

**ORGANICS**  
**Raw Data**

Data File : M:\YODA\DATA\Y181128M\1128Y082.D Vial: 82  
 Acq On : 29 Jan 19 19:02 Operator: MA  
 Sample : AZ85643W26 2/500 Inst : Yoda  
 Misc : soil Multiplr: 1.00

Quant Time: Jan 30 6:07 2019 Quant Results File: YMEE1128.RES

Quant Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Wed Nov 28 11:42:34 2018  
 Response via : Initial Calibration  
 DataAcq Meth : GED

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.24	152	374614	40.0000	ppb	-0.06
3) Napthalene-D8 (IS)	6.65	136	1581904	40.0000	ppb	-0.06
4) Acenaphthene-D10 (IS)	8.67	164	916189	40.0000	ppb	-0.07
5) Phenanthrene-D10 (IS)	10.40	188	1834334	40.0000	ppb	-0.08
6) Chrysene-D12 (IS)	13.49	240	1418555	40.0000	ppb	-0.10
7) Perylene-D12 (IS)	15.26	264	1283573	40.0000	ppb	-0.14

System Monitoring Compounds

Target Compounds Qvalue

Quantitation Report

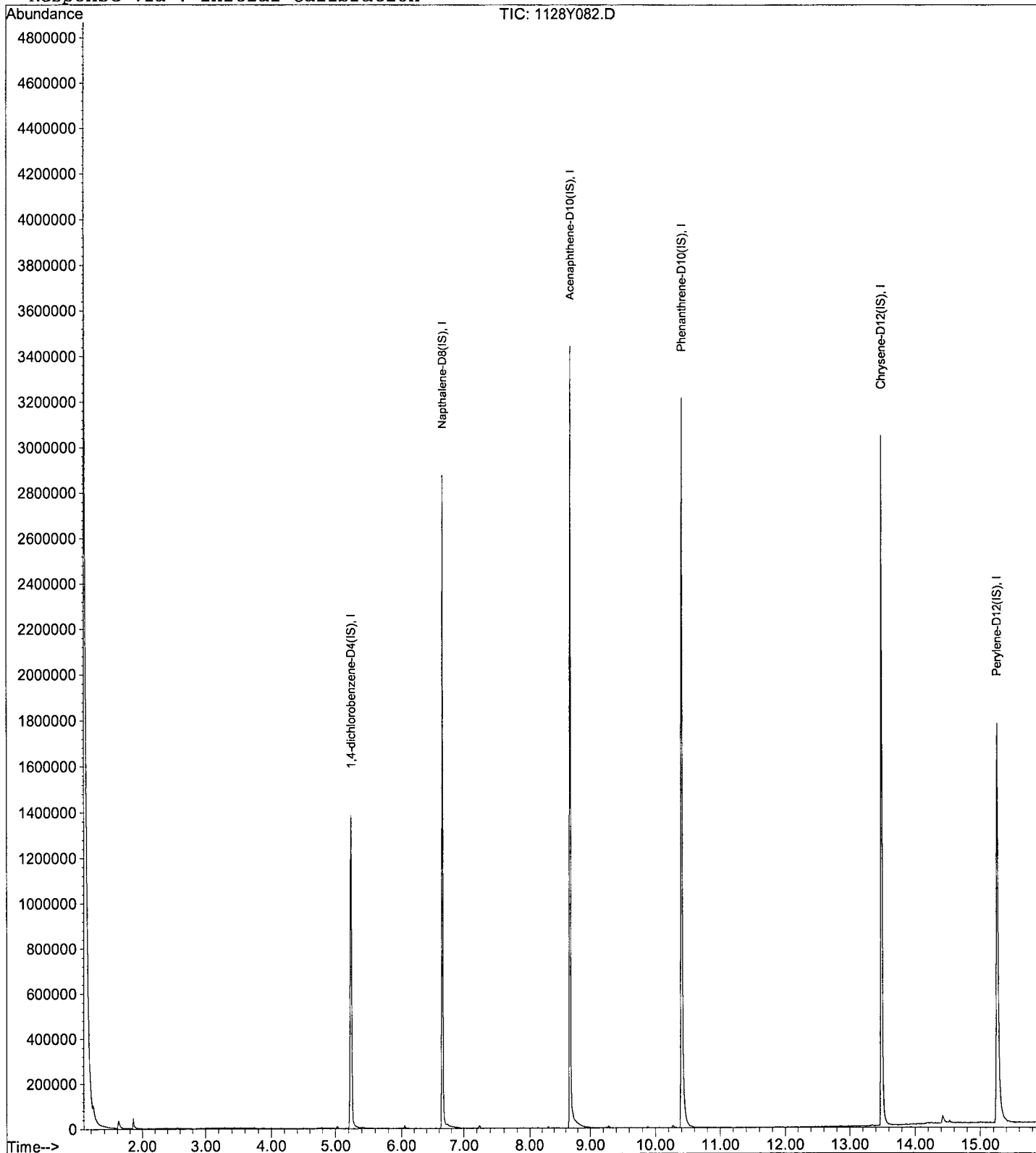
Data File : M:\YODA\DATA\Y181128M\1128Y082.D  
Acq On : 29 Jan 19 19:02  
Sample : AZ85643W26 2/500  
Misc : soil

Vial: 82  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Jan 30 6:07 2019

Quant Results File: YMEE1128.RES

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Wed Nov 28 11:42:34 2018  
Response via : Initial Calibration



Data File : M:\YODA\DATA\Y181128M\1128Y083.D Vial: 83  
 Acq On : 29 Jan 19 19:25 Operator: MA  
 Sample : AZ85644W06 2/500 Inst : Yoda  
 Misc : soil Multiplr: 1.00

Quant Time: Jan 30 6:07 2019 Quant Results File: YMEE1128.RES

Quant Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Wed Nov 28 11:42:34 2018  
 Response via : Initial Calibration  
 DataAcq Meth : GED

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.24	152	427156	40.0000	ppb	-0.07
3) Napthalene-D8 (IS)	6.66	136	1752345	40.0000	ppb	-0.06
4) Acenaphthene-D10 (IS)	8.67	164	928071	40.0000	ppb	-0.07
5) Phenanthrene-D10 (IS)	10.41	188	1897653	40.0000	ppb	-0.08
6) Chrysene-D12 (IS)	13.49	240	1678256	40.0000	ppb	-0.10
7) Perylene-D12 (IS)	15.26	264	1649639	40.0000	ppb	-0.14

System Monitoring Compounds

Target Compounds Qvalue

Quantitation Report

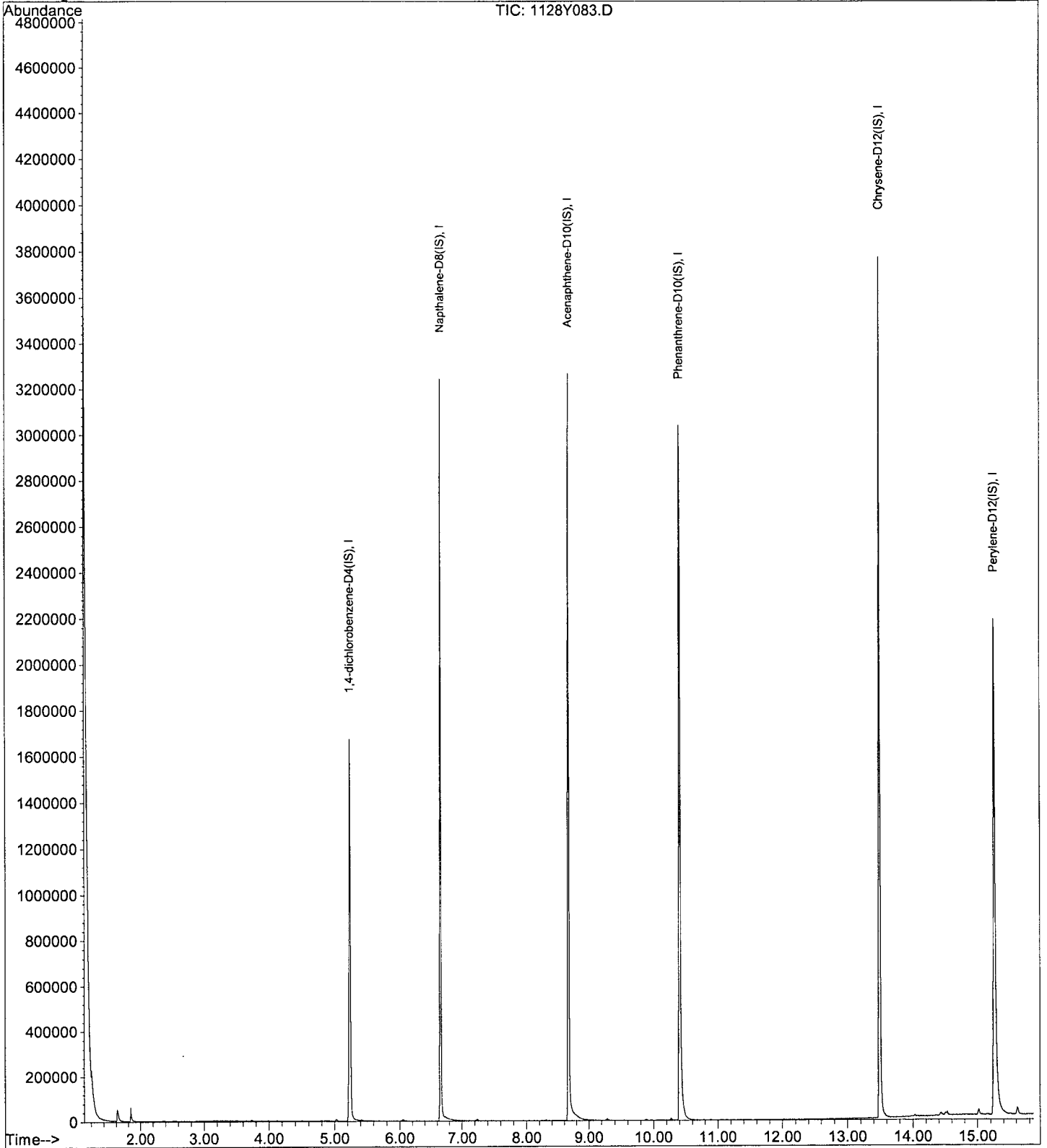
Data File : M:\YODA\DATA\Y181128M\1128Y083.D  
Acq On : 29 Jan 19 19:25  
Sample : AZ85644W06 2/500  
Misc : soil

Vial: 83  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Jan 30 6:07 2019

Quant Results File: YMEE1128.RES

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Wed Nov 28 11:42:34 2018  
Response via : Initial Calibration



Data File : M:\YODA\DATA\Y181128M\1128Y086.D Vial: 86  
 Acq On : 29 Jan 19 20:36 Operator: MA  
 Sample : 190128A BLK 2/500 Inst : Yoda  
 Misc : soil Multiplr: 1.00

Quant Time: Jan 30 6:07 2019 Quant Results File: YMEE1128.RES

Quant Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Wed Nov 28 11:42:34 2018  
 Response via : Initial Calibration  
 DataAcq Meth : GED

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.25	152	429029	40.0000	ppb	-0.06
3) Napthalene-D8 (IS)	6.66	136	1804755	40.0000	ppb	-0.06
4) Acenaphthene-D10 (IS)	8.67	164	894647	40.0000	ppb	-0.07
5) Phenanthrene-D10 (IS)	10.41	188	1665679	40.0000	ppb	-0.08
6) Chrysene-D12 (IS)	13.49	240	1447939	40.0000	ppb	-0.10
7) Perylene-D12 (IS)	15.26	264	1322650	40.0000	ppb	-0.14

System Monitoring Compounds

Target Compounds Qvalue

Quantitation Report

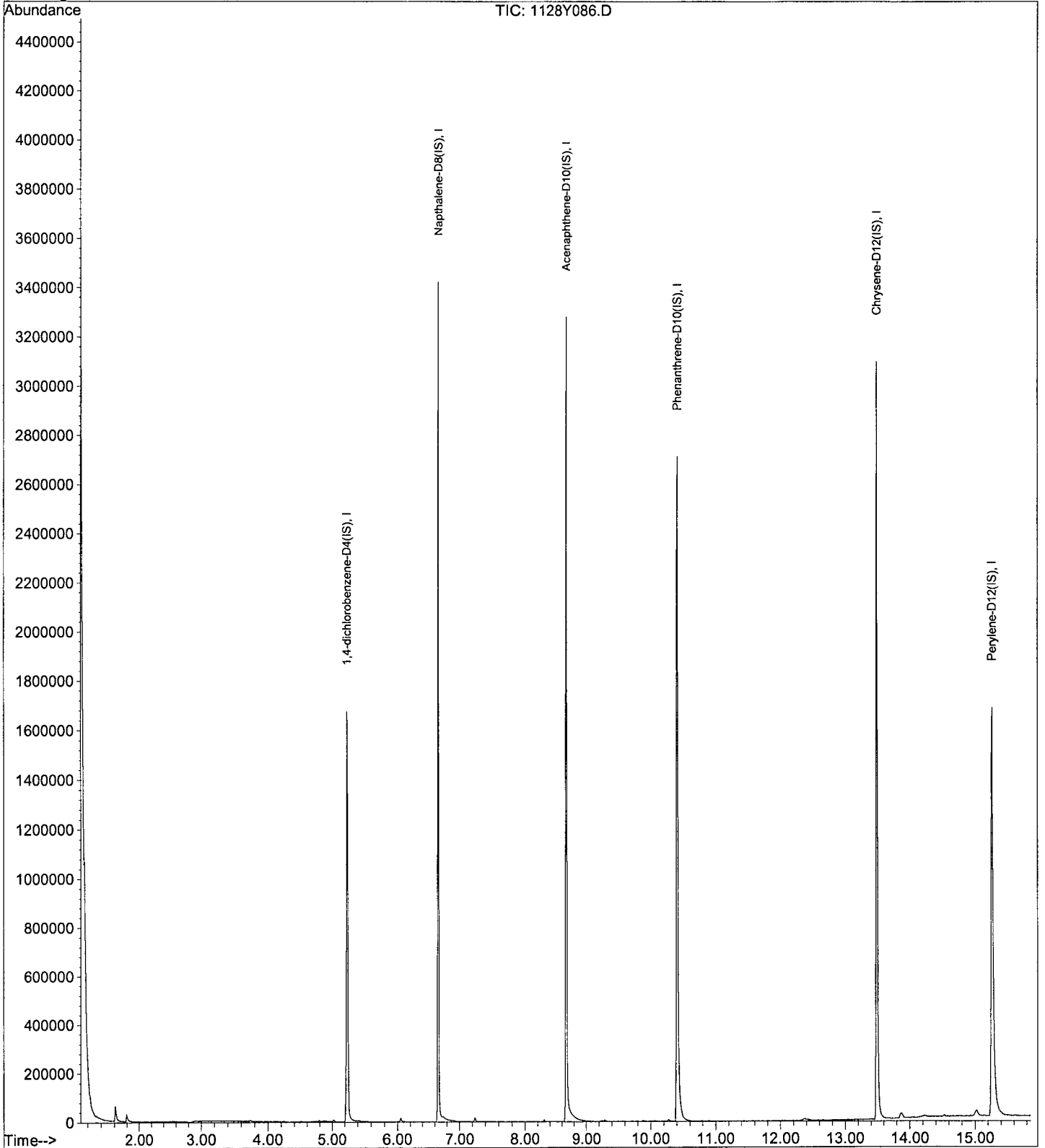
Data File : M:\YODA\DATA\Y181128M\1128Y086.D  
Acq On : 29 Jan 19 20:36  
Sample : 190128A BLK 2/500  
Misc : soil

Vial: 86  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Jan 30 6:07 2019

Quant Results File: YMEE1128.RES

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Wed Nov 28 11:42:34 2018  
Response via : Initial Calibration



Data File : M:\YODA\DATA\Y181128M\1128Y102.D Vial: 2  
 Acq On : 1 Feb 19 9:56 Operator: MA  
 Sample : 190128A LCS-1 2/500 Inst : Yoda  
 Misc : soil Multiplr: 1.00

Quant Time: Feb 1 10:27 2019 Quant Results File: YMEE1128.RES

Quant Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Wed Nov 28 11:42:34 2018  
 Response via : Initial Calibration  
 DataAcq Meth : GED

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.24	152	307091	40.0000	ppb	-0.07
3) Napthalene-D8 (IS)	6.66	136	1402122	40.0000	ppb	-0.06
4) Acenaphthene-D10 (IS)	8.67	164	792591	40.0000	ppb	-0.07
5) Phenanthrene-D10 (IS)	10.40	188	1492774	40.0000	ppb	-0.09
6) Chrysene-D12 (IS)	13.49	240	1077392	40.0000	ppb	-0.10
7) Perylene-D12 (IS)	15.26	264	971847	40.0000	ppb	-0.14

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) 2-(2-Methoxyethoxy) ethanol	4.48	45	163673	88.7441	ppb	95



Quantitation Report

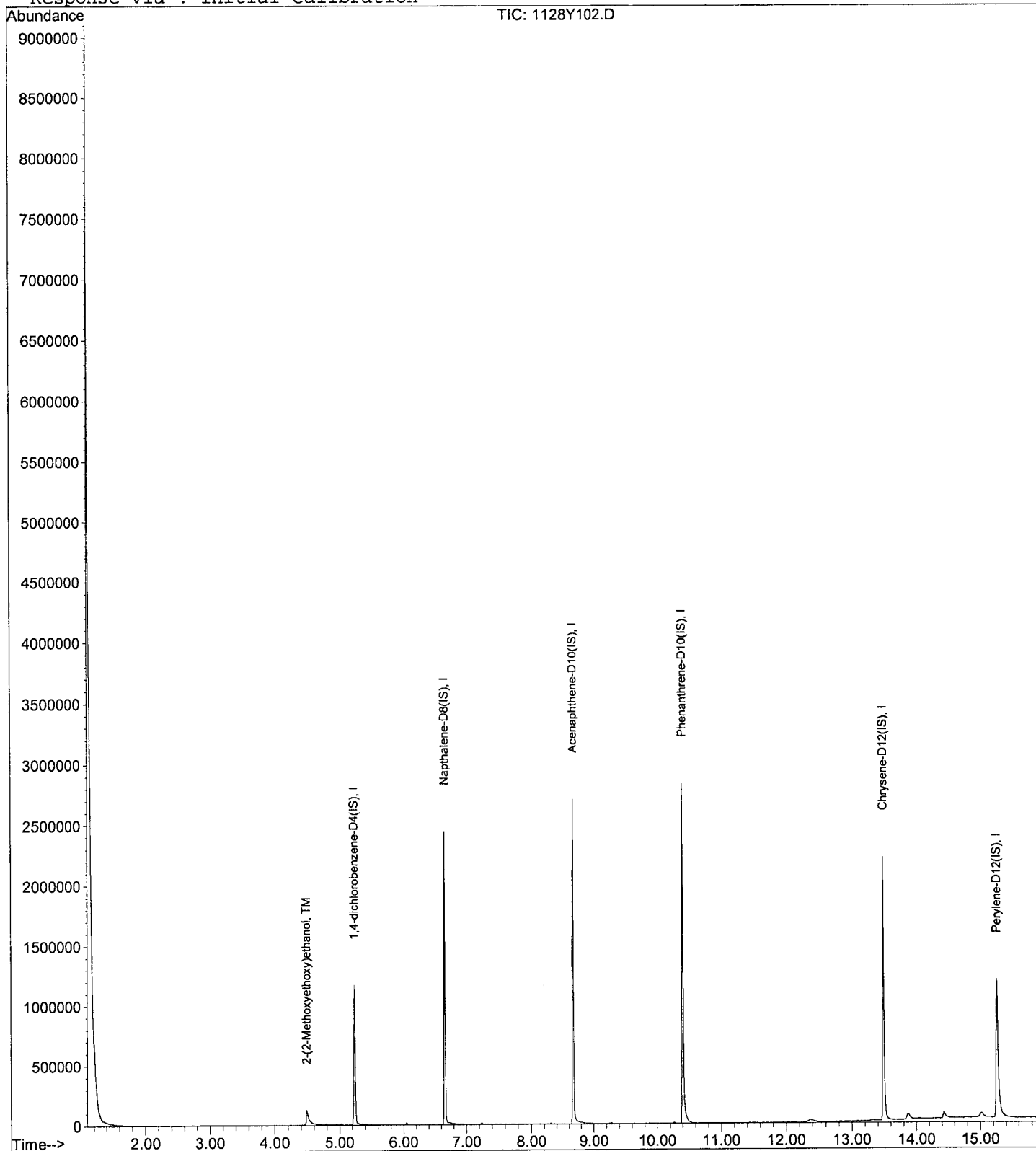
Data File : M:\YODA\DATA\Y181128M\1128Y102.D  
Acq On : 1 Feb 19 9:56  
Sample : 190128A LCS-1 2/500  
Misc : soil

Vial: 2  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Feb 1 10:27 2019

Quant Results File: YMEE1128.RES

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Wed Nov 28 11:42:34 2018  
Response via : Initial Calibration



Data File : M:\YODA\DATA\Y181128M\1128Y103.D Vial: 3  
 Acq On : 1 Feb 19 10:19 Operator: MA  
 Sample : 190128A LCSD-1 2/500 Inst : Yoda  
 Misc : soil Multiplr: 1.00

Quant Time: Feb 1 10:27 2019 Quant Results File: YMEE1128.RES

Quant Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Wed Nov 28 11:42:34 2018  
 Response via : Initial Calibration  
 DataAcq Meth : GED

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.23	152	403357	40.0000	ppb	-0.07
3) Napthalene-D8 (IS)	6.66	136	1743268	40.0000	ppb	-0.06
4) Acenaphthene-D10 (IS)	8.67	164	949174	40.0000	ppb	-0.07
5) Phenanthrene-D10 (IS)	10.40	188	1744190	40.0000	ppb	-0.09
6) Chrysene-D12 (IS)	13.49	240	1349741	40.0000	ppb	-0.10
7) Perylene-D12 (IS)	15.25	264	1235186	40.0000	ppb	-0.15

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) 2-(2-Methoxyethoxy) ethanol	4.51	45	141807	58.5379	ppb	94

Quantitation Report

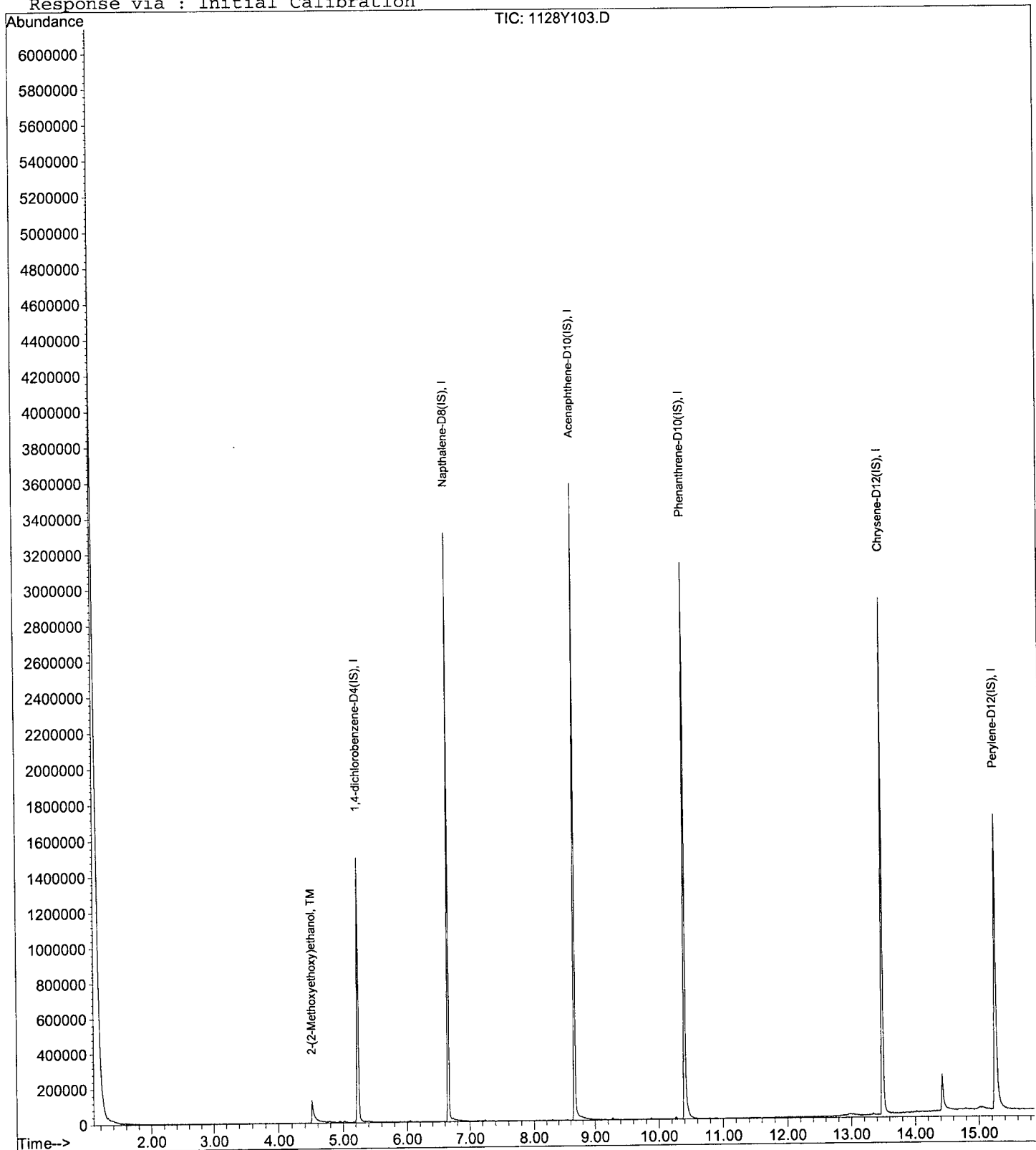
Data File : M:\YODA\DATA\Y181128M\1128Y103.D  
Acq On : 1 Feb 19 10:19  
Sample : 190128A LCSD-1 2/500  
Misc : soil

Vial: 3  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Feb 1 10:27 2019

Quant Results File: YMEE1128.RES

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Wed Nov 28 11:42:34 2018  
Response via : Initial Calibration



Data File : M:\YODA\DATA\Y181128M\1128Y080.D Vial: 80  
 Acq On : 29 Jan 19 18:14 Operator: MA  
 Sample : AZ85643W23 MS-1 2/500 Inst : Yoda  
 Misc : soil Multiplr: 1.00

Quant Time: Jan 30 6:07 2019 Quant Results File: YMEE1128.RES

Quant Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Wed Nov 28 11:42:34 2018  
 Response via : Initial Calibration  
 DataAcq Meth : GED

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.25	152	351823	40.0000	ppb	-0.06
3) Napthalene-D8 (IS)	6.66	136	1449639	40.0000	ppb	-0.06
4) Acenaphthene-D10 (IS)	8.67	164	850197	40.0000	ppb	-0.07
5) Phenanthrene-D10 (IS)	10.41	188	1776129	40.0000	ppb	-0.08
6) Chrysene-D12 (IS)	13.49	240	1322792	40.0000	ppb	-0.10
7) Perylene-D12 (IS)	15.26	264	1208310	40.0000	ppb	-0.14

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) 2-(2-Methoxyethoxy)ethanol	4.47	45	145343	68.7859	ppb	95

Quantitation Report

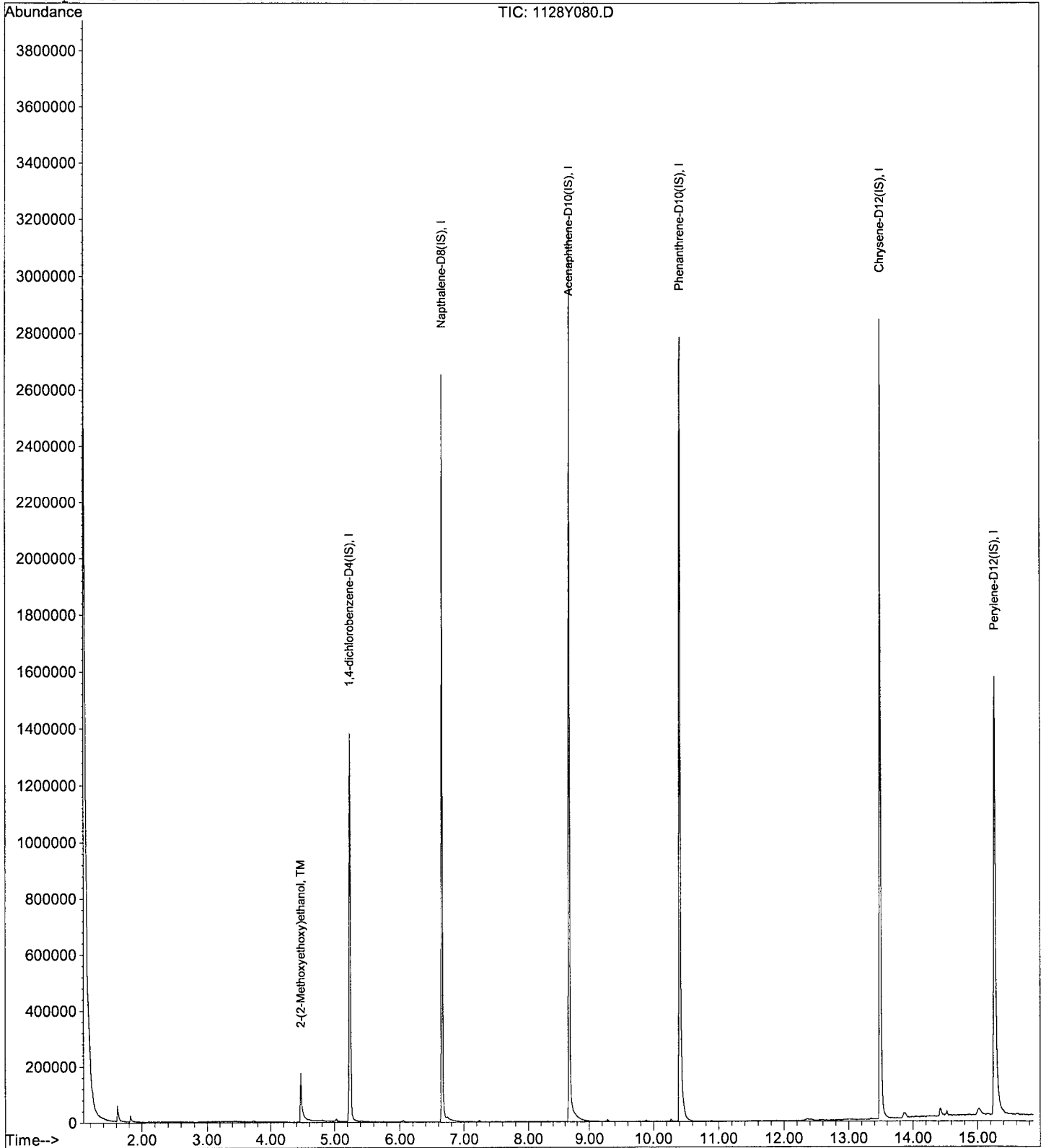
Data File : M:\YODA\DATA\Y181128M\1128Y080.D  
Acq On : 29 Jan 19 18:14  
Sample : AZ85643W23 MS-1 2/500  
Misc : soil

Vial: 80  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Jan 30 6:07 2019

Quant Results File: YMEE1128.RES

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Wed Nov 28 11:42:34 2018  
Response via : Initial Calibration



Data File : M:\YODA\DATA\Y181128M\1128Y081.D Vial: 81  
 Acq On : 29 Jan 19 18:38 Operator: MA  
 Sample : AZ85643W25 MSD-1 2/500 Inst : Yoda  
 Misc : soil Multiplr: 1.00

Quant Time: Jan 30 6:07 2019 Quant Results File: YMEE1128.RES

Quant Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Wed Nov 28 11:42:34 2018  
 Response via : Initial Calibration  
 DataAcq Meth : GED

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.24	152	407383	40.0000	ppb	-0.06
3) Napthalene-D8 (IS)	6.65	136	1632066	40.0000	ppb	-0.07
4) Acenaphthene-D10 (IS)	8.67	164	889059	40.0000	ppb	-0.08
5) Phenanthrene-D10 (IS)	10.40	188	1791018	40.0000	ppb	-0.08
6) Chrysene-D12 (IS)	13.49	240	1543239	40.0000	ppb	-0.10
7) Perylene-D12 (IS)	15.26	264	1390211	40.0000	ppb	-0.14

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) 2-(2-Methoxyethoxy) ethanol	4.46	45	127903	52.2766	ppb	96

Quantitation Report

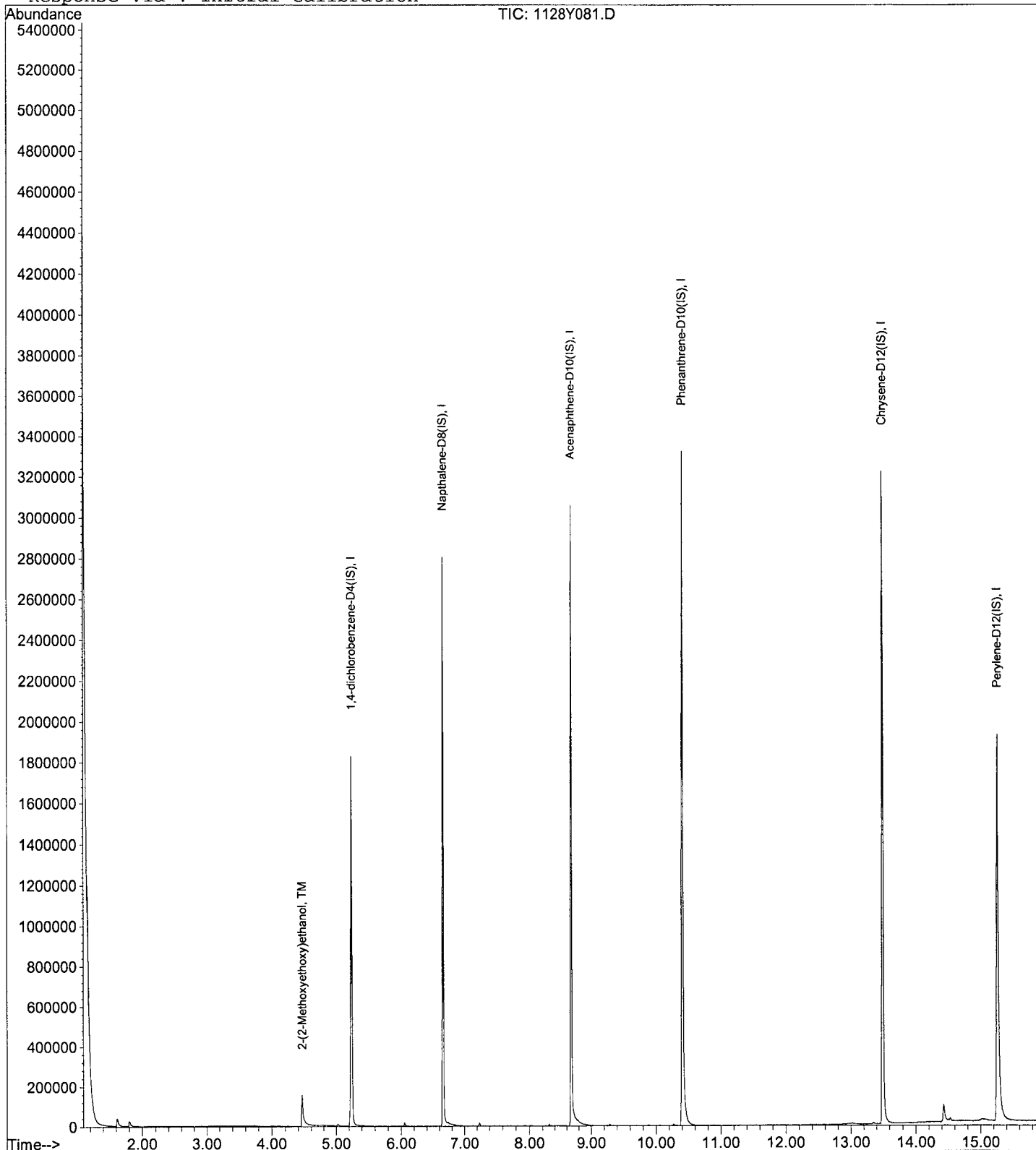
Data File : M:\YODA\DATA\Y181128M\1128Y081.D  
Acq On : 29 Jan 19 18:38  
Sample : AZ85643W25 MSD-1 2/500  
Misc : soil

Vial: 81  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Jan 30 6:07 2019

Quant Results File: YMEE1128.RES

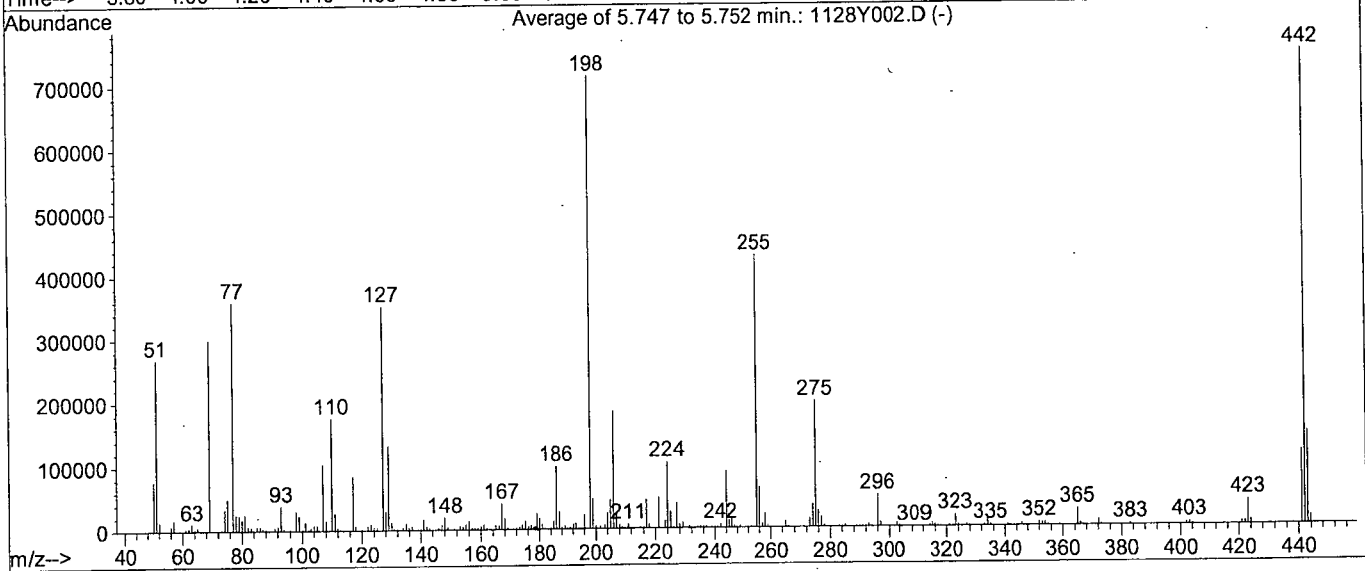
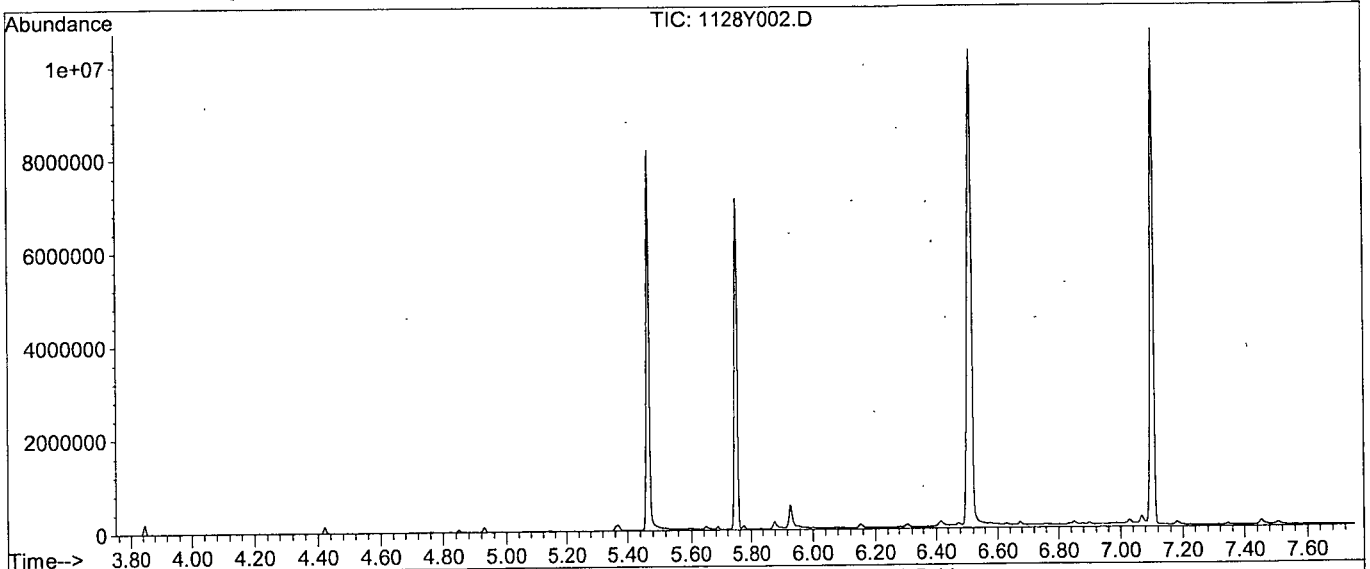
Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Wed Nov 28 11:42:34 2018  
Response via : Initial Calibration



Data File : M:\YODA\DATA\Y181128M\1128Y002.D  
 Acq On : 28 Nov 18 7:30  
 Sample : SV Tune 03/07/18  
 Misc :

Vial: 2  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C



AutoFind: Scans 865, 866, 867; Background Corrected with Scan 856

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	37.6	268391	PASS
68	69	0.00	2	0.0	0	PASS
70	69	0.00	2	0.4	1292	PASS
127	198	10	80	49.3	352384	PASS
197	198	0.00	2	0.0	0	PASS
198	198	100	100	100.0	714581	PASS
199	198	5	9	6.6	46827	PASS
275	198	10	60	27.6	197547	PASS
365	198	1	100	3.7	26576	PASS
441	442	0.01	24	15.6	116851	PASS
442	198	50	150	104.9	749675	PASS
443	442	15	24	19.5	145880	PASS



Data File Name: 1128Y002.D  
Data File Path: M:\YODA\DATA\Y181128M\  
Operator: MA  
Date Acquired: 28 Nov 2018 07:30  
Method File: DFTPP2.M  
Sample Name: SV Tune 03/07/18  
Vial Number: 2  
Instrument Name: Yoda

#	Name	Ret Time	Target Response
1)	DDT	7.10	75896800
2)	DDD	6.90	747340
3)	DDE	7.03	414795

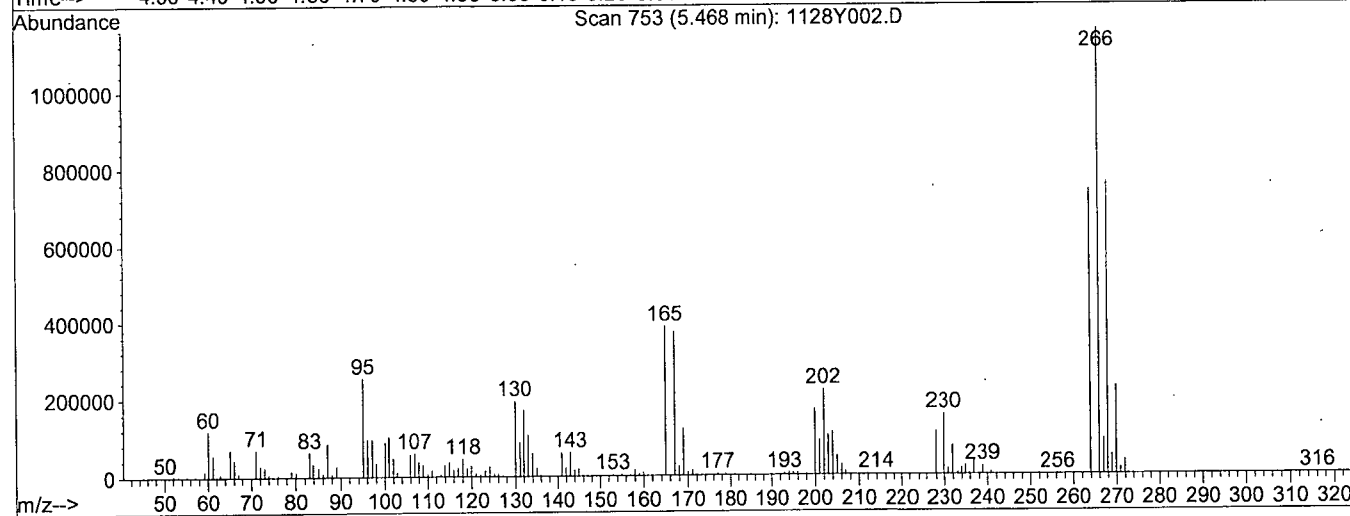
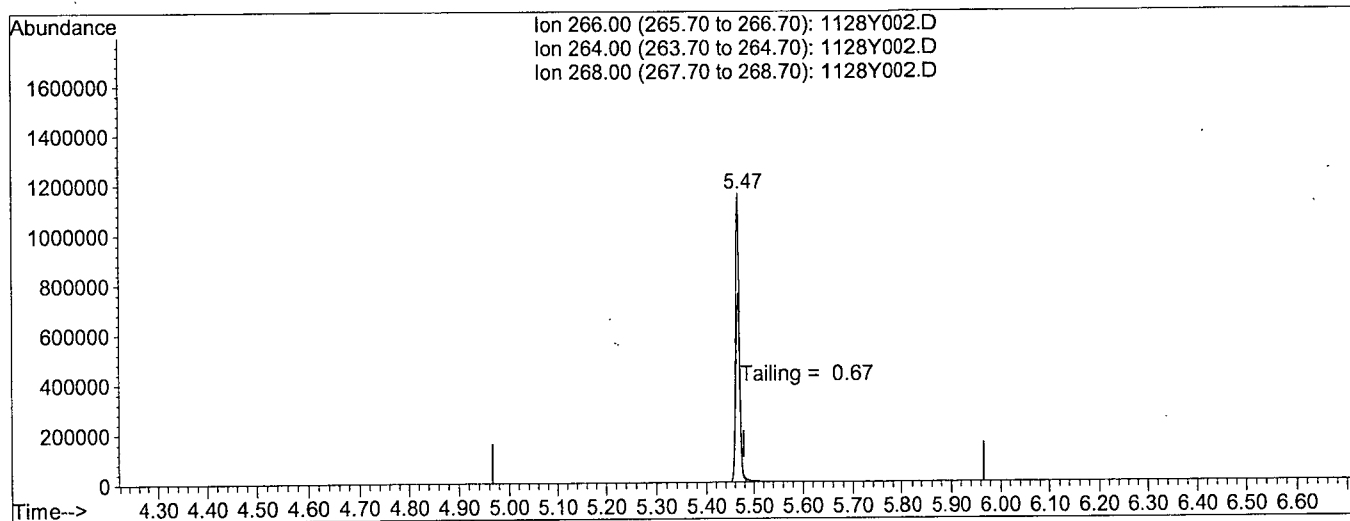
Breakdown 1.51

Quantitation Report

Data File : M:\YODA\DATA\Y181128M\1128Y002.D  
 Acq On : 28 Nov 18 7:30  
 Sample : SV Tune 03/07/18  
 Misc :  
 Quant Time: Nov 28 10:24 2018

Vial: 2  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00  
 Quant Results File: temp.res

Method : M:\YODA\DATA\Y181128M\DFTPP2.M (Chemstation Integrator)  
 Title :  
 Last Update : Wed Nov 28 10:24:36 2018  
 Response via : Single Level Calibration



TIC: 1128Y002.D

(5) Pentachlorophenol

5.47min 0.0000

response 7009891

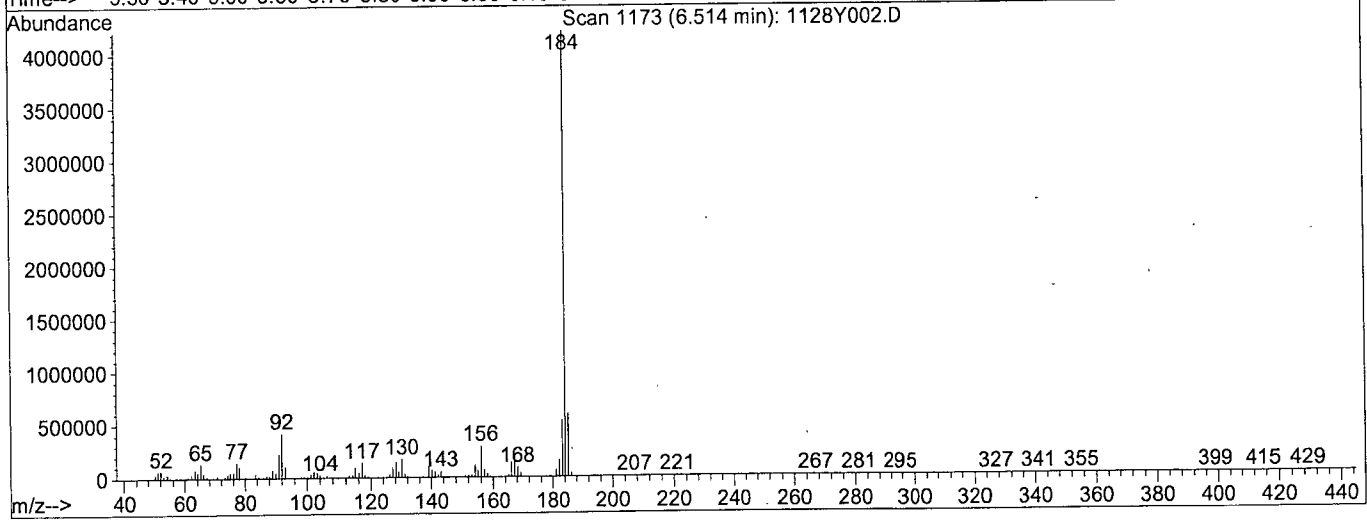
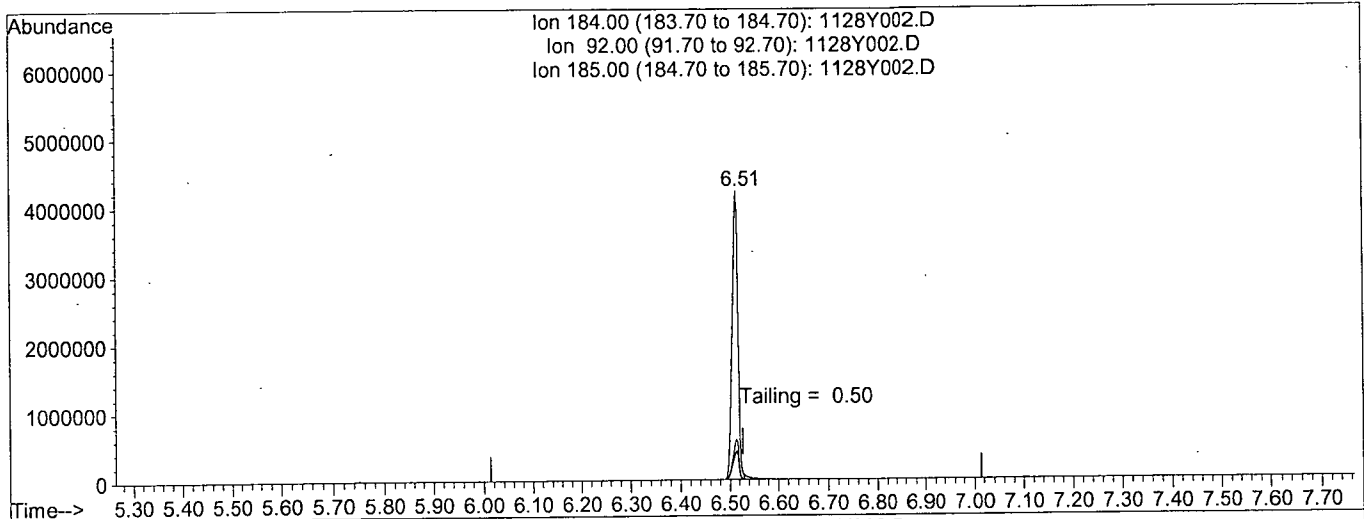
Ion	Exp%	Act%
266.00	100	100
264.00	63.80	61.59
268.00	65.50	63.39
0.00	0.00	0.00

Quantitation Report

Data File : M:\YODA\DATA\Y181128M\1128Y002.D  
 Acq On : 28 Nov 18 7:30  
 Sample : SV Tune 03/07/18  
 Misc :  
 Quant Time: Nov 28 10:24 2018

Vial: 2  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00  
 Quant Results File: temp.res

Method : M:\YODA\DATA\Y181128M\DFTPP2.M (Chemstation Integrator)  
 Title :  
 Last Update : Wed Nov 28 10:24:36 2018  
 Response via : Single Level Calibration



TIC: 1128Y002.D

(6) Benzidine

6.52min 0.0000

response 35701269

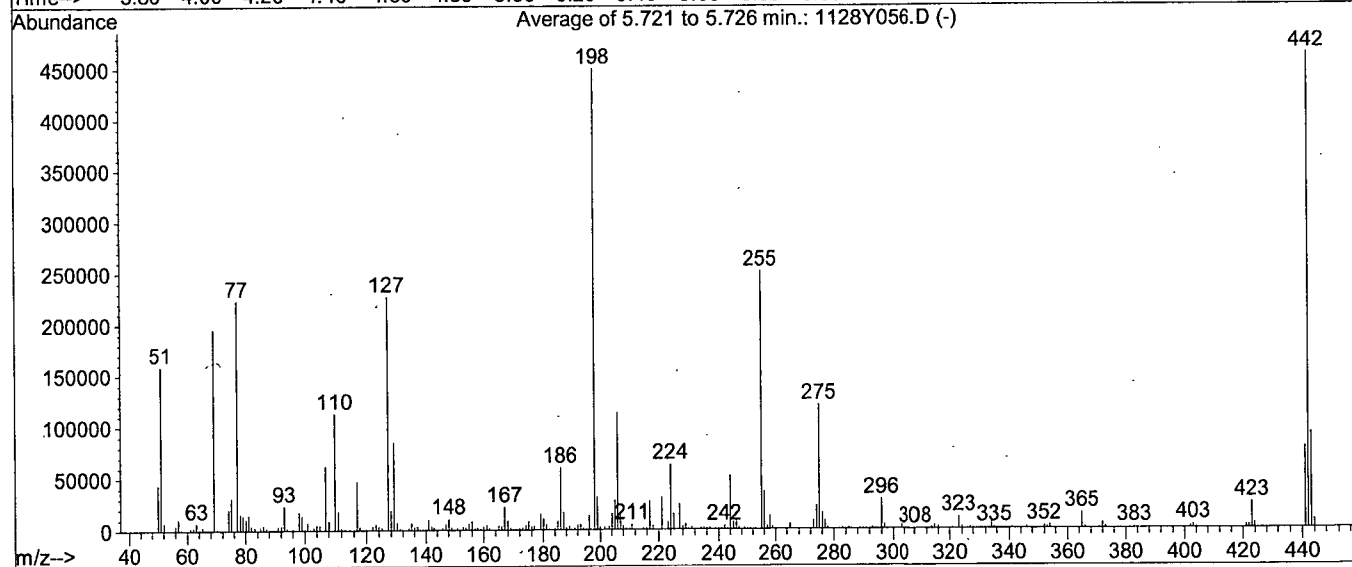
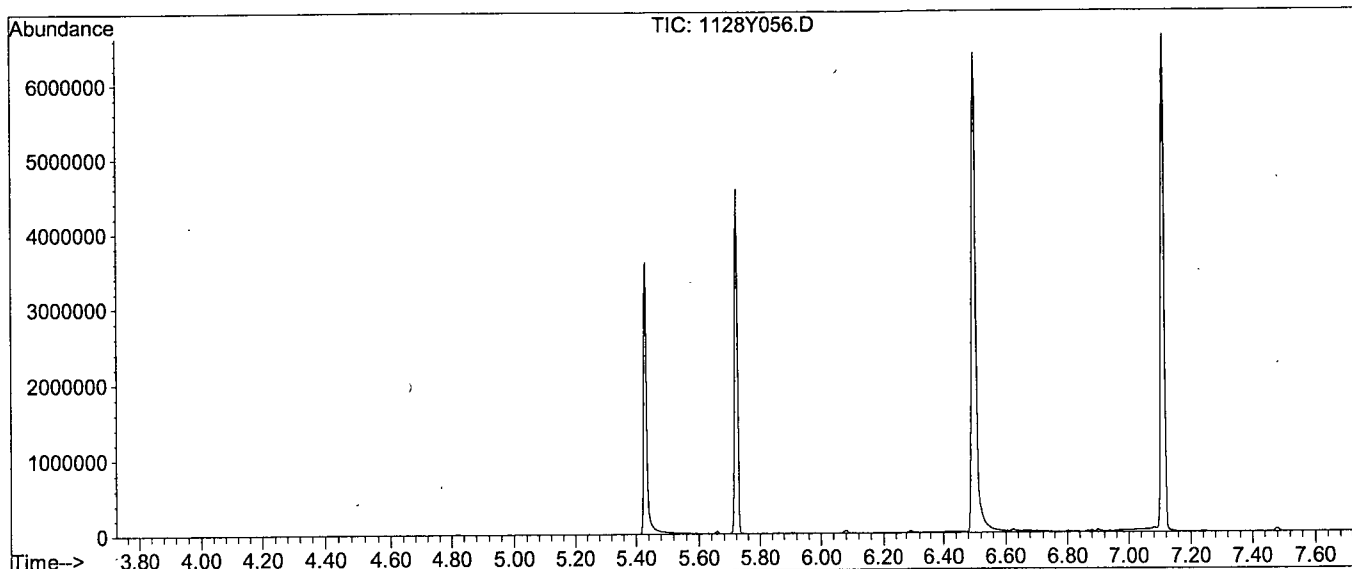
Ion	Exp%	Act%
184.00	100	100
92.00	9.90	10.15
185.00	14.00	14.16
0.00	0.00	0.00

DFTPP

Data File : M:\YODA\DATA\Y181128M\1128Y056.D  
 Acq On : 29 Jan 19 8:36  
 Sample : SV TUNE 11/10/18  
 Misc : soil

Vial: 56  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C



AutoFind: Scans 855, 856, 857; Background Corrected with Scan 846

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	35.4	158979	PASS
68	69	0.00	2	0.0	0	PASS
70	69	0.00	2	0.6	1146	PASS
127	198	10	80	50.5	226944	PASS
197	198	0.00	2	0.0	0	PASS
198	198	100	100	100.0	449557	PASS
199	198	5	9	6.9	31235	PASS
275	198	10	60	26.7	120224	PASS
365	198	1	100	3.4	15263	PASS
441	442	0.01	24	16.9	78525	PASS
442	198	50	150	103.1	463467	PASS
443	442	15	24	19.9	92080	PASS

Data File Name: 1128Y056.D  
Data File Path: M:\YODA\DATA\Y181128M\  
Operator: MA  
Date Acquired: 29 Jan 2019 08:36  
Method File: DFTPP2.M  
Sample Name: SV TUNE 11/10/18  
Vial Number: 56  
Instrument Name: Yoda

#	Name	Ret Time	Target Response
1)	DDT	7.11	48684800
2)	DDD	6.90	257255
3)	DDE	7.18	0

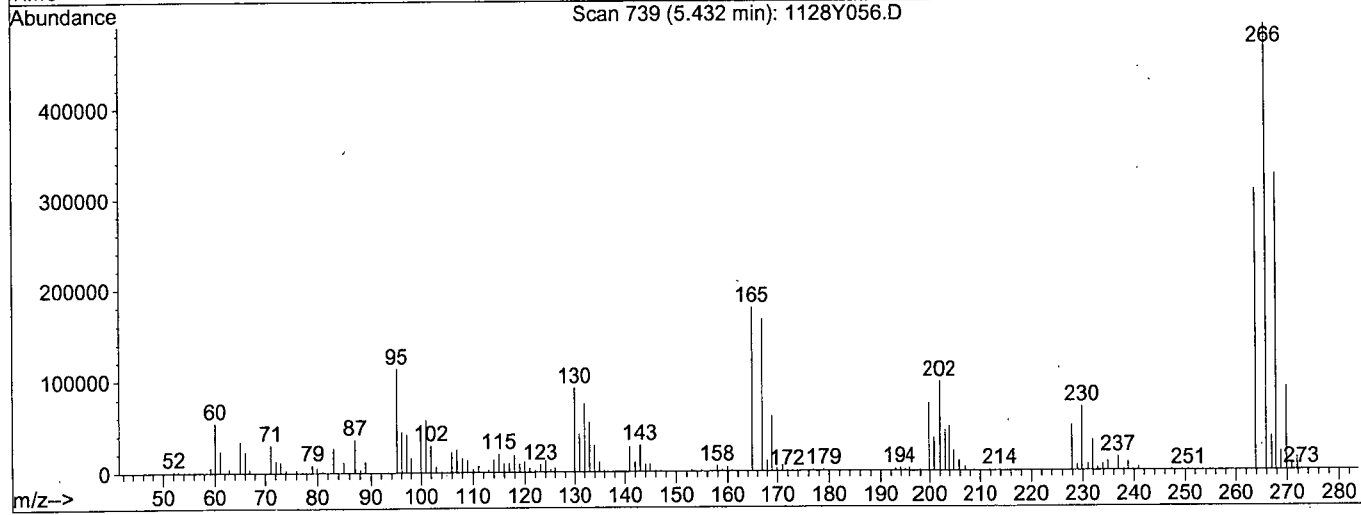
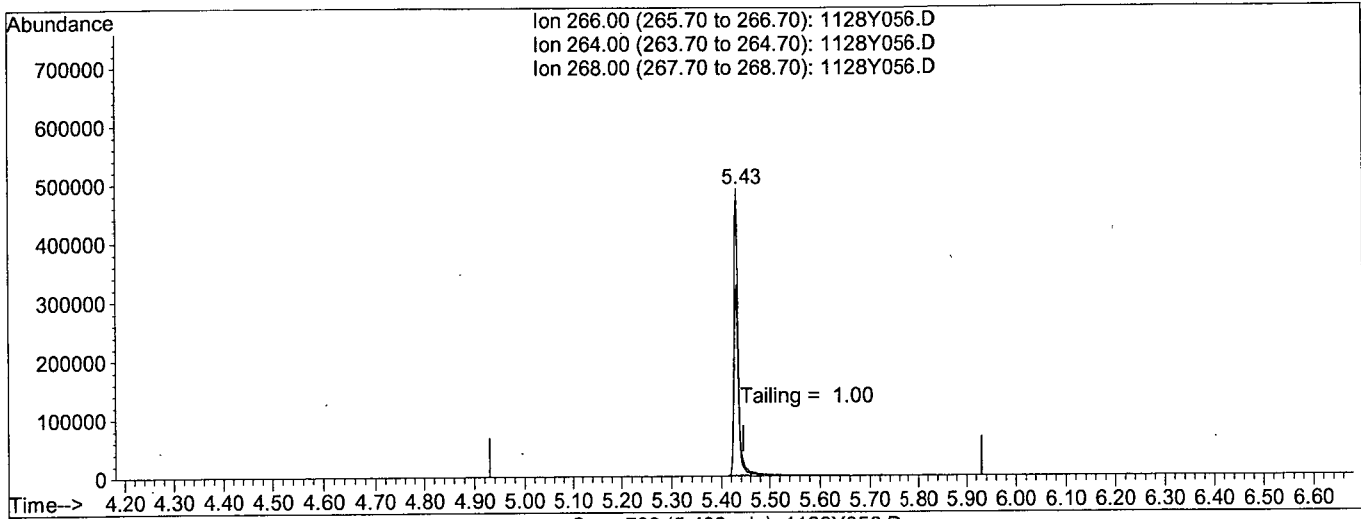
Breakdown 0.53

Quantitation Report

Data File : M:\YODA\DATA\Y181128M\1128Y056.D  
 Acq On : 29 Jan 19 8:36  
 Sample : SV TUNE 11/10/18  
 Misc : soil  
 Quant Time: Jan 29 8:37 2019

Vial: 56  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00  
 Quant Results File: temp.res

Method : M:\YODA\DATA\Y181128M\DFTPP2.M (Chemstation Integrator)  
 Title :  
 Last Update : Tue Jan 29 08:36:56 2019  
 Response via : Single Level Calibration



TIC: 1128Y056.D

(5) Pentachlorophenol

5.43min 0.0000

response 3073868

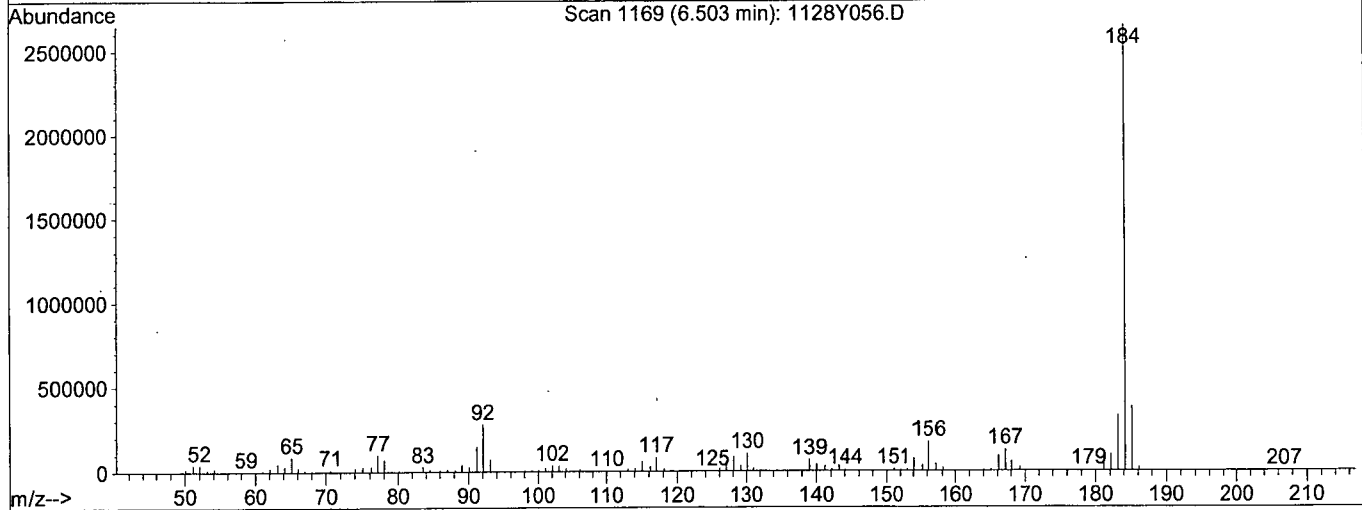
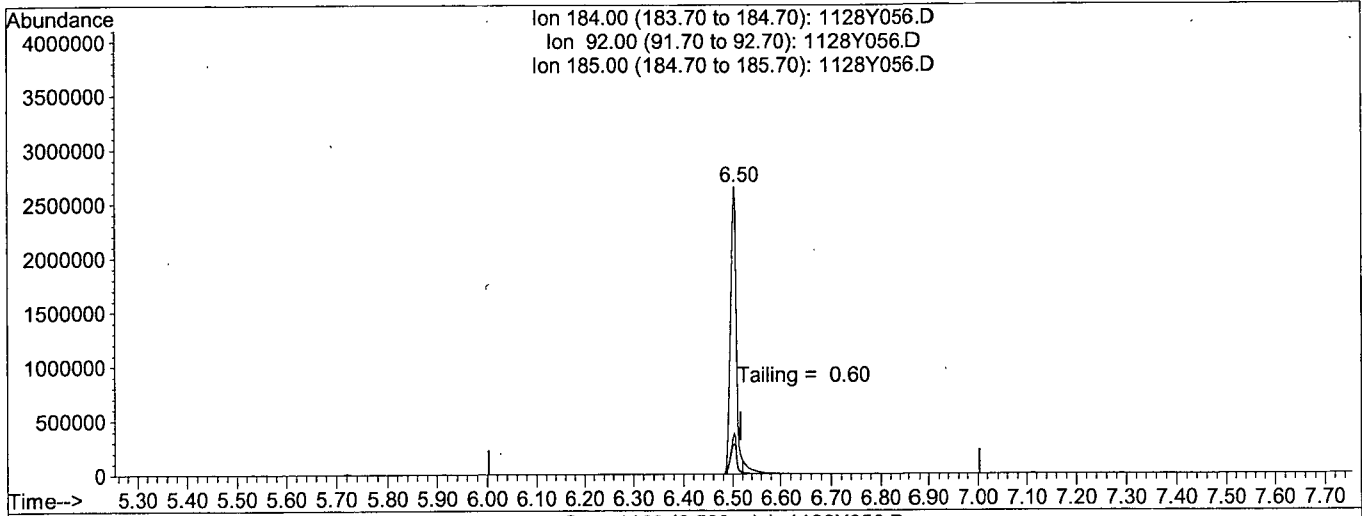
Ion	Exp%	Act%
266.00	100	100
264.00	63.10	62.99
268.00	66.50	63.06
0.00	0.00	0.00

Quantitation Report

Data File : M:\YODA\DATA\Y181128M\1128Y056.D  
 Acq On : 29 Jan 19 8:36  
 Sample : SV TUNE 11/10/18  
 Misc : soil  
 Quant Time: Jan 29 8:37 2019

Vial: 56  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00  
 Quant Results File: temp.res

Method : M:\YODA\DATA\Y181128M\DFTPP2.M (Chemstation Integrator)  
 Title :  
 Last Update : Tue Jan 29 08:36:56 2019  
 Response via : Single Level Calibration



TIC: 1128Y056.D

(6) Benzidine

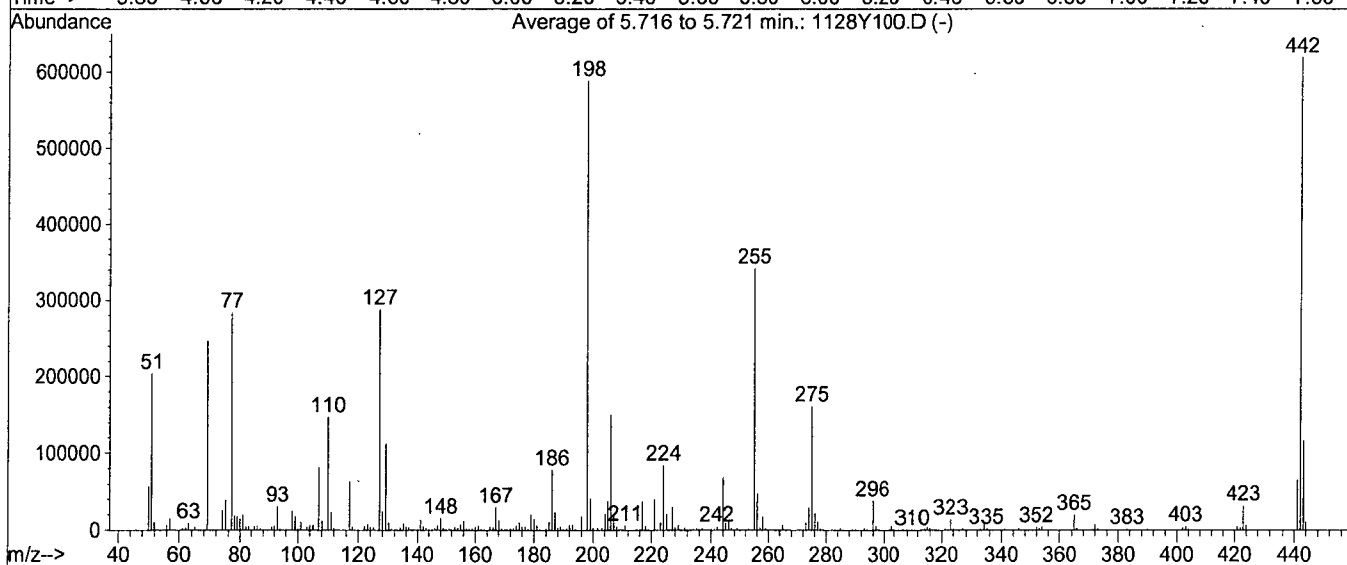
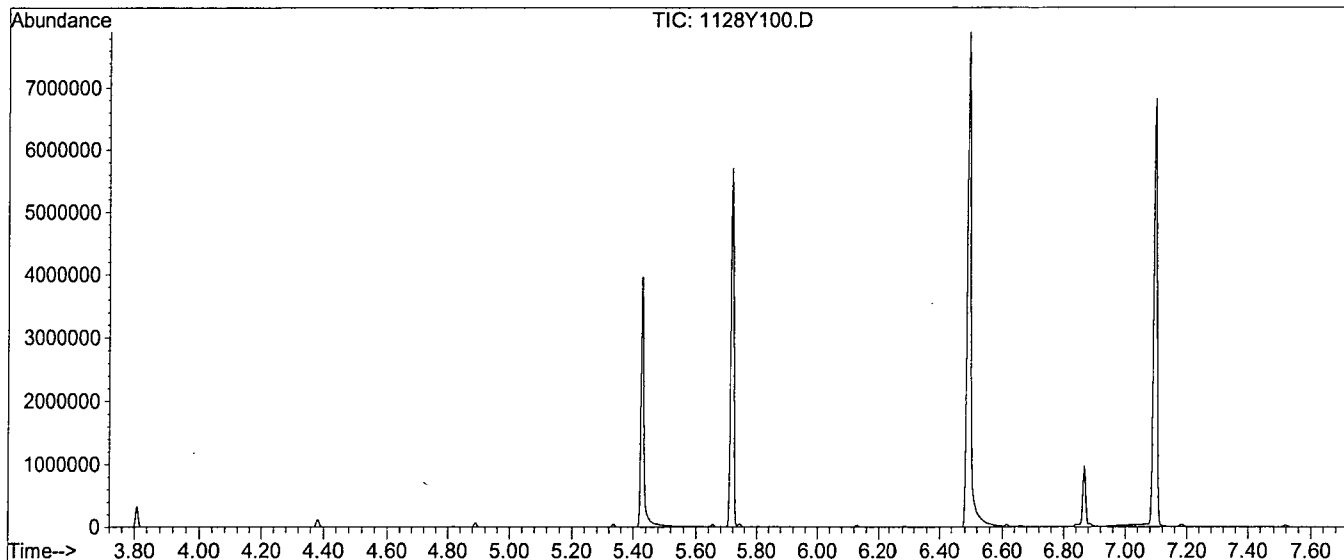
6.50min 0.0000

response 22876598

Ion	Exp%	Act%
184.00	100	100
92.00	10.50	10.94
185.00	14.30	14.29
0.00	0.00	0.00

Data File : M:\YODA\DATA\Y181128M\1128Y100.D Vial: 100  
 Acq On : 1 Feb 19 9:17 Operator: MA  
 Sample : SV TUNE 11/10/18 Inst : Yoda  
 Misc : soil Multiplr: 1.00

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C



AutoFind: Scans 853, 854, 855; Background Corrected with Scan 844

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	34.6	203840	PASS
68	69	0.00	2	0.0	0	PASS
70	69	0.00	2	0.3	809	PASS
127	198	10	80	49.0	287979	PASS
197	198	0.00	2	0.0	0	PASS
198	198	100	100	100.0	588288	PASS
199	198	5	9	6.9	40451	PASS
275	198	10	60	27.4	160939	PASS
365	198	1	100	3.4	19896	PASS
441	442	0.01	24	10.5	65189	PASS
442	198	50	150	105.3	619285	PASS
443	442	15	24	18.8	116187	PASS



Data File Name: 1128Y100.D  
Data File Path: M:\YODA\DATA\Y181128M\  
Operator: MA  
Date Acquired: 1 Feb 19 9:17  
Method File: DFTPP2.M  
Sample Name: SV TUNE 11/10/18  
Vial Number: 100  
Instrument Name: Yoda

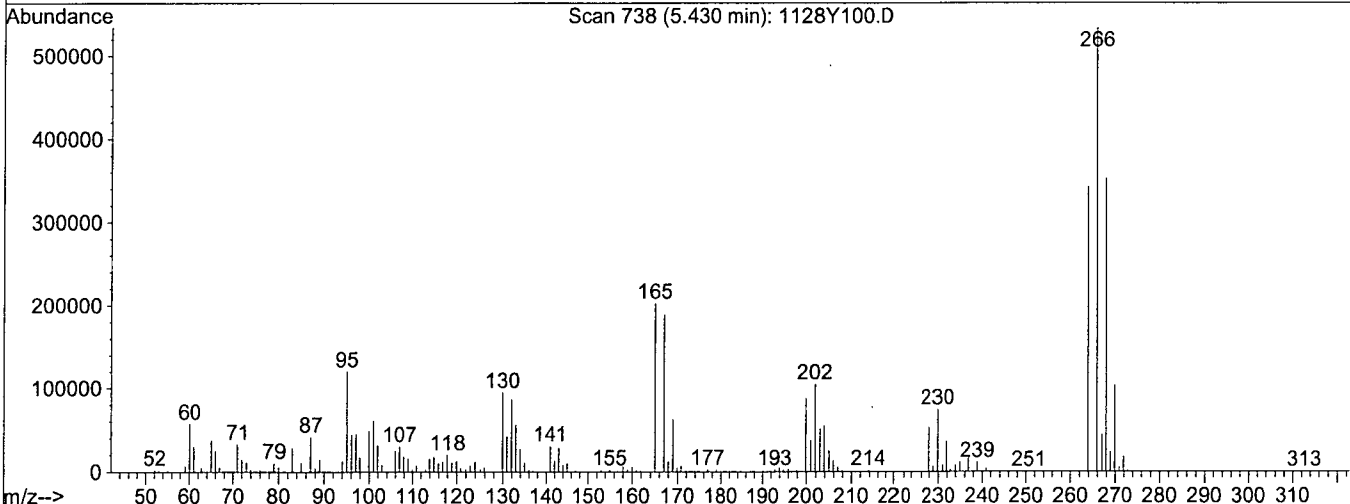
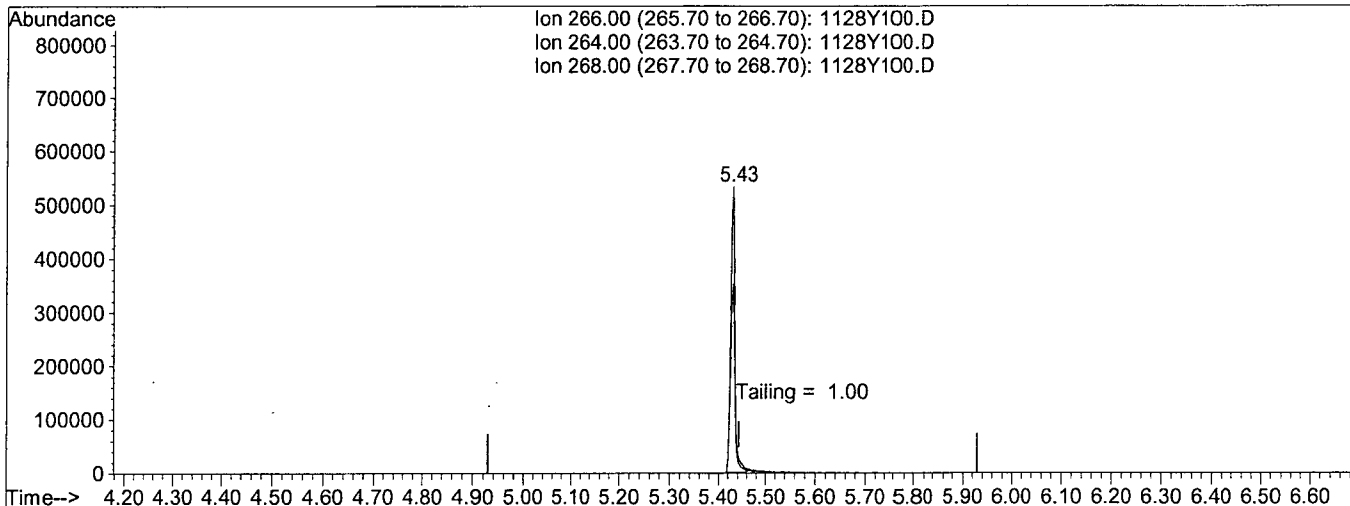
#	Name	Ret Time	Target Response
1)	DDT	7.10	52603900
2)	DDD	6.89	403043
3)	DDE	7.04	33343

Breakdown 0.82

Quantitation Report

Data File : M:\YODA\DATA\Y181128M\1128Y100.D Vial: 100  
 Acq On : 1 Feb 19 9:17 Operator: MA  
 Sample : SV TUNE 11/10/18 Inst : Yoda  
 Misc : soil Multiplr: 1.00  
 Quant Time: Feb 1 9:33 2019 Quant Results File: temp.res

Method : M:\YODA\DATA\Y181128M\DFTPP2.M (Chemstation Integrator)  
 Title :  
 Last Update : Wed Jan 30 08:02:01 2019  
 Response via : Single Level Calibration



TIC: 1128Y100.D

(5) Pentachlorophenol

5.43min 0.0000

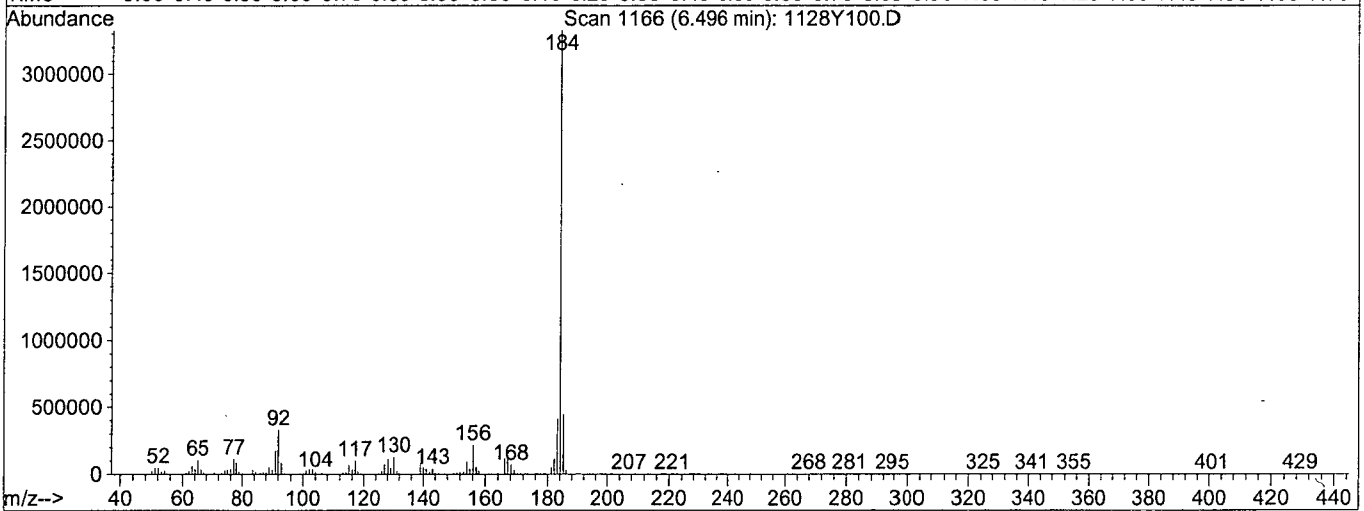
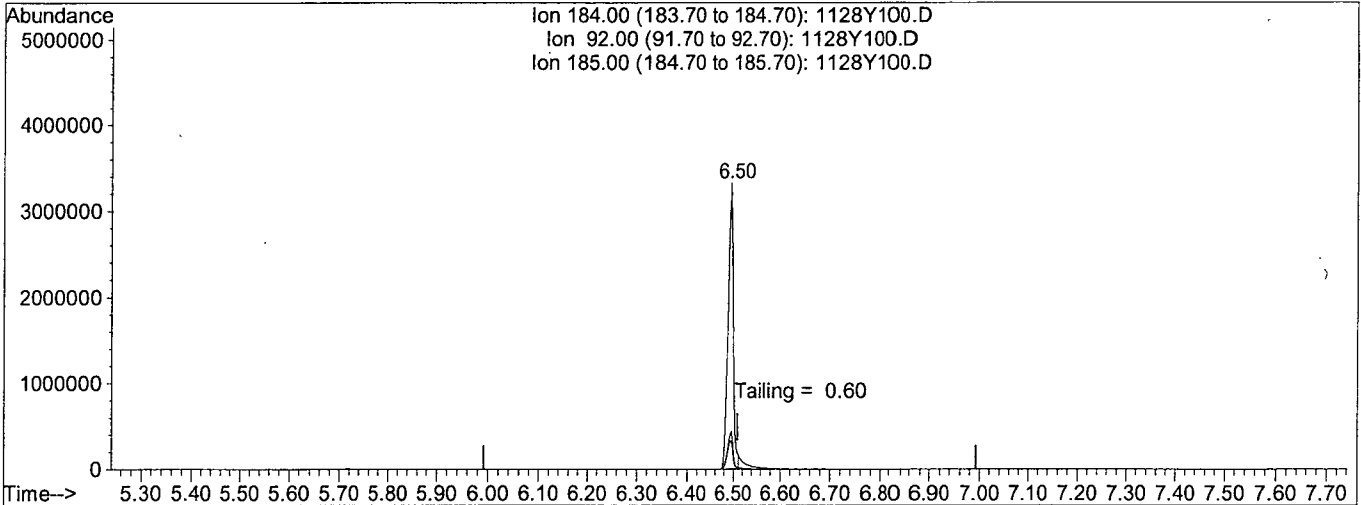
response 3490414

Ion	Exp%	Act%
266.00	100	100
264.00	64.20	61.20
268.00	62.40	63.41
0.00	0.00	0.00

Quantitation Report

Data File : M:\YODA\DATA\Y181128M\1128Y100.D Vial: 100  
 Acq On : 1 Feb 19 9:17 Operator: MA  
 Sample : SV TUNE 11/10/18 Inst : Yoda  
 Misc : soil Multiplr: 1.00  
 Quant Time: Feb 1 9:33 2019 Quant Results File: temp.res

Method : M:\YODA\DATA\Y181128M\DFTPP2.M (Chemstation Integrator)  
 Title :  
 Last Update : Wed Jan 30 08:02:01 2019  
 Response via : Single Level Calibration



TIC: 1128Y100.D

(6) Benzidine

6.50min 0.0000

response 28645968

Ion	Exp%	Act%
184.00	100	100
92.00	10.90	10.63
185.00	14.10	13.33
0.00	0.00	0.00

Methoxyethoxyethanol-Neat (MEE) SS Stock: 5/22/17-R.H. ex: 08/04/19						
STANDARD	INITIAL CONC.	SOURCE DATE	ALIQUOT	FINAL VOL	FINAL CONC.	SOLVENT /LOT#
MEE	Neat 99.5%	HEM SERVIC	0.1032g	10 mL	10320 ug/ml	MC
		Cat: N-12404-1G				#56258
		Lot: 5259000-37082				
		OP: 09/27/16				
		EXP: 7/31/22				

0.097ml were spiked in 500ml of water and extracted on 07/27/18. Final concentration is 2000ug/L

QC on 05/04/18

Name of Final Standard Diethylene Glycol

Prep'd By (Initials) GA

Prep Date 07/25/18  
Exp Date 11/10/18

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
Diethylene glycol monomethyl ether	AccuStandard	72273	2000 ug/mL	21610100 7-37330 and 37331	10/03/18	2.0 mL	4 mL	Methanol #042317C	1000 ug/mL

Given to Extraction to do **MEE M STD Stock** (used for ICAL) Final concentration 2000ug/L  
APPL re-certified diethylene glycol monomethyl ether lot 216101007-37330 and 37331 and extended the expiration date to 11/10/18 per verification with a second source from ChemService lot 7079100-39417 Inj on Yoda 0801Y064

Methoxyethoxyethanol-Neat (MEE) SS Stock: 5/22/17-R.H. ex: 08/04/18						
STANDARD	INITIAL CONC.	SOURCE DATE	ALIQOT	FINAL VOL	FINAL CONC.	SOLVENT /LOT#
MEE	Neat 99.5%	HEM SERVIC	0.1032g	10 mL	10320 ug/ml	MC
		Cat: N-12404-1G				#56258
		Lot: 5259000-37082				
		OP: 09/27/16				
		EXP: 08/04/18				

0.097ml were spiked in 500ml of water and extracted on 06/07/17. Final concentration is 2000ug

APPL re-certified MEE SS stock Lot 5259000-37082 and extended the expiration date to 8/04/18 per verification with a different source Accu Standards Lot # 216101007-37334,5 injected on 05/04/18

Name of Final Standard **8270 Internal Standard (Ampule)**

Prep'd By (Initials)

OA

Prep Date **06/22/18**

Exp Date **06/22/19**

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent Lot# (or APPL Prep Date)	Final Standard Conc (range)
EPA 8270 Semivolatile Internal Standard	RESTEK	CRM48902	2000 ug/mL	A0130603-38562	06/22/19	1000 uL	1 mL	NA	100ug/mL

Name of  
Final

Standard MEE CCV

Prep'd By (Initials) OA

Prep Date 12/19/18

Exp Date 11/06/19

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
MEE M STD	APPL		2000 ug/mL	12/17/18	12/17/19	50 uL	200uL	Methanol 150uL	500 ug/mL
SV Internal Standard	APPL	8270 I.S.	2000 ug/mL	11/29/18	11/06/19	4 uL	*	*	*



Name of  
 Final  
 Standard Diethylene Glycol

Prep'd By (Initials) OA

Prep Date 12/17/18  
Exp Date 02/28/19

Initial Standard Information					Final Standard Information				
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
Diethylene glycol monomethyl ether	AccuStandard	72273	2000 ug/mL	21610100 7-37332 and 37333	02/28/19	2.0 mL	4 mL	Methanol #042317C	1000 ug/mL

Given to Extraction to do **MEE M STD Stock** (used for ICAL) Final concentration 2000ug/L  
 APPL re-certified diethylene glycol monomethyl ether lot 216101007-37330 and 37331 and extended the expiration date to 02/28/19 per verification with a second source from ChemService lot 7079100-39417 Inj on Yoda 1128Y014

Name of

Final

Standard

MEE Curve

Prep'd By (Initials)

GA

Prep Date

08/01/18

Exp Date

02/28/19

Initial Standard Information						Final Standard Information			
MEE M STD Stock	APPL		200 ug/mL	07/27/18	02/28/19	5 uL	200uL	Methanol 195uL	50 ug/mL
SV Internal Standard	APPL	8270 I.S.	2000 ug/mL	06/22/18	06/22/19	4 uL	*	*	*
MEE M STD Stock	APPL		2000 ug/mL	07/27/18	02/28/19	5 uL	100uL	Methanol 95uL	100 ug/mL
SV Internal Standard	APPL	8270 I.S.	2000 ug/mL	06/22/18	06/22/19	2 uL	*	*	*
MEE M STD Stock	APPL		2000 ug/mL	07/27/18	02/28/19	10 uL	100uL	Methanol 90 uL	200 ug/mL
SV Internal Standard	APPL	8270 I.S.	2000 ug/mL	06/22/18	06/22/19	2 uL	*	*	*
MEE M STD Stock	APPL		2000 ug/mL	07/27/18	02/28/19	20 uL	100uL	Methanol 80 uL	400 ug/mL
SV Internal Standard	APPL	8270 I.S.	2000 ug/mL	06/22/18	06/22/19	2 uL	*	*	*
MEE M STD Stock	APPL		2000 ug/mL	07/27/18	02/28/19	50 uL	200 uL	Methanol 150 uL	500 ug/mL
SV Internal Standard	APPL	8270 I.S.	2000 ug/mL	06/22/18	06/22/19	4 uL	*	*	*
MEE M STD Stock	APPL		2000 ug/mL	07/27/18	02/28/19	30 uL	100uL	Methanol 70 uL	600 ug/mL
SV Internal Standard	APPL	8270 I.S.	2000 ug/mL	06/22/18	06/22/19	2 uL	*	*	*
MEE M STD Stock	APPL		2000 ug/mL	07/27/18	02/28/19	40 uL	100uL	Methanol 60 uL	800 ug/mL
SV Internal Standard	APPL	8270 I.S.	2000 ug/mL	06/22/18	06/22/19	2 uL	*	*	*
MEE M STD Stock	APPL		2000 ug/mL	07/27/18	02/28/19	50 uL	100uL	Methanol 50uL	1000 ug/mL
SV Internal Standard	APPL	8270 I.S.	2000 ug/mL	06/22/18	06/22/19	2 uL	*	*	*

Name of

Final

Standard

MEE Second Source

Prep'd By (Initials)

GA

Prep Date

08/01/18

Exp Date

06/22/19

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
MEE SS	APPL		2000 ug/mL	07/27/18	07/27/19	50 uL	200uL	Methanol 150uL	500 ug/mL
SV Internal Standard	APPL	8270 I.S.	2000 ug/mL	06/22/18	06/22/19	4 uL	*	*	*

# Organic Extraction Worksheet

<b>Method</b> Solid Phase Extraction of 2MEE in Water	<b>Extraction Set</b> 190128A	<b>Extraction Method</b> MWE2MEE	<b>Units</b> mL
Spiked ID 1	Diethylene Glycol 12-17-18 EXP 2-28-19	Surrogate ID 1	
Spiked ID 2	2MEE SS 10320ug/mL 8-3-18 exp 8-3-19	Surrogate ID 2	
Spiked ID 3		Surrogate ID 3	
Spiked ID 4		Surrogate ID 4	
Spiked ID 5		Surrogate ID 5	
Spiked ID 6		Sufficient Vol for Matrix QC: YES	
Spiked ID 7		Ext. Start Time:	01/28/19 10:55
Spiked ID 8		Ext. End Time:	01/29/19 9:05
		GC Requires Extract By:	01/31/19 0:00
		pH1	Water Bath Temp Criteria
		pH2	
		pH3	

Spiked By: DL

Date 01/28/19

Witnessed By: CFM

Date 01/28/19

Sample	Sample Container	Spike Amount	Spike ID	Surrogate Amount	Surrogate ID	Extract Amount	Final Volume	pH	Extract Date/Time	Comments	
1	190128A Blk			NA	NA	500	2	7	01/28/19 10:55		
2	190128A LCS-1	0.040	1	NA	NA	500	2	7	01/28/19 10:55		
3	190128A LCSD-1	0.040	1	NA	NA	500	2	7	01/28/19 10:55		
4	AZ85520	AZ85520W09		NA	NA	500	2	7	01/28/19 10:55	87932	
5	AZ85521	AZ85521W05		NA	NA	500	2	7	01/28/19 10:55	87932	
6	AZ85523	AZ85523W08		NA	NA	500	2	7	01/28/19 10:55	87932	
7	AZ85525	AZ85525W08		NA	NA	500	2	7	01/28/19 10:55	87932	
8	AZ85527	AZ85527W08		NA	NA	500	2	7	01/28/19 10:55	87932	
9	AZ85562 MS-1	AZ85562W26	0.040	1	NA	NA	500	2	7	01/28/19 10:55	87940
10	AZ85562 MSD-1	AZ85562W25	0.040	1	NA	NA	500	2	7	01/28/19 10:55	87940
11	AZ85562	AZ85562W24		NA	NA	500	2	7	01/28/19 10:55	87940	
12	AZ85563	AZ85563W05		NA	NA	500	2	7	01/28/19 10:55	87940	
13	AZ85565	AZ85565W19		NA	NA	500	2	7	01/28/19 10:55	87940	
14	AZ85567	AZ85567W19		NA	NA	500	2	7	01/28/19 10:55	87940	
15	AZ85569	AZ85569W19		NA	NA	500	2	7	01/28/19 10:55	87940	
16	AZ85643 MS-1	AZ85643W23	0.040	1	NA	NA	500	2	7	01/28/19 10:55	87956

Solvent and Lot#	
ENVI-Carb Plus 400MG/1ML	
Reverible Tube Lot:	10689901
PH Strip	HC 849161
Di Water	1-28-19
Dichloromethane	18G194011
Methanol	58179

Extraction COC Transfer	
Extraction lab employee Initials	KY
GC analyst's initials	DA
Date	01/30/19
Time	10:10
Refrigerator	# down

Technician's Initials	
Scanned By	DL
Sample Preparation	DL
Extraction	DL
Concentration	DL

Modified 01/29/19 1:07:47 PM

Reviewed By: *KY* Date *1/29/19*

# Organic Extraction Worksheet

<b>Method</b>	Solid Phase Extraction of 2MEE in Water	<b>Extraction Set</b>	190128A	<b>Extraction Method</b>	MWE2MEE	<b>Units</b>	mL
Spiked ID 1	Diethylene Glycol 12-17-18 EXP 2-28-19	Surrogate ID 1					
Spiked ID 2	2MEE SS 10320ug/mL 8-3-18 exp 8-3-19	Surrogate ID 2					
Spiked ID 3		Surrogate ID 3					
Spiked ID 4		Surrogate ID 4					
Spiked ID 5		Surrogate ID 5					
Spiked ID 6		Sufficient Vol for Matrix QC:		YES			
Spiked ID 7		Ext. Start Time:		01/28/19 10:55			
Spiked ID 8		Ext. End Time:		01/29/19 9:05			
		GC Requires Extract By:		01/31/19 0:00			
		pH1				Water Bath Temp Criteria	
		pH2					
		pH3					

Spiked By: DL

Date 01/28/19

Witnessed By: CFM

Date 01/28/19

Sample	Sample Container	Spike Amount	Spike ID	Surrogate Amount	Surrogate ID	Extract Amount	Final Volume	pH	Extract Date/Time	Comments
17	AZ85643 MSD-1 AZ85643W25	0.040	1	NA	NA	500	2	7	01/28/19 10:55	87956
18	AZ85643 AZ85643W26			NA	NA	500	2	7	01/28/19 10:55	87956
19	AZ85644 AZ85644W06			NA	NA	500	2	7	01/28/19 10:55	87956
20	AZ85646 AZ85646W18			NA	NA	500	2	7	01/28/19 10:55	87956
21	AZ85653 AZ85653W18			NA	NA	500	2	7	01/28/19 10:55	87956
22	SS	0.097	2	NA	NA	500	2	7	01/28/19 10:55	

*Kuz 1/29/19*

Solvent and Lot#	
ENVI-Carb Plus 400MG/1ML	
Reverible Tube Lot:	10689901
PH Strip	HC 849161
Di Water	1-28-19
Dichloromethane	18G194011
Methanol	58179

Extraction COC Transfer	
Extraction lab employee Initials	KY
GC analyst's initials	
Date	
Time	
Refrigerator	

Technician's Initials	
Scanned By	DL
Sample Preparation	DL
Extraction	DL
Concentration	DL

Modified	01/29/19 1:07:47 PM
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Reviewed By: *Kuz* Date *1/29/19*

## Injection Log

Directory: M:\YODA\DATA\Y181128M\

Vial	FileName	Multiplier	SampleName	Misc Info	Injected
2	1128Y002.D	1	SV Tune 03/07/18		28 Nov 18 7:30
4	1128Y004.D	1	50ug/ml MEE 08/01/18		28 Nov 18 8:08
5	1128Y005.D	1	100ug/ml MEE 08/01/18		28 Nov 18 8:32
6	1128Y006.D	1	200ug/ml MEE 08/01/18		28 Nov 18 8:55
7	1128Y007.D	1	400ug/ml MEE 08/01/18		28 Nov 18 9:19
8	1128Y008.D	1	600ug/ml MEE 08/01/18		28 Nov 18 9:43
9	1128Y009.D	1	800ug/ml MEE 08/01/18		28 Nov 18 10:06
10	1128Y010.D	1	1000ug/ml MEE 08/01/18		28 Nov 18 10:30
12	1128Y012.D	1	500ug/ml MEE 08/01/18		28 Nov 18 11:17
14	1128Y014.D	1	SS ug/ml MEE 08/01/18		28 Nov 18 12:26
56	1128Y056.D	1	SV TUNE 11/10/18		29 Jan 19 8:36
57	1128Y057.D	1	500ug/mL mee 12/12/18		29 Jan 19 8:51
80	1128Y080.D	1	AZ85643W23 MS-1 2/500		29 Jan 19 18:14
81	1128Y081.D	1	AZ85643W25 MSD-1 2/500		29 Jan 19 18:38
82	1128Y082.D	1	AZ85643W26 2/500		29 Jan 19 19:02
83	1128Y083.D	1	AZ85644W06 2/500		29 Jan 19 19:25
86	1128Y086.D	1	190128A BLK 2/500		29 Jan 19 20:36
88	1128Y088.D	1	500ug/ml MEE 12/19/18		29 Jan 19 21:24
100	1128Y100.D	1	SV TUNE 11/10/18		1 Feb 19 9:17
1	1128Y101.D	1	500ug/ml MEE 12/19/18		1 Feb 19 9:32
2	1128Y102.D	1	190128A LCS-1 2/500		1 Feb 19 9:56
3	1128Y103.D	1	190128A LCSD-1 2/500		1 Feb 19 10:19
4	1128Y104.D	1	500ug/ml MEE 12/19/18		1 Feb 19 10:44

**ORGANICS  
Calibration Data**

VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 6  
Initial Calibration

Lab Name: APPL, Inc.

Case No: \_\_\_\_\_

Matrix: \_\_\_\_\_

SDG No: \_\_\_\_\_

Initial Cal. Date: 01/28/19

Instrument: Loki

Initials: \_\_\_\_\_

0128L03.D    0128L04.D    0128L05.D    0128L06.D    0128L07.D    0128L08.D    0128L09.D    0128L10.D    0128L12.D    0128L11.D

	Compound	1	2	3	4	5	6	7	8	9	8A	Avg	%RSD	Type	r^2	q	MRF
1	I Fluorobenzene (IS)																
2	TM Freon 1113		0.0898	0.1058	0.1098	0.1141	0.0940	0.1018	0.0971	0.1070	0.0956	0.10	8.0	TM			
3	TML Dichlorodifluoromethane		0.1186	0.2346	0.1632	0.1366	0.1551	0.1726	0.1707	0.1660	0.1681	0.17	19	TML	1.000		
4	TML Freon 114		0.1777	0.1766	0.1637	0.1095	0.1346	0.1359	0.1241	0.1059	0.1243	0.14	20	TML	0.991		
5	TM**L Chloromethane		0.4531	0.3981	0.2709	0.2841	0.2751	0.2678	0.2555	0.2584	0.2609	0.30	24	TM**L	1.000		
6	TM* Vinyl chloride		0.1696	0.2074	0.2017	0.1835	0.1993	0.1942	0.1970	0.2141	0.2043	0.20	6.8	TM*			
7	TM 2-Chloro-1,1,1-trifluoroethane		0.1667	0.1779	0.1811	0.1754	0.1640	0.1712	0.1573	0.1476	0.1548	0.17	6.8	TM			
8	TML Bromomethane		0.1776	0.1614	0.1403	0.1335	0.1292	0.1179	0.1148	0.1143	0.1137	0.13	17	TML	1.000		
9	TML Chloroethane		0.1416	0.1331	0.0996	0.1114	0.0977	0.0931	0.0872		0.0929	0.11	19	TML	0.998		
10	TM Dichlorofluoromethane		0.4362	0.3737	0.3313	0.3001	0.3233	0.3079	0.3110	0.3205	0.3164	0.34	13	TM			
11	TM Trichlorofluoromethane		0.2237	0.2883	0.2567	0.2656	0.2810	0.2811	0.2819	0.2939	0.2910	0.27	8.1	TM			
12	TM Acrolein	0.0495	0.0457	0.0477	0.0459	0.0448	0.0450	0.0440	0.0425	0.0427	0.0424	0.05	5.1	TM			
13	TML Acetone		0.2299	0.1209	0.0845	0.0468	0.0470	0.0422	0.0371		0.0399	0.08	82	TML	0.997		
14	TM Freon-113		0.1188	0.1658	0.1502	0.1394	0.1526	0.1389	0.1465	0.1522	0.1533	0.15	9.0	TM			
15	TM*L 1,1-DCE		0.0657	0.0513	0.0439	0.0464	0.0370	0.0440	0.0442	0.0439	0.0421	0.05	17	TM*L	0.999		
16	TML t-Butanol	0.0403	0.0276	0.0270	0.0242	0.0253	0.0244	0.0234				0.03	21	TML	0.997		
17	TML 2-Propanol			0.0235	0.0220	0.0151	0.0157	0.0150	0.0144	0.0150	0.0144	0.02	22	TML	0.997		
18	TM Acetonitrile		0.0363	0.0356	0.0338	0.0326	0.0326	0.0330	0.0309	0.0314	0.0311	0.03	5.8	TM			
19	TML Methyl Acetate		0.3276	0.2260	0.2111	0.1841	0.1805	0.1731	0.1635	0.1631	0.1706	0.20	26	TML	1.000		
20	TML Iodomethane		0.0576	0.0381	0.0402	0.0451	0.0528	0.0620	0.0768	0.0895	0.0861	0.06	32	TML	0.995		
21	TM Acrylonitrile		0.1188	0.1005	0.0782	0.0912	0.0847	0.0831	0.0816	0.0781	0.0796	0.09	15	TM			
22	TML Methylene chloride		0.8197	0.4388	0.2771	0.2123	0.2089	0.1929	0.1881	0.1890	0.1945	0.30	69	TML	1.000		
23	TM Carbon disulfide		0.6354	0.5743	0.5221	0.4879	0.4944	0.4765	0.4947	0.5035	0.5028	0.52	9.8	TM			
24	TM Methyl t-butyl ether (MtBE)		0.5590	0.5812	0.5979	0.6035	0.5958	0.5901	0.6096	0.6039	0.6065	0.59	2.7	TM			
25	TM Trans-1,2-DCE		0.1025	0.0855	0.0858	0.0874	0.0874	0.0856	0.0828	0.0850	0.0869	0.09	6.6	TM			
26	TM Diisopropyl Ether		0.6984	0.6265	0.6269	0.6368	0.6193	0.6039	0.6211	0.6284	0.6288	0.63	4.2	TM			
27	TM** 2,2-Dichloro-1,1,1-trifluoroethane													TM**			
28	TM** 1,1-DCA		0.3581	0.3356	0.3820	0.3402	0.3567	0.3459	0.3523	0.3552	0.3553	0.35	3.8	TM**			
29	TM Vinyl Acetate		0.1857	0.1736	0.1565	0.1788	0.1651	0.1607	0.1669	0.1571	0.1664	0.17	5.9	TM			
30	TM Ethyl tert Butyl Ether		0.5709	0.5756	0.5669	0.6240	0.6116	0.5990	0.6141	0.6235	0.6172	0.60	3.9	TM			
31	TML MEK (2-Butanone)		0.1349	0.2207	0.1708	0.1328	0.1242	0.1364	0.1120	0.1150	0.1161	0.14	25	TML	0.999		
32	TM Cis-1,2-DCE		0.2714	0.2314	0.2270	0.2310	0.2247	0.2231	0.2295	0.2306	0.2314	0.23	6.3	TM			
33	TM 2,2-Dichloropropane		0.4001	0.3561	0.3259	0.3104	0.2783	0.2847	0.2848	0.2904	0.2881	0.31	13	TM			
34	TM 2-Methylpentane													TM			
35	TML 3-Methylpentane													TML			



VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 6  
Initial Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: \_\_\_\_\_

SDG No: \_\_\_\_\_  
Initial Cal. Date: 01/28/19  
Instrument: Loki

Initials: \_\_\_\_\_

		Compound	1	2	3	4	5	6	7	8	9	8A	Avg	%RSD	Type	Q	MRF
36	TM*	Chloroform		0.3914	0.3844	0.3705	0.3691	0.3707	0.3703	0.3745	0.3746	0.3787	0.38	2.0	TM*		
37	TM	Bromochloromethane		0.0713	0.0578	0.0505	0.0585	0.0589	0.0556	0.0589	0.0538	0.0576	0.06	9.8	TM		
38	S	Dibromofluoromethane(S)	0.5786	0.5271	0.4726	0.4590	0.4831	0.4862	0.4858	0.4849	0.4728	0.4653	0.49	7.3	S		
39	TM	1,1,1-TCA		0.1673	0.1276	0.1488	0.1406	0.1384	0.1360	0.1411	0.1407	0.1411	0.14	7.6	TM		
40	TML	Cyclohexane		0.2076	0.2293	0.2289	0.1706	0.1605	0.1515	0.1566	0.1670	0.1658	0.18	17	TML	0.999	
41	TM	1,1-Dichloropropene		0.2790	0.2661	0.2544	0.2410	0.2481	0.2480	0.2588	0.2652	0.2606	0.26	4.5	TM		
42	TM	2,2,4-Trimethylpentane		0.5291	0.5660	0.5182	0.4455	0.4893	0.5005	0.5243	0.5561	0.5323	0.52	7.0	TM		
43	S	1,2-DCA-D4(S)	0.6725	0.6469	0.5511	0.5503	0.5606	0.5609	0.5646	0.5474	0.5318	0.5328	0.57	8.4	S		
44	TM	Carbon Tetrachloride		0.2595	0.2672	0.2698	0.2727	0.2736	0.2714	0.2829	0.2940	0.2899	0.28	4.0	TM		
45	TM	Tert Amyl Methyl Ether		0.6917	0.6814	0.6049	0.5988	0.6043	0.6107	0.6247	0.6291	0.6312	0.63	5.4	TM		
46	TML	Methylcyclopentane													TML		
47	TM	1,2-DCA		0.3007	0.2966	0.3100	0.3039	0.3084	0.3079	0.3051	0.3020	0.3093	0.30	1.5	TM		
48	TM	Benzene		0.8710	0.8266	0.7805	0.8190	0.8165	0.7848	0.8141	0.8251	0.8239	0.82	3.2	TM		
49	TM	TCE		0.1214	0.1103	0.1287	0.1174	0.1189	0.1149	0.1205	0.1211	0.1204	0.12	4.2	TM		
50	TM	2-Pentanone		0.2008	0.2112	0.1962	0.1985	0.1999	0.2005	0.1856	0.1938	0.1867	0.20	4.0	TM		
51	TM*	1,2-Dichloropropane		0.2615	0.2147	0.2238	0.2240	0.2218	0.2165	0.2215	0.2220	0.2236	0.23	6.2	TM*		
52	TM	Bromodichloromethane		0.1698	0.1635	0.1599	0.1628	0.1651	0.1613	0.1683	0.1659	0.1630	0.16	1.9	TM		
53	TM	Methyl Cyclohexane		0.3138	0.2641	0.2759	0.2430	0.2668	0.2592	0.2890	0.3007	0.2945	0.28	8.1	TM		
54	TM	Dibromomethane		0.1464	0.1496	0.1536	0.1579	0.1601	0.1558	0.1559	0.1562	0.1579	0.15	2.8	TM		
55	TM	2-Chloroethyl vinyl ether					0.0062	0.0059	0.0050	0.0054	0.0059	0.0057	0.01	7.6	TM		
56	TML	MIBK (methyl isobutyl ketone)		0.4446	0.2952	0.2789	0.2395	0.2511	0.2336	0.2230	0.2328	0.2253	0.27	26	TML	0.999	
57	TM	1-Bromo-2-chloroethane		0.1692	0.1977	0.1606	0.1803	0.1778	0.1773	0.1763	0.1761	0.1789	0.18	5.6	TM		
58	TM	Cis-1,3-Dichloropropene		0.3775	0.3502	0.3359	0.3420	0.3674	0.3475	0.3617	0.3673	0.3647	0.36	3.9	TM		
59	TM*	Toluene		0.4373	0.4021	0.4614	0.4503	0.4711	0.4666	0.4949	0.5128	0.4915	0.47	7.2	TM*		
60	TM	Trans-1,3-Dichloropropene		0.3430	0.3259	0.3256	0.3440	0.3291	0.3246	0.3425	0.3511	0.3469	0.34	3.1	TM		
61	TM	1,1,2-TCA		0.1765	0.1816	0.1732	0.1729	0.1796	0.1763	0.1786	0.1797	0.1809	0.18	1.8	TM		
62	TML	2-Hexanone		0.2578	0.2417	0.1674	0.1528	0.1579	0.1607	0.1484	0.1641	0.1608	0.18	23	TML	0.999	
63	I	Chlorobenzene-D5 (IS)															
64	S	Toluene-D8(S)	3.031	3.045	2.442	2.383	2.511	2.462	2.471	2.288	2.132	2.256	2.5	12	S		
65	TM	1,2-EDB		0.1953	0.1996	0.1697	0.1773	0.1604	0.1675	0.1628	0.1516	0.1579	0.17	9.7	TM		
66	TML	Tetrachloroethene		0.2594	0.2246	0.1764	0.1875	0.1819	0.1844	0.1731	0.1638	0.1788	0.19	16	TML	0.998	
67	TML	1-Chlorohexane		0.5606	0.4137	0.2732	0.2987	0.2992	0.2990	0.3018	0.3183	0.3175	0.34	27	TML	1.000	
68	TM	1,1,1,2-Tetrachloroethane		0.2801	0.3277	0.2795	0.3180	0.3246	0.3065	0.2983	0.2884	0.3023	0.30	6.0	TM		
69	TM	m&p-Xylene		0.7507	0.7569	0.7448	0.8578	0.8543	0.8709	0.8969	0.9338	0.9342	0.84	9.0	TM		
70	TM	o-Xylene		0.2074	0.1790	0.1798	0.2124	0.2126	0.2370	0.2438	0.2603	0.2472	0.22	13	TM		

VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 6  
Initial Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: \_\_\_\_\_

SDG No: \_\_\_\_\_  
Initial Cal. Date: 01/28/19  
Instrument: Loki

Initials: \_\_\_\_\_

		Compound	1	2	3	4	5	6	7	8	9	8A	Avg	%RSD	Type	Q	MRF
71	TM	Styrene		0.6008	0.6214	0.5963	0.6456	0.7048	0.7283	0.7443	0.8023	0.7890	0.69	11	TM		
72	S	4-Bromofluorobenzene(S)	0.9081	0.8451	0.7081	0.6531	0.7094	0.6818	0.7052	0.7482	0.7785	0.7587	0.75	10	S		
73	TM	1,3-Dichloropropane		0.5270	0.5074	0.4463	0.5309	0.4854	0.4894	0.4676	0.4402	0.4715	0.49	6.7	TM		
74	TM	Dibromochloromethane		0.3857	0.3551	0.3506	0.3866	0.3523	0.3463	0.3380	0.3236	0.3387	0.35	6.0	TM		
75	TM**	Chlorobenzene		0.8632	0.7408	0.7617	0.7712	0.7589	0.7636	0.7462	0.7429	0.7551	0.77	4.9	TM**		
76	TM*	Ethylbenzene		0.7039	0.5761	0.6002	0.6801	0.6379	0.6516	0.6606	0.6863	0.7018	0.66	6.8	TM*		
77	TM**	Bromoform		0.3028	0.2713	0.2345	0.2488	0.2458	0.2443	0.2370	0.2461	0.2448	0.25	8.5	TM**		
78	I	1,4-Dichlorobenzene-D (IS)															
79	TM	Isopropylbenzene		1.988	2.121	2.140	2.119	2.089	2.308	2.403	2.217	2.182	2.2	5.7	TM		
80	TM**	1,1,2,2-Tetrachloroethane		0.7105	0.7779	0.8266	0.7703	0.7519	0.7090	0.7713	0.7162	0.7320	0.75	5.2	TM**		
81	TML	1,2,3-Trichloropropane		0.1306	0.1852	0.1857	0.1366	0.1337	0.1331	0.1248	0.1160	0.1164	0.14	19	TML	0.999	
82	TML	t-1,4-Dichloro-2-Butene		0.1134	0.1135	0.1730	0.1680	0.1666	0.1629	0.1863	0.1680	0.1820	0.16	17	TML	0.997	
83	TM	Bromobenzene		0.3475	0.4341	0.3688	0.3667	0.3282	0.3479	0.3817	0.3316	0.3321	0.36	9.3	TM		
84	TM	n-Propylbenzene		1.384	1.129	1.240	1.316	1.347	1.348	1.478	1.411	1.377	1.3	7.6	TM		
85	TM	4-Ethyltoluene		1.776	1.658	1.765	1.870	1.953	2.017	2.331	2.241	2.182	2.0	12	TM		
86	TM	2-Chlorotoluene		0.8271	0.8168	0.8086	0.8254	0.7853	0.7777	0.8661	0.8376	0.8201	0.82	3.2	TM		
87	TM	1,3,5-Trimethylbenzene		1.559	1.609	1.494	1.551	1.600	1.692	1.963	1.875	1.830	1.7	9.8	TM		
88	TM	4-Chlorotoluene		0.8271	0.8168	0.9318	0.9276	0.9024	0.9508	1.034	1.006	0.9714	0.93	7.9	TM		
89	TM	Tert-Butylbenzene		1.413	1.595	1.765	1.711	1.731	1.738	1.882	1.864	1.790	1.7	8.3	TM		
90	TM	1,2,4-Trimethylbenzene		1.324	1.557	1.395	1.501	1.512	1.650	1.831	1.863	1.741	1.6	12	TM		
91	TM	Sec-Butylbenzene		2.030	1.896	2.009	2.092	2.108	2.109	2.231	2.297	2.161	2.1	5.7	TM		
92	TM	p-Isopropyltoluene		0.9362	0.9086	0.9436	0.9496	0.9166	0.9962	1.025	1.124	1.036	0.98	7.2	TM		
93	TM	Benzyl Chloride		1.082	0.9402	0.8842	0.9061	0.8321	0.8140	0.8385	0.9546	0.8793	0.90	9.1	TM		
94	TM	1,3-DCB		0.6977	0.7339	0.5944	0.6194	0.6337	0.5854	0.5796	0.6218	0.5907	0.63	8.5	TM		
95	TM	1,4-DCB		1.337	1.222	1.248	1.251	1.212	1.190	1.164	1.182	1.165	1.2	4.5	TM		
96	TM	n-Butylbenzene		1.082	0.9402	0.8842	0.9061	0.8321	0.8140	0.8385	0.9546	0.8793	0.90	9.1	TM		
97	TM	1,2-DCB		1.125	1.264	1.203	1.261	1.144	1.157	1.081	1.171	1.100	1.2	5.6	TM		
98	TM	Hexachloroethane		0.3898	0.4676	0.4231	0.4479	0.4320	0.4224	0.3969	0.4314	0.3878	0.42	6.4	TM		
99	TML	1,2-Dibromo-3-chloropropane		0.2065	0.1547	0.1727	0.1570	0.1414	0.1421	0.1339	0.1390	0.1211	0.15	17	TML	0.996	
100	TM	1,2,4-Trichlorobenzene		0.8283	0.7511	0.8239	0.7486	0.6979	0.7359	0.7217	0.6652	0.6522	0.74	8.4	TM		
101	TM	Hexachlorobutadiene		0.3982	0.3685	0.3686	0.3849	0.3651	0.3636	0.3533	0.3204	0.3213	0.36	7.5	TM		
102	TM	Naphthalene		1.849	1.610	1.515	1.558	1.550	1.564	1.548	1.478	1.396	1.6	7.9	TM		
103	TM	1,2,3-Trichlorobenzene		0.3535	0.4502	0.2933	0.3171	0.3315	0.3343	0.3480	0.3019	0.2962	0.34	14	TM		
104																	
105																	

Quantitation Report (QT Reviewed)

Data File : M:\LOKI\DATA\190128\0128L03.D  
 Acq On : 28 Jan 19 15:03  
 Sample : 0.3ug/L VOC STD 01/28/19  
 Misc : IS&S 11/8/18

Vial: 2  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 29 8:00 2019

Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 07:59:02 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	414464	25.0000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.97	117	262144	25.0000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.54	152	124304	25.0000	ppb	0.00
System Monitoring Compounds						
38) Dibromofluoromethane(S)	5.65	111	47965	6.1150	ppb	0.00
Spiked Amount	25.000		Recovery	=	24.460%	
43) 1,2-DCA-D4(S)	6.07	65	55743	6.0932	ppb	0.00
Spiked Amount	25.000		Recovery	=	24.372%	
64) Toluene-D8(S)	8.37	98	158889	7.2752	ppb	0.00
Spiked Amount	25.000		Recovery	=	29.100%	
72) 4-Bromofluorobenzene(S)	11.26	95	47612	5.4158	ppb	0.00
Spiked Amount	25.000		Recovery	=	21.664%	
Target Compounds						
12) Acrolein	2.42	56	8204	7.0027	ppb	Qvalue # 92
16) t-Butanol	3.38	59	6689	13.8657	ppb	97

(#) = qualifier out of range (m) = manual integration

Quantitation Report

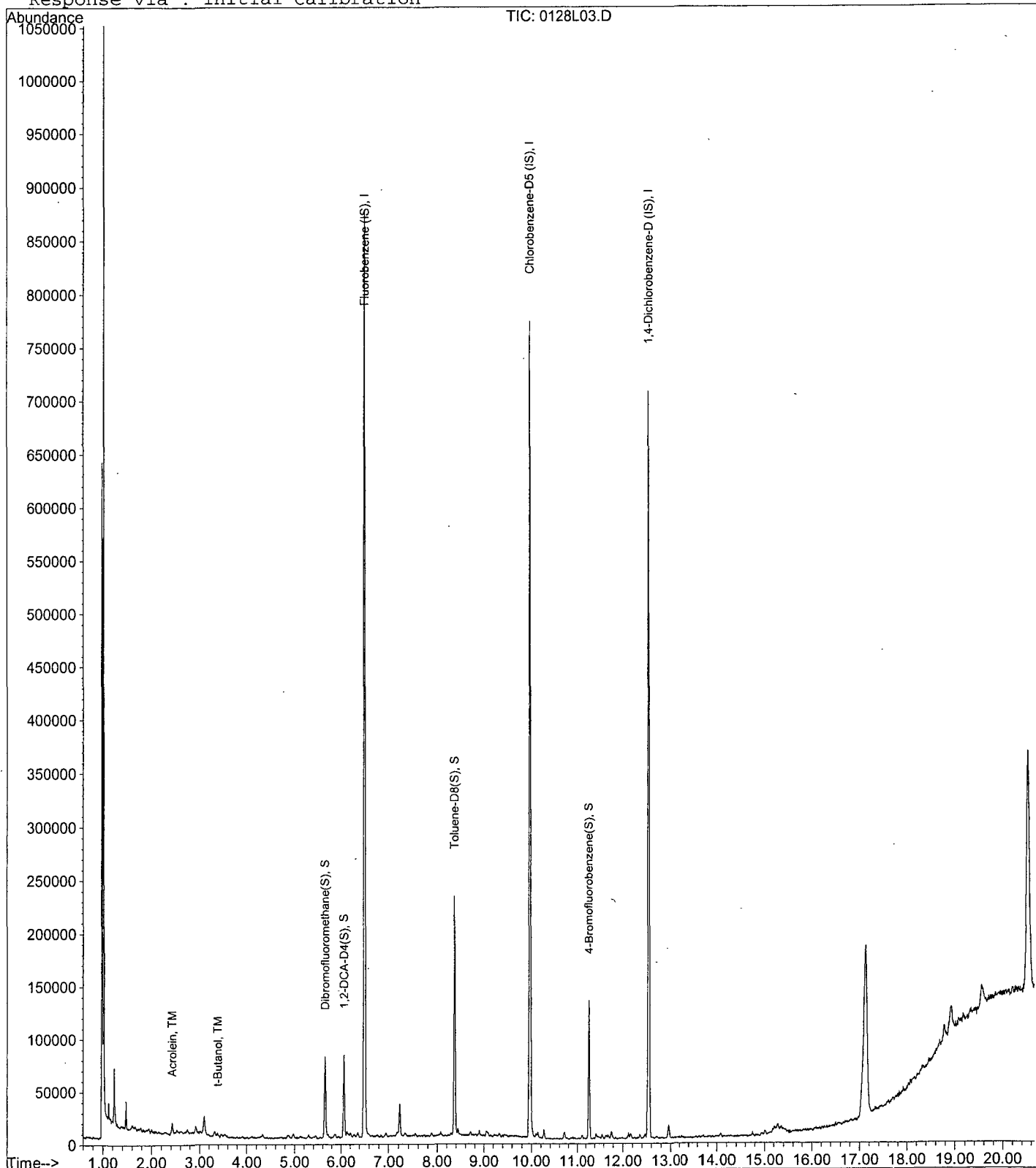
Data File : M:\LOKI\DATA\190128\0128L03.D  
Acq On : 28 Jan 19 15:03  
Sample : 0.3ug/L VOC STD 01/28/19  
Misc : IS&S 11/8/18

Vial: 2  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 29 8:00 2019

Quant Results File: L0128W.RES

Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Jan 29 09:06:22 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190128\0128L04.D  
 Acq On : 28 Jan 19 15:31  
 Sample : 0.5ug/L VOC STD 01/28/19  
 Misc : IS&S 11/8/18

Vial: 3  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 29 8:06 2019

Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 08:06:28 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	419520	25.0000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.97	117	260416	25.0000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.53	152	125192	25.0000	ppb	0.00
System Monitoring Compounds						
38) Dibromofluoromethane(S)	5.65	111	44226	5.5704	ppb	0.00
Spiked Amount	25.000		Recovery	=	22.280%	
43) 1,2-DCA-D4(S)	6.07	65	54279	5.8616	ppb	0.00
Spiked Amount	25.000		Recovery	=	23.448%	
64) Toluene-D8(S)	8.37	98	158592	7.3098	ppb	0.00
Spiked Amount	25.000		Recovery	=	29.240%	
72) 4-Bromofluorobenzene(S)	11.26	95	44018	5.0402	ppb	0.00
Spiked Amount	25.000		Recovery	=	20.160%	
Target Compounds						Qvalue
2) Freon 1113	1.12	116	7532	3.3994	ppb	99
3) Dichlorodifluoromethane	1.15	85	995	0.8411	ppb	95
4) Freon 114	1.25	85	1491	0.5359	ppb	76
5) Chloromethane	1.29	50	3802	0.6614	ppb	94
6) Vinyl chloride	1.38	62	1423	0.2821	ppb	92
7) 2-Chloro-1,1,1-trifluoroet	1.48	118	13984	3.2747	ppb	94
8) Bromomethane	1.66	94	1490	-0.6930	ppb	89
9) Chloroethane	1.76	64	1188	0.4311	ppb	# 76
10) Dichlorofluoromethane	1.95	67	3660	0.3984	ppb	90
11) Trichlorofluoromethane	2.00	101	1877	0.2650	ppb	87
12) Acrolein	2.43	56	19180	17.5062	ppb	# 92
13) Acetone	2.61	43	1929	-0.3737	ppb	93
14) Freon-113	2.54	101	997	0.2543	ppb	88
15) 1,1-DCE	2.52	63	551	0.4237	ppb	# 61
16) t-Butanol	3.38	59	11565	23.6844	ppb	94
17) 2-Propanol	2.84	45	1939	5.5039	ppb	# 55
18) Acetonitrile	2.92	41	15228	18.5125	ppb	# 94
19) Methyl Acetate	3.01	43	2749	0.9278	ppb	# 61
20) Iodomethane	2.66	142	483	3.6263	ppb	# 72
21) Acrylonitrile	3.44	52	997	0.3199	ppb	92
22) Methylene chloride	3.09	84	6878	1.2869	ppb	95
23) Carbon disulfide	2.73	76	5331	0.3910	ppb	96
24) Methyl t-butyl ether (MtBE)	3.53	73	4690	0.3688	ppb	# 84
25) Trans-1,2-DCE	2.52	96	860	0.3634	ppb	# 89
26) Diisopropyl Ether	4.33	45	5860	0.4268	ppb	96
27) 2,2-Dichloro-1,1,1-trifluo	1.87	85	20	0.1135	ppb	# 1
28) 1,1-DCA	4.11	63	3005	0.3814	ppb	# 86
29) Vinyl Acetate	4.27	43	1558	0.5255	ppb	95
30) Ethyl tert Butyl Ether	4.87	59	4790	0.3970	ppb	# 88
31) MEK (2-Butanone)	5.08	43	1132	0.6516	ppb	# 54
32) Cis-1,2-DCE	4.97	96	2277	0.5003	ppb	# 59
33) 2,2-Dichloropropane	4.97	77	3357	0.5370	ppb	94
34) 2-Methylpentane	2.41	71	43	7.8929	ppb	# 20
35) 3-Methylpentane	2.81	57	224	10.7348	ppb	# 43
36) Chloroform	5.44	83	3284	0.4707	ppb	80
37) Bromochloromethane	5.30	128	598	0.5355	ppb	96
39) 1,1,1-TCA	5.65	97	1404	0.5512	ppb	88
40) Cyclohexane	5.72	41	1742	0.5493	ppb	# 74
41) 1,1-Dichloropropene	5.88	75	2341	0.4760	ppb	# 77

Data File : M:\LOKI\DATA\190128\0128L04.D  
 Acq On : 28 Jan 19 15:31  
 Sample : 0.5ug/L VOC STD 01/28/19  
 Misc : IS&S 11/8/18

Vial: 3  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 29 8:06 2019

Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 08:06:28 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
42) 2,2,4-Trimethylpentane	6.29	57	4439	0.4891	ppb	# 73
44) Carbon Tetrachloride	5.86	117	2177	0.4175	ppb	97
45) Tert Amyl Methyl Ether	6.36	73	5804	0.5277	ppb	94
46) Methylcyclopentane	3.93	56	206	28.6294	ppb	100
47) 1,2-DCA	6.17	62	2523	0.4429	ppb	# 41
48) Benzene	6.13	78	7308	0.4923	ppb	# 90
49) TCE	6.95	130	1019	0.4176	ppb	# 81
50) 2-Pentanone	7.22	43	84247	28.8203	ppb	98
51) 1,2-Dichloropropane	7.20	63	2194	0.5561	ppb	# 84
52) Bromodichloromethane	7.54	83	1425	0.4791	ppb	# 93
53) Methyl Cyclohexane	7.17	83	2633	0.5008	ppb	# 70
54) Dibromomethane	7.34	93	1228	0.4470	ppb	85
55) 2-Chloroethyl vinyl ether	7.98	43	334	3.1685	ppb	# 34
56) MIBK (methyl isobutyl ket	8.28	43	3730	0.9341	ppb	91
57) 1-Bromo-2-chloroethane	7.88	63	1420	0.4697	ppb	86
58) Cis-1,3-Dichloropropene	8.07	75	3167	0.4867	ppb	# 77
59) Toluene	8.44	91	3669	0.4156	ppb	95
60) Trans-1,3-Dichloropropene	8.70	75	2878	0.4634	ppb	91
61) 1,1,2-TCA	8.90	83	1481	0.4666	ppb	89
62) 2-Hexanone	9.22	43	2163	0.8118	ppb	# 71
65) 1,2-EDB	9.44	107	1017	0.6084	ppb	81
66) Tetrachloroethene	9.05	166	1351	0.6590	ppb	# 77
67) 1-Chlorohexane	9.97	91	2920	0.3797	ppb	# 4
68) 1,1,1,2-Tetrachloroethane	10.10	131	1459	0.4314	ppb	82
69) m&p-Xylene	10.27	91	7820	0.7793	ppb	# 78
70) o-Xylene	10.70	106	1080	0.3732	ppb	97
71) Styrene	10.71	104	3129	0.3491	ppb	# 71
73) 1,3-Dichloropropane	9.08	76	2745	0.5702	ppb	82
74) Dibromochloromethane	9.33	129	2009	0.5569	ppb	100
75) Chlorobenzene	10.00	112	4496	0.5433	ppb	98
76) Ethylbenzene	10.13	91	3666	0.4915	ppb	91
77) Bromoform	10.90	173	1577	0.5386	ppb	# 57
79) Isopropylbenzene	11.11	105	4977	0.4313	ppb	100
80) 1,1,2,2-Tetrachloroethane	11.43	83	1779	0.5159	ppb	# 65
81) 1,2,3-Trichloropropane	11.47	110	327	0.5487	ppb	# 73
82) t-1,4-Dichloro-2-Butene	11.49	53	284	0.3620	ppb	97
83) Bromobenzene	11.42	156	870	0.4650	ppb	100
84) n-Propylbenzene	11.56	91	3466	0.4891	ppb	99
85) 4-Ethyltoluene	11.68	105	4447	0.4156	ppb	98
86) 2-Chlorotoluene	11.77	91	2071	0.4644	ppb	89
87) 1,3,5-Trimethylbenzene	11.76	105	3903	0.4238	ppb	80
88) 4-Chlorotoluene	11.77	91	2071	0.4104	ppb	# 78
89) Tert-Butylbenzene	12.11	119	3538	0.3616	ppb	85
90) 1,2,4-Trimethylbenzene	12.17	105	3316	0.3674	ppb	97
91) Sec-Butylbenzene	12.36	105	5083	0.4270	ppb	91
92) p-Isopropyltoluene	12.52	119	2344	0.4241	ppb	92
93) Benzyl Chloride	12.71	91	2710	0.6685	ppb	96
94) 1,3-DCB	12.46	146	1747	0.5227	ppb	91
95) 1,4-DCB	12.56	146	3347	0.5083	ppb	# 74
96) n-Butylbenzene	12.71	91	2710	0.6685	ppb	# 75
97) 1,2-DCB	12.97	146	2818	0.4397	ppb	91
98) Hexachloroethane	13.26	117	976	0.4787	ppb	# 63
100) 1,2,4-Trichlorobenzene	14.75	180	2074	0.5128	ppb	# 82
101) Hexachlorobutadiene	14.93	225	997	0.4955	ppb	# 66

(#) = qualifier out of range (m) = manual integration

Quantitation Report (Not Reviewed)

Data File : M:\LOKI\DATA\190128\0128L04.D Vial: 3  
 Acq On : 28 Jan 19 15:31 Operator: PM, DG, SV, CMM, KV  
 Sample : 0.5ug/L VOC STD 01/28/19 Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Jan 29 8:06 2019 Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 08:06:28 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
102) Naphthalene	15.01	128	4629	0.5467	ppb	93
103) 1,2,3-Trichlorobenzene	15.28	180	885	0.4850	ppb #	86

Quantitation Report

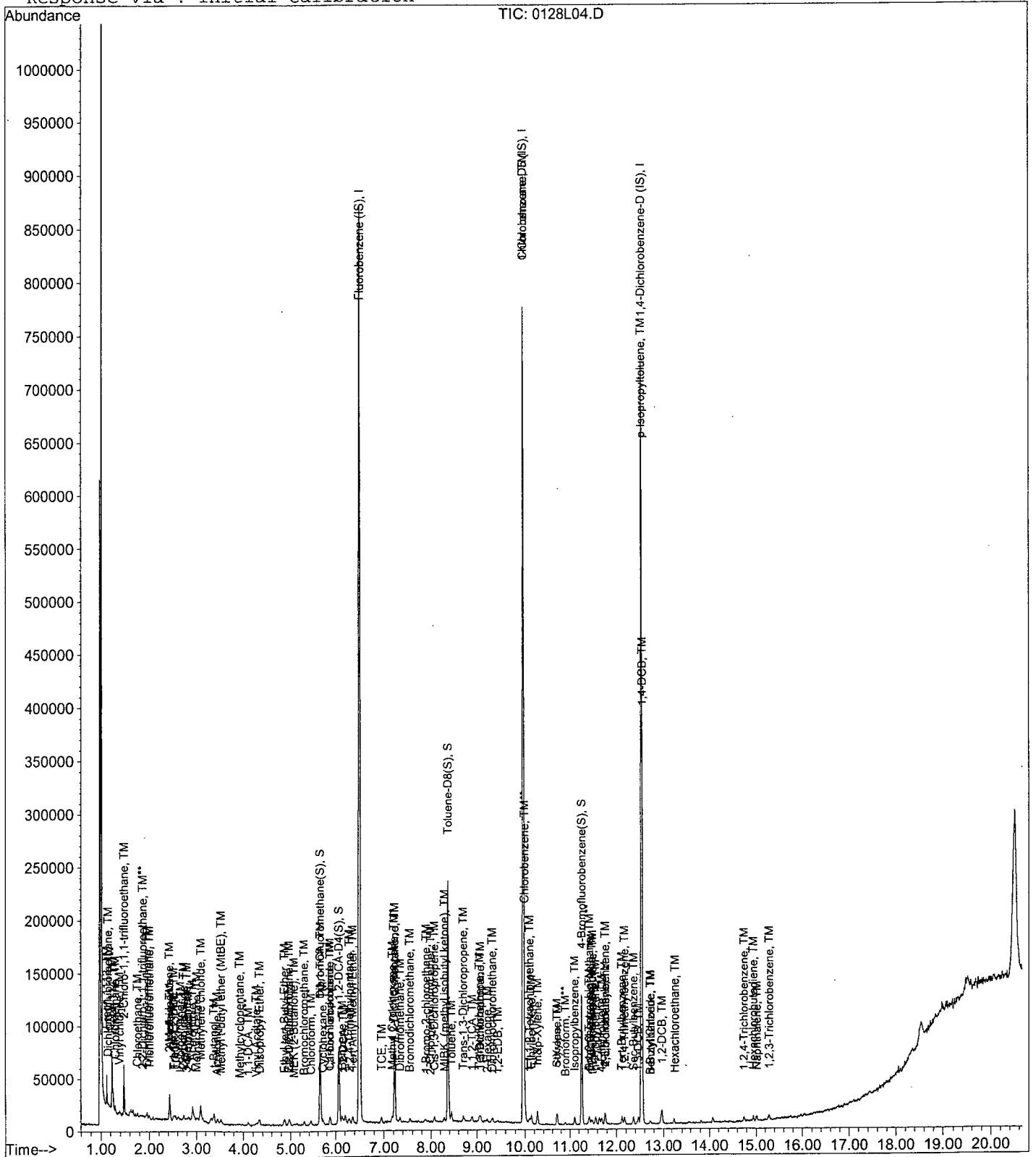
Data File : M:\LOKI\DATA\190128\0128L04.D  
Acq On : 28 Jan 19 15:31  
Sample : 0.5ug/L VOC STD 01/28/19  
Misc : IS&S 11/8/18

Vial: 3  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 29 8:06 2019

Quant Results File: L0128W.RES

Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Jan 29 09:06:22 2019  
Response via : Initial Calibration





Data File : M:\LOKI\DATA\190128\0128L05.D  
 Acq On : 28 Jan 19 16:00  
 Sample : 1.0ug/L VOC STD 01/28/19  
 Misc : IS&S 11/8/18

Vial: 4  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 29 8:06 2019

Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 08:06:28 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	400384	25.0000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.97	117	262528	25.0000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.54	152	116336	25.0000	ppb	0.00

System Monitoring Compounds

38) Dibromofluoromethane(S)	5.65	111	75694	9.9896	ppb	0.00
Spiked Amount	25.000		Recovery	=	39.960%	
43) 1,2-DCA-D4(S)	6.07	65	88263	9.9872	ppb	0.00
Spiked Amount	25.000		Recovery	=	39.948%	
64) Toluene-D8(S)	8.37	98	256471	11.7261	ppb	0.00
Spiked Amount	25.000		Recovery	=	46.904%	
72) 4-Bromofluorobenzene(S)	11.26	95	74359	8.4459	ppb	0.00
Spiked Amount	25.000		Recovery	=	33.784%	

Target Compounds

	R.T.	QIon	Response	Conc	Units	Qvalue
2) Freon 1113	1.12	116	16948	8.0147	ppb	99
3) Dichlorodifluoromethane	1.14	85	3757	1.5489	ppb #	81
4) Freon 114	1.25	85	2829	1.0655	ppb	96
5) Chloromethane	1.29	50	6375	1.1620	ppb	97
6) Vinyl chloride	1.38	62	3322	0.6900	ppb #	81
7) 2-Chloro-1,1,1-trifluoroet	1.48	118	28496	6.9919	ppb	98
8) Bromomethane	1.66	94	2585	-0.2858	ppb	88
9) Chloroethane	1.76	64	2131	0.8391	ppb	97
10) Dichlorofluoromethane	1.95	67	5985	0.6827	ppb	95
11) Trichlorofluoromethane	2.00	101	4617	0.6830	ppb	93
12) Acrolein	2.43	56	38171	37.6088	ppb #	99
13) Acetone	2.61	43	1937	-0.2700	ppb	89
14) Freon-113	2.54	101	2655	0.7095	ppb #	75
15) 1,1-DCE	2.52	63	821	0.6616	ppb #	47
16) t-Butanol	3.38	59	21610	46.3711	ppb #	86
17) 2-Propanol	2.83	45	3766	11.2008	ppb #	74
18) Acetonitrile	2.92	41	28502	36.3057	ppb	93
19) Methyl Acetate	3.02	43	3619	1.1493	ppb	93
20) Iodomethane	2.67	142	610	3.6943	ppb #	90
21) Acrylonitrile	3.44	52	1609	0.7402	ppb	95
22) Methylene chloride	3.09	84	7028	1.3811	ppb	97
23) Carbon disulfide	2.73	76	9198	0.7069	ppb #	92
24) Methyl t-butyl ether (MtBE)	3.54	73	9308	0.7670	ppb #	86
25) Trans-1,2-DCE	2.52	96	1369	0.6061	ppb	86
26) Diisopropyl Ether	4.33	45	10034	0.7658	ppb	92
27) 2,2-Dichloro-1,1,1-trifluo	1.95	85	149	0.8861	ppb #	80
28) 1,1-DCA	4.11	63	5374	0.7147	ppb #	83
29) Vinyl Acetate	4.28	43	2781	0.9829	ppb #	89
30) Ethyl tert Butyl Ether	4.88	59	9219	0.8007	ppb	96
31) MEK (2-Butanone)	5.08	43	3535	1.7950	ppb #	83
32) Cis-1,2-DCE	4.98	96	3706	0.8533	ppb	84
33) 2,2-Dichloropropane	4.96	77	5703	0.9558	ppb #	85
34) 2-Methylpentane	2.31	71	161	30.9649	ppb #	1
35) 3-Methylpentane	2.79	57	148	7.4317	ppb #	26
36) Chloroform	5.45	83	6157	0.9246	ppb	92
37) Bromochloromethane	5.31	128	925	0.8679	ppb	93
39) 1,1,1-TCA	5.65	97	2043	0.8404	ppb	94
40) Cyclohexane	5.72	41	3673	1.2218	ppb	77
41) 1,1-Dichloropropene	5.88	75	4262	0.9080	ppb	97

(#) = qualifier out of range (m) = manual integration

Data File : M:\LOKI\DATA\190128\0128L05.D  
 Acq On : 28 Jan 19 16:00  
 Sample : 1.0ug/L VOC STD 01/28/19  
 Misc : IS&S 11/8/18

Vial: 4  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 29 8:06 2019

Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 08:06:28 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
42) 2,2,4-Trimethylpentane	6.29	57	9064	1.0465	ppb	# 73
44) Carbon Tetrachloride	5.86	117	4280	0.8600	ppb	87
45) Tert Amyl Methyl Ether	6.36	73	10913	1.0396	ppb	# 85
46) Methylcyclopentane	3.95	56	174	25.3379	ppb	100
47) 1,2-DCA	6.16	62	4750	0.8737	ppb	# 89
48) Benzene	6.13	78	13238	0.9344	ppb	87
49) TCE	6.95	130	1767	0.7587	ppb	89
50) 2-Pentanone	7.22	43	169102	60.6134	ppb	99
51) 1,2-Dichloropropane	7.21	63	3439	0.9133	ppb	99
52) Bromodichloromethane	7.54	83	2619	0.9225	ppb	# 94
53) Methyl Cyclohexane	7.17	83	4230	0.8429	ppb	92
54) Dibromomethane	7.34	93	2396	0.9139	ppb	90
55) 2-Chloroethyl vinyl ether	8.08	43	315	3.1311	ppb	# 34
56) MIBK (methyl isobutyl ket	8.29	43	4728	1.2407	ppb	93
57) 1-Bromo-2-chloroethane	7.89	63	3167	1.0977	ppb	# 82
58) Cis-1,3-Dichloropropene	8.07	75	5609	0.9031	ppb	91
59) Toluene	8.44	91	6440	0.7644	ppb	86
60) Trans-1,3-Dichloropropene	8.70	75	5220	0.8806	ppb	96
61) 1,1,2-TCA	8.90	83	2909	0.9604	ppb	91
62) 2-Hexanone	9.22	43	3871	1.5223	ppb	# 73
65) 1,2-EDB	9.44	107	2096	1.2438	ppb	82
66) Tetrachloroethene	9.05	166	2359	1.1414	ppb	# 83
67) 1-Chlorohexane	10.00	91	4344	0.7937	ppb	95
68) 1,1,1,2-Tetrachloroethane	10.09	131	3441	1.0092	ppb	97
69) m&p-Xylene	10.27	91	15896	1.5713	ppb	90
70) o-Xylene	10.70	106	1880	0.6444	ppb	93
71) Styrene	10.71	104	6525	0.7221	ppb	80
73) 1,3-Dichloropropane	9.08	76	5328	1.0978	ppb	99
74) Dibromochloromethane	9.33	129	3729	1.0254	ppb	95
75) Chlorobenzene	10.00	112	7779	0.9325	ppb	98
76) Ethylbenzene	10.14	91	6050	0.8045	ppb	94
77) Bromoform	10.89	173	2849	0.9652	ppb	83
79) Isopropylbenzene	11.11	105	9870	0.9204	ppb	92
80) 1,1,2,2-Tetrachloroethane	11.43	83	3620	1.1298	ppb	# 98
81) 1,2,3-Trichloropropane	11.47	110	862	1.5564	ppb	# 71
82) t-1,4-Dichloro-2-Butene	11.49	53	528	0.7243	ppb	90
83) Bromobenzene	11.42	156	2020	1.1619	ppb	# 66
84) n-Propylbenzene	11.56	91	5254	0.7978	ppb	90
85) 4-Ethyltoluene	11.69	105	7717	0.7761	ppb	99
86) 2-Chlorotoluene	11.77	91	3801	0.9173	ppb	99
87) 1,3,5-Trimethylbenzene	11.76	105	7488	0.8750	ppb	91
88) 4-Chlorotoluene	11.77	91	3801	0.8106	ppb	89
89) Tert-Butylbenzene	12.12	119	7423	0.8164	ppb	97
90) 1,2,4-Trimethylbenzene	12.17	105	7245	0.8638	ppb	95
91) Sec-Butylbenzene	12.35	105	8821	0.7974	ppb	97
92) p-Isopropyltoluene	12.52	119	4228	0.8231	ppb	93
93) Benzyl Chloride	12.71	91	4375	1.1613	ppb	97
94) 1,3-DCB	12.46	146	3415	1.0995	ppb	85
95) 1,4-DCB	12.56	146	5686	0.9292	ppb	93
96) n-Butylbenzene	12.71	91	4375	1.1613	ppb	# 90
97) 1,2-DCB	12.97	146	5882	0.9877	ppb	98
98) Hexachloroethane	13.26	117	2176	1.1486	ppb	81
99) 1,2-Dibromo-3-chloropropan	13.82	75	720	0.4297	ppb	# 83
100) 1,2,4-Trichlorobenzene	14.75	180	3495	0.9299	ppb	# 80

(#) = qualifier out of range (m) = manual integration

Data File : M:\LOKI\DATA\190128\0128L05.D Vial: 4  
 Acq On : 28 Jan 19 16:00 Operator: PM,DG,SV,CMM,KV  
 Sample : 1.0ug/L VOC STD 01/28/19 Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Jan 29 8:06 2019 Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 08:06:28 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
101) Hexachlorobutadiene	14.94	225	1715	0.9172	ppb	95
102) Naphthalene	15.01	128	7491	0.9521	ppb	92
103) 1,2,3-Trichlorobenzene	15.27	180	2095	1.2355	ppb #	70

Quantitation Report

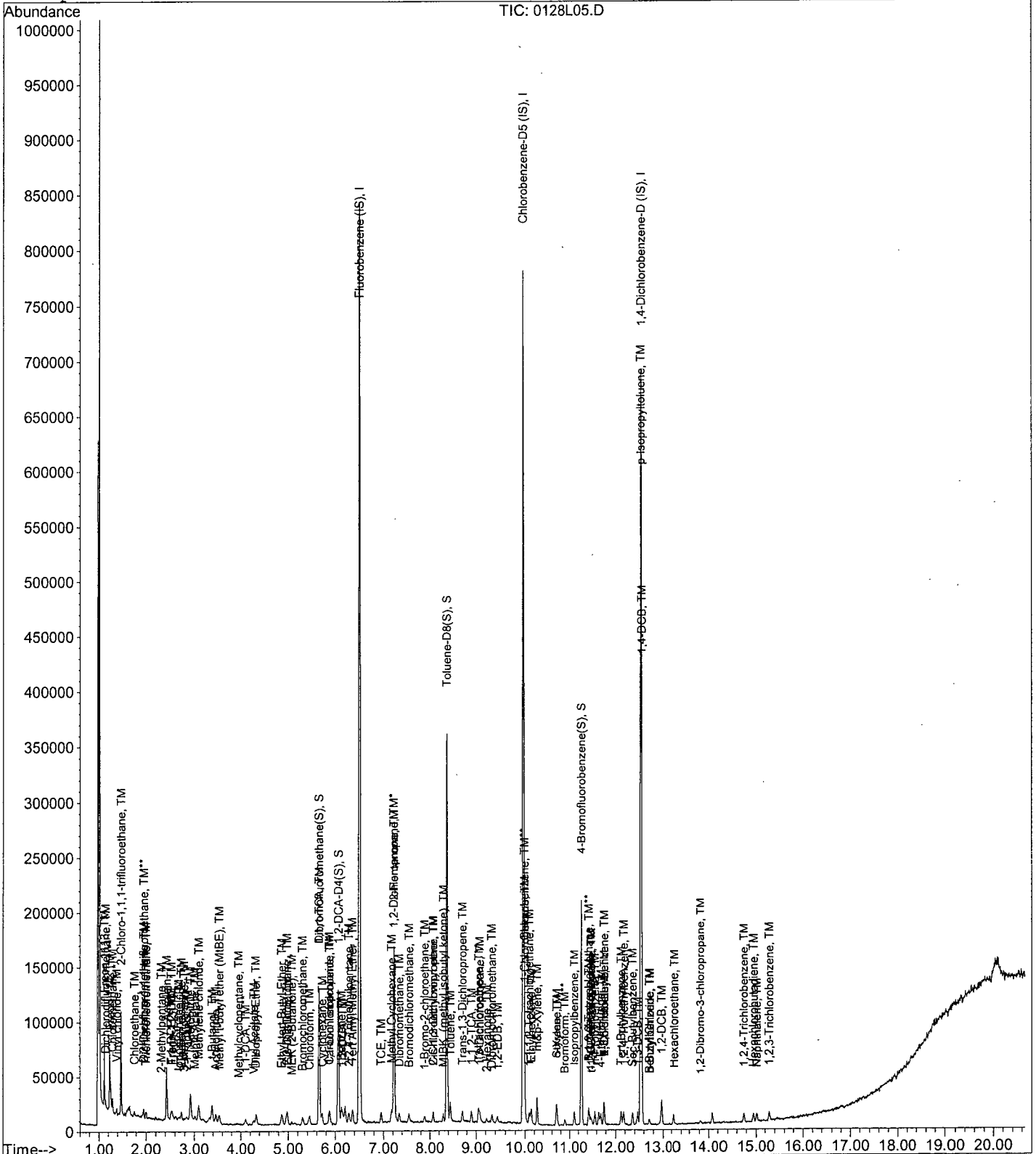
Data File : M:\LOKI\DATA\190128\0128L05.D  
Acq On : 28 Jan 19 16:00  
Sample : 1.0ug/L VOC STD 01/28/19  
Misc : IS&S 11/8/18

Vial: 4  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 29 8:06 2019

Quant Results File: L0128W.RES

Method : M:\LOKI\DATA\190128\L0128W.M (RTE.Integrator)  
Title : METHOD 8260B  
Last Update : Tue Jan 29 09:06:22 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190128\0128L06.D  
 Acq On : 28 Jan 19 16:29  
 Sample : 2.0ug/L VOC STD 01/28/19  
 Misc : IS&S 11/8/18

Vial: 5  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 29 8:06 2019

Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 08:06:28 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	394368	25.0000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.97	117	273536	25.0000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.54	152	114176	25.0000	ppb	0.00
System Monitoring Compounds						
38) Dibromofluoromethane(S)	5.65	111	72400	9.7006	ppb	0.00
Spiked Amount	25.000		Recovery	=	38.804%	
43) 1,2-DCA-D4(S)	6.07	65	86807	9.9722	ppb	0.00
Spiked Amount	25.000		Recovery	=	39.888%	
64) Toluene-D8(S)	8.37	98	260744	11.4417	ppb	0.00
Spiked Amount	25.000		Recovery	=	45.768%	
72) 4-Bromofluorobenzene(S)	11.27	95	71461	7.7901	ppb	0.00
Spiked Amount	25.000		Recovery	=	31.160%	
Target Compounds						
						Qvalue
2) Freon 1113	1.12	116	34638	16.6301	ppb	99
3) Dichlorodifluoromethane	1.15	85	5148	1.9200	ppb	96
4) Freon 114	1.25	85	5166	1.9753	ppb	92
5) Chloromethane	1.29	50	8547	1.5816	ppb	# 87
6) Vinyl chloride	1.38	62	6362	1.3416	ppb	99
7) 2-Chloro-1,1,1-trifluoroet	1.48	118	57128	14.2310	ppb	96
8) Bromomethane	1.66	94	4427	0.3827	ppb	93
9) Chloroethane	1.76	64	3143	1.2728	ppb	88
10) Dichlorofluoromethane	1.95	67	10452	1.2104	ppb	99
11) Trichlorofluoromethane	2.00	101	8098	1.2162	ppb	89
12) Acrolein	2.42	56	54343	54.8124	ppb	# 98
13) Acetone	2.61	43	2666	0.5617	ppb	100
14) Freon-113	2.55	101	4738	1.2854	ppb	94
15) 1,1-DCE	2.52	63	1386	1.1339	ppb	87
16) t-Butanol	3.38	59	28645	62.4045	ppb	97
17) 2-Propanol	2.84	45	6927	20.9165	ppb	# 88
18) Acetonitrile	2.92	41	39974	51.6954	ppb	89
19) Methyl Acetate	3.02	43	6660	1.8488	ppb	95
20) Iodomethane	2.67	142	1269	4.0036	ppb	# 92
21) Acrylonitrile	3.45	52	2468	1.3135	ppb	# 65
22) Methylene chloride	3.09	84	8741	1.7562	ppb	99
23) Carbon disulfide	2.73	76	16471	1.2851	ppb	96
24) Methyl t-butyl ether (MtBE)	3.53	73	18863	1.5780	ppb	92
25) Trans-1,2-DCE	2.52	96	2706	1.2163	ppb	81
26) Diisopropyl Ether	4.33	45	19778	1.5325	ppb	92
27) 2,2-Dichloro-1,1,1-trifluo	1.95	85	312	1.8838	ppb	94
28) 1,1-DCA	4.10	63	12053	1.6275	ppb	95
29) Vinyl Acetate	4.27	43	4938	1.7718	ppb	96
30) Ethyl tert Butyl Ether	4.87	59	17885	1.5771	ppb	98
31) MEK (2-Butanone)	5.07	43	5390	2.6974	ppb	# 85
32) Cis-1,2-DCE	4.98	96	7161	1.6739	ppb	94
33) 2,2-Dichloropropane	4.96	77	10282	1.7495	ppb	# 92
34) 2-Methylpentane	2.43	71	70	13.6684	ppb	# 1
35) 3-Methylpentane	2.76	57	42	2.1412	ppb	# 25
36) Chloroform	5.45	83	11690	1.7822	ppb	95
37) Bromochloromethane	5.31	128	1594	1.5184	ppb	99
39) 1,1,1-TCA	5.65	97	4694	1.9604	ppb	92
40) Cyclohexane	5.73	41	7160	2.4248	ppb	74
41) 1,1-Dichloropropene	5.88	75	8026	1.7360	ppb	97

(#) = qualifier out of range (m) = manual integration

Data File : M:\LOKI\DATA\190128\0128L06.D  
 Acq On : 28 Jan 19 16:29  
 Sample : 2.0ug/L VOC STD 01/28/19  
 Misc : IS&S 11/8/18

Vial: 5  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 29 8:06 2019

Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 08:06:28 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
42) 2,2,4-Trimethylpentane	6.28	57	16348	1.9162	ppb	96
44) Carbon Tetrachloride	5.87	117	8513	1.7366	ppb	88
45) Tert Amyl Methyl Ether	6.36	73	19085	1.8458	ppb #	91
46) Methylcyclopentane	3.92	56	121	17.8888	ppb	100
47) 1,2-DCA	6.16	62	9779	1.8261	ppb #	84
48) Benzene	6.13	78	24623	1.7646	ppb	96
49) TCE	6.95	130	4060	1.7698	ppb	93
50) 2-Pentanone	7.22	43	232125	84.4728	ppb	100
51) 1,2-Dichloropropane	7.21	63	7062	1.9040	ppb #	84
52) Bromodichloromethane	7.55	83	5046	1.8046	ppb	92
53) Methyl Cyclohexane	7.17	83	8703	1.7608	ppb	97
54) Dibromomethane	7.33	93	4847	1.8770	ppb	96
55) 2-Chloroethyl vinyl ether	7.92	43	419	4.2284	ppb #	34
56) MIBK (methyl isobutyl ket	8.29	43	8799	2.3442	ppb	99
57) 1-Bromo-2-chloroethane	7.88	63	5066	1.7827	ppb	92
58) Cis-1,3-Dichloropropene	8.07	75	10597	1.7323	ppb	96
59) Toluene	8.44	91	14556	1.7541	ppb	98
60) Trans-1,3-Dichloropropene	8.71	75	10271	1.7592	ppb	96
61) 1,1,2-TCA	8.90	83	5465	1.8317	ppb	90
62) 2-Hexanone	9.22	43	5280	2.1081	ppb #	81
65) 1,2-EDB	9.44	107	3713	2.1146	ppb	87
66) Tetrachloroethene	9.05	166	3861	1.7930	ppb	81
67) 1-Chlorohexane	10.00	91	5978	1.2056	ppb #	77
68) 1,1,1,2-Tetrachloroethane	10.10	131	6117	1.7219	ppb	80
69) m&p-Xylene	10.27	91	32595	3.0923	ppb	95
70) o-Xylene	10.70	106	3934	1.2942	ppb	89
71) Styrene	10.71	104	13048	1.3859	ppb	92
73) 1,3-Dichloropropane	9.08	76	9767	1.9314	ppb	99
74) Dibromochloromethane	9.32	129	7672	2.0247	ppb	96
75) Chlorobenzene	10.00	112	16669	1.9178	ppb	97
76) Ethylbenzene	10.13	91	13134	1.6763	ppb	98
77) Bromoform	10.90	173	5131	1.6683	ppb	93
79) Isopropylbenzene	11.11	105	19550	1.8576	ppb	93
80) 1,1,2,2-Tetrachloroethane	11.43	83	7550	2.4008	ppb	89
81) 1,2,3-Trichloropropane	11.47	110	1696	3.1202	ppb #	69
82) t-1,4-Dichloro-2-Butene	11.50	53	1580	2.2085	ppb #	71
83) Bromobenzene	11.43	156	3369	1.9746	ppb	87
84) n-Propylbenzene	11.56	91	11329	1.7528	ppb	100
85) 4-Ethyltoluene	11.69	105	16124	1.6523	ppb	98
86) 2-Chlorotoluene	11.64	91	7386	1.8161	ppb	99
87) 1,3,5-Trimethylbenzene	11.76	105	13642	1.6243	ppb	96
88) 4-Chlorotoluene	11.76	91	8511	1.8494	ppb	96
89) Tert-Butylbenzene	12.11	119	16122	1.8068	ppb	95
90) 1,2,4-Trimethylbenzene	12.17	105	12746	1.5484	ppb	98
91) Sec-Butylbenzene	12.36	105	18351	1.6903	ppb	95
92) p-Isopropyltoluene	12.52	119	8619	1.7098	ppb	97
93) Benzyl Chloride	12.72	91	8076	2.1843	ppb	98
94) 1,3-DCB	12.46	146	5429	1.7810	ppb	89
95) 1,4-DCB	12.57	146	11397	1.8977	ppb	89
96) n-Butylbenzene	12.72	91	8076	2.1843	ppb	98
97) 1,2-DCB	12.97	146	10987	1.8798	ppb	94
98) Hexachloroethane	13.25	117	3865	2.0788	ppb #	76
99) 1,2-Dibromo-3-chloropropan	13.82	75	1577	1.7693	ppb	92
100) 1,2,4-Trichlorobenzene	14.74	180	7526	2.0403	ppb	91

Data File : M:\LOKI\DATA\190128\0128L06.D  
 Acq On : 28 Jan 19 16:29  
 Sample : 2.0ug/L VOC STD 01/28/19  
 Misc : IS&S 11/8/18

Vial: 5  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 29 8:06 2019

Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 08:06:28 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
101) Hexachlorobutadiene	14.94	225	3367	1.8347	ppb	90
102) Naphthalene	15.01	128	13839	1.7921	ppb	90
103) 1,2,3-Trichlorobenzene	15.28	180	2679	1.6098	ppb	83

Quantitation Report

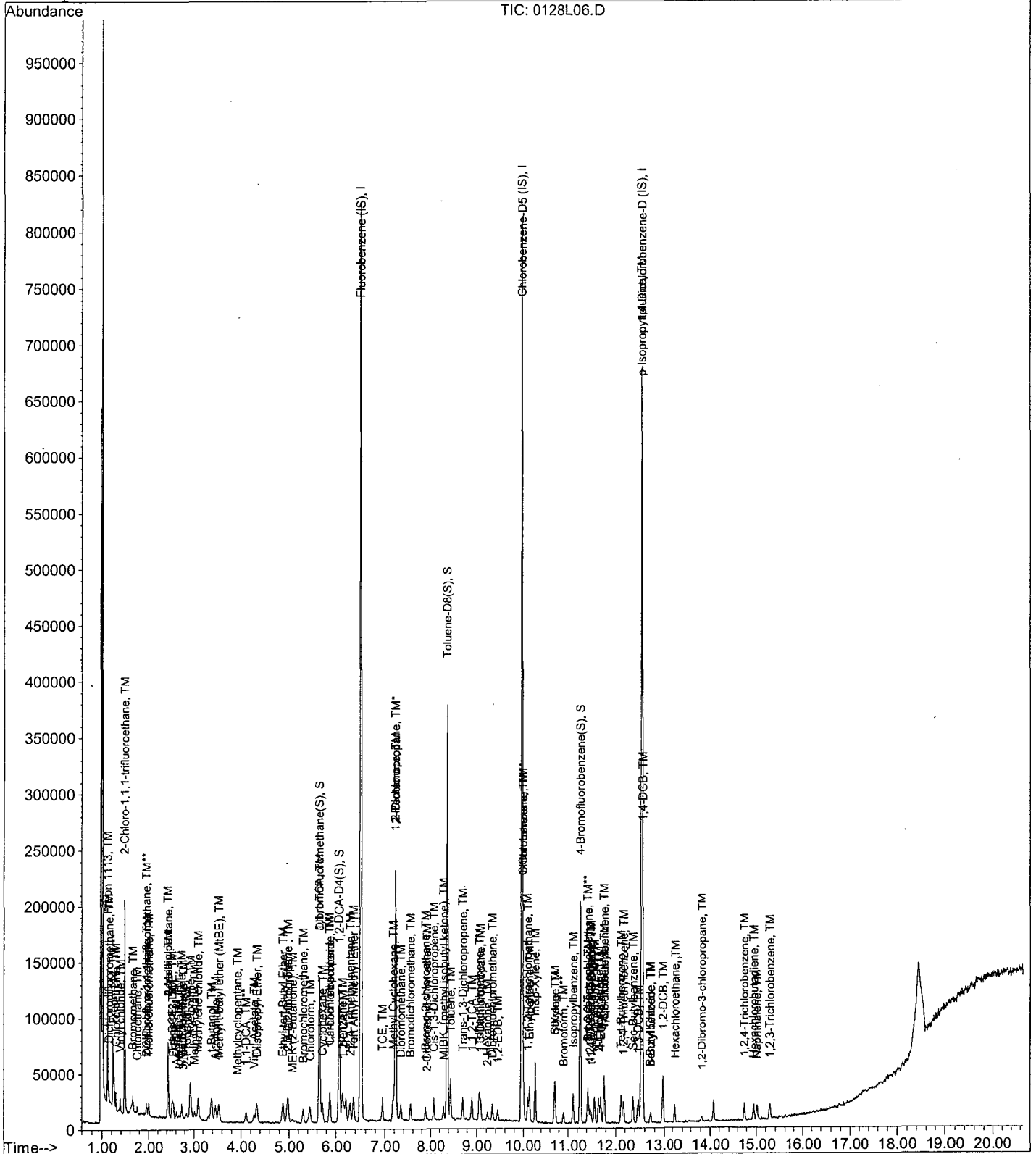
Data File : M:\LOKI\DATA\190128\0128L06.D  
 Acq On : 28 Jan 19 16:29  
 Sample : 2.0ug/L VOC STD 01/28/19  
 Misc : IS&S 11/8/18

Vial: 5  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 29 8:06 2019

Quant Results File: L0128W.RES

Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration





Data File : M:\LOKI\DATA\190128\0128L07.D  
 Acq On : 28 Jan 19 16:57  
 Sample : 5.0ug/L VOC STD 01/28/19  
 Misc : IS&S 11/8/18

Vial: 6  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 29 8:07 2019

Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 08:06:28 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	406976	25.0000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.97	117	273664	25.0000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.54	152	125568	25.0000	ppb	0.00

#### System Monitoring Compounds

38) Dibromofluoromethane(S)	5.65	111	196617	25.5279	ppb	0.00
Spiked Amount	25.000		Recovery	=	102.112%	
43) 1,2-DCA-D4(S)	6.07	65	228144	25.3969	ppb	0.00
Spiked Amount	25.000		Recovery	=	101.588%	
64) Toluene-D8(S)	8.37	98	687108	30.1368	ppb	0.00
Spiked Amount	25.000		Recovery	=	120.548%	
72) 4-Bromofluorobenzene(S)	11.27	95	194145	21.1542	ppb	0.00
Spiked Amount	25.000		Recovery	=	84.616%	

#### Target Compounds

	R.T.	QIon	Response	Conc	Units	Qvalue
2) Freon 1113	1.12	116	74318	34.5755	ppb	99
3) Dichlorodifluoromethane	1.15	85	11115	3.3656	ppb	99
4) Freon 114	1.25	85	8912	3.3021	ppb	97
5) Chloromethane	1.29	50	23128	4.1472	ppb	91
6) Vinyl chloride	1.38	62	14934	3.0517	ppb	96
7) 2-Chloro-1,1,1-trifluoroet	1.48	118	114184	27.5628	ppb	100
8) Bromomethane	1.66	94	10863	2.5507	ppb	92
9) Chloroethane	1.76	64	9071	3.6186	ppb	97
10) Dichlorofluoromethane	1.95	67	24428	2.7412	ppb	90
11) Trichlorofluoromethane	2.00	101	21621	3.1466	ppb	97
12) Acrolein	2.43	56	72873	71.5299	ppb	# 99
13) Acetone	2.61	43	3808	1.6852	ppb	98
14) Freon-113	2.54	101	11343	2.9819	ppb	92
15) 1,1-DCE	2.53	63	3776	2.9934	ppb	# 46
16) t-Butanol	3.38	59	41252	87.0854	ppb	99
17) 2-Propanol	2.83	45	9858	28.8446	ppb	# 59
18) Acetonitrile	2.92	41	53148	66.6030	ppb	# 96
19) Methyl Acetate	3.01	43	14982	3.6244	ppb	89
20) Iodomethane	2.67	142	3669	5.0620	ppb	95
21) Acrylonitrile	3.45	52	7420	4.3785	ppb	97
22) Methylene chloride	3.09	84	17284	3.4079	ppb	86
23) Carbon disulfide	2.73	76	39709	3.0022	ppb	97
24) Methyl t-butyl ether (MtBE)	3.53	73	49119	3.9818	ppb	95
25) Trans-1,2-DCE	2.52	96	7113	3.0982	ppb	96
26) Diisopropyl Ether	4.33	45	51832	3.8918	ppb	97
27) 2,2-Dichloro-1,1,1-trifluo	1.95	85	859	5.0259	ppb	# 47
28) 1,1-DCA	4.10	63	27694	3.6236	ppb	90
29) Vinyl Acetate	4.27	43	14553	5.0601	ppb	95
30) Ethyl tert Butyl Ether	4.87	59	50791	4.3399	ppb	95
31) MEK (2-Butanone)	5.07	43	10806	5.1005	ppb	92
32) Cis-1,2-DCE	4.98	96	18801	4.2586	ppb	86
33) 2,2-Dichloropropane	4.97	77	25263	4.1654	ppb	98
34) 2-Methylpentane	2.43	71	41	7.7577	ppb	# 1
35) 3-Methylpentane	2.82	57	165	8.1511	ppb	100
36) Chloroform	5.45	83	30042	4.4383	ppb	92
37) Bromochloromethane	5.29	128	4764	4.3975	ppb	94
39) 1,1,1-TCA	5.65	97	11443	4.6310	ppb	93
40) Cyclohexane	5.71	41	13883	4.5621	ppb	89
41) 1,1-Dichloropropene	5.88	75	19618	4.1119	ppb	97

Quantitation Report (Not Reviewed)

Data File : M:\LOKI\DATA\190128\0128L07.D  
 Acq On : 28 Jan 19 16:57  
 Sample : 5.0ug/L VOC STD 01/28/19  
 Misc : IS&S 11/8/18

Vial: 6  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 29 8:07 2019

Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 08:06:28 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
42) 2,2,4-Trimethylpentane	6.29	57	36265	4.1191	ppb	# 84
44) Carbon Tetrachloride	5.87	117	22197	4.3879	ppb	85
45) Tert Amyl Methyl Ether	6.36	73	48742	4.5681	ppb	99
46) Methylcyclopentane	3.99	56	133	19.0538	ppb	# 100
47) 1,2-DCA	6.17	62	24738	4.4763	ppb	99
48) Benzene	6.13	78	66663	4.6294	ppb	97
49) TCE	6.95	130	9554	4.0357	ppb	97
50) 2-Pentanone	7.22	43	323201	113.9726	ppb	98
51) 1,2-Dichloropropane	7.20	63	18235	4.7640	ppb	99
52) Bromodichloromethane	7.54	83	13253	4.5928	ppb	92
53) Methyl Cyclohexane	7.17	83	19782	3.8783	ppb	99
54) Dibromomethane	7.34	93	12855	4.8238	ppb	89
55) 2-Chloroethyl vinyl ether	7.93	43	507	4.9580	ppb	# 62
56) MIBK (methyl isobutyl ket	8.29	43	19494	5.0325	ppb	100
57) 1-Bromo-2-chloroethane	7.88	63	14677	5.0048	ppb	92
58) Cis-1,3-Dichloropropene	8.07	75	27837	4.4096	ppb	94
59) Toluene	8.44	91	36656	4.2804	ppb	98
60) Trans-1,3-Dichloropropene	8.71	75	27998	4.6468	ppb	100
61) 1,1,2-TCA	8.90	83	14070	4.5697	ppb	97
62) 2-Hexanone	9.22	43	12437	4.8119	ppb	# 87
65) 1,2-EDB	9.44	107	9706	5.5251	ppb	96
66) Tetrachloroethene	9.06	166	10263	4.7638	ppb	93
67) 1-Chlorohexane	10.00	91	16346	4.1453	ppb	95
68) 1,1,1,2-Tetrachloroethane	10.09	131	17406	4.8975	ppb	90
69) m&p-Xylene	10.27	91	93904	8.9045	ppb	99
70) o-Xylene	10.70	106	11625	3.8226	ppb	98
71) Styrene	10.71	104	35333	3.7513	ppb	91
73) 1,3-Dichloropropane	9.08	76	29056	5.7432	ppb	94
74) Dibromochloromethane	9.33	129	21162	5.5821	ppb	97
75) Chlorobenzene	10.00	112	42211	4.8542	ppb	99
76) Ethylbenzene	10.13	91	37224	4.7487	ppb	94
77) Bromoform	10.90	173	13619	4.4260	ppb	98
79) Isopropylbenzene	11.11	105	53222	4.5982	ppb	95
80) 1,1,2,2-Tetrachloroethane	11.43	83	19346	5.5937	ppb	98
81) 1,2,3-Trichloropropane	11.47	110	3430	5.7378	ppb	96
82) t-1,4-Dichloro-2-Butene	11.50	53	4220	5.3636	ppb	87
83) Bromobenzene	11.43	156	9210	4.9082	ppb	95
84) n-Propylbenzene	11.56	91	33042	4.6483	ppb	97
85) 4-Ethyltoluene	11.69	105	46954	4.3751	ppb	97
86) 2-Chlorotoluene	11.65	91	20728	4.6344	ppb	95
87) 1,3,5-Trimethylbenzene	11.76	105	38946	4.2165	ppb	96
88) 4-Chlorotoluene	11.77	91	23296	4.6029	ppb	100
89) Tert-Butylbenzene	12.12	119	42968	4.3785	ppb	98
90) 1,2,4-Trimethylbenzene	12.17	105	37700	4.1642	ppb	96
91) Sec-Butylbenzene	12.36	105	52532	4.3997	ppb	99
92) p-Isopropyltoluene	12.52	119	23848	4.3016	ppb	94
93) Benzyl Chloride	12.71	91	22755	5.5960	ppb	96
94) 1,3-DCB	12.47	146	15555	4.6399	ppb	95
95) 1,4-DCB	12.56	146	31412	4.7557	ppb	97
96) n-Butylbenzene	12.71	91	22755	5.5960	ppb	99
97) 1,2-DCB	12.97	146	31679	4.9284	ppb	93
98) Hexachloroethane	13.26	117	11248	5.5008	ppb	87
99) 1,2-Dibromo-3-chloropropan	13.82	75	3942	4.8589	ppb	92
100) 1,2,4-Trichlorobenzene	14.74	180	18800	4.6344	ppb	92

Quantitation Report (Not Reviewed)

Data File : M:\LOKI\DATA\190128\0128L07.D Vial: 6  
 Acq On : 28 Jan 19 16:57 Operator: PM,DG,SV,CMM,KV  
 Sample : 5.0ug/L VOC STD 01/28/19 Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Jan 29 8:07 2019 Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 08:06:28 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
101) Hexachlorobutadiene	14.94	225	9667	4.7898	ppb	96
102) Naphthalene	15.01	128	39138	4.6085	ppb	99
103) 1,2,3-Trichlorobenzene	15.28	180	7964	4.3513	ppb	89

Quantitation Report

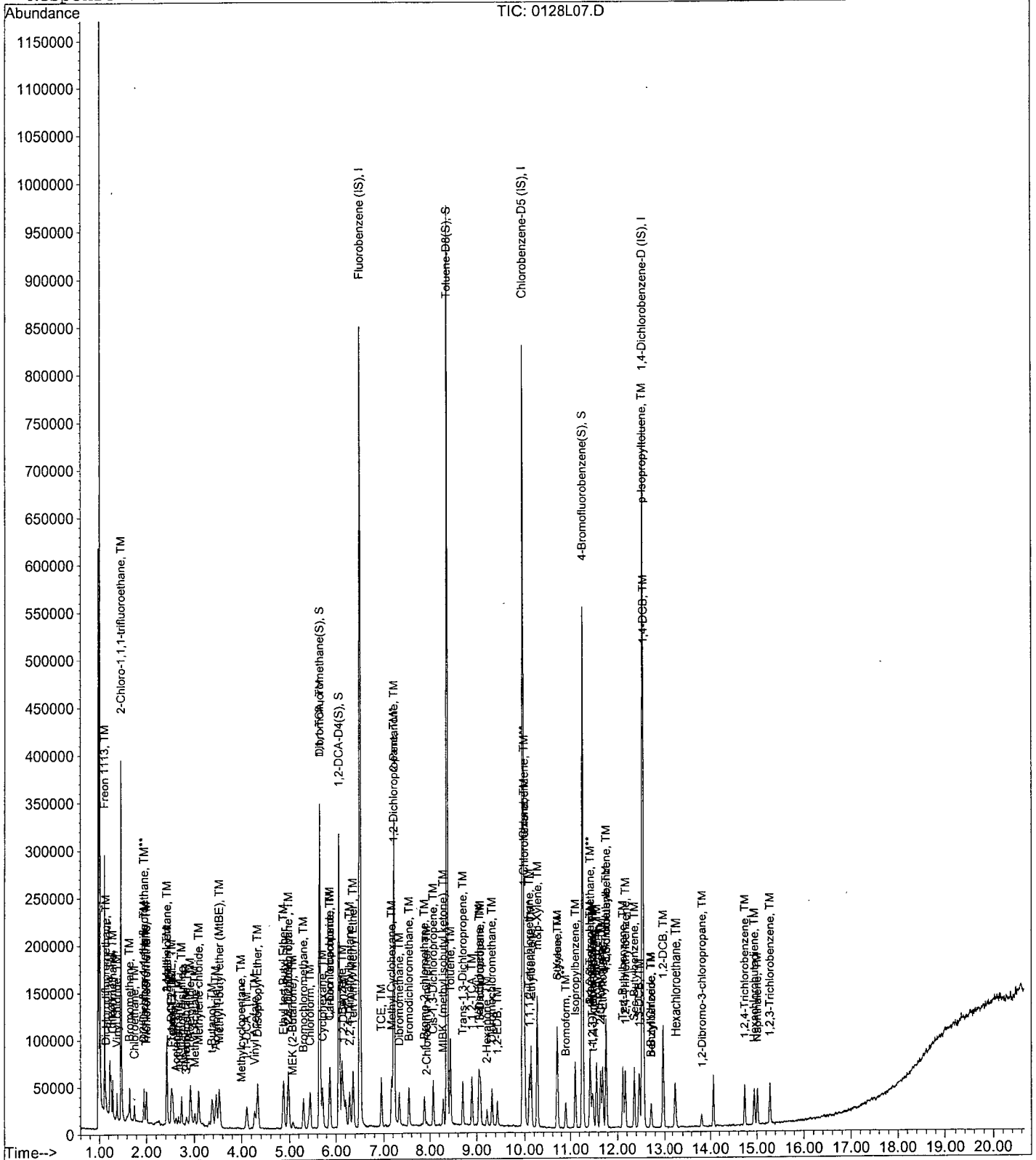
Data File : M:\LOKI\DATA\190128\0128L07.D  
Acq On : 28 Jan 19 16:57  
Sample : 5.0ug/L VOC STD 01/28/19  
Misc : IS&S 11/8/18

Vial: 6  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 29 8:07 2019

Quant Results File: L0128W.RES

Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Jan 29 09:06:22 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190128\0128L08.D  
 Acq On : 28 Jan 19 17:26  
 Sample : 10ug/L VOC STD 01/28/19  
 Misc : IS&S 11/8/18

Vial: 7  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 29 8:07 2019

Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 08:06:28 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	408128	25.0000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.97	117	289088	25.0000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.53	152	128392	25.0000	ppb	0.00
<b>System Monitoring Compounds</b>						
38) Dibromofluoromethane(S)	5.65	111	198416	25.6887	ppb	0.00
Spiked Amount 25.000			Recovery =	102.756%		
43) 1,2-DCA-D4(S)	6.07	65	228932	25.4126	ppb	0.00
Spiked Amount 25.000			Recovery =	101.652%		
64) Toluene-D8(S)	8.37	98	711839	29.5557	ppb	0.00
Spiked Amount 25.000			Recovery =	118.224%		
72) 4-Bromofluorobenzene(S)	11.26	95	197094	20.3297	ppb	0.00
Spiked Amount 25.000			Recovery =	81.320%		
<b>Target Compounds</b>						<b>Qvalue</b>
2) Freon 1113	1.12	116	153403	71.1674	ppb	100
3) Dichlorodifluoromethane	1.14	85	25320	6.9133	ppb	100
4) Freon 114	1.25	85	21976	8.1197	ppb	100
5) Chloromethane	1.29	50	44912	8.0307	ppb	100
6) Vinyl chloride	1.38	62	32536	6.6298	ppb	100
7) 2-Chloro-1,1,1-trifluoroet	1.48	118	267776	64.4559	ppb	100
8) Bromomethane	1.65	94	21095	6.0543	ppb	100
9) Chloroethane	1.75	64	15952	6.3703	ppb	100
10) Dichlorofluoromethane	1.95	67	52782	5.9062	ppb	100
11) Trichlorofluoromethane	2.00	101	45876	6.6577	ppb	100
12) Acrolein	2.42	56	91753	90.0676	ppb	100
13) Acetone	2.61	43	7666	5.7635	ppb	100
14) Freon-113	2.54	101	24909	6.5298	ppb	100
15) 1,1-DCE	2.52	63	6043	4.7770	ppb	100
16) t-Butanol	3.38	59	49719	104.6634	ppb	100
17) 2-Propanol	2.84	45	25613	74.7324	ppb	# 100
18) Acetonitrile	2.92	41	66442	83.0276	ppb	100
19) Methyl Acetate	3.01	43	29471	6.7789	ppb	100
20) Iodomethane	2.66	142	8620	7.2720	ppb	100
21) Acrylonitrile	3.45	52	13829	8.3850	ppb	100
22) Methylene chloride	3.10	84	34102	6.7501	ppb	100
23) Carbon disulfide	2.73	76	80709	6.0847	ppb	100
24) Methyl t-butyl ether (MtBE)	3.53	73	97264	7.8624	ppb	100
25) Trans-1,2-DCE	2.52	96	14266	6.1963	ppb	100
26) Diisopropyl Ether	4.33	45	101100	7.5696	ppb	100
27) 2,2-Dichloro-1,1,1-trifluo	1.95	85	1714	10.0000	ppb	100
28) 1,1-DCA	4.10	63	58228	7.5973	ppb	100
29) Vinyl Acetate	4.27	43	26955	9.3459	ppb	100
30) Ethyl tert Butyl Ether	4.87	59	99839	8.5067	ppb	100
31) MEK (2-Butanone)	5.07	43	20268	9.4105	ppb	100
32) Cis-1,2-DCE	4.98	96	36677	8.2843	ppb	100
33) 2,2-Dichloropropane	4.96	77	45436	7.4703	ppb	100
34) 2-Methylpentane	2.43	71	53	10.0000	ppb	100
35) 3-Methylpentane	2.78	57	203	10.0000	ppb	100
36) Chloroform	5.45	83	60525	8.9164	ppb	100
37) Bromochloromethane	5.30	128	9617	8.8521	ppb	100
39) 1,1,1-TCA	5.65	97	22600	9.1205	ppb	100
40) Cyclohexane	5.71	41	26207	8.5936	ppb	100
41) 1,1-Dichloropropene	5.88	75	40496	8.4639	ppb	100

Data File : M:\LOKI\DATA\190128\0128L08.D  
 Acq On : 28 Jan 19 17:26  
 Sample : 10ug/L VOC STD 01/28/19  
 Misc : IS&S 11/8/18

Vial: 7  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant. Time: Jan 29 8:07 2019

Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 08:06:28 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
42) 2,2,4-Trimethylpentane	6.28	57	79886	9.0481	ppb	100
44) Carbon Tetrachloride	5.87	117	44671	8.8056	ppb	100
45) Tert Amyl Methyl Ether	6.36	73	98648	9.2192	ppb	100
46) Methylcyclopentane	3.98	56	70	10.0000	ppb	100
47) 1,2-DCA	6.16	62	50344	9.0840	ppb	100
48) Benzene	6.13	78	133301	9.2309	ppb	100
49) TCE	6.95	130	19416	8.1784	ppb	100
50) 2-Pentanone	7.22	43	407939	143.4484	ppb	100
51) 1,2-Dichloropropane	7.20	63	36215	9.4347	ppb	100
52) Bromodichloromethane	7.54	83	26952	9.3138	ppb	100
53) Methyl Cyclohexane	7.17	83	43552	8.5143	ppb	100
54) Dibromomethane	7.34	93	26136	9.7797	ppb	100
55) 2-Chloroethyl vinyl ether	7.94	43	957	9.3321	ppb	100
56) MIBK (methyl isobutyl ket	8.28	43	41000	10.5546	ppb	100
57) 1-Bromo-2-chloroethane	7.88	63	29032	9.8719	ppb	100
58) Cis-1,3-Dichloropropene	8.07	75	59976	9.4739	ppb	100
59) Toluene	8.44	91	76912	8.9559	ppb	100
60) Trans-1,3-Dichloropropene	8.71	75	53721	8.8908	ppb	100
61) 1,1,2-TCA	8.90	83	29324	9.4972	ppb	100
62) 2-Hexanone	9.22	43	25770	9.9422	ppb	100
65) 1,2-EDB	9.44	107	18552	9.9972	ppb	100
66) Tetrachloroethene	9.05	166	21032	9.2416	ppb	100
67) 1-Chlorohexane	10.00	91	34599	8.7985	ppb	100
68) 1,1,1,2-Tetrachloroethane	10.09	131	37539	9.9987	ppb	100
69) m&p-Xylene	10.26	91	197564	17.7346	ppb	100
70) o-Xylene	10.70	106	24584	7.6525	ppb	100
71) Styrene	10.71	104	81495	8.1906	ppb	100
73) 1,3-Dichloropropane	9.08	76	56134	10.5034	ppb	100
74) Dibromochloromethane	9.33	129	40736	10.1720	ppb	100
75) Chlorobenzene	9.99	112	87761	9.5539	ppb	100
76) Ethylbenzene	10.13	91	73768	8.9085	ppb	100
77) Bromoform	10.90	173	28428	8.7459	ppb	100
79) Isopropylbenzene	11.11	105	107272	9.0642	ppb	100
80) 1,1,2,2-Tetrachloroethane	11.43	83	38616	10.9199	ppb	100
81) 1,2,3-Trichloropropane	11.47	110	6867	11.2346	ppb	100
82) t-1,4-Dichloro-2-Butene	11.49	53	8557	10.6367	ppb	100
83) Bromobenzene	11.42	156	16856	8.7854	ppb	100
84) n-Propylbenzene	11.56	91	69196	9.5203	ppb	100
85) 4-Ethyltoluene	11.69	105	100304	9.1406	ppb	100
86) 2-Chlorotoluene	11.64	91	40328	8.8183	ppb	100
87) 1,3,5-Trimethylbenzene	11.76	105	82153	8.6987	ppb	100
88) 4-Chlorotoluene	11.76	91	46344	8.9554	ppb	100
89) Tert-Butylbenzene	12.11	119	88882	8.8580	ppb	100
90) 1,2,4-Trimethylbenzene	12.17	105	77636	8.3869	ppb	100
91) Sec-Butylbenzene	12.35	105	108280	8.8693	ppb	100
92) p-Isopropyltoluene	12.52	119	47072	8.3039	ppb	100
93) Benzyl Chloride	12.71	91	42732	10.2777	ppb	100
94) 1,3-DCB	12.46	146	32544	9.4941	ppb	100
95) 1,4-DCB	12.56	146	62238	9.2155	ppb	100
96) n-Butylbenzene	12.71	91	42732	10.2777	ppb	100
97) 1,2-DCB	12.97	146	58736	8.9367	ppb	100
98) Hexachloroethane	13.25	117	22186	10.6114	ppb	100
99) 1,2-Dibromo-3-chloropropan	13.82	75	7263	9.2832	ppb	100
100) 1,2,4-Trichlorobenzene	14.74	180	35841	8.6408	ppb	100

(#) = qualifier out of range (m) = manual integration  
 0128L08.D L0128W.M Tue Jan 29 09: Page 510 of 917

Quantitation Report (Not Reviewed)

Data File : M:\LOKI\DATA\190128\0128L08.D Vial: 7  
 Acq On : 28 Jan 19 17:26 Operator: PM,DG,SV,CMM,KV  
 Sample : 10ug/L VOC STD 01/28/19 Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Jan 29 8:07 2019 Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 08:06:28 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
101) Hexachlorobutadiene	14.93	225	18751	9.0863	ppb	100
102) Naphthalene	15.01	128	79606	9.1675	ppb	100
103) 1,2,3-Trichlorobenzene	15.27	180	17024	9.0969	ppb	100

Quantitation Report

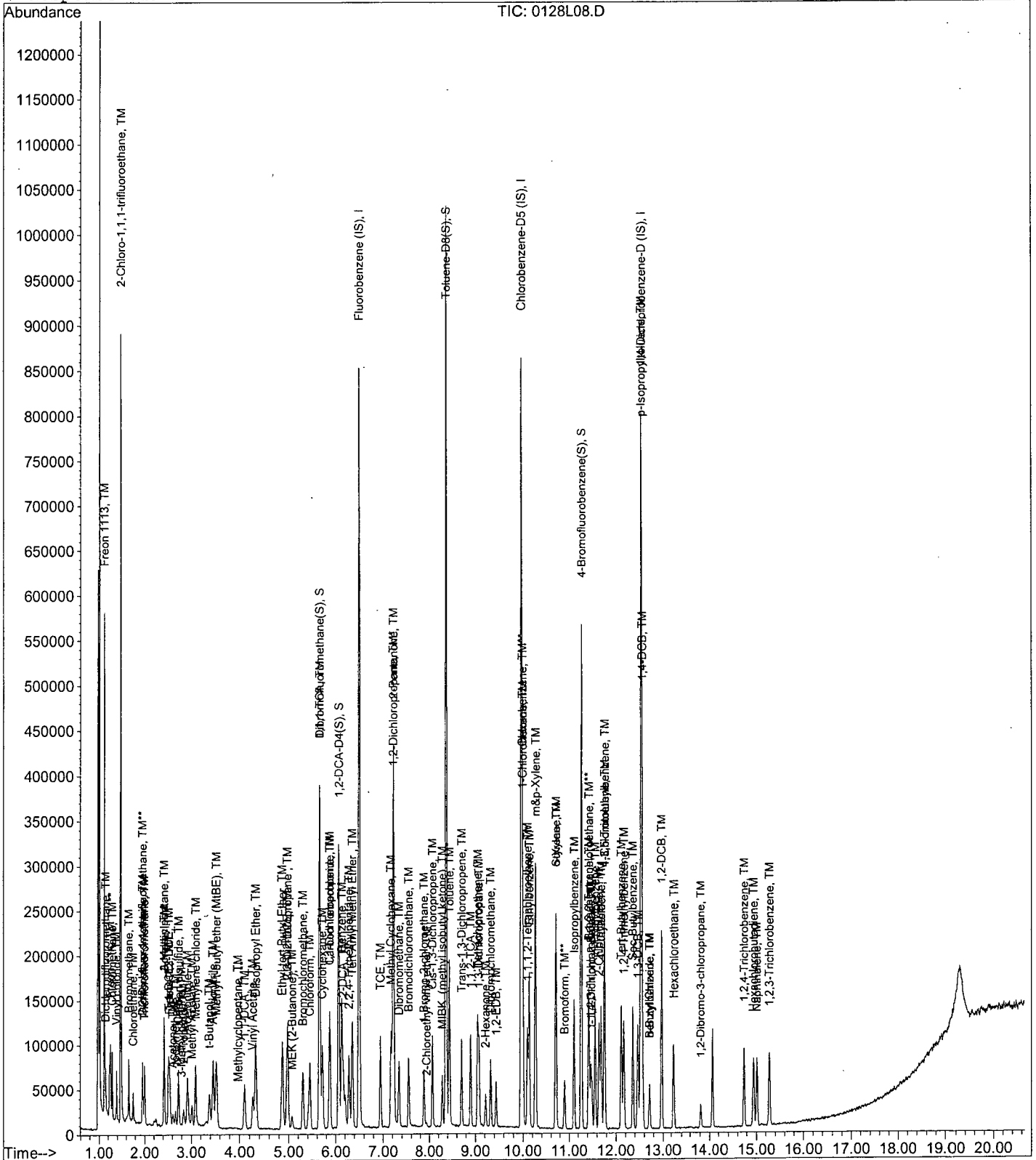
Data File : M:\LOKI\DATA\190128\0128L08.D  
Acq On : 28 Jan 19 17:26  
Sample : 10ug/L VOC STD 01/28/19  
Misc : IS&S 11/8/18

Vial: 7  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 29 8:07 2019

Quant Results File: L0128W.RES

Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Jan 29 09:06:22 2019  
Response via : Initial Calibration





Quantitation Report (Not Reviewed)

Data File : M:\LOKI\DATA\190128\0128L09.D  
 Acq On : 28 Jan 19 17:55  
 Sample : 20ug/L VOC STD 01/28/19  
 Misc : IS&S 11/8/18

Vial: 8  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 29 8:07 2019

Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 08:06:28 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	412032	25.0000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.97	117	296000	25.0000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.54	152	129368	25.0000	ppb	0.00

System Monitoring Compounds

38) Dibromofluoromethane(S)	5.65	111	400321	51.3381	ppb	0.00
Spiked Amount	25.000		Recovery	=	205.352%	
43) 1,2-DCA-D4(S)	6.07	65	465272	51.1583	ppb	0.00
Spiked Amount	25.000		Recovery	=	204.632%	
64) Toluene-D8(S)	8.37	98	1462858	59.3198	ppb	0.00
Spiked Amount	25.000		Recovery	=	237.280%	
72) 4-Bromofluorobenzene(S)	11.27	95	417458	42.0542	ppb	0.00
Spiked Amount	25.000		Recovery	=	168.216%	

Target Compounds

	R.T.	QIon	Response	Conc	Units	Qvalue
2) Freon 1113	1.12	116	201391	92.5450	ppb	99
3) Dichlorodifluoromethane	1.14	85	56879	14.8146	ppb	95
4) Freon 114	1.25	85	44800	16.3959	ppb	95
5) Chloromethane	1.29	50	88277	15.6353	ppb	100
6) Vinyl chloride	1.38	62	64002	12.9180	ppb	99
7) 2-Chloro-1,1,1-trifluoroet	1.47	118	338624	80.7373	ppb	99
8) Bromomethane	1.65	94	38856	12.0279	ppb	95
9) Chloroethane	1.75	64	30698	12.1727	ppb	93
10) Dichlorofluoromethane	1.95	67	101483	11.2481	ppb	100
11) Trichlorofluoromethane	2.00	101	92647	13.3179	ppb	100
12) Acrolein	2.43	56	108731	105.8993	ppb	100
13) Acetone	2.61	43	13910	12.2430	ppb	# 89
14) Freon-113	2.54	101	45777	11.8866	ppb	92
15) 1,1-DCE	2.52	63	14510	11.3615	ppb	78
16) t-Butanol	3.39	59	57862	120.6511	ppb	96
17) 2-Propanol	2.85	45	29663	85.7293	ppb	# 97
18) Acetonitrile	2.92	41	81690	101.1146	ppb	# 89
19) Methyl Acetate	3.02	43	57068	12.6866	ppb	93
20) Iodomethane	2.67	142	20424	12.4655	ppb	97
21) Acrylonitrile	3.45	52	27387	16.7257	ppb	88
22) Methylene chloride	3.09	84	63590	12.5073	ppb	98
23) Carbon disulfide	2.73	76	157054	11.7282	ppb	100
24) Methyl t-butyl ether (MtBE)	3.53	73	194505	15.5739	ppb	97
25) Trans-1,2-DCE	2.52	96	28200	12.1323	ppb	94
26) Diisopropyl Ether	4.33	45	199046	14.7619	ppb	98
27) 2,2-Dichloro-1,1,1-trifluo	1.95	85	3685	21.2957	ppb	75
28) 1,1-DCA	4.10	63	114006	14.7341	ppb	96
29) Vinyl Acetate	4.27	43	52982	18.1959	ppb	100
30) Ethyl tert Butyl Ether	4.87	59	197442	16.6636	ppb	99
31) MEK (2-Butanone)	5.07	43	44952	20.4960	ppb	96
32) Cis-1,2-DCE	4.98	96	73540	16.4532	ppb	91
33) 2,2-Dichloropropane	4.96	77	93844	15.2831	ppb	97
34) 2-Methylpentane	2.47	71	40	7.4757	ppb	# 1
35) 3-Methylpentane	2.79	57	228	11.1251	ppb	# 1
36) Chloroform	5.45	83	122067	17.8123	ppb	94
37) Bromochloromethane	5.30	128	18312	16.6958	ppb	95
39) 1,1,1-TCA	5.65	97	44832	17.9210	ppb	98
40) Cyclohexane	5.71	41	49923	16.2214	ppb	91
41) 1,1-Dichloropropene	5.88	75	81760	16.9263	ppb	98

(#) = qualifier out of range (m) = manual integration

Data File : M:\LOKI\DATA\190128\0128L09.D  
 Acq On : 28 Jan 19 17:55  
 Sample : 20ug/L VOC STD 01/28/19  
 Misc : IS&S 11/8/18

Vial: 8  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 29 8:07 2019

Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 08:06:28 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
42) 2,2,4-Trimethylpentane	6.29	57	164989	18.5100	ppb	96
44) Carbon Tetrachloride	5.87	117	89458	17.4670	ppb	97
45) Tert Amyl Methyl Ether	6.36	73	201297	18.6340	ppb	98
46) Methylcyclopentane	3.94	56	39	5.5186	ppb	100
47) 1,2-DCA	6.16	62	101492	18.1395	ppb	97
48) Benzene	6.13	78	258682	17.7437	ppb	97
49) TCE	6.95	130	37888	15.8079	ppb	99
50) 2-Pentanone	7.22	43	495661	172.6436	ppb	100
51) 1,2-Dichloropropane	7.20	63	71364	18.4155	ppb	98
52) Bromodichloromethane	7.54	83	53168	18.1991	ppb	95
53) Methyl Cyclohexane	7.17	83	85443	16.5456	ppb	99
54) Dibromomethane	7.34	93	51350	19.0323	ppb	96
55) 2-Chloroethyl vinyl ether	7.94	43	1639	15.8312	ppb #	84
56) MIBK (methyl isobutyl ket	8.28	43	77000	19.6343	ppb	97
57) 1-Bromo-2-chloroethane	7.88	63	58432	19.6808	ppb	97
58) Cis-1,3-Dichloropropene	8.07	75	114549	17.9230	ppb	98
59) Toluene	8.44	91	153792	17.7384	ppb	99
60) Trans-1,3-Dichloropropene	8.71	75	106985	17.5382	ppb	95
61) 1,1,2-TCA	8.90	83	58127	18.6472	ppb	94
62) 2-Hexanone	9.22	43	52975	20.2445	ppb	95
65) 1,2-EDB	9.44	107	39656	20.8707	ppb	95
66) Tetrachloroethene	9.05	166	43656	18.7347	ppb	92
67) 1-Chlorohexane	10.00	91	70813	18.0772	ppb	96
68) 1,1,1,2-Tetrachloroethane	10.09	131	72578	18.8800	ppb	91
69) m&p-Xylene	10.27	91	412457	36.1601	ppb	96
70) o-Xylene	10.70	106	56112	17.0587	ppb	96
71) Styrene	10.71	104	172466	16.9288	ppb	98
73) 1,3-Dichloropropane	9.08	76	115886	21.1774	ppb	93
74) Dibromochloromethane	9.33	129	81992	19.9958	ppb	100
75) Chlorobenzene	10.00	112	180827	19.2256	ppb	97
76) Ethylbenzene	10.13	91	154304	18.1992	ppb	100
77) Bromoform	10.90	173	57860	17.3849	ppb	100
79) Isopropylbenzene	11.11	105	238870	20.0315	ppb	97
80) 1,1,2,2-Tetrachloroethane	11.43	83	73374	20.5922	ppb	93
81) 1,2,3-Trichloropropane	11.47	110	13779	22.3728	ppb	97
82) t-1,4-Dichloro-2-Butene	11.50	53	16857	20.7958	ppb	93
83) Bromobenzene	11.43	156	36008	18.6259	ppb	94
84) n-Propylbenzene	11.56	91	139497	19.0479	ppb	98
85) 4-Ethyltoluene	11.69	105	208728	18.8777	ppb	99
86) 2-Chlorotoluene	11.64	91	80490	17.4675	ppb	99
87) 1,3,5-Trimethylbenzene	11.76	105	175101	18.4005	ppb	94
88) 4-Chlorotoluene	11.76	91	98400	18.8711	ppb	99
89) Tert-Butylbenzene	12.12	119	179910	17.7947	ppb	99
90) 1,2,4-Trimethylbenzene	12.17	105	170811	18.3131	ppb	95
91) Sec-Butylbenzene	12.36	105	218262	17.7431	ppb	100
92) p-Isopropyltoluene	12.52	119	103104	18.0512	ppb	97
93) Benzyl Chloride	12.71	91	84243	20.1089	ppb	98
94) 1,3-DCB	12.46	146	60584	17.5408	ppb	97
95) 1,4-DCB	12.56	146	123170	18.1000	ppb	99
96) n-Butylbenzene	12.71	91	84243	20.1089	ppb	97
97) 1,2-DCB	12.97	146	119720	18.0780	ppb	95
98) Hexachloroethane	13.26	117	43711	20.7489	ppb	93
99) 1,2-Dibromo-3-chloropropan	13.82	75	14706	19.3188	ppb	85
100) 1,2,4-Trichlorobenzene	14.74	180	76161	18.2229	ppb	94

(#) = qualifier out of range (m) = manual integration  
 0128L09.D L0128W.M Tue Jan 29 09: Page 514 of 917

Quantitation Report (Not Reviewed)

Data File : M:\LOKI\DATA\190128\0128L09.D Vial: 8  
 Acq On : 28 Jan 19 17:55 Operator: PM,DG,SV,CMM,KV  
 Sample : 20ug/L VOC STD 01/28/19 Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Jan 29 8:07 2019 Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 08:06:28 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
101) Hexachlorobutadiene	14.94	225	39698	19.0917	ppb	94
102) Naphthalene	15.01	128	161814	18.4941	ppb	98
103) 1,2,3-Trichlorobenzene	15.28	180	34600	18.3492	ppb	96

Quantitation Report

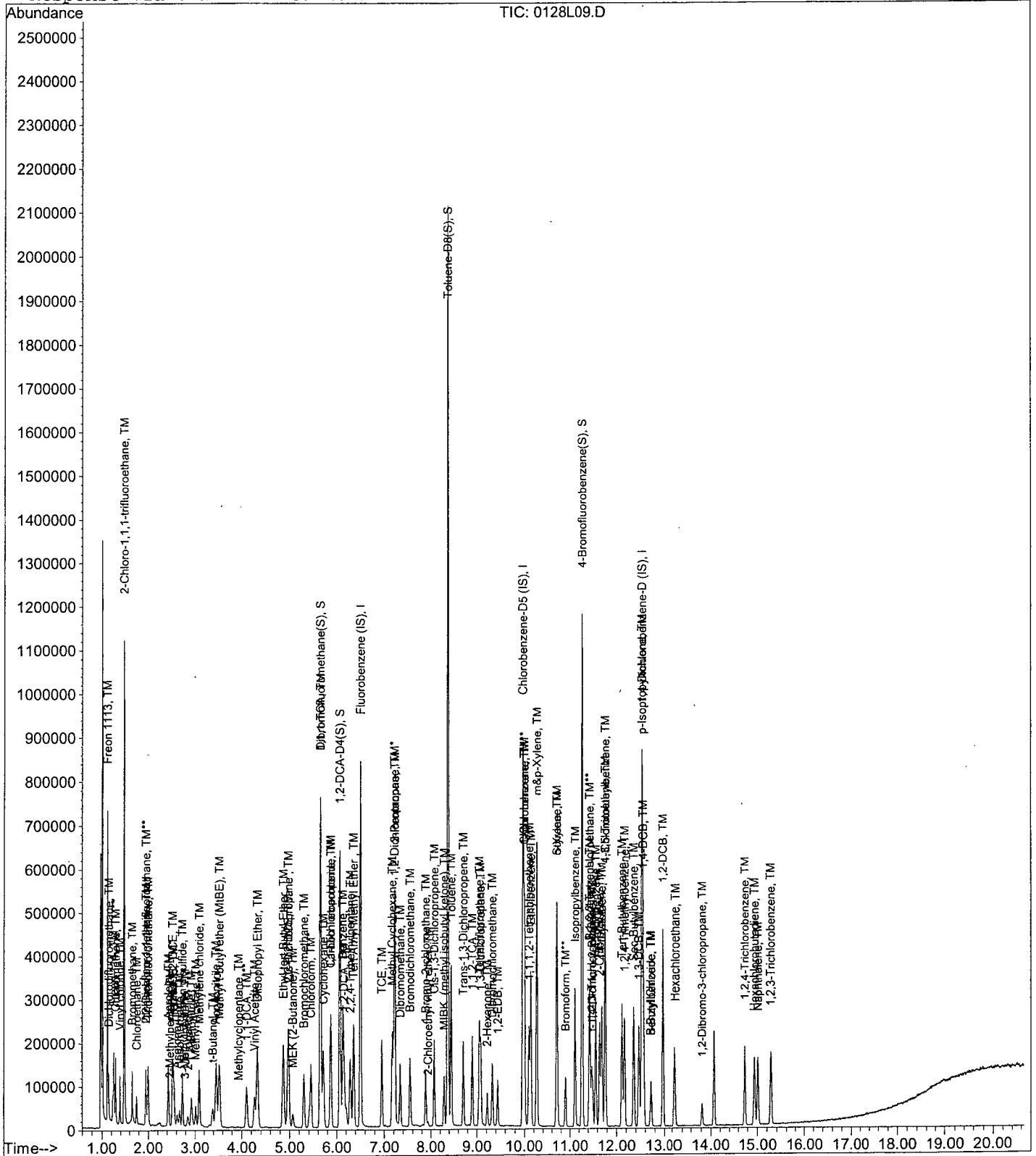
Data File : M:\LOKI\DATA\190128\0128L09.D  
Acq On : 28 Jan 19 17:55  
Sample : 20ug/L VOC STD 01/28/19  
Misc : IS&S 11/8/18

Vial: 8  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 29 8:07 2019

Quant Results File: L0128W.RES

Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Jan 29 09:06:22 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190128\0128L10.D  
 Acq On : 28 Jan 19 18:23  
 Sample : 40ug/L VOC STD 01/28/19  
 Misc : IS&S 11/8/18

Vial: 9  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 29 8:07 2019

Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 08:06:28 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	423040	25.0000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.97	117	328192	25.0000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.54	152	146240	25.0000	ppb	0.00

System Monitoring Compounds

38) Dibromofluoromethane(S)	5.65	111	410242	51.2414	ppb	0.00
Spiked Amount	25.000		Recovery	=	204.964%	
43) 1,2-DCA-D4(S)	6.07	65	463142	49.5989	ppb	0.00
Spiked Amount	25.000		Recovery	=	198.396%	
64) Toluene-D8(S)	8.37	98	1501546	54.9161	ppb	0.00
Spiked Amount	25.000		Recovery	=	219.664%	
72) 4-Bromofluorobenzene(S)	11.27	95	491105	44.6205	ppb	0.00
Spiked Amount	25.000		Recovery	=	178.484%	

Target Compounds

	R.T.	QIon	Response	Conc	Units	Qvalue
2) Freon 1113	1.12	116	229948	102.9182	ppb	99
3) Dichlorodifluoromethane	1.14	85	115564	29.3656	ppb	99
4) Freon 114	1.25	85	84008	29.9451	ppb	95
5) Chloromethane	1.29	50	172911	29.8285	ppb	95
6) Vinyl chloride	1.38	62	133346	26.2138	ppb	98
7) 2-Chloro-1,1,1-trifluoroet	1.48	118	372608	86.5283	ppb	99
8) Bromomethane	1.65	94	77688	24.5508	ppb	88
9) Chloroethane	1.75	64	58995	22.8132	ppb	96
10) Dichlorofluoromethane	1.95	67	210519	22.7261	ppb	100
11) Trichlorofluoromethane	1.99	101	190827	26.7174	ppb	97
12) Acrolein	2.42	56	125962	119.6197	ppb	# 97
13) Acetone	2.61	43	25128	23.3357	ppb	94
14) Freon-113	2.54	101	99153	25.0763	ppb	92
15) 1,1-DCE	2.52	63	29904	22.8059	ppb	75
16) t-Butanol	3.39	59	60403	122.6722	ppb	98
17) 2-Propanol	2.85	45	34179	96.2106	ppb	# 99
18) Acetonitrile	2.92	41	91418	110.2113	ppb	88
19) Methyl Acetate	3.01	43	110672	23.6573	ppb	91
20) Iodomethane	2.66	142	52008	25.8599	ppb	96
21) Acrylonitrile	3.44	52	55206	33.1157	ppb	80
22) Methylene chloride	3.09	84	127327	24.4363	ppb	96
23) Carbon disulfide	2.73	76	334863	24.3557	ppb	100
24) Methyl t-butyl ether (MtBE)	3.53	73	412645	32.1806	ppb	97
25) Trans-1,2-DCE	2.52	96	56072	23.4959	ppb	92
26) Diisopropyl Ether	4.33	45	420368	30.3646	ppb	99
27) 2,2-Dichloro-1,1,1-trifluo	1.95	85	7234	40.7176	ppb	# 69
28) 1,1-DCA	4.10	63	238427	30.0124	ppb	96
29) Vinyl Acetate	4.27	43	112961	37.7854	ppb	99
30) Ethyl tert Butyl Ether	4.87	59	415665	34.1682	ppb	96
31) MEK (2-Butanone)	5.07	43	75811	33.5715	ppb	91
32) Cis-1,2-DCE	4.98	96	155311	33.8437	ppb	89
33) 2,2-Dichloropropane	4.96	77	192769	30.5768	ppb	97
34) 2-Methylpentane	2.27	71	40	7.2811	ppb	# 1
35) 3-Methylpentane	2.77	57	68	3.2317	ppb	# 1
36) Chloroform	5.45	83	253479	36.0258	ppb	96
37) Bromochloromethane	5.30	128	39880	35.4141	ppb	98
39) 1,1,1-TCA	5.65	97	95480	37.1738	ppb	99
40) Cyclohexane	5.71	41	105985	33.5489	ppb	97
41) 1,1-Dichloropropene	5.88	75	175146	35.3160	ppb	97

(#) = qualifier out of range (m) = manual integration

Data File : M:\LOKI\DATA\190128\0128L10.D  
 Acq On : 28 Jan 19 18:23  
 Sample : 40ug/L VOC STD 01/28/19  
 Misc : IS&S 11/8/18

Vial: 9  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 29 8:07 2019

Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 08:06:28 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
42) 2,2,4-Trimethylpentane	6.28	57	354878	38.7774	ppb	95
44) Carbon Tetrachloride	5.87	117	191462	36.4110	ppb	99
45) Tert Amyl Methyl Ether	6.36	73	422817	38.1216	ppb	100
46) Methylcyclopentane	3.99	56	49	6.7533	ppb #	100
47) 1,2-DCA	6.16	62	206539	35.9537	ppb	96
48) Benzene	6.13	78	551028	36.8130	ppb	97
49) TCE	6.95	130	81552	33.1404	ppb	99
50) 2-Pentanone	7.22	43	549729	186.4936	ppb	100
51) 1,2-Dichloropropane	7.20	63	149924	37.6812	ppb	99
52) Bromodichloromethane	7.54	83	113928	37.9821	ppb	98
53) Methyl Cyclohexane	7.17	83	195630	36.8969	ppb	97
54) Dibromomethane	7.34	93	105554	38.1044	ppb	94
55) 2-Chloroethyl vinyl ether	7.93	43	3668	34.5075	ppb #	85
56) MIBK (methyl isobutyl ket	8.28	43	150961	37.4921	ppb	99
57) 1-Bromo-2-chloroethane	7.88	63	119312	39.1404	ppb	98
58) Cis-1,3-Dichloropropene	8.07	75	244813	37.3080	ppb	98
59) Toluene	8.44	91	334984	37.6318	ppb	99
60) Trans-1,3-Dichloropropene	8.71	75	231812	37.0124	ppb	99
61) 1,1,2-TCA	8.90	83	120888	37.7719	ppb	97
62) 2-Hexanone	9.22	43	100462	37.3927	ppb	94
65) 1,2-EDB	9.44	107	85480	40.5747	ppb	93
66) Tetrachloroethene	9.05	166	90912	35.1875	ppb	97
67) 1-Chlorohexane	10.00	91	158467	36.9850	ppb	98
68) 1,1,1,2-Tetrachloroethane	10.09	131	156620	36.7458	ppb	86
69) m&p-Xylene	10.26	91	941893	74.4761	ppb	100
70) o-Xylene	10.70	106	128008	35.0986	ppb	94
71) Styrene	10.71	104	390833	34.6000	ppb	99
73) 1,3-Dichloropropane	9.08	76	245544	40.4701	ppb	92
74) Dibromochloromethane	9.33	129	177500	39.0418	ppb	97
75) Chlorobenzene	10.00	112	391837	37.5739	ppb	98
76) Ethylbenzene	10.13	91	346880	36.8993	ppb	99
77) Bromoform	10.90	173	124465	33.7291	ppb	98
79) Isopropylbenzene	11.11	105	562340	41.7169	ppb	98
80) 1,1,2,2-Tetrachloroethane	11.43	83	180474	44.8060	ppb	97
81) 1,2,3-Trichloropropane	11.47	110	29192	41.9303	ppb	87
82) t-1,4-Dichloro-2-Butene	11.50	53	43581	47.5612	ppb	92
83) Bromobenzene	11.43	156	89304	40.8648	ppb	94
84) n-Propylbenzene	11.56	91	345756	41.7650	ppb	100
85) 4-Ethyltoluene	11.69	105	545366	43.6331	ppb	97
86) 2-Chlorotoluene	11.64	91	202663	38.9066	ppb	98
87) 1,3,5-Trimethylbenzene	11.76	105	459374	42.7040	ppb	96
88) 4-Chlorotoluene	11.77	91	241964	41.0500	ppb	98
89) Tert-Butylbenzene	12.11	119	440302	38.5253	ppb	99
90) 1,2,4-Trimethylbenzene	12.17	105	428445	40.6352	ppb	96
91) Sec-Butylbenzene	12.36	105	521948	37.5352	ppb	100
92) p-Isopropyltoluene	12.52	119	239936	37.1610	ppb	96
93) Benzyl Chloride	12.71	91	196185	41.4268	ppb	99
94) 1,3-DCB	12.47	146	135616	34.7347	ppb	96
95) 1,4-DCB	12.56	146	272422	35.4142	ppb	99
96) n-Butylbenzene	12.71	91	196185	41.4268	ppb	97
97) 1,2-DCB	12.97	146	252960	33.7907	ppb	97
98) Hexachloroethane	13.26	117	92873	38.9991	ppb	91
99) 1,2-Dibromo-3-chloropropan	13.82	75	31342	37.0052	ppb	87
100) 1,2,4-Trichlorobenzene	14.74	180	168876	35.7448	ppb	97

(#) = qualifier out of range (m) = manual integration

Quantitation Report (Not Reviewed)

Data File : M:\LOKI\DATA\190128\0128L10.D Vial: 9  
 Acq On : 28 Jan 19 18:23 Operator: PM,DG,SV,CMM,KV  
 Sample : 40ug/L VOC STD 01/28/19 Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Jan 29 8:07 2019 Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 08:06:28 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
101) Hexachlorobutadiene	14.94	225	82665	35.1688	ppb	95
102) Naphthalene	15.01	128	362175	36.6181	ppb	97
103) 1,2,3-Trichlorobenzene	15.28	180	81416	38.1955	ppb	99

Quantitation Report

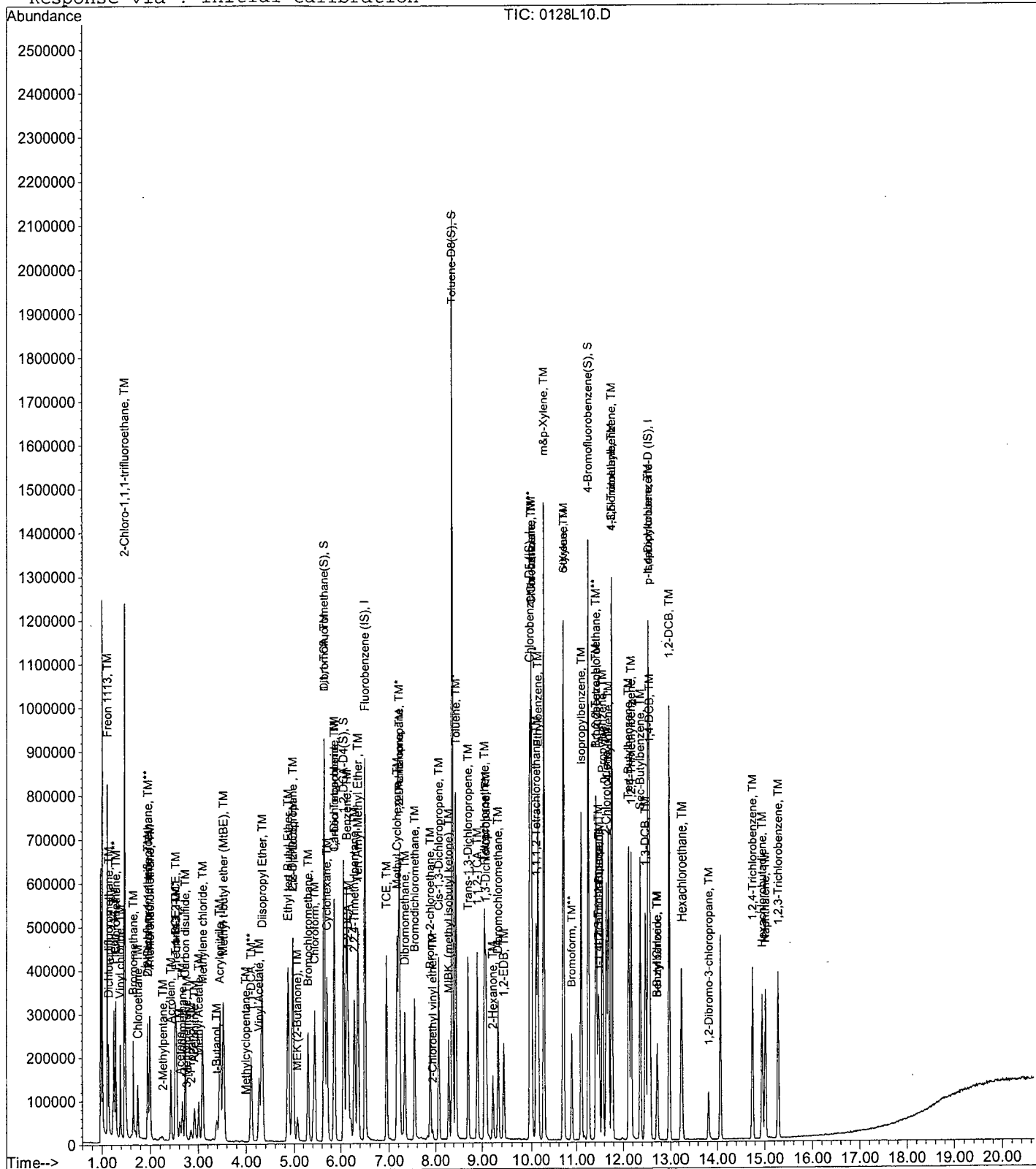
Data File : M:\LOKI\DATA\190128\0128L10.D  
Acq On : 28 Jan 19 18:23  
Sample : 40ug/L VOC STD 01/28/19  
Misc : IS&S 11/8/18

Vial: 9  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 29 8:07 2019

Quant Results File: L0128W.RES

Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Jan 29 09:06:22 2019  
Response via : Initial Calibration





Data File : M:\LOKI\DATA\190128\0128L11.D  
 Acq On : 28 Jan 19 18:52  
 Sample : 50ug/L VOC STD 01/28/19  
 Misc : IS&S 11/8/18

Vial: 10  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 29 8:07 2019

Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 08:06:28 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	427264	25.0000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.97	117	334016	25.0000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.54	152	171456	25.0000	ppb	0.00

System Monitoring Compounds

38) Dibromofluoromethane(S)	5.65	111	795174	98.3395	ppb	0.00
Spiked Amount	25.000		Recovery	=	393.356%	
43) 1,2-DCA-D4(S)	6.07	65	910540	96.5478	ppb	0.00
Spiked Amount	25.000		Recovery	=	386.192%	
64) Toluene-D8(S)	8.37	98	3014125	108.3137	ppb	0.00
Spiked Amount	25.000		Recovery	=	433.256%	
72) 4-Bromofluorobenzene(S)	11.27	95	1013641	90.4910	ppb	0.00
Spiked Amount	25.000		Recovery	=	361.964%	

Target Compounds

	R.T.	QIon	Response	Conc	Units	Qvalue
2) Freon 1113	1.11	116	245121	108.6246	ppb	99
3) Dichlorodifluoromethane	1.14	85	143617	36.3864	ppb	99
4) Freon 114	1.25	85	106192	37.4785	ppb	94
5) Chloromethane	1.29	50	222966	38.0831	ppb	99
6) Vinyl chloride	1.38	62	174602	33.9848	ppb	100
7) 2-Chloro-1,1,1-trifluoroet	1.48	118	396928	91.2647	ppb	99
8) Bromomethane	1.65	94	97168	30.6871	ppb	90
9) Chloroethane	1.74	64	79380	30.4035	ppb	99
10) Dichlorofluoromethane	1.95	67	270356	28.8971	ppb	99
11) Trichlorofluoromethane	1.99	101	248647	34.4685	ppb	95
12) Acrolein	2.43	56	145061	136.5378	ppb	# 98
13) Acetone	2.62	43	34106	32.1729	ppb	98
14) Freon-113	2.54	101	130993	32.8013	ppb	92
15) 1,1-DCE	2.52	63	35976	27.1654	ppb	86
16) t-Butanol	3.40	59	81835	164.5553	ppb	93
17) 2-Propanol	2.86	45	37039	103.2305	ppb	# 99
18) Acetonitrile	2.92	41	106131	126.6840	ppb	89
19) Methyl Acetate	3.02	43	145757	30.7445	ppb	92
20) Iodomethane	2.66	142	73592	34.8604	ppb	99
21) Acrylonitrile	3.45	52	67983	40.4402	ppb	85
22) Methylene chloride	3.09	84	166203	31.5956	ppb	100
23) Carbon disulfide	2.73	76	429651	30.9409	ppb	99
24) Methyl t-butyl ether (MtBE)	3.53	73	518231	40.0153	ppb	98
25) Trans-1,2-DCE	2.52	96	74264	30.8112	ppb	93
26) Diisopropyl Ether	4.33	45	537309	38.4280	ppb	100
27) 2,2-Dichloro-1,1,1-trifluo	1.95	85	9803	54.6321	ppb	# 73
28) 1,1-DCA	4.10	63	303628	37.8418	ppb	96
29) Vinyl Acetate	4.27	43	142208	47.0982	ppb	98
30) Ethyl tert Butyl Ether	4.87	59	527424	42.9263	ppb	98
31) MEK (2-Butanone)	5.07	43	99245	43.4704	ppb	89
32) Cis-1,2-DCE	4.98	96	197717	42.6584	ppb	91
33) 2,2-Dichloropropane	4.96	77	246202	38.6662	ppb	97
34) 2-Methylpentane	2.42	71	44	7.9301	ppb	# 1
35) 3-Methylpentane	2.79	57	146	6.8700	ppb	# 43
36) Chloroform	5.45	83	323581	45.5344	ppb	95
37) Bromochloromethane	5.30	128	49256	43.3077	ppb	98
39) 1,1,1-TCA	5.65	97	120560	46.4743	ppb	99
40) Cyclohexane	5.72	41	141673	44.4046	ppb	96
41) 1,1-Dichloropropene	5.88	75	222655	44.4518	ppb	97

(#) = qualifier out of range (m) = manual integration

Data File : M:\LOKI\DATA\190128\0128L11.D  
 Acq On : 28 Jan 19 18:52  
 Sample : 50ug/L VOC STD 01/28/19  
 Misc : IS&S 11/8/18

Vial: 10  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 29 8:07 2019

Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 08:06:28 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
42) 2,2,4-Trimethylpentane	6.29	57	454838	49.2087	ppb	97
44) Carbon Tetrachloride	5.87	117	247696	46.6395	ppb	98
45) Tert Amyl Methyl Ether	6.36	73	539354	48.1480	ppb	97
46) Methylcyclopentane	4.02	56	44	6.0042	ppb	100
47) 1,2-DCA	6.17	62	264298	45.5534	ppb	98
48) Benzene	6.13	78	704007	46.5682	ppb	98
49) TCE	6.95	130	102872	41.3909	ppb	99
50) 2-Pentanone	7.23	43	638124	214.3411	ppb	99
51) 1,2-Dichloropropane	7.21	63	191106	47.5569	ppb	99
52) Bromodichloromethane	7.55	83	139328	45.9909	ppb	97
53) Methyl Cyclohexane	7.17	83	251662	46.9956	ppb	96
54) Dibromomethane	7.34	93	134971	48.2421	ppb	97
55) 2-Chloroethyl vinyl ether	7.94	43	4833	45.0179	ppb #	86
56) MIBK (methyl isobutyl ket	8.29	43	192530	47.3432	ppb	98
57) 1-Bromo-2-chloroethane	7.88	63	152832	49.6409	ppb	100
58) Cis-1,3-Dichloropropene	8.07	75	311621	47.0197	ppb	97
59) Toluene	8.44	91	419968	46.7124	ppb	100
60) Trans-1,3-Dichloropropene	8.71	75	296450	46.8650	ppb	99
61) 1,1,2-TCA	8.90	83	154582	47.8222	ppb	98
62) 2-Hexanone	9.22	43	137373	50.6258	ppb	92
65) 1,2-EDB	9.44	107	105488	49.1989	ppb	97
66) Tetrachloroethene	9.05	166	119424	45.4171	ppb	98
67) 1-Chlorohexane	10.00	91	212085	48.7905	ppb	97
68) 1,1,1,2-Tetrachloroethane	10.09	131	201941	46.5528	ppb	88
69) m&p-Xylene	10.27	91	1248126	96.9693	ppb	98
70) o-Xylene	10.70	106	165120	44.4849	ppb	99
71) Styrene	10.71	104	527046	45.8453	ppb	98
73) 1,3-Dichloropropane	9.08	76	314994	51.0115	ppb	94
74) Dibromochloromethane	9.33	129	226287	48.9048	ppb	99
75) Chlorobenzene	10.00	112	504462	47.5302	ppb	98
76) Ethylbenzene	10.13	91	468800	48.9989	ppb	98
77) Bromoform	10.90	173	163566	43.5524	ppb	100
79) Isopropylbenzene	11.11	105	748139	47.3378	ppb	99
80) 1,1,2,2-Tetrachloroethane	11.43	83	251014	53.1537	ppb	99
81) 1,2,3-Trichloropropane	11.47	110	39904	48.8870	ppb	99
82) t-1,4-Dichloro-2-Butene	11.49	53	62407	58.0902	ppb	93
83) Bromobenzene	11.43	156	113896	44.4529	ppb	95
84) n-Propylbenzene	11.56	91	472126	48.6423	ppb	99
85) 4-Ethyltoluene	11.69	105	748380	51.0697	ppb	96
86) 2-Chlorotoluene	11.64	91	281229	46.0493	ppb	99
87) 1,3,5-Trimethylbenzene	11.76	105	627645	49.7656	ppb	97
88) 4-Chlorotoluene	11.76	91	333120	48.2032	ppb	99
89) Tert-Butylbenzene	12.12	119	613902	45.8151	ppb	99
90) 1,2,4-Trimethylbenzene	12.17	105	596940	48.2894	ppb	98
91) Sec-Butylbenzene	12.36	105	740875	45.4433	ppb	98
92) p-Isopropyltoluene	12.52	119	355264	46.9306	ppb	96
93) Benzyl Chloride	12.72	91	301538	54.3090	ppb	99
94) 1,3-DCB	12.46	146	202560	44.2507	ppb	96
95) 1,4-DCB	12.56	146	399448	44.2903	ppb	98
96) n-Butylbenzene	12.72	91	301538	54.3090	ppb	96
97) 1,2-DCB	12.97	146	377077	42.9624	ppb	98
98) Hexachloroethane	13.26	117	132978	47.6276	ppb	90
99) 1,2-Dibromo-3-chloropropan	13.82	75	41537	41.9155	ppb	88
100) 1,2,4-Trichlorobenzene	14.74	180	223635	40.3736	ppb	96

(#) = qualifier out of range (m) = manual integration  
 0128L11.D L0128W.M Tue Jan 29 09: Page 522 of 917

Quantitation Report (Not Reviewed)

Data File : M:\LOKI\DATA\190128\0128L11.D Vial: 10  
 Acq On : 28 Jan 19 18:52 Operator: PM, DG, SV, CMM, KV  
 Sample : 50ug/L VOC STD 01/28/19 Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Jan 29 8:07 2019 Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 08:06:28 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
101) Hexachlorobutadiene	14.94	225	110179	39.9805	ppb	94
102) Naphthalene	15.01	128	478634	41.2757	ppb	95
103) 1,2,3-Trichlorobenzene	15.28	180	101568	40.6417	ppb	93

Quantitation Report

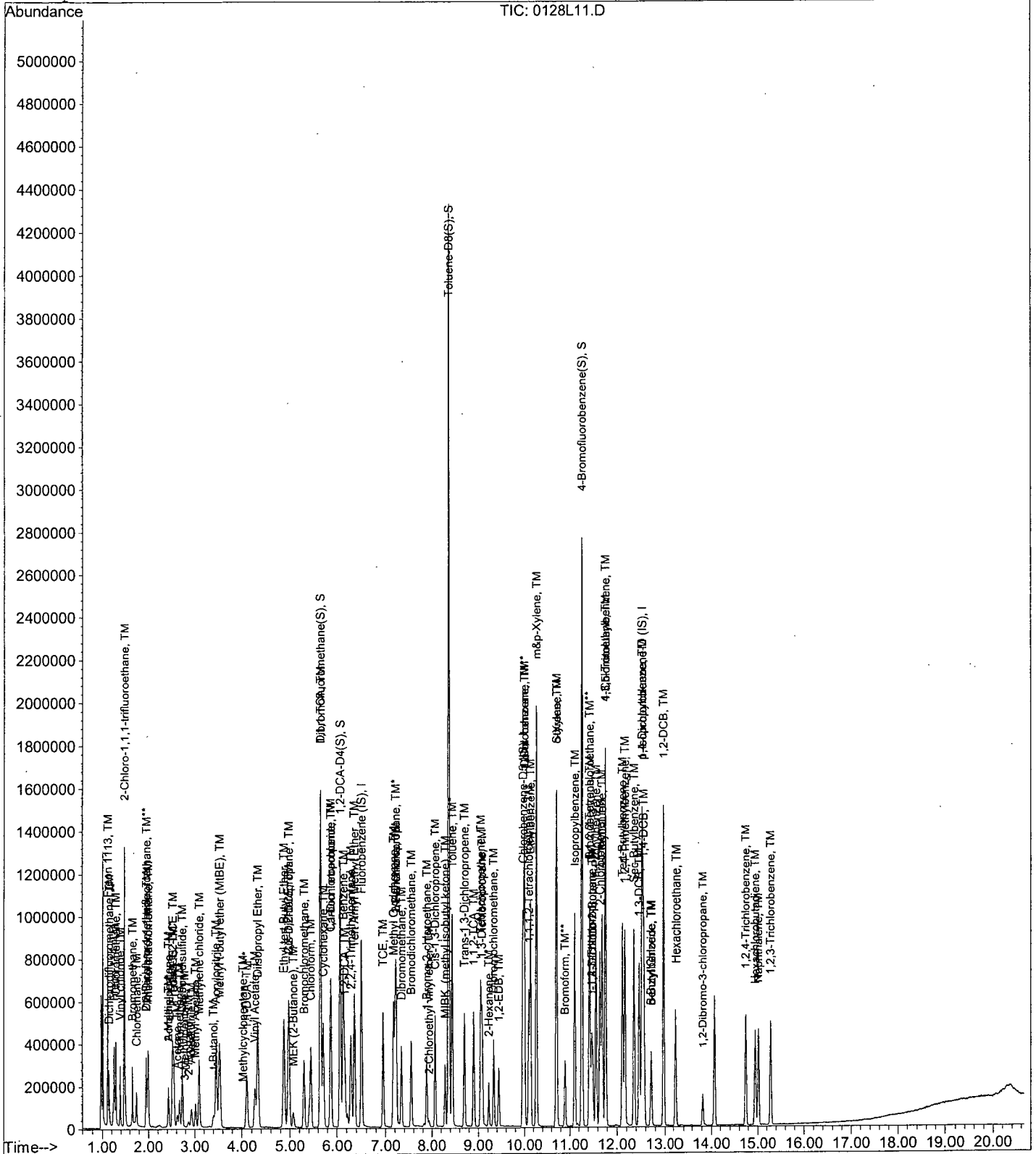
Data File : M:\LOKI\DATA\190128\0128L11.D  
Acq On : 28 Jan 19 18:52  
Sample : 50ug/L VOC STD 01/28/19  
Misc : IS&S 11/8/18

Vial: 10  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 29 8:07 2019

Quant Results File: L0128W.RES

Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Jan 29 09:06:22 2019  
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : M:\LOKI\DATA\190128\0128L12.D  
 Acq On : 28 Jan 19 19:21  
 Sample : 100ug/L VOC STD 01/28/19  
 Misc : IS&S 11/8/18

Vial: 11  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 29 8:07 2019

Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 08:06:28 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	399808	25.0000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.97	117	335744	25.0000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.53	152	174784	25.0000	ppb	0.00
System Monitoring Compounds						
38) Dibromofluoromethane(S)	5.65	111	756147	99.9348	ppb	0.00
Spiked Amount	25.000		Recovery	=	399.740%	
43) 1,2-DCA-D4(S)	6.07	65	850540	96.3791	ppb	0.00
Spiked Amount	25.000		Recovery	=	385.516%	
64) Toluene-D8(S)	8.37	98	2863025	102.3543	ppb	0.00
Spiked Amount	25.000		Recovery	=	409.416%	
72) 4-Bromofluorobenzene(S)	11.26	95	1045481	92.8531	ppb	0.00
Spiked Amount	25.000		Recovery	=	371.412%	
Target Compounds						Qvalue
2) Freon 1113	1.12	116	273849	129.6891	ppb	99
3) Dichlorodifluoromethane	1.14	85	265475	76.0029	ppb	100
4) Freon 114	1.25	85	169280	63.8471	ppb	96
5) Chloromethane	1.29	50	413237	75.4289	ppb	97
6) Vinyl chloride	1.38	62	342398	71.2215	ppb	99
7) 2-Chloro-1,1,1-trifluoroet	1.48	118	377728	92.8143	ppb	98
8) Bromomethane	1.65	94	182720	62.8708	ppb	90
9) Chloroethane	1.74	64	117947	48.2967	ppb	99
10) Dichlorofluoromethane	1.95	67	512474	58.5377	ppb	99
11) Trichlorofluoromethane	1.99	101	469956	69.6212	ppb	99
12) Acrolein	2.43	56	153625	154.6627	ppb	98
13) Acetone	2.62	43	43568	44.7838	ppb	95
14) Freon-113	2.54	101	243435	65.1435	ppb	96
15) 1,1-DCE	2.51	63	70184	56.6352	ppb	78
16) t-Butanol	3.42	59	95276	204.7392	ppb	96
17) 2-Propanol	2.90	45	38325	114.1499	ppb	# 99
18) Acetonitrile	2.93	41	112946	144.0772	ppb	92
19) Methyl Acetate	3.02	43	260909	58.4989	ppb	95
20) Iodomethane	2.66	142	143168	68.7896	ppb	98
21) Acrylonitrile	3.45	52	124930	79.6970	ppb	75
22) Methylene chloride	3.09	84	302332	61.4652	ppb	97
23) Carbon disulfide	2.73	76	805161	61.9648	ppb	99
24) Methyl t-butyl ether (MtBE)	3.54	73	965716	79.6887	ppb	97
25) Trans-1,2-DCE	2.52	96	135886	60.2490	ppb	94
26) Diisopropyl Ether	4.33	45	1004914	76.8063	ppb	98
27) 2,2-Dichloro-1,1,1-trifluo	1.95	85	17995	107.1731	ppb	77
28) 1,1-DCA	4.10	63	567981	75.6499	ppb	95
29) Vinyl Acetate	4.27	43	251195	88.9070	ppb	98
30) Ethyl tert Butyl Ether	4.87	59	997134	86.7284	ppb	98
31) MEK (2-Butanone)	5.07	43	183956	85.9627	ppb	89
32) Cis-1,2-DCE	4.98	96	368844	85.0449	ppb	93
33) 2,2-Dichloropropane	4.96	77	464380	77.9397	ppb	97
34) 2-Methylpentane	2.41	71	319	61.4412	ppb	# 77
35) 3-Methylpentane	2.80	57	229	11.5155	ppb	90
36) Chloroform	5.45	83	599007	90.0810	ppb	97
37) Bromochloromethane	5.30	128	86032	80.8371	ppb	96
39) 1,1,1-TCA	5.65	97	225024	92.7008	ppb	100
40) Cyclohexane	5.72	41	267008	89.4424	ppb	94
41) 1,1-Dichloropropene	5.88	75	424191	90.5030	ppb	98

Quantitation Report (Not Reviewed)

Data File : M:\LOKI\DATA\190128\0128L12.D  
 Acq On : 28 Jan 19 19:21  
 Sample : 100ug/L VOC STD 01/28/19  
 Misc : IS&S 11/8/18

Vial: 11  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 29 8:07 2019

Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 08:06:28 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
42) 2,2,4-Trimethylpentane	6.28	57	889353	102.8263	ppb	95
44) Carbon Tetrachloride	5.87	117	470194	94.6143	ppb	98
45) Tert Amyl Methyl Ether	6.36	73	1006065	95.9787	ppb	97
46) Methylcyclopentane	3.91	56	1339	195.2664	ppb	100
47) 1,2-DCA	6.17	62	482896	88.9458	ppb	98
48) Benzene	6.13	78	1319461	93.2726	ppb	98
49) TCE	6.95	130	193600	83.2449	ppb	99
50) 2-Pentanone	7.23	43	697452	250.3569	ppb	99
51) 1,2-Dichloropropane	7.21	63	354984	94.4045	ppb	99
52) Bromodichloromethane	7.55	83	265280	93.5800	ppb	98
53) Methyl Cyclohexane	7.17	83	480818	95.9545	ppb	100
54) Dibromomethane	7.34	93	249728	95.3889	ppb	94
55) 2-Chloroethyl vinyl ether	7.93	43	9367	93.2426	ppb	99
56) MIBK (methyl isobutyl ket	8.29	43	372229	97.8171	ppb	99
57) 1-Bromo-2-chloroethane	7.88	63	281600	97.7470	ppb	96
58) Cis-1,3-Dichloropropene	8.07	75	587337	94.7077	ppb	99
59) Toluene	8.44	91	820032	97.4747	ppb	100
60) Trans-1,3-Dichloropropene	8.71	75	561509	94.8634	ppb	97
61) 1,1,2-TCA	8.90	83	287327	94.9931	ppb	97
62) 2-Hexanone	9.22	43	262375	103.3326	ppb	93
65) 1,2-EDB	9.44	107	203584	94.4615	ppb	96
66) Tetrachloroethene	9.05	166	219968	83.2235	ppb	98
67) 1-Chlorohexane	10.00	91	427439	98.3200	ppb	95
68) 1,1,1,2-Tetrachloroethane	10.09	131	387253	88.8128	ppb	88
69) m&p-Xylene	10.26	91	2508074	193.8542	ppb	99
70) o-Xylene	10.70	106	349568	93.6923	ppb	95
71) Styrene	10.71	104	1077416	93.2370	ppb	98
73) 1,3-Dichloropropane	9.08	76	591169	95.2438	ppb	95
74) Dibromochloromethane	9.33	129	434569	93.4350	ppb	99
75) Chlorobenzene	10.00	112	997726	93.5215	ppb	98
76) Ethylbenzene	10.13	91	921671	95.8372	ppb	98
77) Bromoform	10.90	173	330526	87.5555	ppb	100
79) Isopropylbenzene	11.11	105	1549982	96.2063	ppb	99
80) 1,1,2,2-Tetrachloroethane	11.43	83	500725	104.0125	ppb	97
81) 1,2,3-Trichloropropane	11.47	110	81096	97.4603	ppb	99
82) t-1,4-Dichloro-2-Butene	11.49	53	117453	107.2468	ppb	91
83) Bromobenzene	11.42	156	231808	88.7506	ppb	94
84) n-Propylbenzene	11.56	91	986234	99.6752	ppb	98
85) 4-Ethyltoluene	11.69	105	1566930	104.8919	ppb	97
86) 2-Chlorotoluene	11.64	91	585574	94.0579	ppb	98
87) 1,3,5-Trimethylbenzene	11.76	105	1310589	101.9372	ppb	97
88) 4-Chlorotoluene	11.76	91	703552	99.8671	ppb	99
89) Tert-Butylbenzene	12.11	119	1303169	95.4028	ppb	99
90) 1,2,4-Trimethylbenzene	12.17	105	1302368	103.3489	ppb	96
91) Sec-Butylbenzene	12.36	105	1606225	96.6457	ppb	99
92) p-Isopropyltoluene	12.52	119	785803	101.8286	ppb	97
93) Benzyl Chloride	12.71	91	667375	117.9099	ppb	99
94) 1,3-DCB	12.46	146	434688	93.1526	ppb	95
95) 1,4-DCB	12.56	146	826306	89.8754	ppb	99
96) n-Butylbenzene	12.71	91	667375	117.9099	ppb	96
97) 1,2-DCB	12.97	146	818650	91.4971	ppb	98
98) Hexachloroethane	13.26	117	301595	105.9629	ppb	89
99) 1,2-Dibromo-3-chloropropan	13.82	75	97188	97.0584	ppb	92
100) 1,2,4-Trichlorobenzene	14.74	180	465088	82.3653	ppb	95

Quantitation Report (Not Reviewed)

Data File : M:\LOKI\DATA\190128\0128L12.D Vial: 11  
 Acq On : 28 Jan 19 19:21 Operator: PM,DG,SV,CMM,KV  
 Sample : 100ug/L VOC STD 01/28/19 Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Jan 29 8:07 2019 Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 08:06:28 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
101) Hexachlorobutadiene	14.94	225	224030	79.7456	ppb	94
102) Naphthalene	15.01	128	1033648	87.4408	ppb	96
103) 1,2,3-Trichlorobenzene	15.27	180	211072	82.8509	ppb	97

Quantitation Report

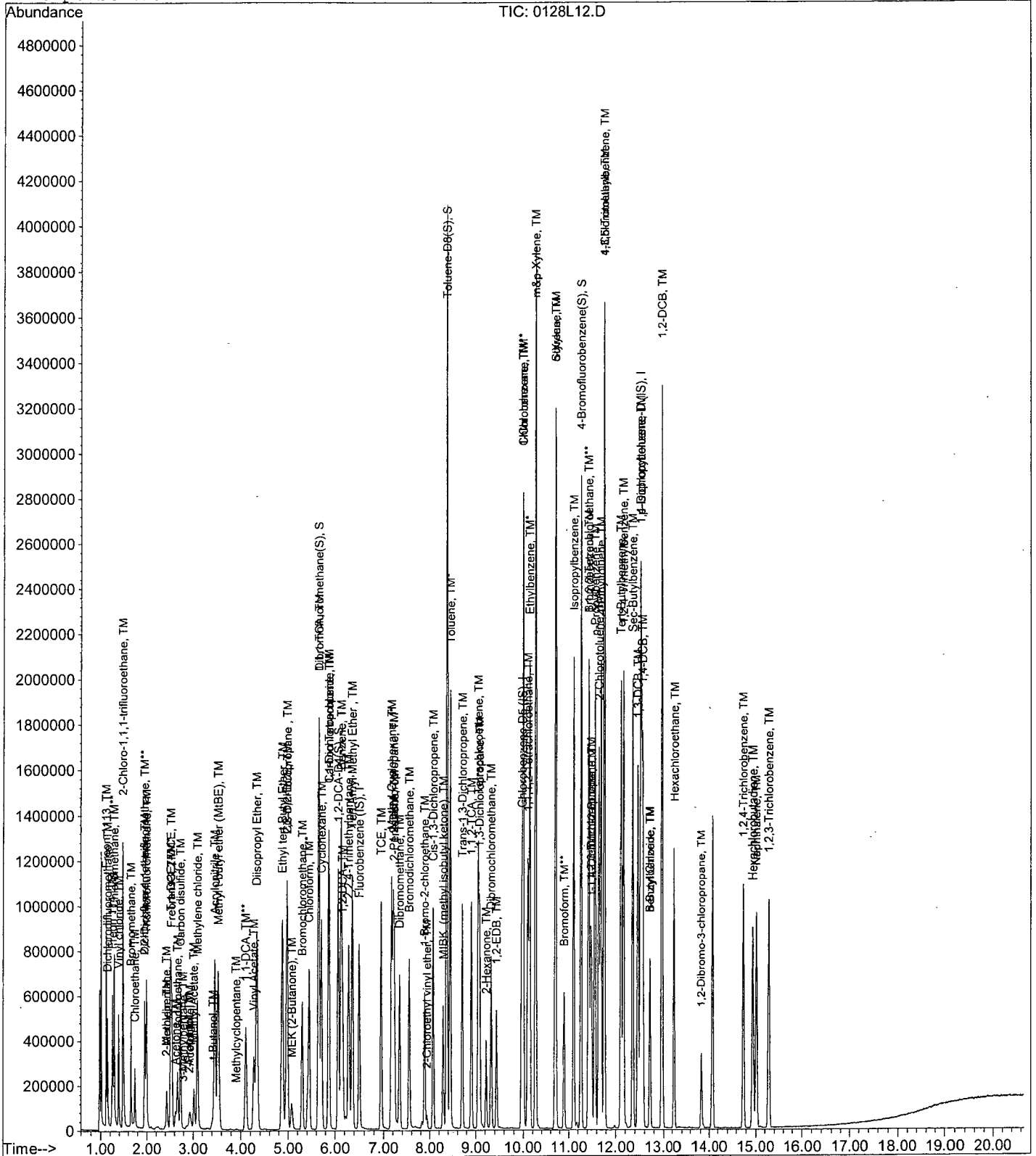
Data File : M:\LOKI\DATA\190128\0128L12.D  
Acq On : 28 Jan 19 19:21  
Sample : 100ug/L VOC STD 01/28/19  
Misc : IS&S 11/8/18

Vial: 11  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

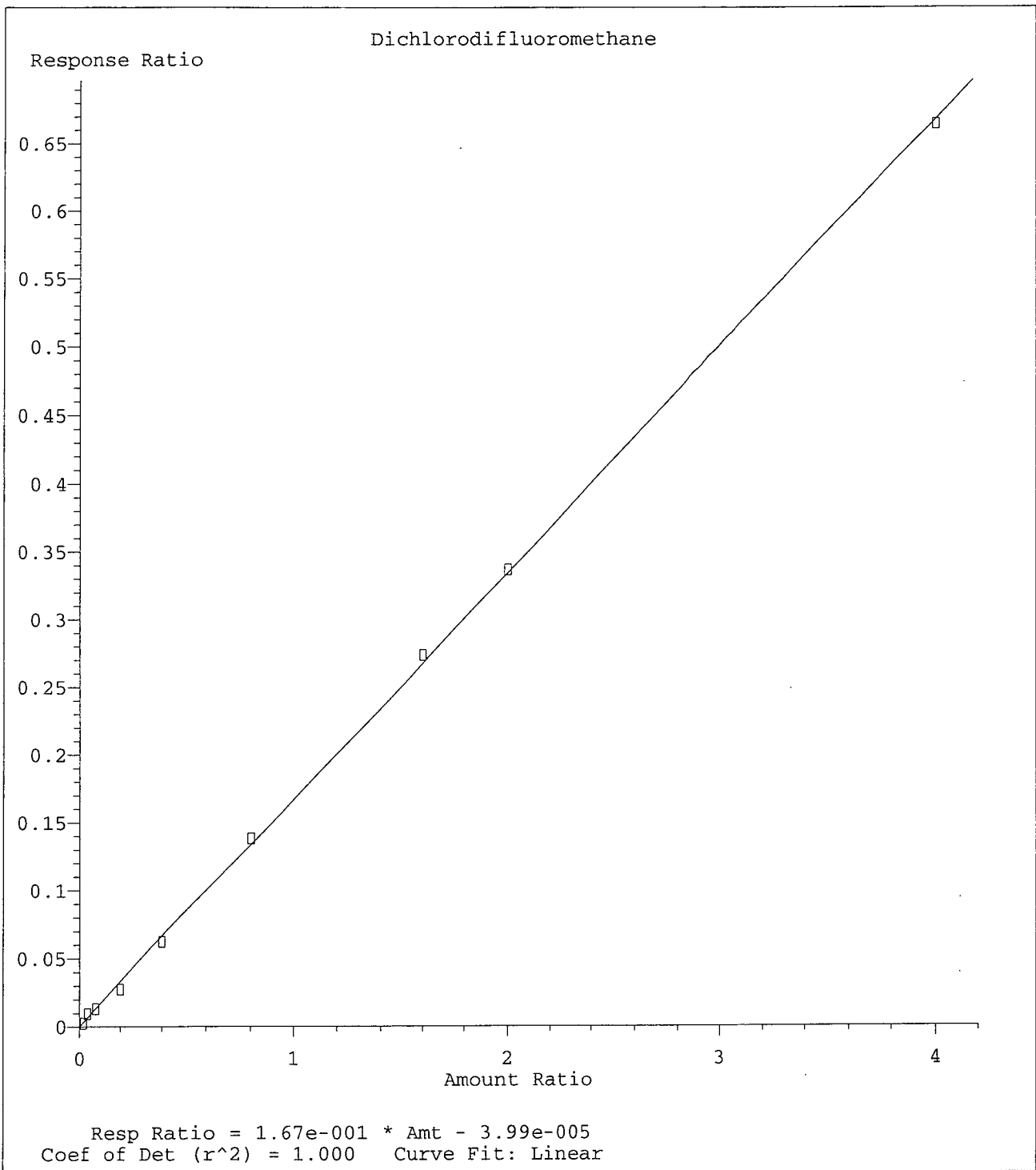
Quant Time: Jan 29 8:07 2019

Quant Results File: L0128W.RES

Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Jan 29 09:06:22 2019  
Response via : Initial Calibration



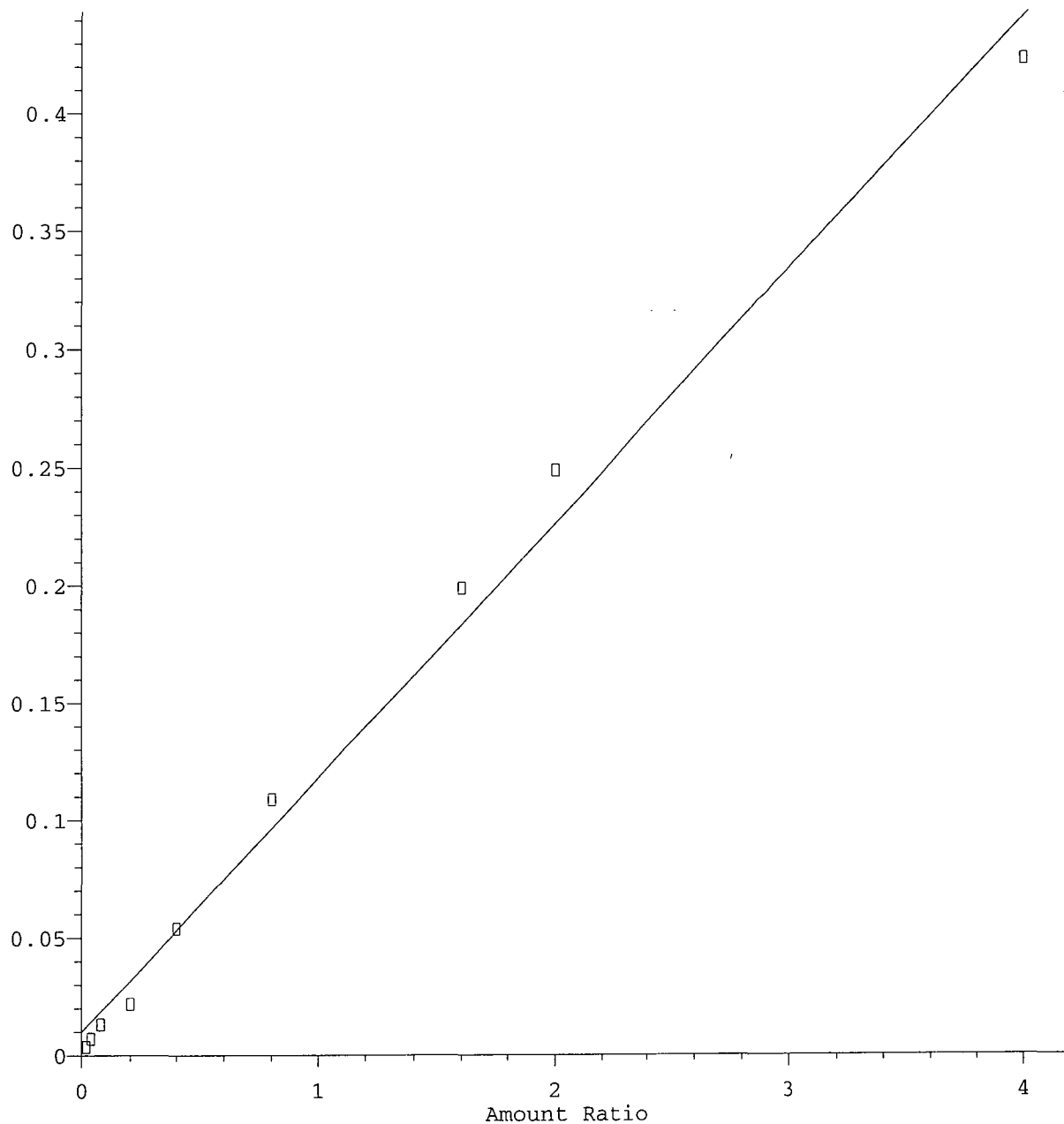




Method Name: M:\LOKI\DATA\190128\L0128W.M  
Calibration Table Last Updated: Tue Jan 29 09:06:22 2019

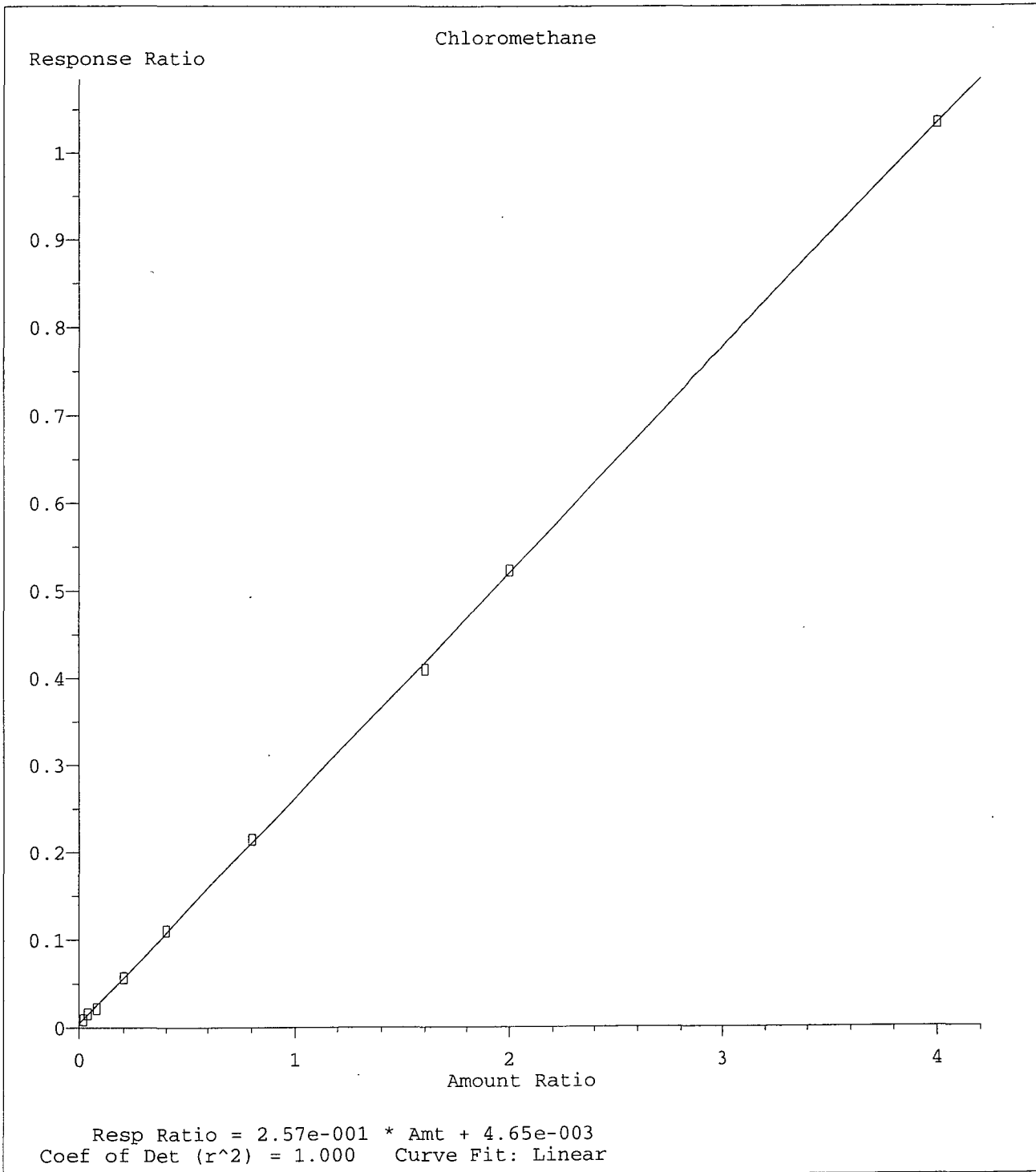
Freon 114

Response Ratio

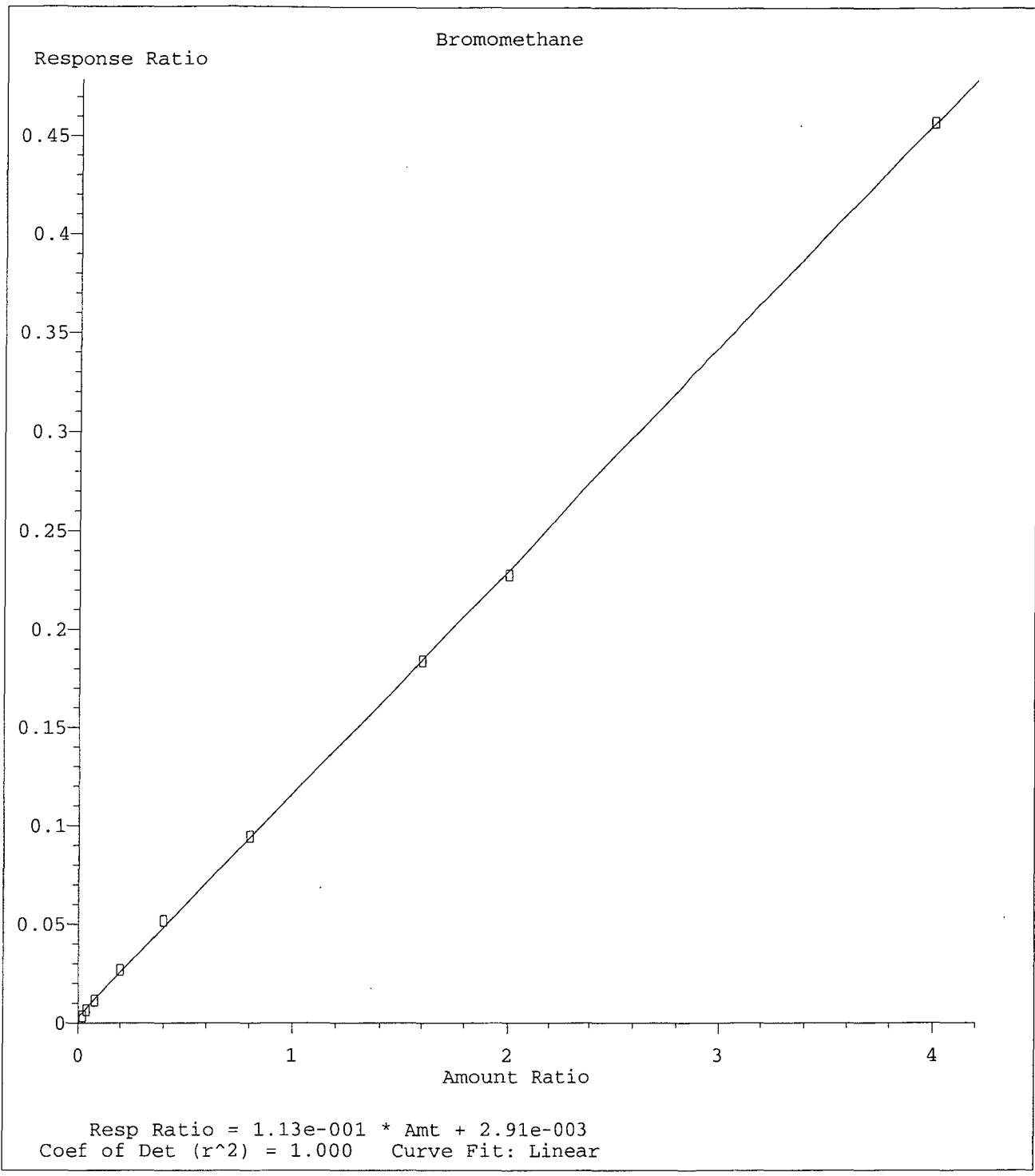


Resp Ratio = 1.08e-001 \* Amt + 1.01e-002  
Coef of Det (r^2) = 0.991 Curve Fit: Linear

Method Name: M:\LOKI\DATA\190128\L0128W.M  
Calibration Table Last Updated: Tue Jan 29 09:06:22 2019



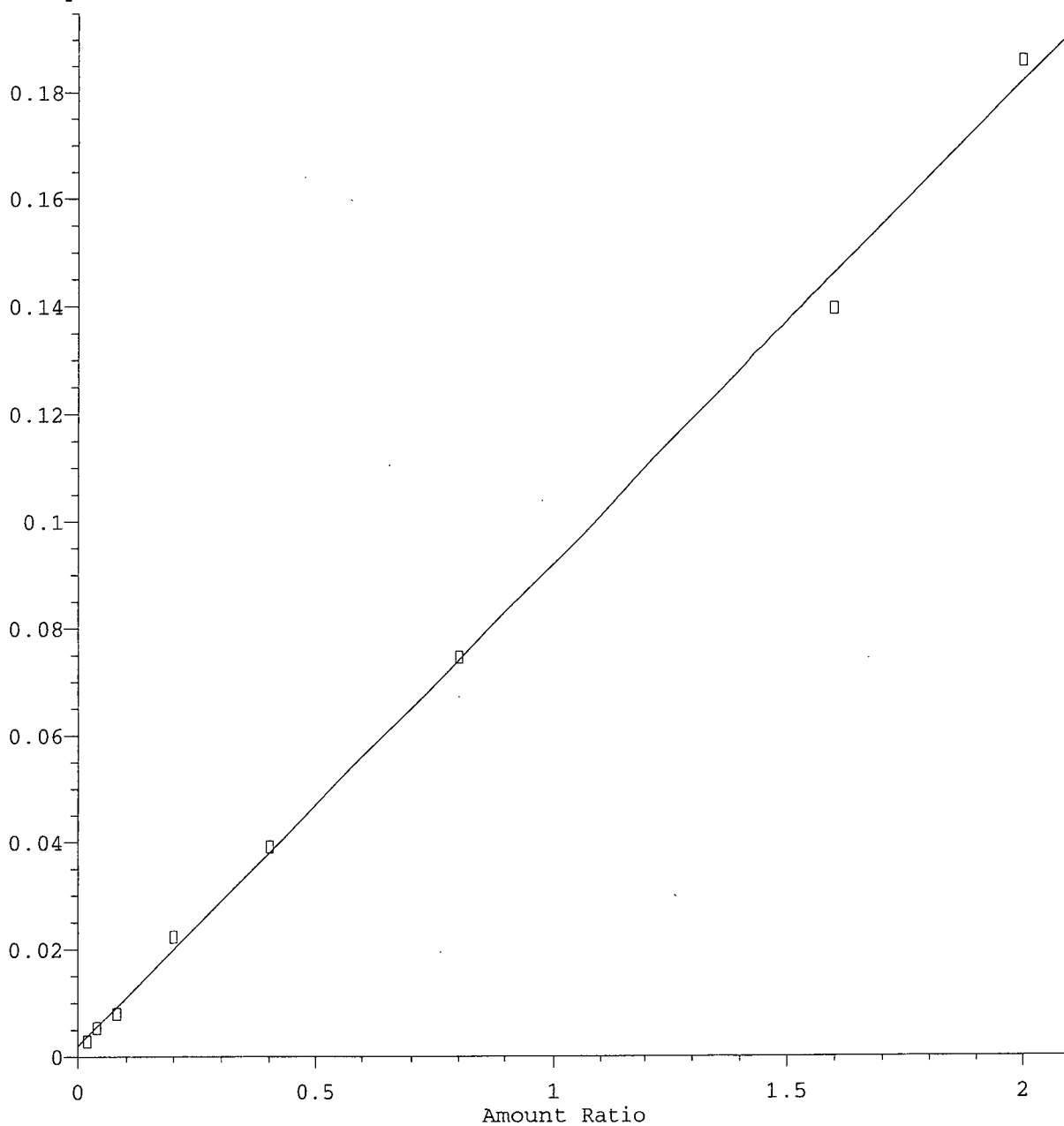
Method Name: M:\LOKI\DATA\190128\L0128W.M  
Calibration Table Last Updated: Tue Jan 29 09:06:22 2019



Method Name: M:\LOKI\DATA\190128\L0128W.M  
Calibration Table Last Updated: Tue Jan 29 09:06:22 2019

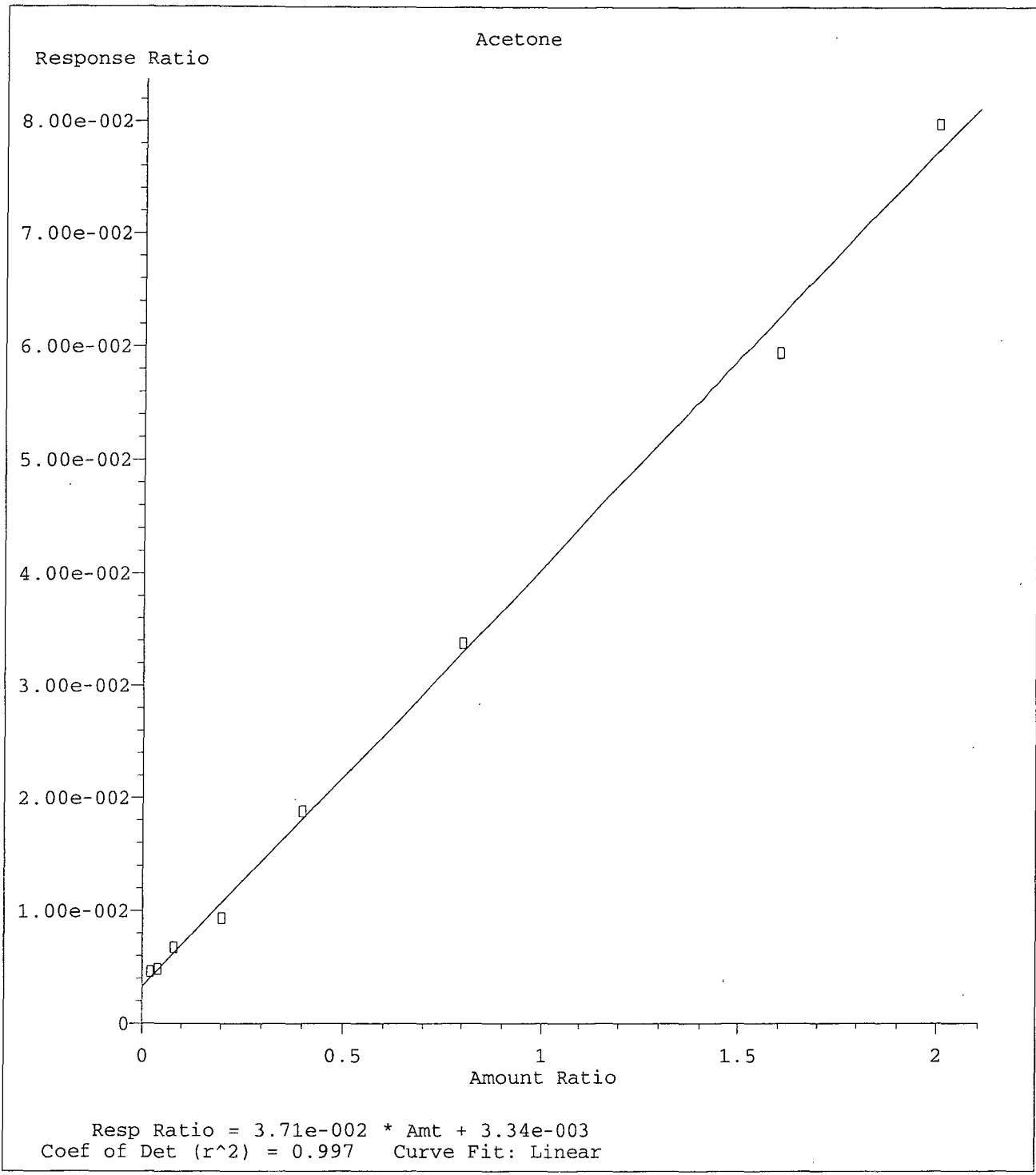
Chloroethane

Response Ratio

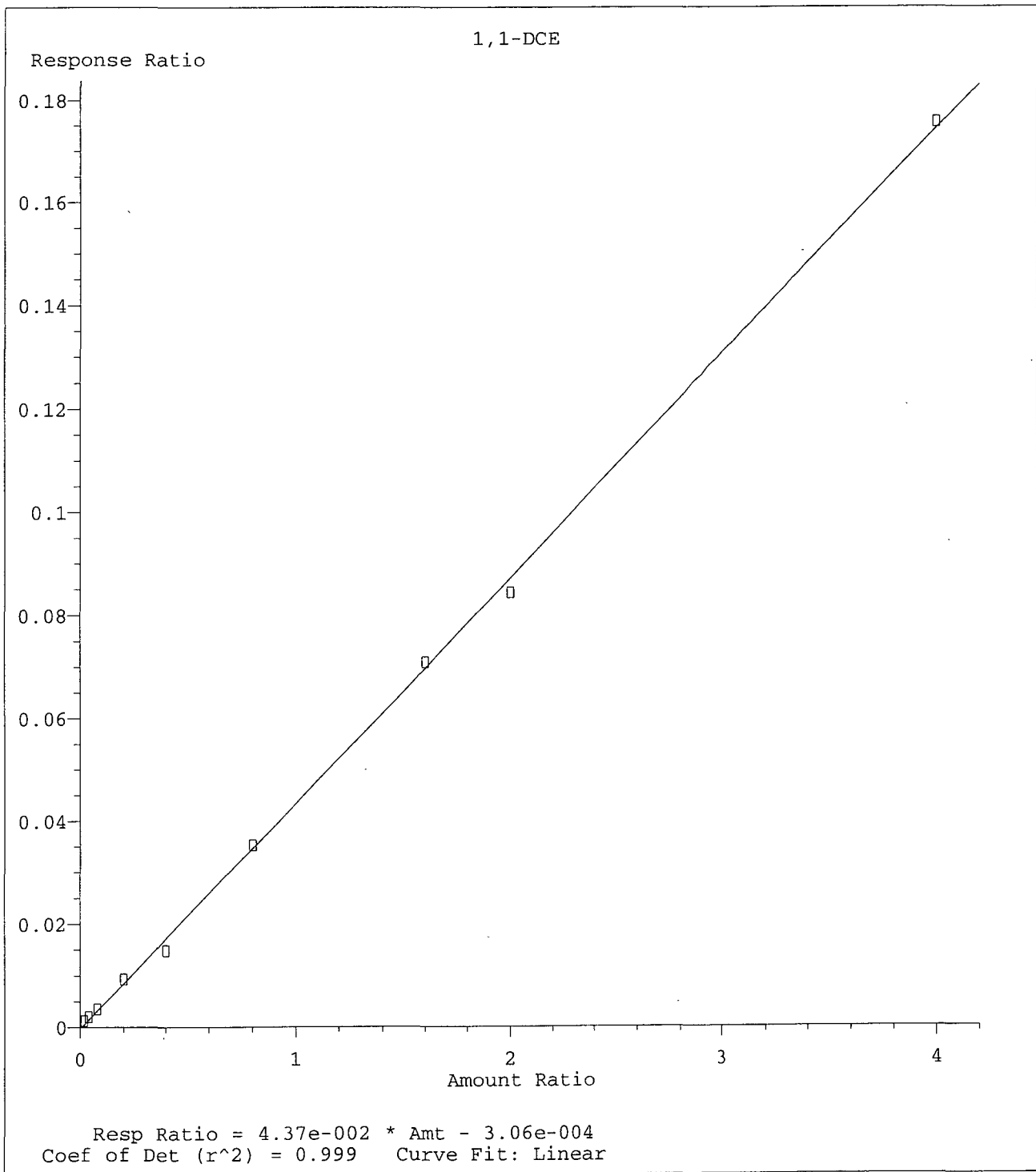


Resp Ratio =  $8.98e-002 * Amt + 1.97e-003$   
Coef of Det ( $r^2$ ) = 0.998 Curve Fit: Linear

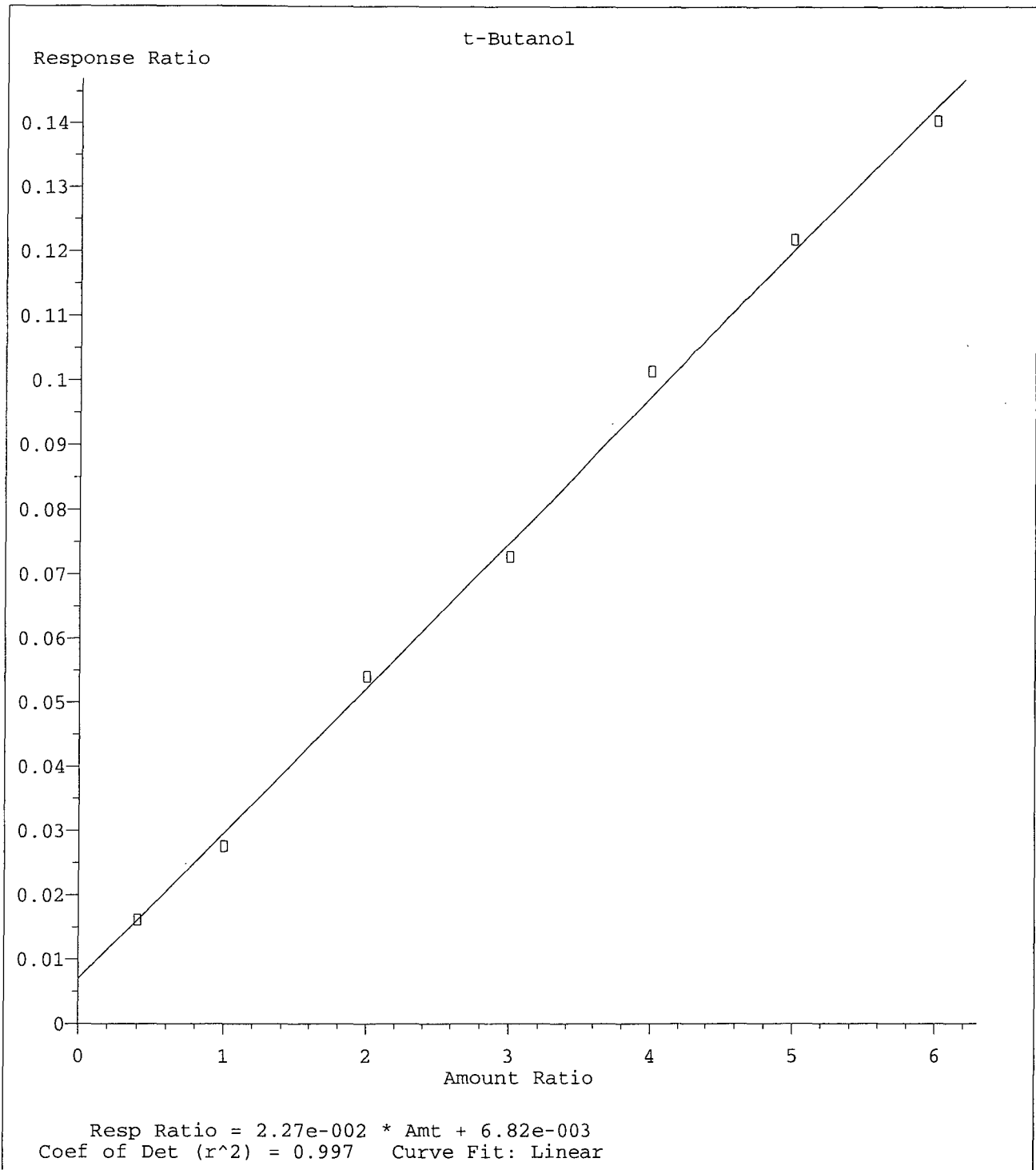
Method Name: M:\LOKI\DATA\190128\L0128W.M  
Calibration Table Last Updated: Tue Jan 29 09:06:22 2019



Method Name: M:\LOKI\DATA\190128\L0128W.M  
Calibration Table Last Updated: Tue Jan 29 09:06:22 2019



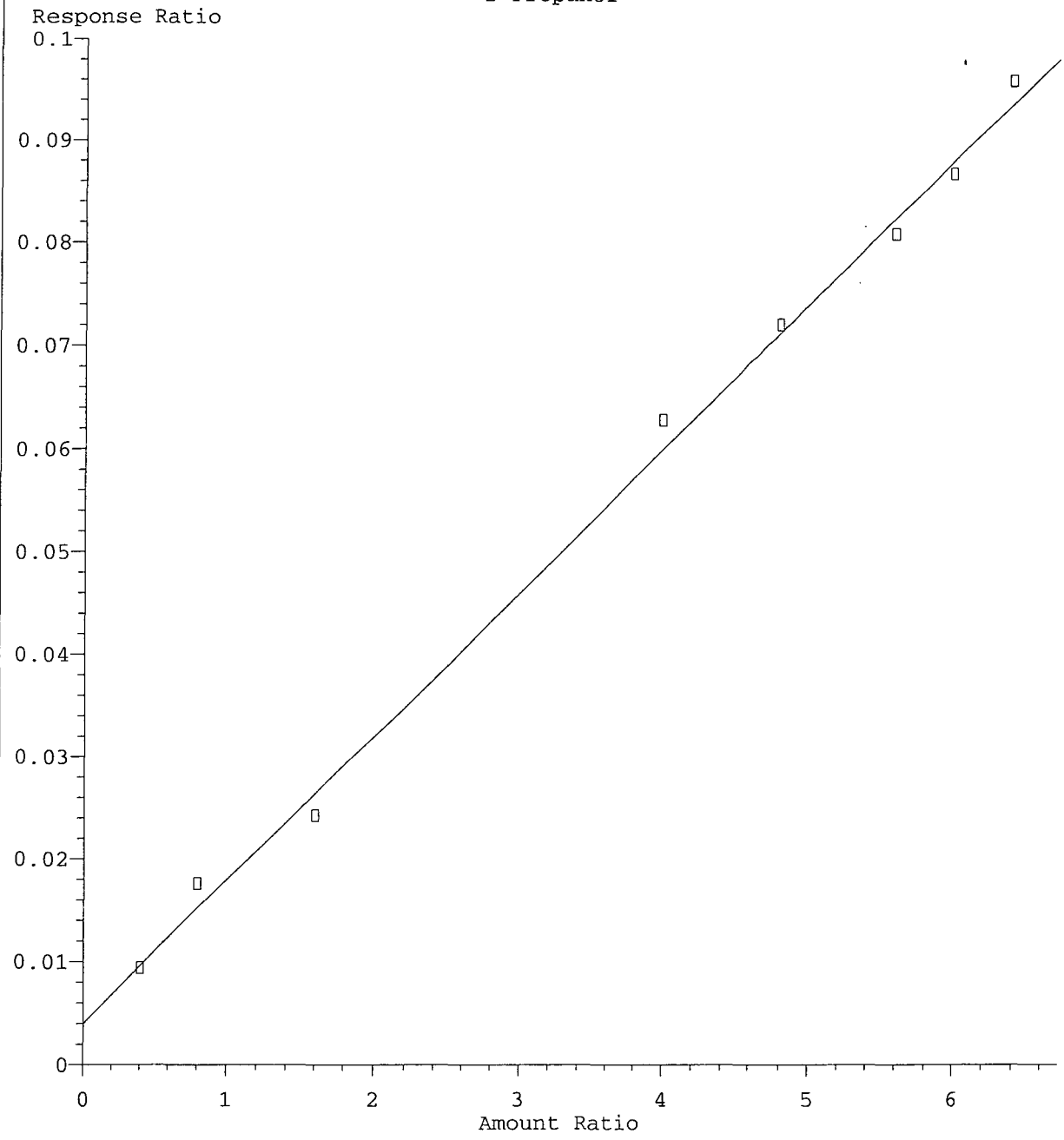
Method Name: M:\LOKI\DATA\190128\L0128W.M  
Calibration Table Last Updated: Tue Jan 29 09:06:22 2019



Method Name: M:\LOKI\DATA\190128\L0128W.M  
Calibration Table Last Updated: Tue Jan 29 09:06:22 2019

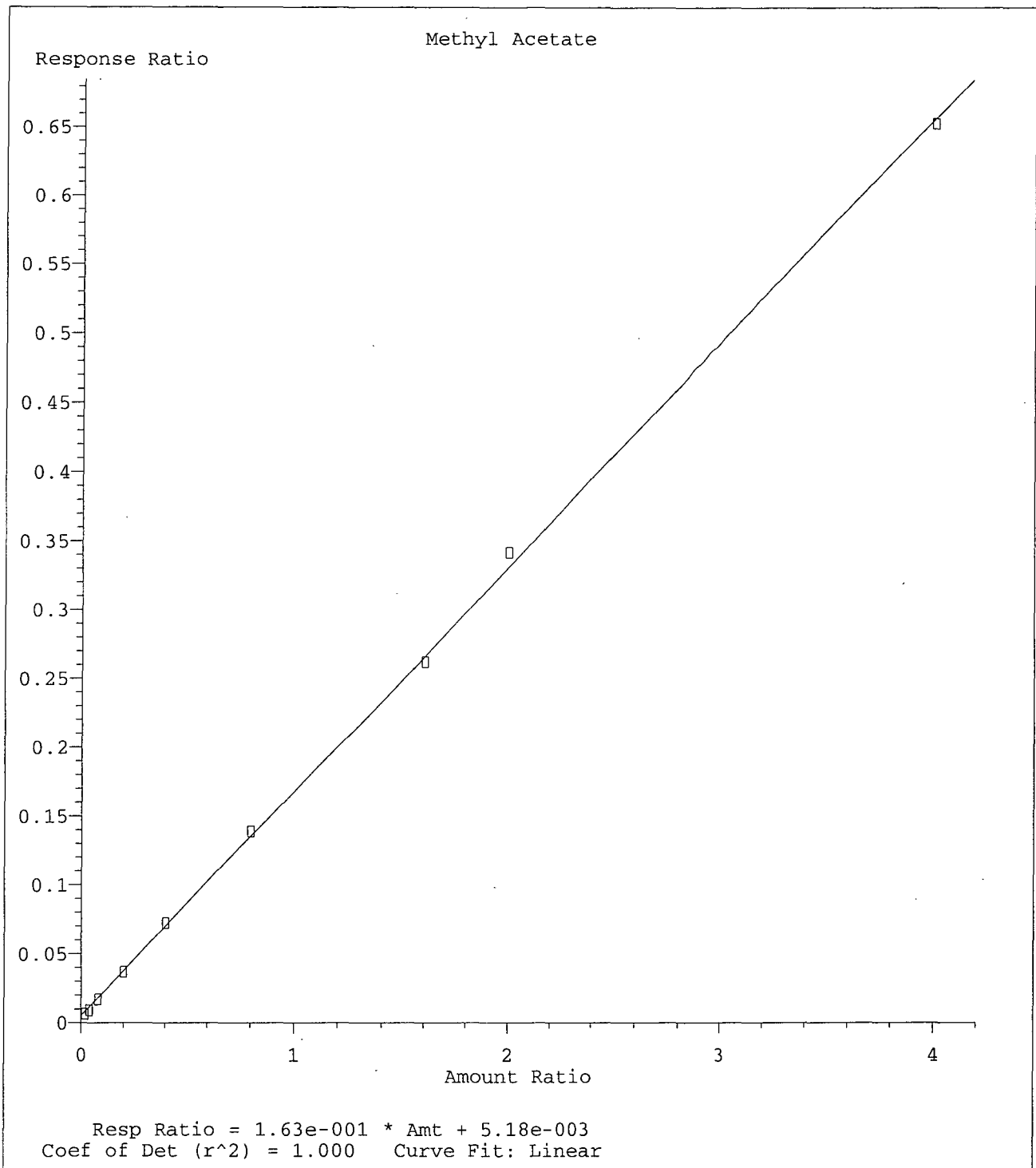


2-Propanol



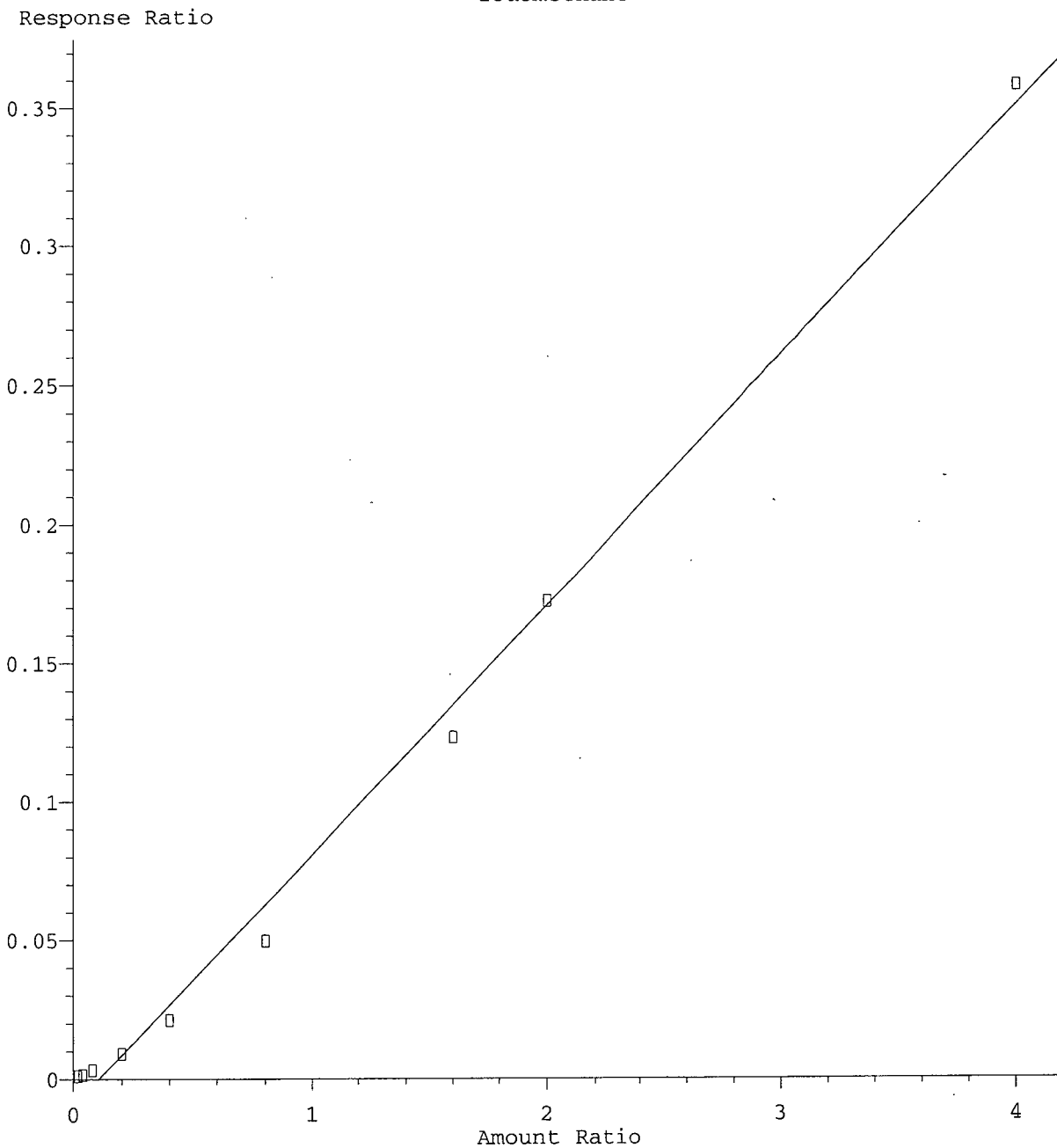
Resp Ratio = 1.40e-002 \* Amt + 4.35e-003  
Coef of Det (r^2) = 0.997 Curve Fit: Linear

Method Name: M:\LOKI\DATA\190128\L0128W.M  
Calibration Table Last Updated: Tue Jan 29 09:06:22 2019



Method Name: M:\LOKI\DATA\190128\L0128W.M  
Calibration Table Last Updated: Tue Jan 29 09:06:22 2019

Iodomethane

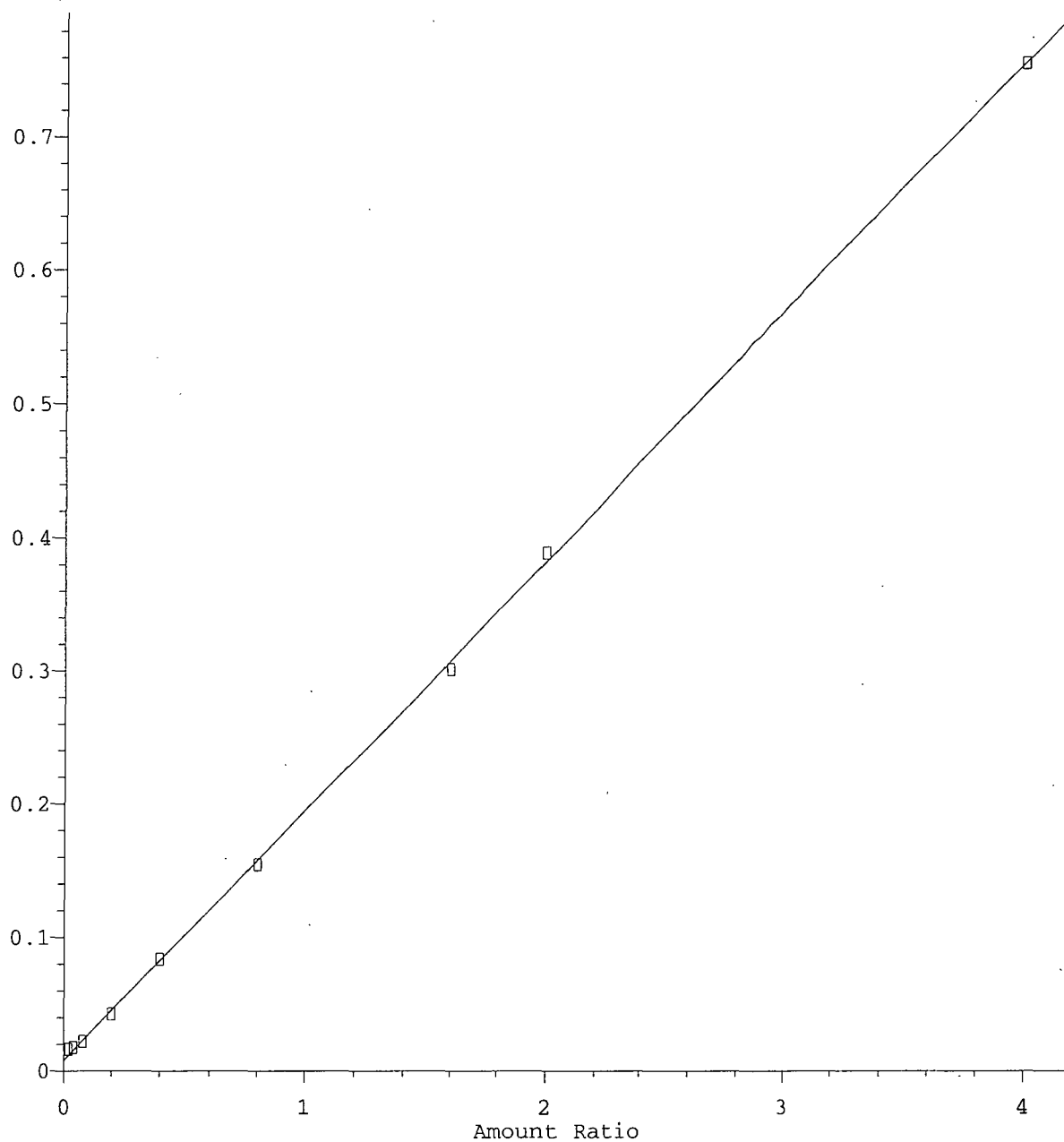


Resp Ratio =  $9.01e-002 * Amt - 9.45e-003$   
Coef of Det ( $r^2$ ) = 0.995 Curve Fit: Linear

Method Name: M:\LOKI\DATA\190128\L0128W.M  
Calibration Table Last Updated: Tue Jan 29 09:06:22 2019

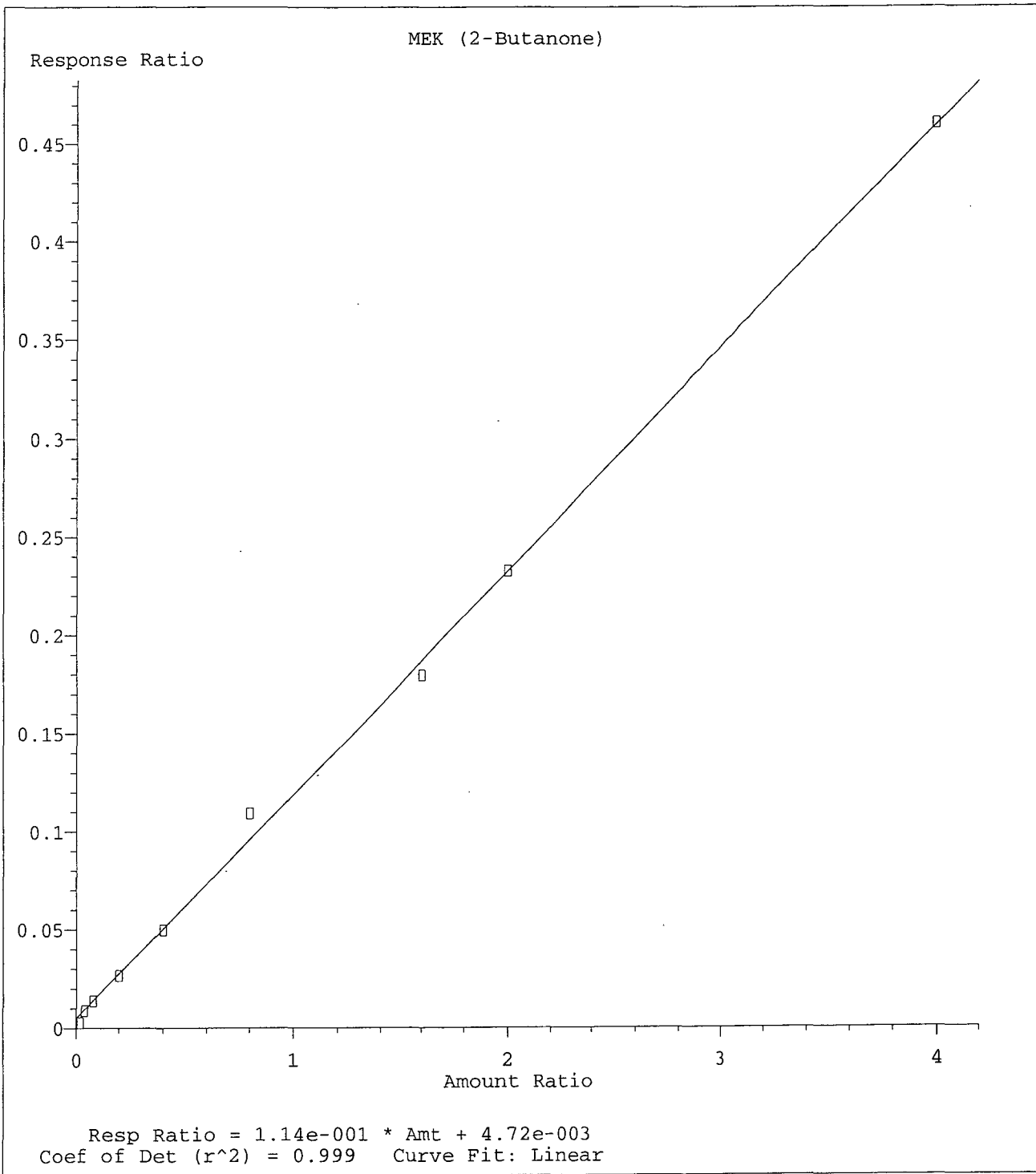
Methylene chloride

Response Ratio

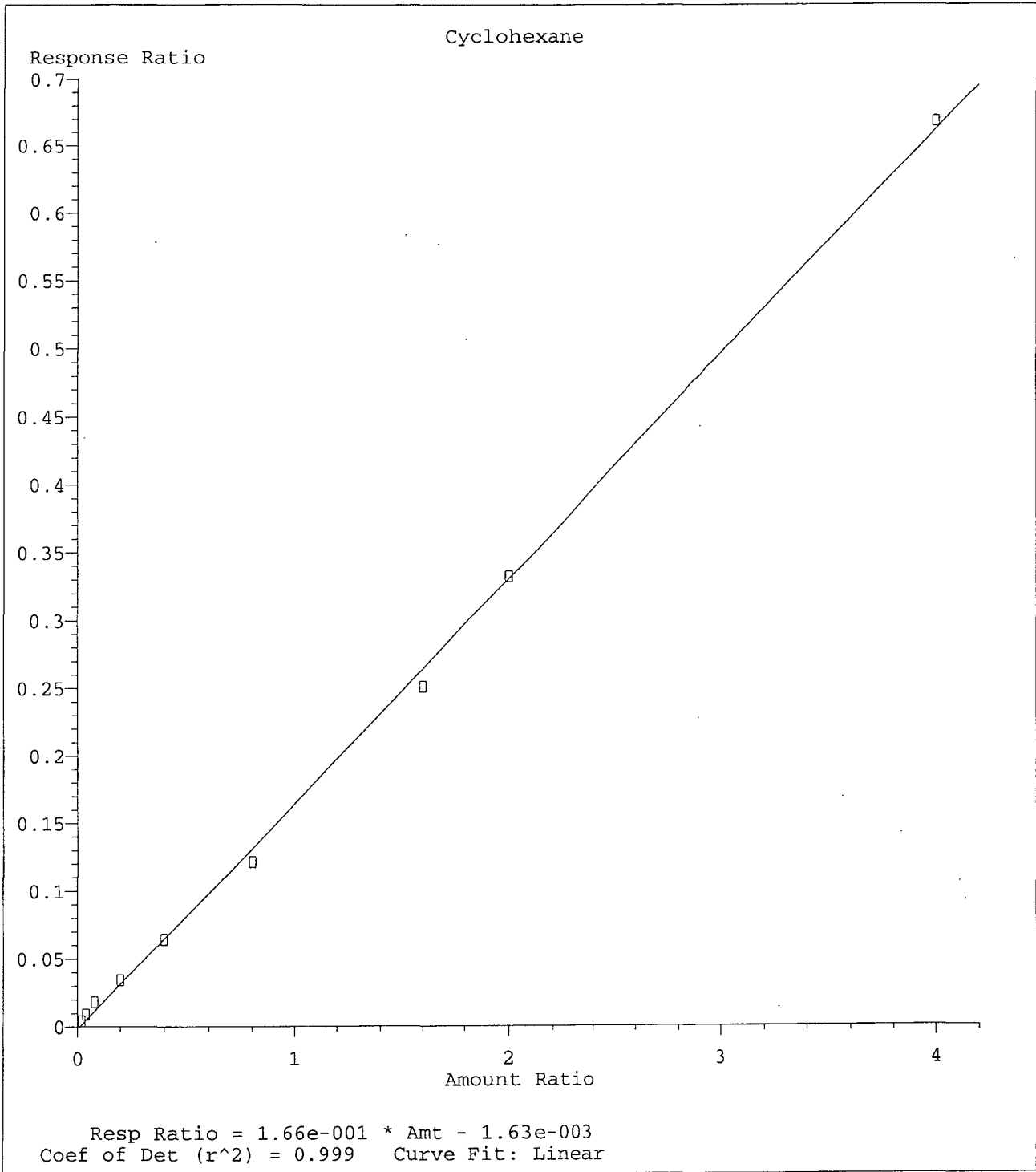


Resp Ratio = 1.87e-001 \* Amt + 8.12e-003  
Coef of Det (r^2) = 1.000 Curve Fit: Linear

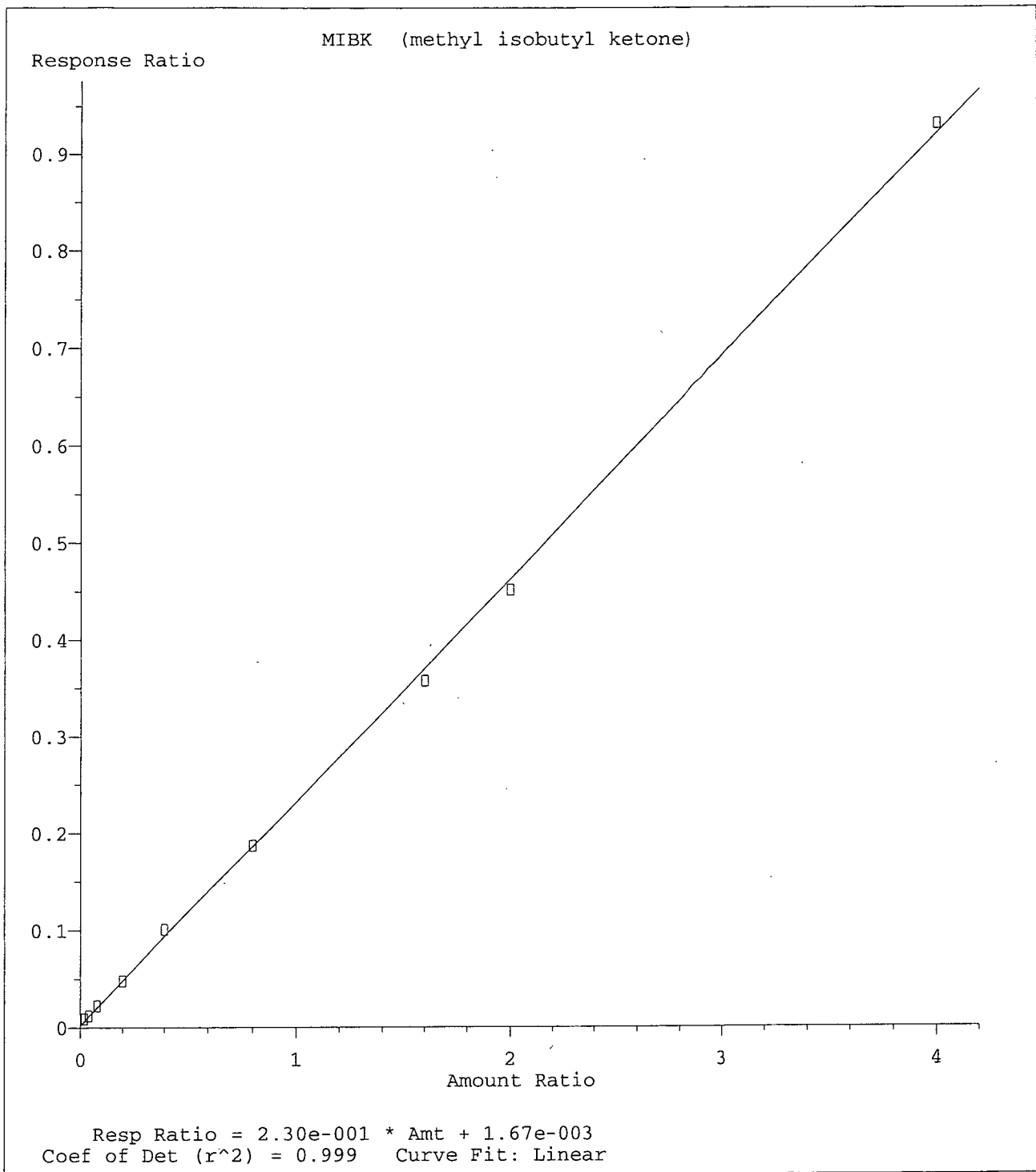
Method Name: M:\LOKI\DATA\190128\L0128W.M  
Calibration Table Last Updated: Tue Jan 29 09:06:22 2019



Method Name: M:\LOKI\DATA\190128\L0128W.M  
Calibration Table Last Updated: Tue Jan 29 09:06:22 2019

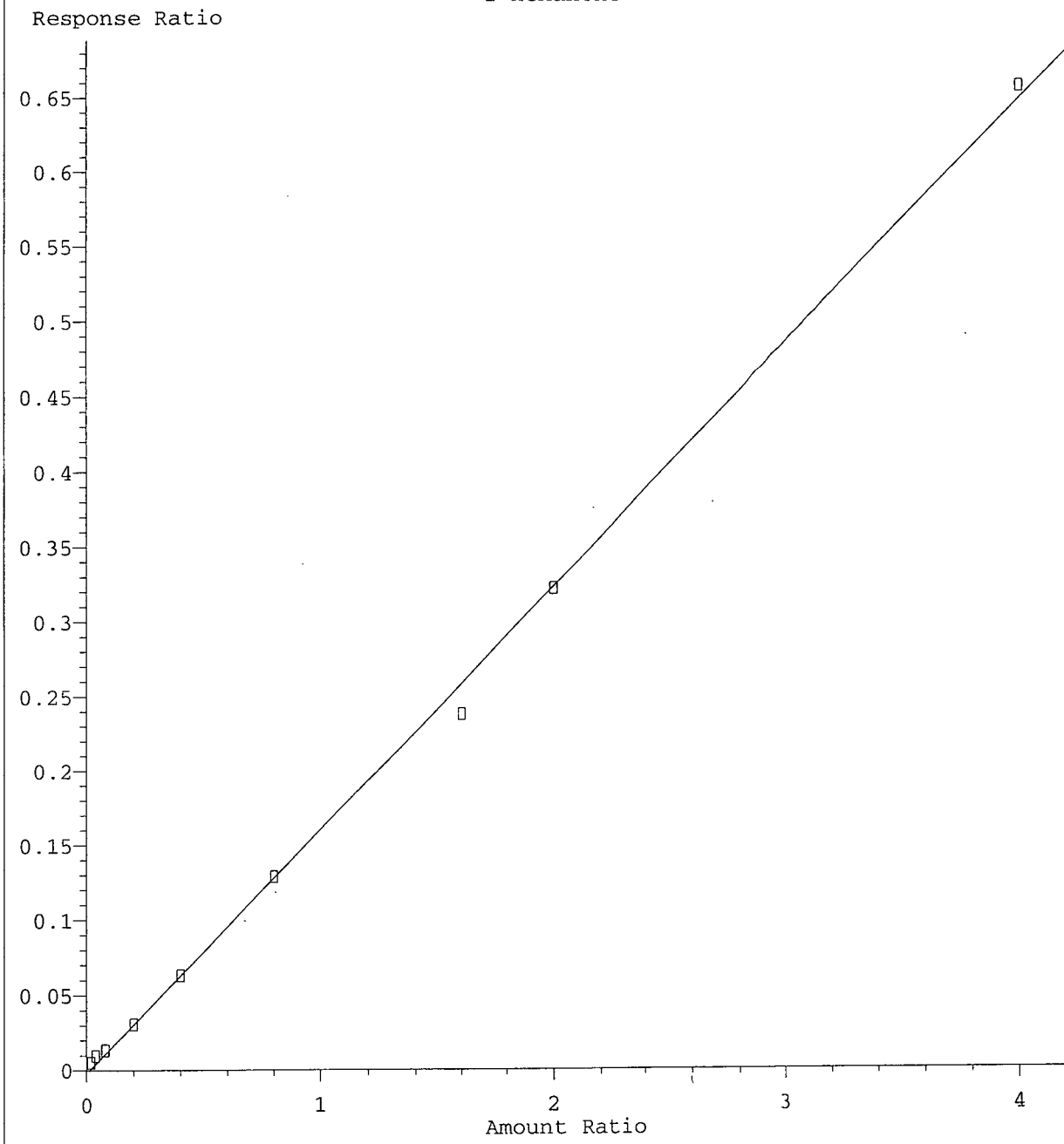


Method Name: M:\LOKI\DATA\190128\L0128W.M  
Calibration Table Last Updated: Tue Jan 29 09:06:22 2019



Method Name: M:\LOKI\DATA\190128\L0128W.M  
Calibration Table Last Updated: Tue Jan 29 09:06:22 2019

2-Hexanone

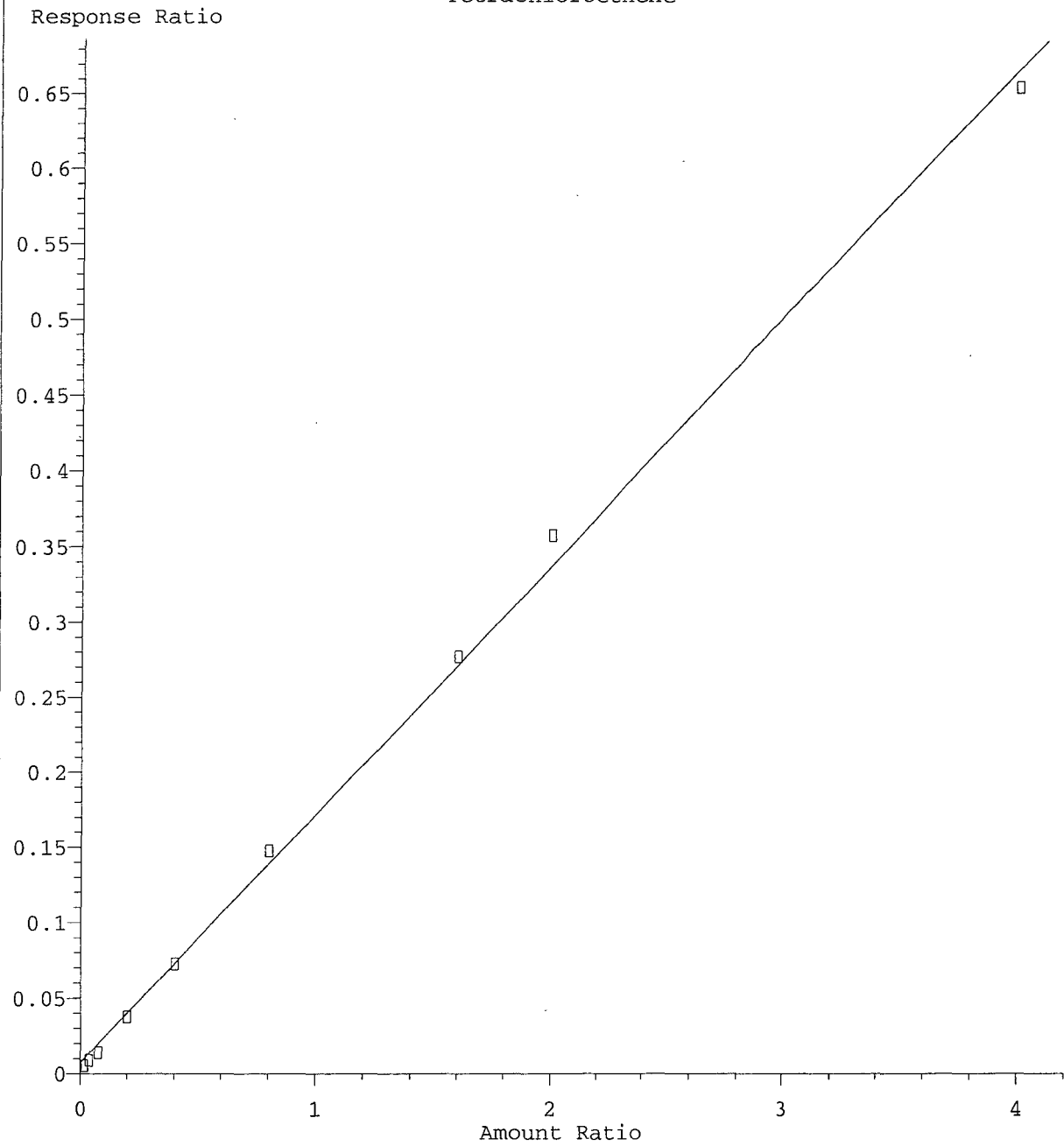


Resp Ratio = 1.62e-001 \* Amt - 2.15e-003  
Coef of Det (r^2) = 0.999 Curve Fit: Linear

Method Name: M:\LOKI\DATA\190128\L0128W.M  
Calibration Table Last Updated: Tue Jan 29 09:06:22 2019



Tetrachloroethene

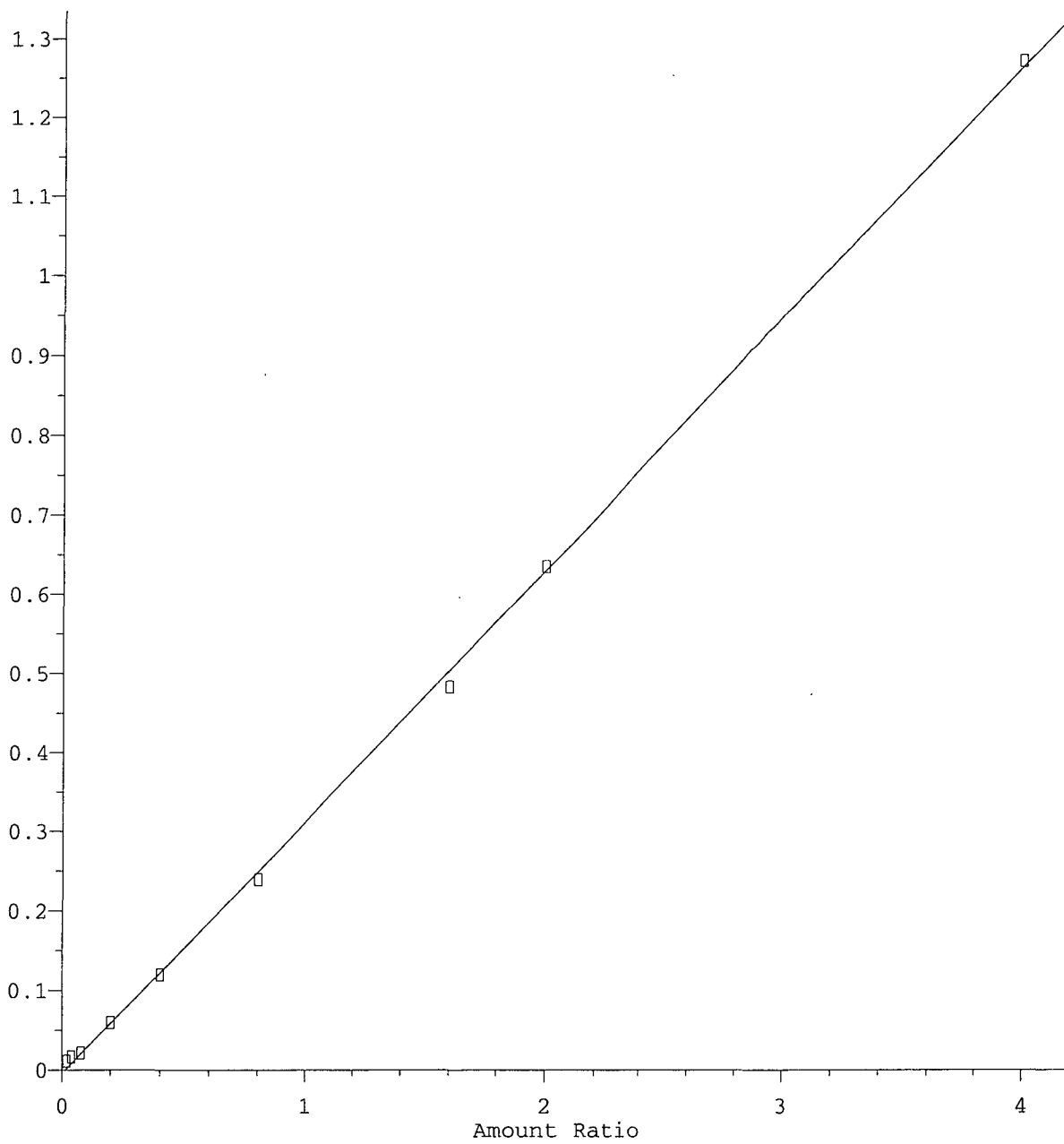


Resp Ratio = 1.65e-001 \* Amt + 7.22e-003  
Coef of Det (r^2) = 0.998 Curve Fit: Linear

Method Name: M:\LOKI\DATA\190128\L0128W.M  
Calibration Table Last Updated: Tue Jan 29 09:06:22 2019

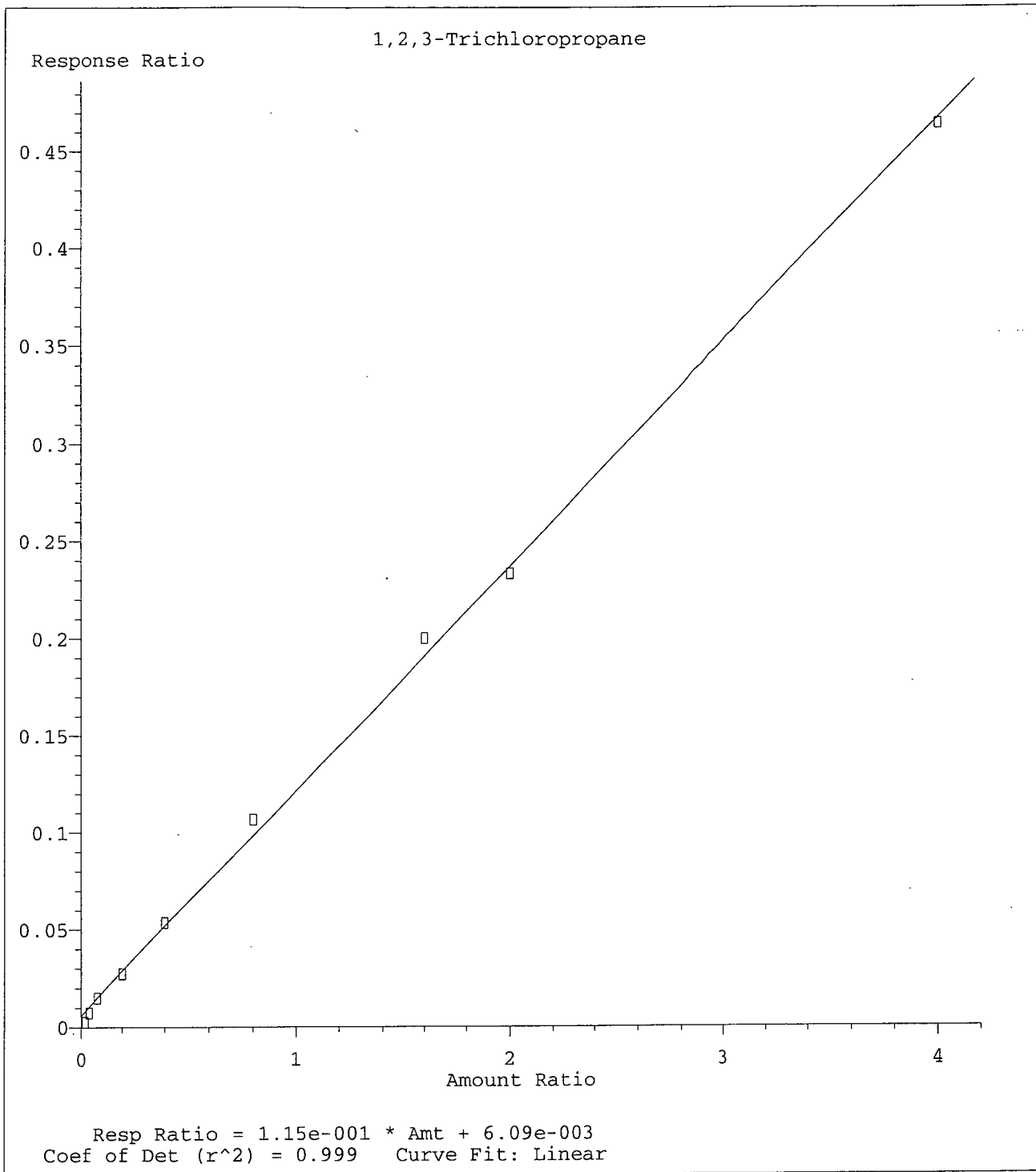
1-Chlorohexane

Response Ratio

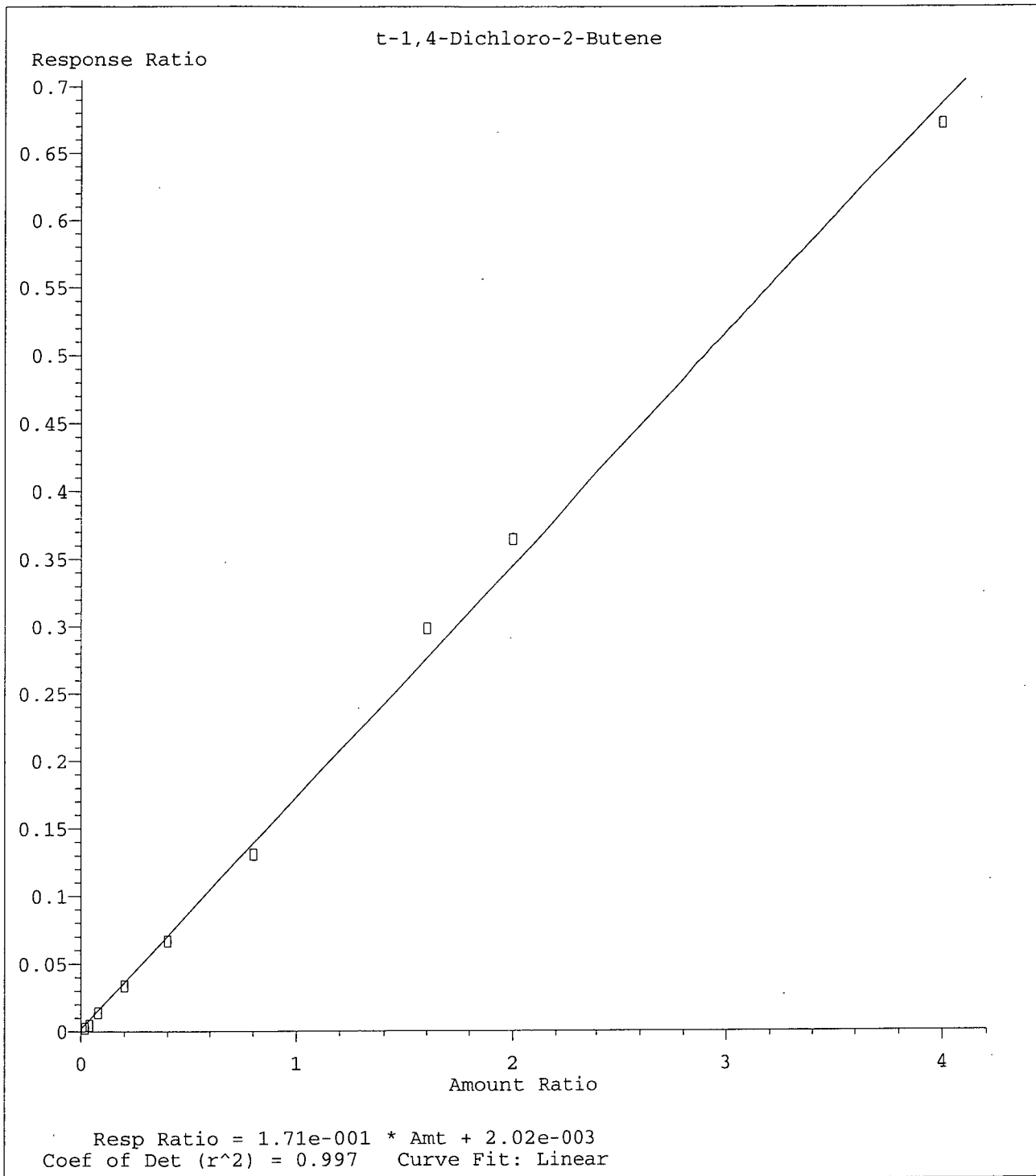


Resp Ratio = 3.18e-001 \* Amt - 4.75e-003  
Coef of Det (r^2) = 0.999 Curve Fit: Linear

Method Name: M:\LOKI\DATA\190128\L0128W.M  
Calibration Table Last Updated: Tue Jan 29 09:06:22 2019

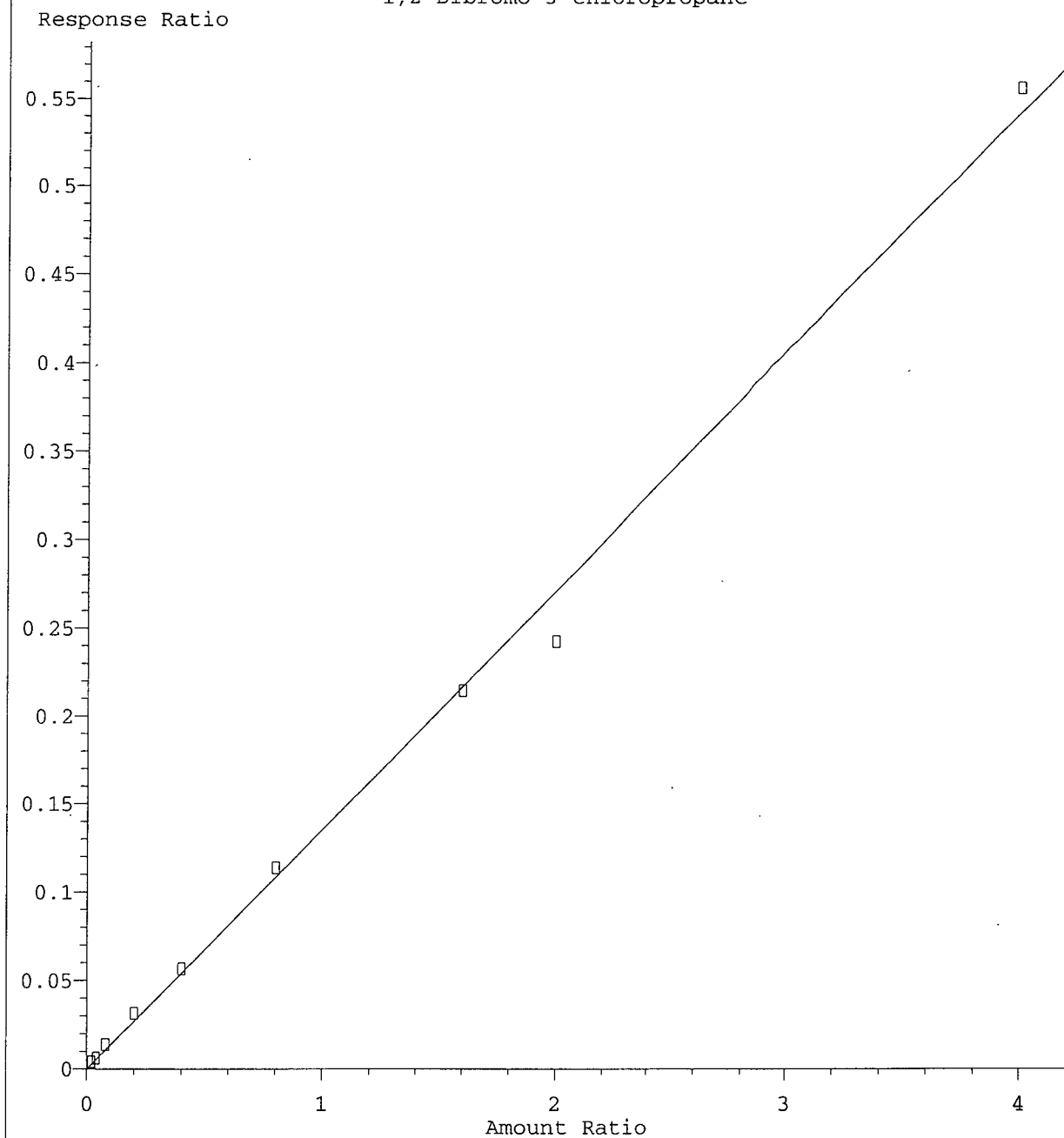


Method Name: M:\LOKI\DATA\190128\L0128W.M  
Calibration Table Last Updated: Tue Jan 29 09:06:22 2019



Method Name: M:\LOKI\DATA\190128\L0128W.M  
Calibration Table Last Updated: Tue Jan 29 09:06:22 2019

1,2-Dibromo-3-chloropropane



Resp Ratio = 1.36e-001 \* Amt - 9.02e-005  
Coef of Det (r^2) = 0.996 Curve Fit: Linear

Method Name: M:\LOKI\DATA\190128\L0128W.M  
Calibration Table Last Updated: Tue Jan 29 09:06:22 2019

VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 7

Second Source Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: \_\_\_\_\_

SDG No: \_\_\_\_\_  
Date Analyzed: 01/28/19  
Instrument: Loki  
Initial Cal. Date: 01/28/19  
Data File: 0128L14.D

		Compound	MEAN	CCRF	%D		%Drift
1	TM	Freon 1113	0.1017	0.1019	0.26	TM	
2	TML	Dichlorodifluoromethane	0.1650	0.1744	5.7	TML	4.5
3	TML	Freon 114	0.1391	0.1331	4.4	TML	0.19
4	TM**L	Chloromethane	0.3027	0.2590	14	TM**L	3.8
5	TM*	Vinyl chloride	0.1968	0.1968	0.01	TM*	
6	TM	2-Chloro-1,1,1-trifluoroethane	0.1662	0.1692	1.8	TM	
7	TML	Bromomethane	0.1336	0.1362	1.9	TML	14
8	TML	Chloroethane	0.1071	0.0904	16	TML	4.8
9	TM	Dichlorofluoromethane	0.3356	0.3124	6.9	TM	
10	TM	Trichlorofluoromethane	0.2737	0.2790	1.9	TM	
11	TM	Acrolein	0.0450	0.0376	16	TM	
12	TML	Acetone	0.0810	0.0394	51	TML	16
13	TM	Freon-113	0.1464	0.1561	6.6	TM	
14	TM*L	1,1-DCE	0.0465	0.0433	6.9	TM*L	0.85
15	TML	t-Butanol	0.0275	0.0217	21	TML	11
16	TML	2-Propanol	0.0169	0.0141	17	TML	7.0
17	TM	Acetonitrile	0.0330	0.0300	9.3	TM	
18	TML	Methyl Acetate	0.2000	0.1587	21	TML	10
19	TML	Iodomethane	0.0609	0.0518	15	TML	16
20	TM	Acrylonitrile	0.0884	0.0734	17	TM	
21	TML	Methylene chloride	0.3024	0.1914	37	TML	8.5
22	TM	Carbon disulfide	0.5213	0.4995	4.2	TM	
23	TM	Methyl t-butyl ether (MtBE)	0.5941	0.5720	3.7	TM	
24	TM	Trans-1,2-DCE	0.0876	0.0870	0.76	TM	
25	TM	Diisopropyl Ether	0.6322	0.6055	4.2	TM	
26	TM**	2,2-Dichloro-1,1,1-trifluoroethane	0.0000	0.0112	0.00	TM**	
27	TM**	1,1-DCA	0.3535	0.3446	2.5	TM**	
28	TM	Vinyl Acetate	0.1679	0.1344	20	TM	
29	TM	Ethyl tert Butyl Ether	0.6003	0.5863	2.3	TM	
30	TML	MEK (2-Butanone)	0.1403	0.1235	12	TML	1.8
31	TM	Cis-1,2-DCE	0.2333	0.2217	5.0	TM	
32	TM	2,2-Dichloropropane	0.3132	0.2928	6.5	TM	
33	TM	2-Methylpentane	0.0000	0.0003	0.00	TM	
34	TML	3-Methylpentane	0.0000	0.0003	0.00	TML	
35	TM*	Chloroform	0.3760	0.3683	2.0	TM*	
36	TM	Bromochloromethane	0.0581	0.0596	2.5	TM	
37	TM	1,1,1-TCA	0.1424	0.1377	3.3	TM	
38	TML	Cyclohexane	0.1818	0.1608	12	TML	0.57
39	TM	1,1-Dichloropropene	0.2579	0.2483	3.7	TM	
40	TM	2,2,4-Trimethylpentane	0.5179	0.5098	1.6	TM	

Average

8.9

VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 7

Second Source Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: 0

SDG No: \_\_\_\_\_  
Date Analyzed: 01/28/19  
Instrument: Loki  
Cal. Date: 01/28/19  
Data File: 0128L14.D

		Compound	MEAN	CCRF	%D	%Drift
41	TM	Carbon Tetrachloride	0.2757	0.2790	1.2	TM
42	TM	Tert Amyl Methyl Ether	0.6308	0.5834	7.5	TM
43	TML	Methylcyclopentane	0.0000	0.0002	0.00	TML
44	TM	1,2-DCA	0.3049	0.2959	3.0	TM
45	TM	Benzene	0.8179	0.8040	1.7	TM
46	TM	TCE	0.1193	0.1203	0.86	TM
47	TM	2-Pentanone	0.1970	0.1782	9.6	TM
48	TM*	1,2-Dichloropropane	0.2255	0.2135	5.3	TM*
49	TM	Bromodichloromethane	0.1644	0.1587	3.5	TM
50	TM	Methyl Cyclohexane	0.2786	0.2786	0.01	TM
51	TM	Dibromomethane	0.1548	0.1473	4.9	TM
52	TM	2-Chloroethyl vinyl ether	0.0057	0.0057	0.45	TM
53	TML	MIBK (methyl isobutyl ketone)	0.2693	0.2231	17	TML 4.8
54	TM	1-Bromo-2-chloroethane	0.1771	0.1677	5.3	TM
55	TM	Cis-1,3-Dichloropropene	0.3571	0.3481	2.5	TM
56	TM*	Toluene	0.4653	0.4787	2.9	TM*
57	TM	Trans-1,3-Dichloropropene	0.3370	0.3235	4.0	TM
58	TM	1,1,2-TCA	0.1777	0.1765	0.68	TM
59	TML	2-Hexanone	0.1791	0.1619	9.6	TML 2.9
60	TM	1,2-EDB	0.1713	0.1463	15	TM
61	TML	Tetrachloroethene	0.1922	0.1788	7.0	TML 2.7
62	TML	1-Chlorohexane	0.3424	0.3000	12	TML 1.8
63	TM	1,1,1,2-Tetrachloroethane	0.3028	0.2974	1.8	TM
64	TM	m&p-Xylene	0.8445	0.8605	1.9	TM
65	TM	o-Xylene	0.2199	0.2299	4.5	TM
66	TM	Styrene	0.6925	0.7025	1.4	TM
67	TM	1,3-Dichloropropane	0.4851	0.4539	6.4	TM
68	TM	Dibromochloromethane	0.3530	0.3254	7.8	TM
69	TM**	Chlorobenzene	0.7671	0.7288	5.0	TM**
70	TM*	Ethylbenzene	0.6554	0.6303	3.8	TM*
71	TM**	Bromoform	0.2528	0.2239	11	TM**
72	TM	Isopropylbenzene	2.174	2.531	16	TM
73	TM**	1,1,2,2-Tetrachloroethane	0.7518	0.7678	2.1	TM**
74	TML	1,2,3-Trichloropropane	0.1402	0.1432	2.1	TML 11
75	TML	t-1,4-Dichloro-2-Butene	0.1593	0.2017	27	TML 15
76	TM	Bromobenzene	0.3598	0.4058	13	TM
77	TM	n-Propylbenzene	1.337	1.573	18	TM
78	TM	4-Ethyltoluene	1.977	2.300	16	TM
79	TM	2-Chlorotoluene	0.8183	0.9406	15	TM
80	TM	1,3,5-Trimethylbenzene	1.686	1.839	9.1	TM

Average

6.9

VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 7

Second Source Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: 0

SDG No: \_\_\_\_\_  
Date Analyzed: 01/28/19  
Instrument: Loki  
Cal. Date: 01/28/19  
Data File: 0128L14.D

		Compound	MEAN	CCRF	%D	%Drift
81	TM	4-Chlorotoluene	0.9298	1.037	12	TM
82	TM	Tert-Butylbenzene	1.721	1.824	6.0	TM
83	TM	1,2,4-Trimethylbenzene	1.597	1.640	2.7	TM
84	TM	Sec-Butylbenzene	2.104	2.157	2.5	TM
85	TM	p-Isopropyltoluene	0.9818	0.9739	0.80	TM
86	TM	Benzyl Chloride	0.9035	0.7804	14	TM
87	TM	1,3-DCB	0.6285	0.6079	3.3	TM
88	TM	1,4-DCB	1.219	1.211	0.67	TM
89	TM	n-Butylbenzene	0.9035	0.7804	14	TM
90	TM	1,2-DCB	1.167	1.176	0.75	TM
91	TM	Hexachloroethane	0.4221	0.4313	2.2	TM
92	TML	1,2-Dibromo-3-chloropropane	0.1520	0.1378	9.4	TML 1.8
93	TM	1,2,4-Trichlorobenzene	0.7361	0.7406	0.61	TM
94	TM	Hexachlorobutadiene	0.3627	0.3853	6.2	TM
95	TM	Naphthalene	1.563	1.569	0.37	TM
96	TM	1,2,3-Trichlorobenzene	0.3362	0.3390	0.82	TM
97						
98						
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117						
118						
119						
120						

Average

4.8



Data File : M:\LOKI\DATA\190128\0128L14.D  
 Acq On : 28 Jan 19 20:18  
 Sample : (SS)10ug/L VOC STD 01/28/19  
 Misc : IS&S 11/8/18

Vial: 13  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 29 9:16 2019

Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	431360	25.0000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.97	117	334592	25.0000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.54	152	134464	25.0000	ppb	0.00

System Monitoring Compounds

38) Dibromofluoromethane(S)	5.65	111	201595	23.7697	ppb	0.00
Spiked Amount	25.000		Recovery	=	95.080%	
43) 1,2-DCA-D4(S)	6.07	65	233733	23.6867	ppb	0.00
Spiked Amount	25.000		Recovery	=	94.748%	
64) Toluene-D8(S)	8.37	98	737456	22.0223	ppb	0.00
Spiked Amount	25.000		Recovery	=	88.088%	
72) 4-Bromofluorobenzene(S)	11.27	95	237119	23.6346	ppb	0.00
Spiked Amount	25.000		Recovery	=	94.540%	

Target Compounds

	R.T.	QIon	Response	Conc	Units	Qvalue
2) Freon 1113	1.12	116	175886	100.2643	ppb	100
3) Dichlorodifluoromethane	1.14	85	30093	10.4530	ppb	99
4) Freon 114	1.25	85	22960	9.9813	ppb	99
5) Chloromethane	1.29	50	44685	9.6202	ppb	97
6) Vinyl chloride	1.38	62	33957	10.0009	ppb	99
7) 2-Chloro-1,1,1-trifluoroet	1.48	118	291904	101.7770	ppb	99
8) Bromomethane	1.65	94	23504	11.3785	ppb	92
9) Chloroethane	1.75	64	15593	9.5175	ppb	93
10) Dichlorofluoromethane	1.95	67	53901	9.3085	ppb	100
11) Trichlorofluoromethane	2.00	101	48139	10.1941	ppb	100
12) Acrolein	2.42	56	81132	104.4486	ppb	# 100
13) Acetone	2.61	43	6796	8.3711	ppb	95
14) Freon-113	2.55	101	26928	10.6602	ppb	95
15) 1,1-DCE	2.52	63	7471	10.0847	ppb	81
16) t-Butanol	3.38	59	46795	111.8691	ppb	98
17) 2-Propanol	2.84	45	24336	92.9579	ppb	# 98
18) Acetonitrile	2.92	41	64637	113.4270	ppb	# 86
19) Methyl Acetate	3.01	43	27389	8.9505	ppb	89
20) Iodomethane	2.67	142	8935	8.3659	ppb	99
21) Acrylonitrile	3.44	52	12667	8.3035	ppb	73
22) Methylene chloride	3.09	84	33032	9.1496	ppb	98
23) Carbon disulfide	2.73	76	86187	9.5825	ppb	98
24) Methyl t-butyl ether (MtBE)	3.53	73	98695	9.6272	ppb	95
25) Trans-1,2-DCE	2.52	96	15007	9.9237	ppb	95
26) Diisopropyl Ether	4.33	45	104475	9.5773	ppb	99
28) 1,1-DCA	4.10	63	59460	9.7492	ppb	97
29) Vinyl Acetate	4.27	43	23192	8.0067	ppb	97
30) Ethyl tert Butyl Ether	4.87	59	101168	9.7671	ppb	99
31) MEK (2-Butanone)	5.06	43	21305	9.8179	ppb	90
32) Cis-1,2-DCE	4.98	96	38258	9.5027	ppb	94
33) 2,2-Dichloropropane	4.96	77	50528	9.3500	ppb	95
36) Chloroform	5.45	83	63556	9.7957	ppb	93
37) Bromochloromethane	5.30	128	10279	10.2535	ppb	96
39) 1,1,1-TCA	5.65	97	23752	9.6672	ppb	100
40) Cyclohexane	5.71	41	27744	9.9429	ppb	95
41) 1,1-Dichloropropene	5.88	75	42842	9.6272	ppb	95
42) 2,2,4-Trimethylpentane	6.29	57	87967	9.8437	ppb	95
44) Carbon Tetrachloride	5.87	117	48134	10.1197	ppb	99
45) Tert Amyl Methyl Ether	6.36	73	100663	9.2493	ppb	98

(#) = qualifier out of range (m) = manual integration

Data File : M:\LOKI\DATA\190128\0128L14.D  
 Acq On : 28 Jan 19 20:18  
 Sample : (SS)10ug/L VOC STD 01/28/19  
 Misc : IS&S 11/8/18

Vial: 13  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 29 9:16 2019

Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
47) 1,2-DCA	6.16	62	51048	9.7042	ppb	100
48) Benzene	6.13	78	138733	9.8303	ppb	97
49) TCE	6.95	130	20760	10.0857	ppb	98
50) 2-Pentanone	7.22	43	384268	113.0309	ppb	100
51) 1,2-Dichloropropane	7.20	63	36844	9.4692	ppb	97
52) Bromodichloromethane	7.54	83	27376	9.6498	ppb	99
53) Methyl Cyclohexane	7.17	83	48068	10.0010	ppb	95
54) Dibromomethane	7.34	93	25417	9.5142	ppb	86
55) 2-Chloroethyl vinyl ether	7.94	43	982	10.0448	ppb	93
56) MIBK (methyl isobutyl ket	8.28	43	38490	9.5199	ppb	98
57) 1-Bromo-2-chloroethane	7.88	63	28944	9.4702	ppb	100
58) Cis-1,3-Dichloropropene	8.07	75	60062	9.7473	ppb	97
59) Toluene	8.44	91	82600	10.2878	ppb	100
60) Trans-1,3-Dichloropropene	8.71	75	55811	9.5994	ppb	98
61) 1,1,2-TCA	8.90	83	30454	9.9321	ppb	96
62) 2-Hexanone	9.22	43	27932	10.2941	ppb	97
65) 1,2-EDB	9.44	107	19584	8.5402	ppb	99
66) Tetrachloroethene	9.05	166	23936	9.7275	ppb	95
67) 1-Chlorohexane	10.00	91	40153	9.8236	ppb	95
68) 1,1,1,2-Tetrachloroethane	10.10	131	39800	9.8202	ppb	91
69) m&p-Xylene	10.27	91	230340	20.3804	ppb	100
70) o-Xylene	10.70	106	30768	10.4530	ppb	94
71) Styrene	10.72	104	94023	10.1446	ppb	96
73) 1,3-Dichloropropane	9.08	76	60753	9.3578	ppb	93
74) Dibromochloromethane	9.33	129	43553	9.2188	ppb	94
75) Chlorobenzene	10.00	112	97537	9.5005	ppb	98
76) Ethylbenzene	10.13	91	84352	9.6166	ppb	97
77) Bromoform	10.90	173	29963	8.8545	ppb	100
79) Isopropylbenzene	11.11	105	136131	11.6414	ppb	98
80) 1,1,2,2-Tetrachloroethane	11.43	83	41295	10.2131	ppb	94
81) 1,2,3-Trichloropropane	11.47	110	7704	11.1044	ppb	95
82) t-1,4-Dichloro-2-Butene	11.49	53	10851	11.4727	ppb	98
83) Bromobenzene	11.43	156	21824	11.2758	ppb	95
84) n-Propylbenzene	11.56	91	84587	11.7659	ppb	100
85) 4-Ethyltoluene	11.69	105	123702	11.6329	ppb	99
86) 2-Chlorotoluene	11.64	91	50592	11.4948	ppb	98
87) 1,3,5-Trimethylbenzene	11.76	105	98887	10.9062	ppb	100
88) 4-Chlorotoluene	11.77	91	55800	11.1575	ppb	99
89) Tert-Butylbenzene	12.12	119	98109	10.5988	ppb	97
90) 1,2,4-Trimethylbenzene	12.17	105	88203	10.2674	ppb	99
91) Sec-Butylbenzene	12.36	105	116016	10.2538	ppb	98
92) p-Isopropyltoluene	12.53	119	52384	9.9200	ppb	94
93) Benzyl Chloride	12.72	91	41973	8.6376	ppb	100
94) 1,3-DCB	12.47	146	32696	9.6722	ppb	96
95) 1,4-DCB	12.57	146	65119	9.9327	ppb	97
96) n-Butylbenzene	12.72	91	41973	8.6376	ppb	98
97) 1,2-DCB	12.98	146	63257	10.0751	ppb	94
98) Hexachloroethane	13.26	117	23199	10.2186	ppb	91
99) 1,2-Dibromo-3-chloropropan	13.82	75	7411	10.1794	ppb	92
100) 1,2,4-Trichlorobenzene	14.75	180	39834	10.0613	ppb	95
101) Hexachlorobutadiene	14.94	225	20724	10.6243	ppb	88
102) Naphthalene	15.01	128	84384	10.0372	ppb	95
103) 1,2,3-Trichlorobenzene	15.28	180	18232	10.0821	ppb	97

(#) = qualifier out of range (m) = manual integration

Quantitation Report

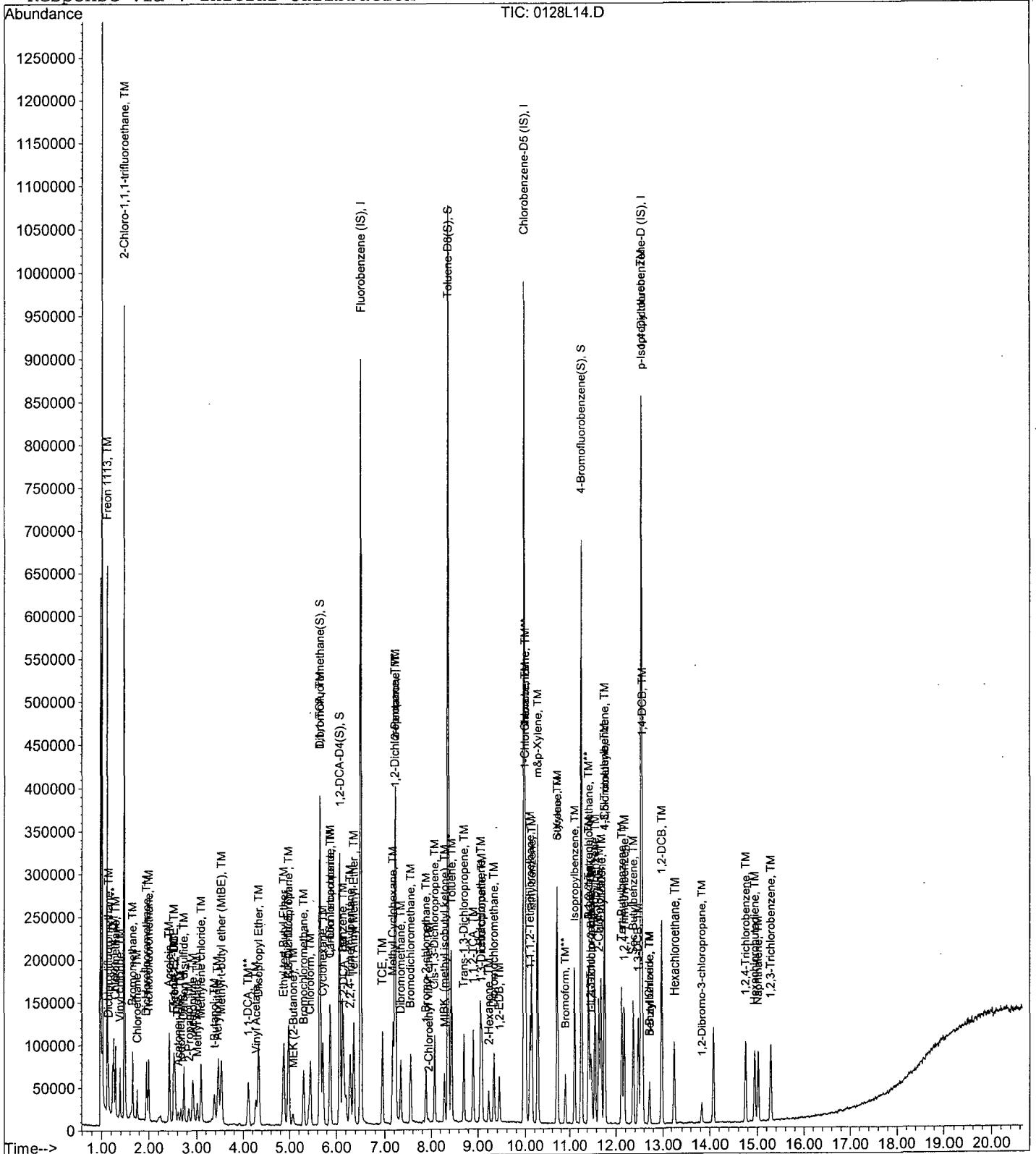
Data File : M:\LOKI\DATA\190128\0128L14.D  
Acq On : 28 Jan 19 20:18  
Sample : (SS)10ug/L VOC STD 01/28/19  
Misc : IS&S 11/8/18

Vial: 13  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 29 9:16 2019

Quant Results File: L0128W.RES

Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Jan 29 09:06:22 2019  
Response via : Initial Calibration



VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 7

Ending Continuing Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: \_\_\_\_\_

SDG No: \_\_\_\_\_  
Date Analyzed: 01/29/19  
Instrument: Loki  
Initial Cal. Date: 01/28/19  
Data File: 0128L38.D

		Compound	MEAN	CCRF	%D	%Drift	
1	I	Fluorobenzene (IS)	ISTD			I	
2	TM	Freon 1113	0.1017	0.1039	2.2	TM	
3	TML	Dichlorodifluoromethane	0.1650	0.1842	12	TML	10
4	TML	Freon 114	0.1391	0.1506	8.2	TML	16
5	TM**L	Chloromethane	0.3027	0.2728	9.9	TM**L	1.6
6	TM*	Vinyl chloride	0.1968	0.1996	1.4	TM*	
7	TM	2-Chloro-1,1,1-trifluoroethane	0.1662	0.1880	13	TM	
8	TML	Bromomethane	0.1336	0.1450	8.5	TML	21
9	TML	Chloroethane	0.1071	0.1011	5.5	TML	7.2
10	TM	Dichlorofluoromethane	0.3356	0.3203	4.6	TM	
11	TM	Trichlorofluoromethane	0.2737	0.3036	11	TM	
12	TM	Acrolein	0.0450	0.0319	29	TM	
13	TML	Acetone	0.0810	0.0387	52	TML	18
14	TM	Freon-113	0.1464	0.1574	7.5	TM	
15	TM*L	1,1-DCE	0.0465	0.0445	4.3	TM*L	3.6
16	TML	t-Butanol	0.0275	0.0220	20	TML	9.3
17	TML	2-Propanol	0.0169	0.0127	25	TML	17
18	TM	Acetonitrile	0.0330	0.0277	16	TM	
19	TML	Methyl Acetate	0.2000	0.1580	21	TML	11
20	TML	Iodomethane	0.0609	0.0290	52	TML	42
21	TM	Acrylonitrile	0.0884	0.0710	20	TM	
22	TML	Methylene chloride	0.3024	0.1950	36	TML	6.6
23	TM	Carbon disulfide	0.5213	0.4997	4.1	TM	
24	TM	Methyl t-butyl ether (MtBE)	0.5941	0.5777	2.8	TM	
25	TM	Trans-1,2-DCE	0.0876	0.0959	9.4	TM	
26	TM	Diisopropyl Ether	0.6322	0.6115	3.3	TM	
27	TM**	2,2-Dichloro-1,1,1-trifluoroethane	0.0000	0.0122	0.00	TM**	
28	TM**	1,1-DCA	0.3535	0.3595	1.7	TM**	
29	TM	Vinyl Acetate	0.1679	0.1124	33	TM	
30	TM	Ethyl tert Butyl Ether	0.6003	0.5985	0.30	TM	
31	TML	MEK (2-Butanone)	0.1403	0.1091	22	TML	14
32	TM	Cis-1,2-DCE	0.2333	0.2434	4.3	TM	
33	TM	2,2-Dichloropropane	0.3132	0.2471	21	TM	
34	TM	2-Methylpentane	0.0000	0.0003	0.00	TM	
35	TML	3-Methylpentane	0.0000	0.0001	0.00	TML	
36	TM*	Chloroform	0.3760	0.3855	2.5	TM*	
37	TM	Bromochloromethane	0.0581	0.0601	3.5	TM	
38	S	Dibromofluoromethane(S)	0.4915	0.4920	0.10	S	
39	TM	1,1,1-TCA	0.1424	0.1494	4.9	TM	
40	TML	Cyclohexane	0.1818	0.1777	2.3	TML	9.6

Average

12.2

VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 7

Ending Continuing Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: 0

SDG No: \_\_\_\_\_  
Date Analyzed: 01/29/19  
Instrument: Loki  
Cal. Date: 01/28/19  
Data File: 0128L38.D

		Compound	MEAN	CCRF	%D	%Drift
41	TM	1,1-Dichloropropene	0.2579	0.2638	2.3	TM
42	TM	2,2,4-Trimethylpentane	0.5179	0.4952	4.4	TM
43	S	1,2-DCA-D4(S)	0.5719	0.5617	1.8	S
44	TM	Carbon Tetrachloride	0.2757	0.3098	12	TM
45	TM	Tert Amyl Methyl Ether	0.6308	0.6018	4.6	TM
46	TML	Methylcyclopentane	0.0000	0.0028	0.00	TML
47	TM	1,2-DCA	0.3049	0.3107	1.9	TM
48	TM	Benzene	0.8179	0.8386	2.5	TM
49	TM	TCE	0.1193	0.1364	14	TM
50	TM	2-Pentanone	0.1970	0.1750	11	TM
51	TM*	1,2-Dichloropropane	0.2255	0.2176	3.5	TM*
52	TM	Bromodichloromethane	0.1644	0.1721	4.6	TM
53	TM	Methyl Cyclohexane	0.2786	0.2899	4.1	TM
54	TM	Dibromomethane	0.1548	0.1656	7.0	TM
55	TM	2-Chloroethyl vinyl ether	0.0057	0.0038	34	TM
56	TML	MIBK (methyl isobutyl ketone)	0.2693	0.2129	21	TML 9.2
57	TM	1-Bromo-2-chloroethane	0.1771	0.1865	5.3	TM
58	TM	Cis-1,3-Dichloropropene	0.3571	0.3602	0.85	TM
59	TM*	Toluene	0.4653	0.5084	9.3	TM*
60	TM	Trans-1,3-Dichloropropene	0.3370	0.3378	0.25	TM
61	TM	1,1,2-TCA	0.1777	0.1845	3.8	TM
62	TML	2-Hexanone	0.1791	0.1377	23	TML 12
63	I	Chlorobenzene-D5 (IS)	ISTD			I
64	S	Toluene-D8(S)	2.502	2.276	9.1	S
65	TM	1,2-EDB	0.1713	0.1577	8.0	TM
66	TML	Tetrachloroethene	0.1922	0.1768	8.0	TML 4.0
67	TML	1-Chlorohexane	0.3424	0.3096	9.6	TML 1.3
68	TM	1,1,1,2-Tetrachloroethane	0.3028	0.3237	6.9	TM
69	TM	m&p-Xylene	0.8445	0.8892	5.3	TM
70	TM	o-Xylene	0.2199	0.2474	12	TM
71	TM	Styrene	0.6925	0.7623	10	TM
72	S	4-Bromofluorobenzene(S)	0.7496	0.7975	6.4	S
73	TM	1,3-Dichloropropane	0.4851	0.4842	0.18	TM
74	TM	Dibromochloromethane	0.3530	0.3534	0.12	TM
75	TM**	Chlorobenzene	0.7671	0.8079	5.3	TM**
76	TM*	Ethylbenzene	0.6554	0.6791	3.6	TM*
77	TM**	Bromoform	0.2528	0.2595	2.6	TM**
78	I	1,4-Dichlorobenzene-D (IS)	ISTD			I
79	TM	Isopropylbenzene	2.174	2.385	9.7	TM
80	TM**	1,1,2,2-Tetrachloroethane	0.7518	0.7206	4.1	TM**

Average

7.2

VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 7

Ending Continuing Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: 0

SDG No: \_\_\_\_\_  
Date Analyzed: 01/29/19  
Instrument: Loki  
Cal. Date: 01/28/19  
Data File: 0128L38.D

		Compound	MEAN	CCRF	%D	%Drift	
81	TML	1,2,3-Trichloropropane	0.1402	0.1259	10	TML	4.0
82	TML	t-1,4-Dichloro-2-Butene	0.1593	0.1531	3.9	TML	14
83	TM	Bromobenzene	0.3598	0.3653	1.5	TM	
84	TM	n-Propylbenzene	1.337	1.467	9.8	TM	
85	TM	4-Ethyltoluene	1.977	2.131	7.8	TM	
86	TM	2-Chlorotoluene	0.8183	0.8930	9.1	TM	
87	TM	1,3,5-Trimethylbenzene	1.686	1.794	6.4	TM	
88	TM	4-Chlorotoluene	0.9298	1.040	12	TM	
89	TM	Tert-Butylbenzene	1.721	1.876	9.0	TM	
90	TM	1,2,4-Trimethylbenzene	1.597	1.635	2.4	TM	
91	TM	Sec-Butylbenzene	2.104	2.319	10	TM	
92	TM	p-Isopropyltoluene	0.9818	0.9216	6.1	TM	
93	TM	Benzyl Chloride	0.9035	0.5852	35	TM	
94	TM	1,3-DCB	0.6285	0.6427	2.3	TM	
95	TM	1,4-DCB	1.219	1.271	4.3	TM	
96	TM	n-Butylbenzene	0.9035	0.5852	35	TM	
97	TM	1,2-DCB	1.167	1.196	2.4	TM	
98	TM	Hexachloroethane	0.4221	0.4696	11	TM	
99	TML	1,2-Dibromo-3-chloropropane	0.1520	0.1233	19	TML	8.9
100	TM	1,2,4-Trichlorobenzene	0.7361	0.5427	26	TM	
101	TM	Hexachlorobutadiene	0.3627	0.3006	17	TM	
102	TM	Naphthalene	1.563	1.068	32	TM	
103	TM	1,2,3-Trichlorobenzene	0.3362	0.2600	23	TM	
104							
105							
106							
107							
108							
109							
110							
111							
112							
113							
114							
115							
116							
117							
118							
119							
120							

Average

12.8

Data File : M:\LOKI\DATA\190128\0128L38.D  
 Acq On : 29 Jan 19 7:43  
 Sample : Ending CCV 10ug/L 01/28/19  
 Misc : IS&S 11/8/18

Vial: 37  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 29 9:16 2019

Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	381632	25.0000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.97	117	307200	25.0000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.54	152	145920	25.0000	ppb	0.00

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
38) Dibromofluoromethane(S)	5.65	111	187777	25.0254	ppb	0.00
Spiked Amount 25.000			Recovery =	100.100%		
43) 1,2-DCA-D4(S)	6.07	65	214363	24.5544	ppb	0.00
Spiked Amount 25.000			Recovery =	98.216%		
64) Toluene-D8(S)	8.37	98	699065	22.7373	ppb	0.00
Spiked Amount 25.000			Recovery =	90.948%		
72) 4-Bromofluorobenzene(S)	11.26	95	244991	26.5966	ppb	0.00
Spiked Amount 25.000			Recovery =	106.388%		

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Freon 1113	1.12	116	158658	102.2285	ppb	99
3) Dichlorodifluoromethane	1.14	85	28115	11.0381	ppb	92
4) Freon 114	1.25	85	22992	11.6045	ppb	97
5) Chloromethane	1.29	50	41637	10.1561	ppb	96
6) Vinyl chloride	1.38	62	30471	10.1436	ppb	97
7) 2-Chloro-1,1,1-trifluoroet	1.48	118	286976	113.0967	ppb	99
8) Bromomethane	1.65	94	22128	12.1493	ppb	99
9) Chloroethane	1.76	64	15439	10.7166	ppb	99
10) Dichlorofluoromethane	1.95	67	48894	9.5441	ppb	93
11) Trichlorofluoromethane	2.00	101	46342	11.0923	ppb	99
12) Acrolein	2.42	56	60788	88.4552	ppb	# 99
13) Acetone	2.61	43	5906	8.1829	ppb	97
14) Freon-113	2.54	101	24031	10.7529	ppb	92
15) 1,1-DCE	2.52	63	6796	10.3639	ppb	89
16) t-Butanol	3.37	59	41944	113.4366	ppb	95
17) 2-Propanol	2.84	45	19319	82.6114	ppb	# 99
18) Acetonitrile	2.92	41	52814	104.7561	ppb	92
19) Methyl Acetate	3.01	43	24116	8.9040	ppb	91
20) Iodomethane	2.67	142	4420	5.8334	ppb	96
21) Acrylonitrile	3.44	52	10831	8.0251	ppb	90
22) Methylene chloride	3.10	84	29762	9.3380	ppb	99
23) Carbon disulfide	2.73	76	76280	9.5861	ppb	98
24) Methyl t-butyl ether (MtBE)	3.53	73	88183	9.7226	ppb	95
25) Trans-1,2-DCE	2.52	96	14642	10.9440	ppb	98
26) Diisopropyl Ether	4.33	45	93341	9.6716	ppb	95
28) 1,1-DCA	4.10	63	54886	10.1719	ppb	98
29) Vinyl Acetate	4.33	43	17152	6.6931	ppb	# 70
30) Ethyl tert Butyl Ether	4.87	59	91360	9.9695	ppb	98
31) MEK (2-Butanone)	5.07	43	16651	8.5520	ppb	91
32) Cis-1,2-DCE	4.98	96	37155	10.4313	ppb	89
33) 2,2-Dichloropropane	4.96	77	37716	7.8886	ppb	99
36) Chloroform	5.45	83	58850	10.2523	ppb	97
37) Bromochloromethane	5.30	128	9177	10.3471	ppb	84
39) 1,1,1-TCA	5.65	97	22800	10.4889	ppb	94
40) Cyclohexane	5.71	41	27119	10.9595	ppb	94
41) 1,1-Dichloropropene	5.88	75	40268	10.2278	ppb	96
42) 2,2,4-Trimethylpentane	6.29	57	75595	9.5615	ppb	# 92
44) Carbon Tetrachloride	5.87	117	47285	11.2365	ppb	91
45) Tert Amyl Methyl Ether	6.36	73	91865	9.5408	ppb	98

Data File : M:\LOKI\DATA\190128\0128L38.D  
 Acq On : 29 Jan 19 7:43  
 Sample : Ending CCV 10ug/L 01/28/19  
 Misc : IS&S 11/8/18

Vial: 37  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 29 9:16 2019

Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
47) 1,2-DCA	6.16	62	47428	10.1909	ppb	93
48) Benzene	6.13	78	128018	10.2530	ppb	98
49) TCE	6.95	130	20816	11.4307	ppb	98
50) 2-Pentanone	7.22	43	333941	111.0268	ppb	99
51) 1,2-Dichloropropane	7.21	63	33212	9.6480	ppb	98
52) Bromodichloromethane	7.55	83	26264	10.4642	ppb	100
53) Methyl Cyclohexane	7.17	83	44247	10.4056	ppb	99
54) Dibromomethane	7.33	93	25279	10.6956	ppb	93
55) 2-Chloroethyl vinyl ether	7.93	43	575	6.6481	ppb #	85
56) MIBK (methyl isobutyl ket	8.28	43	32497	9.0766	ppb	96
57) 1-Bromo-2-chloroethane	7.88	63	28472	10.5297	ppb	93
58) Cis-1,3-Dichloropropene	8.07	75	54980	10.0852	ppb	95
59) Toluene	8.44	91	77616	10.9267	ppb	98
60) Trans-1,3-Dichloropropene	8.71	75	51566	10.0250	ppb	92
61) 1,1,2-TCA	8.90	83	28168	10.3836	ppb	96
62) 2-Hexanone	9.22	43	21020	8.8056	ppb	91
65) 1,2-EDB	9.44	107	19376	9.2029	ppb	98
66) Tetrachloroethene	9.05	166	21720	9.6013	ppb	94
67) 1-Chlorohexane	10.00	91	38048	10.1266	ppb	92
68) 1,1,1,2-Tetrachloroethane	10.09	131	39772	10.6883	ppb	88
69) m&p-Xylene	10.26	91	218520	21.0586	ppb	96
70) o-Xylene	10.70	106	30400	11.2489	ppb	91
71) Styrene	10.71	104	93672	11.0079	ppb	97
73) 1,3-Dichloropropane	9.08	76	59500	9.9820	ppb	91
74) Dibromochloromethane	9.33	129	43428	10.0120	ppb	99
75) Chlorobenzene	10.00	112	99279	10.5325	ppb	98
76) Ethylbenzene	10.13	91	83448	10.3618	ppb	98
77) Bromoform	10.90	173	31886	10.2629	ppb	97
79) Isopropylbenzene	11.11	105	139181	10.9678	ppb	96
80) 1,1,2,2-Tetrachloroethane	11.43	83	42062	9.5861	ppb	97
81) 1,2,3-Trichloropropane	11.47	110	7348	9.6000	ppb	100
82) t-1,4-Dichloro-2-Butene	11.50	53	8934	8.6332	ppb	88
83) Bromobenzene	11.43	156	21320	10.1506	ppb	94
84) n-Propylbenzene	11.56	91	85645	10.9778	ppb	99
85) 4-Ethyltoluene	11.69	105	124362	10.7768	ppb	95
86) 2-Chlorotoluene	11.65	91	52120	10.9123	ppb	98
87) 1,3,5-Trimethylbenzene	11.76	105	104699	10.6406	ppb	98
88) 4-Chlorotoluene	11.77	91	60720	11.1881	ppb	98
89) Tert-Butylbenzene	12.12	119	109494	10.9001	ppb	98
90) 1,2,4-Trimethylbenzene	12.17	105	95427	10.2362	ppb	98
91) Sec-Butylbenzene	12.36	105	135354	11.0238	ppb	96
92) p-Isopropyltoluene	12.52	119	53792	9.3869	ppb	96
93) Benzyl Chloride	12.71	91	34159	6.4777	ppb	98
94) 1,3-DCB	12.46	146	37512	10.2257	ppb	94
95) 1,4-DCB	12.56	146	74205	10.4300	ppb	97
96) n-Butylbenzene	12.71	91	34159	6.4777	ppb	99
97) 1,2-DCB	12.97	146	69781	10.2417	ppb	95
98) Hexachloroethane	13.26	117	27411	11.1259	ppb	79
99) 1,2-Dibromo-3-chloropropan	13.82	75	7199	9.1137	ppb	90
100) 1,2,4-Trichlorobenzene	14.74	180	31675	7.3724	ppb	93
101) Hexachlorobutadiene	14.94	225	17546	8.2889	ppb	96
102) Naphthalene	15.01	128	62360	6.8352	ppb	98
103) 1,2,3-Trichlorobenzene	15.28	180	15175	7.7328	ppb	98

(#) = qualifier out of range (m) = manual integration



Quantitation Report

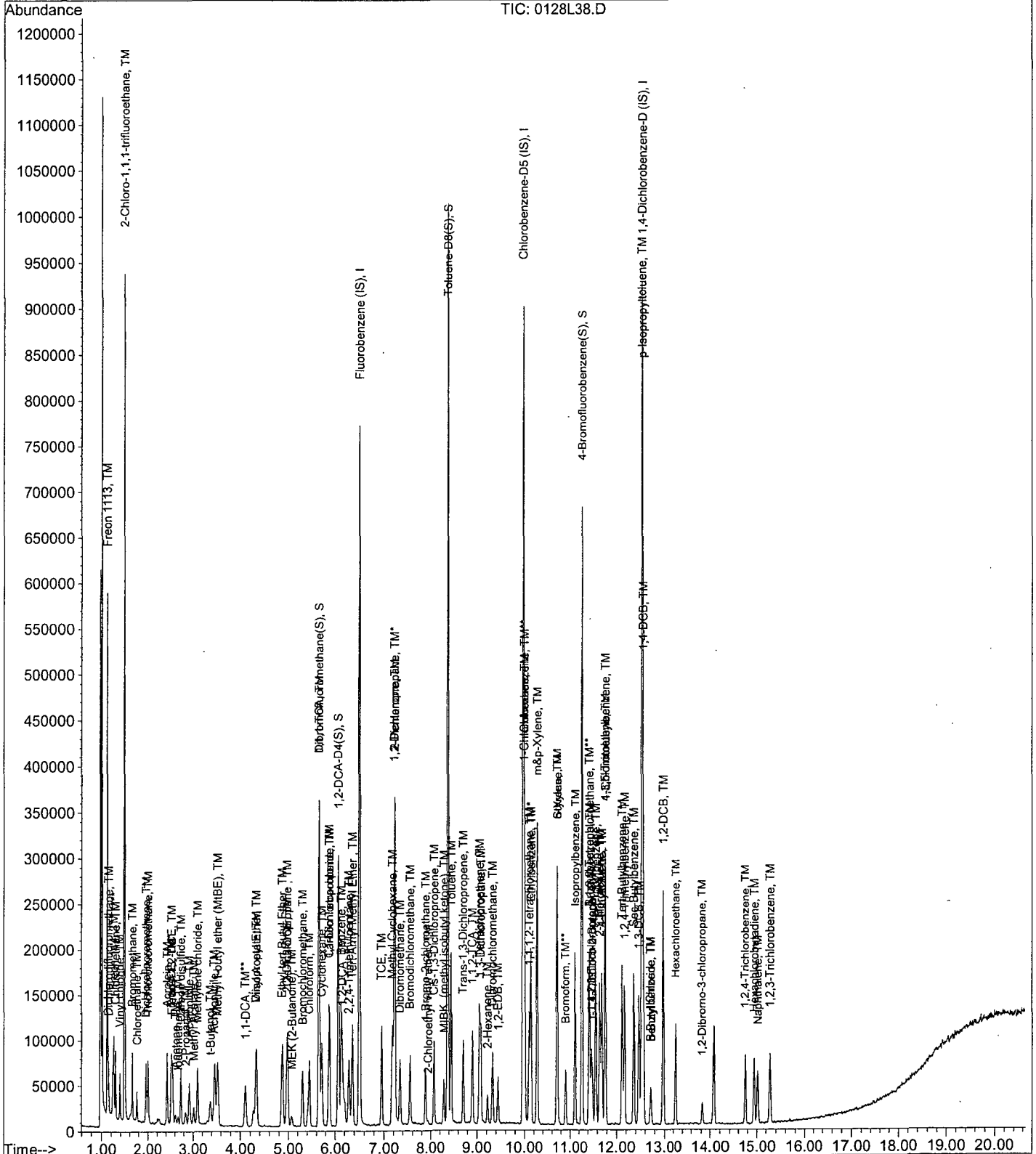
Data File : M:\LOKI\DATA\190128\0128L38.D  
Acq On : 29 Jan 19 7:43  
Sample : Ending CCV 10ug/L 01/28/19  
Misc : IS&S 11/8/18

Vial: 37  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 29 9:16 2019

Quant Results File: L0128W.RES

Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Jan 29 09:06:22 2019  
Response via : Initial Calibration



VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 7

Continuing Calibration

Lab Name: APPL, Inc.

SDG No: \_\_\_\_\_

Case No: \_\_\_\_\_

Date Analyzed: 01/30/19

Matrix: \_\_\_\_\_

Instrument: Loki

Initial Cal. Date: 01/28/19

Data File: 0130L04.D

		Compound	MEAN	CCRF	%D	%Drift	
1	I	Fluorobenzene (IS)	ISTD			I	
2	TM	Freon 1113	0.1017	0.1202	18	TM	
3	TML	Dichlorodifluoromethane	0.1650	0.1619	1.9	TML	3.0
4	TML	Freon 114	0.1391	0.1575	13	TML	22
5	TM**L	Chloromethane	0.3027	0.2536	16	TM**L	5.9
6	TM*	Vinyl chloride	0.1968	0.1760	11	TM*	
7	TM	2-Chloro-1,1,1-trifluoroethane	0.1662	0.1853	11	TM	
8	TML	Bromomethane	0.1336	0.1424	6.5	TML	19
9	TML	Chloroethane	0.1071	0.0961	10	TML	1.6
10	TM	Dichlorofluoromethane	0.3356	0.3165	5.7	TM	
11	TM	Trichlorofluoromethane	0.2737	0.2940	7.4	TM	
12	TM	Acrolein	0.0450	0.0332	26	TM	nt
13	TML	Acetone	0.0810	0.0458	43	TML	1.1
14	TM	Freon-113	0.1464	0.1558	6.4	TM	
15	TM*L	1,1-DCE	0.0465	0.0405	13	TM*L	5.5
16	TML	t-Butanol	0.0275	0.0198	28	TML	19
17	TML	2-Propanol	0.0169	0.0111	34	TML	28
18	TM	Acetonitrile	0.0330	0.0254	23	TM	nt
19	TML	Methyl Acetate	0.2000	0.1437	28	TML	20
20	TML	Iodomethane	0.0609	0.0553	9.3	TML	12
21	TM	Acrylonitrile	0.0884	0.0684	23	TM	nt
22	TML	Methylene chloride	0.3024	0.2016	33	TML	3.0
23	TM	Carbon disulfide	0.5213	0.4810	7.7	TM	
24	TM	Methyl t-butyl ether (MtBE)	0.5941	0.5389	9.3	TM	
25	TM	Trans-1,2-DCE	0.0876	0.0834	4.8	TM	
26	TM	Diisopropyl Ether	0.6322	0.5566	12	TM	
27	TM**	2,2-Dichloro-1,1,1-trifluoroethane	0.0000	0.0111	0.00	TM**	
28	TM**	1,1-DCA	0.3535	0.3533	0.04	TM**	
29	TM	Vinyl Acetate	0.1679	0.1115	34	TM	nt
30	TM	Ethyl tert Butyl Ether	0.6003	0.5538	7.8	TM	
31	TML	MEK (2-Butanone)	0.1403	0.1089	22	TML	15
32	TM	Cis-1,2-DCE	0.2333	0.2341	0.35	TM	
33	TM	2,2-Dichloropropane	0.3132	0.3325	6.2	TM	
34	TM	2-Methylpentane	0.0000	0.0001	0.00	TM	
35	TML	3-Methylpentane	0.0000	0.0010	0.00	TML	
36	TM*	Chloroform	0.3760	0.3846	2.3	TM*	
37	TM	Bromochloromethane	0.0581	0.0601	3.5	TM	
38	S	Dibromofluoromethane(S)	0.4915	0.4944	0.58	S	
39	TM	1,1,1-TCA	0.1424	0.1537	8.0	TM	
40	TML	Cyclohexane	0.1818	0.1552	15	TML	3.9

Average

12.8

VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 7

Continuing Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: 0

SDG No: \_\_\_\_\_  
Date Analyzed: 01/30/19  
Instrument: Loki  
Cal. Date: 01/28/19  
Data File: 0130L04.D

		Compound	MEAN	CCRF	%D	%Drift
41	TM	1,1-Dichloropropene	0.2579	0.2560	0.72	TM
42	TM	2,2,4-Trimethylpentane	0.5179	0.5364	3.6	TM
43	S	1,2-DCA-D4(S)	0.5719	0.5560	2.8	S
44	TM	Carbon Tetrachloride	0.2757	0.3023	9.7	TM
45	TM	Tert Amyl Methyl Ether	0.6308	0.5704	9.6	TM
46	TML	Methylcyclopentane	0.0000	0.0011	0.00	TML
47	TM	1,2-DCA	0.3049	0.2932	3.8	TM
48	TM	Benzene	0.8179	0.8138	0.51	TM
49	TM	TCE	0.1193	0.1223	2.5	TM
50	TM	2-Pentanone	0.1970	0.1607	18	TM
51	TM*	1,2-Dichloropropane	0.2255	0.2260	0.22	TM*
52	TM	Bromodichloromethane	0.1644	0.1718	4.5	TM
53	TM	Methyl Cyclohexane	0.2786	0.2921	4.9	TM
54	TM	Dibromomethane	0.1548	0.1556	0.51	TM
55	TM	2-Chloroethyl vinyl ether	0.0057	0.0039	31	TM
56	TML	MIBK (methyl isobutyl ketone)	0.2693	0.1989	26	TML
57	TM	1-Bromo-2-chloroethane	0.1771	0.1797	1.4	TM
58	TM	Cis-1,3-Dichloropropene	0.3571	0.3625	1.5	TM
59	TM*	Toluene	0.4653	0.5079	9.1	TM*
60	TM	Trans-1,3-Dichloropropene	0.3370	0.3409	1.2	TM
61	TM	1,1,2-TCA	0.1777	0.1813	2.0	TM
62	TML	2-Hexanone	0.1791	0.1394	22	TML
63	I	Chlorobenzene-D5 (IS)	ISTD			I
64	S	Toluene-D8(S)	2.502	2.215	11	S
65	TM	1,2-EDB	0.1713	0.1500	12	TM
66	TML	Tetrachloroethene	0.1922	0.1956	1.7	TML
67	TML	1-Chlorohexane	0.3424	0.2965	13	TML
68	TM	1,1,1,2-Tetrachloroethane	0.3028	0.3159	4.3	TM
69	TM	m&p-Xylene	0.8445	0.8659	2.5	TM
70	TM	o-Xylene	0.2199	0.2411	9.6	TM
71	TM	Styrene	0.6925	0.7390	6.7	TM
72	S	4-Bromofluorobenzene(S)	0.7496	0.8137	8.5	S
73	TM	1,3-Dichloropropane	0.4851	0.4434	8.6	TM
74	TM	Dibromochloromethane	0.3530	0.3211	9.0	TM
75	TM**	Chlorobenzene	0.7671	0.7516	2.0	TM**
76	TM*	Ethylbenzene	0.6554	0.6496	0.89	TM*
77	TM**	Bromoform	0.2528	0.2537	0.33	TM**
78	I	1,4-Dichlorobenzene-D (IS)	ISTD			I
79	TM	Isopropylbenzene	2.174	2.097	3.6	TM
80	TM**	1,1,2,2-Tetrachloroethane	0.7518	0.6718	11	TM**

Average

6.8

VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 7

Continuing Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: 0

SDG No: \_\_\_\_\_  
Date Analyzed: 01/30/19  
Instrument: Loki  
Cal. Date: 01/28/19  
Data File: 0130L04.D

		Compound	MEAN	CCRF	%D	%Drift	
81	TML	1,2,3-Trichloropropane	0.1402	0.1148	18	TML	14
82	TML	t-1,4-Dichloro-2-Butene	0.1593	0.1425	11	TML	20
83	TM	Bromobenzene	0.3598	0.3385	5.9	TM	
84	TM	n-Propylbenzene	1.337	1.286	3.8	TM	
85	TM	4-Ethyltoluene	1.977	1.960	0.88	TM	
86	TM	2-Chlorotoluene	0.8183	0.8037	1.8	TM	
87	TM	1,3,5-Trimethylbenzene	1.686	1.626	3.6	TM	
88	TM	4-Chlorotoluene	0.9298	0.9232	0.72	TM	
89	TM	Tert-Butylbenzene	1.721	1.713	0.45	TM	
90	TM	1,2,4-Trimethylbenzene	1.597	1.537	3.8	TM	
91	TM	Sec-Butylbenzene	2.104	2.124	0.97	TM	
92	TM	p-Isopropyltoluene	0.9818	0.8905	9.3	TM	
93	TM	Benzyl Chloride	0.9035	0.8112	10	TM	
94	TM	1,3-DCB	0.6285	0.6390	1.7	TM	
95	TM	1,4-DCB	1.219	1.156	5.2	TM	
96	TM	n-Butylbenzene	0.9035	0.8112	10	TM	
97	TM	1,2-DCB	1.167	1.119	4.1	TM	
98	TM	Hexachloroethane	0.4221	0.4158	1.5	TM	
99	TML	1,2-Dibromo-3-chloropropane	0.1520	0.1335	12	TML	1.4
100	TM	1,2,4-Trichlorobenzene	0.7361	0.6741	8.4	TM	
101	TM	Hexachlorobutadiene	0.3627	0.3667	1.1	TM	
102	TM	Naphthalene	1.563	1.327	15	TM	
103	TM	1,2,3-Trichlorobenzene	0.3362	0.3227	4.0	TM	
104							
105							
106							
107							
108							
109							
110							
111							
112							
113							
114							
115							
116							
117							
118							
119							
120							

Average

5.8

Data File : M:\LOKI\DATA\190128\0130L04.D  
 Acq On : 30 Jan 19 9:40  
 Sample : 190130A CCV 10ug/L  
 Misc : IS&S 11/8/18

Vial: 3  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 30 10:03 2019

Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	358528	25.0000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.97	117	306304	25.0000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.53	152	163264	25.0000	ppb	0.00

System Monitoring Compounds

38) Dibromofluoromethane(S)	5.65	111	177255	25.1455	ppb	0.00
Spiked Amount	25.000		Recovery	=	100.580%	
43) 1,2-DCA-D4(S)	6.07	65	199343	24.3054	ppb	0.00
Spiked Amount	25.000		Recovery	=	97.220%	
64) Toluene-D8(S)	8.37	98	678582	22.1357	ppb	0.00
Spiked Amount	25.000		Recovery	=	88.544%	
72) 4-Bromofluorobenzene(S)	11.26	95	249233	27.1363	ppb	0.00
Spiked Amount	25.000		Recovery	=	108.544%	

Target Compounds

	R.T.	QIon	Response	Conc	Units	Qvalue
2) Freon 1113	1.12	116	172420	118.2550	ppb	98
3) Dichlorodifluoromethane	1.15	85	23215	9.7024	ppb	99
4) Freon 114	1.25	85	22592	12.2443	ppb	89
5) Chloromethane	1.29	50	36376	9.4129	ppb	99
6) Vinyl chloride	1.38	62	25240	8.9437	ppb	99
7) 2-Chloro-1,1,1-trifluoroet	1.48	118	265728	111.4714	ppb	100
8) Bromomethane	1.65	94	20416	11.9202	ppb	83
9) Chloroethane	1.75	64	13782	10.1557	ppb	100
10) Dichlorofluoromethane	1.95	67	45389	9.4308	ppb	100
11) Trichlorofluoromethane	2.00	101	42162	10.7421	ppb	95
12) Acrolein	2.42	56	59581	92.2858	ppb	98
13) Acetone	2.61	43	6573	10.1093	ppb	94
14) Freon-113	2.55	101	22337	10.6390	ppb	92
15) 1,1-DCE	2.52	63	5814	9.4534	ppb	87
16) t-Butanol	3.37	59	35520	101.5135	ppb	97
17) 2-Propanol	2.83	45	15947	71.6434	ppb	# 83
18) Acetonitrile	2.92	41	45591	96.2568	ppb	94
19) Methyl Acetate	3.01	43	20612	8.0289	ppb	89
20) Iodomethane	2.67	142	7925	8.7515	ppb	97
21) Acrylonitrile	3.44	52	9806	7.7339	ppb	85
22) Methylene chloride	3.09	84	28918	9.6951	ppb	96
23) Carbon disulfide	2.73	76	68984	9.2279	ppb	99
24) Methyl t-butyl ether (MtBE)	3.53	73	77287	9.0704	ppb	96
25) Trans-1,2-DCE	2.52	96	11964	9.5186	ppb	82
26) Diisopropyl Ether	4.33	45	79825	8.8042	ppb	99
28) 1,1-DCA	4.10	63	50674	9.9965	ppb	96
29) Vinyl Acetate	4.27	43	15997	6.6446	ppb	93
30) Ethyl tert Butyl Ether	4.87	59	79419	9.2250	ppb	97
31) MEK (2-Butanone)	5.06	43	15614	8.5343	ppb	90
32) Cis-1,2-DCE	4.98	96	33579	10.0349	ppb	88
33) 2,2-Dichloropropane	4.96	77	47683	10.6160	ppb	93
36) Chloroform	5.45	83	55162	10.2291	ppb	95
37) Bromochloromethane	5.30	128	8624	10.3502	ppb	99
39) 1,1,1-TCA	5.65	97	22048	10.7966	ppb	99
40) Cyclohexane	5.72	41	22257	9.6054	ppb	91
41) 1,1-Dichloropropene	5.88	75	36720	9.9277	ppb	99
42) 2,2,4-Trimethylpentane	6.28	57	76921	10.3562	ppb	91
44) Carbon Tetrachloride	5.86	117	43355	10.9665	ppb	99
45) Tert Amyl Methyl Ether	6.35	73	81798	9.0427	ppb	97

(#) = qualifier out of range (m) = manual integration

Data File : M:\LOKI\DATA\190128\0130L04.D  
 Acq On : 30 Jan 19 9:40  
 Sample : 190130A CCV 10ug/L  
 Misc : IS&S 11/8/18

Vial: 3  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 30 10:03 2019

Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
47) 1,2-DCA	6.16	62	42041	9.6155	ppb	99
48) Benzene	6.13	78	116705	9.9493	ppb	99
49) TCE	6.95	130	17536	10.2501	ppb	95
50) 2-Pentanone	7.22	43	288010	101.9265	ppb	97
51) 1,2-Dichloropropane	7.20	63	32411	10.0220	ppb	97
52) Bromodichloromethane	7.54	83	24632	10.4464	ppb	99
53) Methyl Cyclohexane	7.17	83	41894	10.4872	ppb	92
54) Dibromomethane	7.33	93	22318	10.0513	ppb	86
55) 2-Chloroethyl vinyl ether	7.93	43	563	6.9288	ppb	94
56) MIBK (methyl isobutyl ket	8.28	43	28522	8.4678	ppb	98
57) 1-Bromo-2-chloroethane	7.88	63	25768	10.1438	ppb	97
58) Cis-1,3-Dichloropropene	8.07	75	51987	10.1507	ppb	96
59) Toluene	8.44	91	72832	10.9139	ppb	100
60) Trans-1,3-Dichloropropene	8.71	75	48883	10.1158	ppb	97
61) 1,1,2-TCA	8.90	83	26007	10.2048	ppb	98
62) 2-Hexanone	9.22	43	19990	8.9097	ppb	93
65) 1,2-EDB	9.44	107	18384	8.7573	ppb	99
66) Tetrachloroethene	9.05	166	23960	10.7387	ppb	91
67) 1-Chlorohexane	10.00	91	36323	9.7117	ppb	92
68) 1,1,1,2-Tetrachloroethane	10.09	131	38701	10.4309	ppb	94
69) m&p-Xylene	10.26	91	212177	20.5072	ppb	98
70) o-Xylene	10.70	106	29544	10.9641	ppb	91
71) Styrene	10.71	104	90544	10.6715	ppb	99
73) 1,3-Dichloropropane	9.08	76	54329	9.1412	ppb	99
74) Dibromochloromethane	9.33	129	39336	9.0951	ppb	99
75) Chlorobenzene	10.00	112	92083	9.7976	ppb	99
76) Ethylbenzene	10.13	91	79584	9.9109	ppb	100
77) Bromoform	10.89	173	31082	10.0334	ppb	95
79) Isopropylbenzene	11.11	105	136926	9.6438	ppb	98
80) 1,1,2,2-Tetrachloroethane	11.43	83	43871	8.9362	ppb	98
81) 1,2,3-Trichloropropane	11.47	110	7494	8.6339	ppb	93
82) t-1,4-Dichloro-2-Butene	11.50	53	9305	8.0161	ppb	83
83) Bromobenzene	11.42	156	22104	9.4059	ppb	90
84) n-Propylbenzene	11.56	91	83960	9.6185	ppb	99
85) 4-Ethyltoluene	11.69	105	127975	9.9118	ppb	100
86) 2-Chlorotoluene	11.64	91	52488	9.8219	ppb	97
87) 1,3,5-Trimethylbenzene	11.76	105	106175	9.6443	ppb	98
88) 4-Chlorotoluene	11.76	91	60288	9.9284	ppb	99
89) Tert-Butylbenzene	12.11	119	111882	9.9546	ppb	99
90) 1,2,4-Trimethylbenzene	12.17	105	100347	9.6205	ppb	95
91) Sec-Butylbenzene	12.36	105	138710	10.0970	ppb	99
92) p-Isopropyltoluene	12.52	119	58152	9.0697	ppb	96
93) Benzyl Chloride	12.71	91	52975	8.9786	ppb	99
94) 1,3-DCB	12.46	146	41728	10.1666	ppb	95
95) 1,4-DCB	12.56	146	75469	9.4808	ppb	99
96) n-Butylbenzene	12.71	91	52975	8.9786	ppb	100
97) 1,2-DCB	12.97	146	73084	9.5870	ppb	99
98) Hexachloroethane	13.26	117	27153	9.8504	ppb	92
99) 1,2-Dibromo-3-chloropropan	13.82	75	8715	9.8594	ppb	# 81
100) 1,2,4-Trichlorobenzene	14.74	180	44025	9.1583	ppb	97
101) Hexachlorobutadiene	14.94	225	23946	10.1105	ppb	87
102) Naphthalene	15.01	128	86641	8.4877	ppb	95
103) 1,2,3-Trichlorobenzene	15.27	180	21072	9.5971	ppb	97

(#) = qualifier out of range (m) = manual integration

Quantitation Report

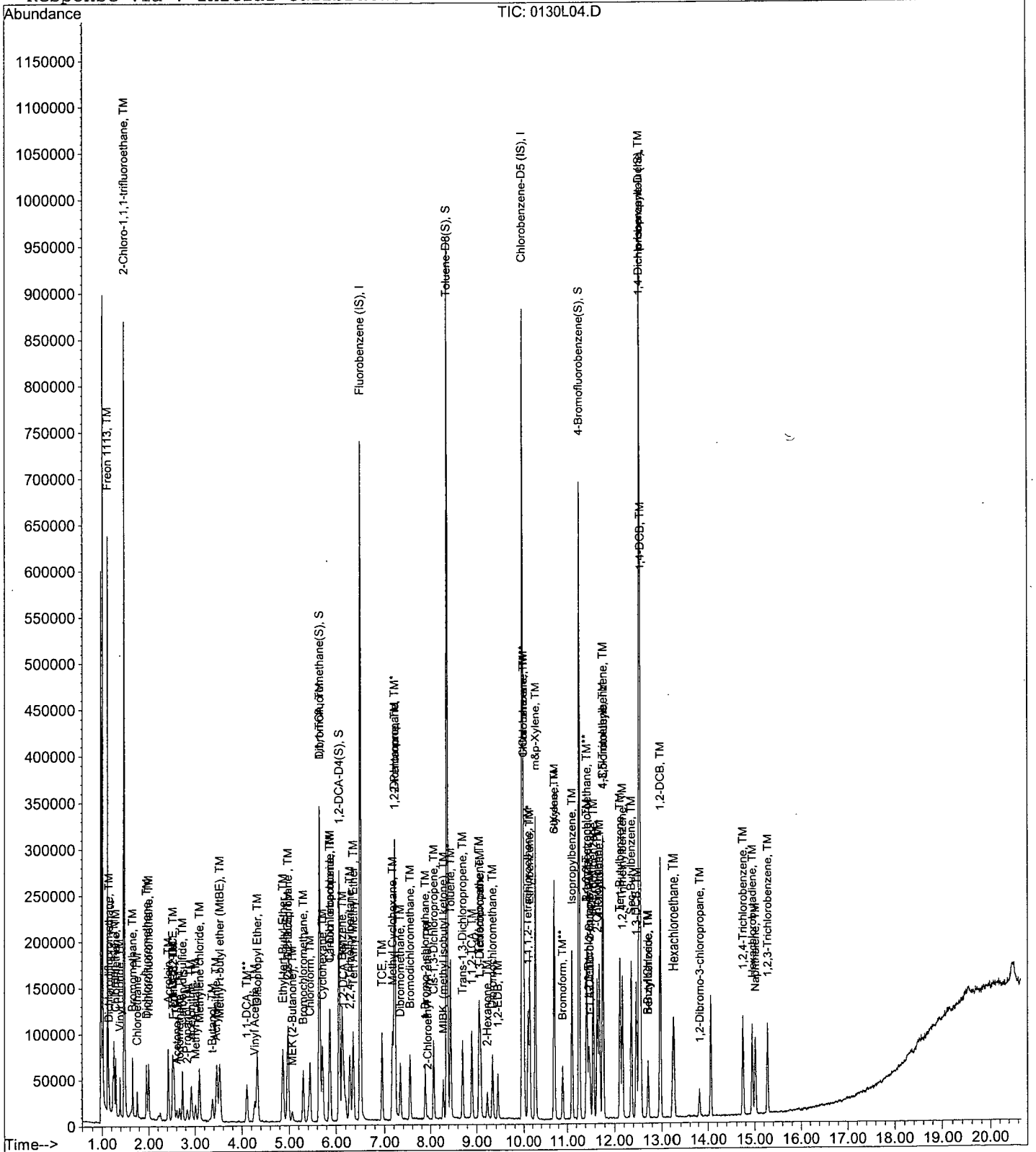
Data File : M:\LOKI\DATA\190128\0130L04.D  
Acq On : 30 Jan 19 9:40  
Sample : 190130A CCV 10ug/L  
Misc : IS&S 11/8/18

Vial: 3  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 30 10:03 2019

Quant Results File: L0128W.RES

Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Jan 29 09:06:22 2019  
Response via : Initial Calibration



VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 7

Ending Continuing Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: \_\_\_\_\_

SDG No: \_\_\_\_\_  
Date Analyzed: 01/30/19  
Instrument: Loki  
Initial Cal. Date: 01/28/19  
Data File: 0130L28.D

		Compound	MEAN	CCRF	%D	%Drift
1	I	Fluorobenzene (IS)	ISTD			I
2	TM	Freon 1113	0.1017	0.0894	12	TM
3	TML	Dichlorodifluoromethane	0.1650	0.1711	3.7	TML 2.6
4	TML	Freon 114	0.1391	0.1494	7.3	TML 15
5	TM**L	Chloromethane	0.3027	0.2483	18	TM**L 7.9
6	TM*	Vinyl chloride	0.1968	0.1760	11	TM*
7	TM	2-Chloro-1,1,1-trifluoroethane	0.1662	0.1525	8.3	TM
8	TML	Bromomethane	0.1336	0.1417	6.0	TML 19
9	TML	Chloroethane	0.1071	0.0923	14	TML 2.7
10	TM	Dichlorofluoromethane	0.3356	0.3400	1.3	TM
11	TM	Trichlorofluoromethane	0.2737	0.2972	8.6	TM
12	TM	Acrolein	0.0450	0.0320	29	TM
13	TML	Acetone	0.0810	0.0417	48	TML 9.9
14	TM	Freon-113	0.1464	0.1647	13	TM
15	TM*L	1,1-DCE	0.0465	0.0403	13	TM*L 6.0
16	TML	t-Butanol	0.0275	0.0175	36	TML 29
17	TML	2-Propanol	0.0169	0.0097	43	TML 38
18	TM	Acetonitrile	0.0330	0.0247	25	TM
19	TML	Methyl Acetate	0.2000	0.1644	18	TML 7.0
20	TML	Iodomethane	0.0609	0.0449	26	TML 24
21	TM	Acrylonitrile	0.0884	0.0657	26	TM
22	TML	Methylene chloride	0.3024	0.2043	32	TML 1.6
23	TM	Carbon disulfide	0.5213	0.4890	6.2	TM
24	TM	Methyl t-butyl ether (MtBE)	0.5941	0.6049	1.8	TM
25	TM	Trans-1,2-DCE	0.0876	0.0999	14	TM
26	TM	Diisopropyl Ether	0.6322	0.5794	8.4	TM
27	TM**	2,2-Dichloro-1,1,1-trifluoroethane	0.0000	0.0135	0.00	TM**
28	TM**	1,1-DCA	0.3535	0.3672	3.9	TM**
29	TM	Vinyl Acetate	0.1679	0.1167	30	TM
30	TM	Ethyl tert Butyl Ether	0.6003	0.6006	0.05	TM
31	TML	MEK (2-Butanone)	0.1403	0.1048	25	TML 18
32	TM	Cis-1,2-DCE	0.2333	0.2579	11	TM
33	TM	2,2-Dichloropropane	0.3132	0.3077	1.7	TM
34	TM	2-Methylpentane	0.0000	0.0003	0.00	TM
35	TML	3-Methylpentane	0.0000	0.0003	0.00	TML
36	TM*	Chloroform	0.3760	0.4150	10	TM*
37	TM	Bromochloromethane	0.0581	0.0703	21	TM
38	S	Dibromofluoromethane(S)	0.4915	0.4993	1.6	S
39	TM	1,1,1-TCA	0.1424	0.1505	5.7	TM
40	TML	Cyclohexane	0.1818	0.1529	16	TML 5.4

Average

14.2



VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 7

Ending Continuing Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: 0

SDG No: \_\_\_\_\_  
Date Analyzed: 01/30/19  
Instrument: Loki  
Cal. Date: 01/28/19  
Data File: 0130L28.D

		Compound	MEAN	CCRF	%D	%Drift	
41	TM	1,1-Dichloropropene	0.2579	0.2718	5.4	TM	
42	TM	2,2,4-Trimethylpentane	0.5179	0.5198	0.36	TM	
43	S	1,2-DCA-D4(S)	0.5719	0.5582	2.4	S	
44	TM	Carbon Tetrachloride	0.2757	0.3194	16	TM	
45	TM	Tert Amyl Methyl Ether	0.6308	0.6322	0.23	TM	
46	TML	Methylcyclopentane	0.0000	0.0021	0.00	TML	
47	TM	1,2-DCA	0.3049	0.3205	5.1	TM	
48	TM	Benzene	0.8179	0.9025	10	TM	
49	TM	TCE	0.1193	0.1422	19	TM	
50	TM	2-Pentanone	0.1970	0.1687	14	TM	
51	TM*	1,2-Dichloropropane	0.2255	0.2514	11	TM*	
52	TM	Bromodichloromethane	0.1644	0.1740	5.8	TM	
53	TM	Methyl Cyclohexane	0.2786	0.2949	5.9	TM	
54	TM	Dibromomethane	0.1548	0.1716	11	TM	
55	TM	2-Chloroethyl vinyl ether	0.0057	0.0021	62	TM	nt
56	TML	MIBK (methyl isobutyl ketone)	0.2693	0.2073	23	TML	12
57	TM	1-Bromo-2-chloroethane	0.1771	0.1889	6.6	TM	
58	TM	Cis-1,3-Dichloropropene	0.3571	0.3879	8.6	TM	
59	TM*	Toluene	0.4653	0.5629	21	TM*	
60	TM	Trans-1,3-Dichloropropene	0.3370	0.3679	9.2	TM	
61	TM	1,1,2-TCA	0.1777	0.2028	14	TM	
62	TML	2-Hexanone	0.1791	0.1506	16	TML	4.0
63	I	Chlorobenzene-D5 (IS)	ISTD			I	
64	S	Toluene-D8(S)	2.502	2.191	12	S	
65	TM	1,2-EDB	0.1713	0.1558	9.1	TM	
66	TML	Tetrachloroethene	0.1922	0.1877	2.3	TML	2.6
67	TML	1-Chlorohexane	0.3424	0.3157	7.8	TML	3.2
68	TM	1,1,1,2-Tetrachloroethane	0.3028	0.3441	14	TM	
69	TM	m&p-Xylene	0.8445	0.9706	15	TM	
70	TM	o-Xylene	0.2199	0.2797	27	TM	
71	TM	Styrene	0.6925	0.8598	24	TM	
72	S	4-Bromofluorobenzene(S)	0.7496	0.8267	10	S	
73	TM	1,3-Dichloropropane	0.4851	0.4502	7.2	TM	
74	TM	Dibromochloromethane	0.3530	0.3509	0.59	TM	
75	TM**	Chlorobenzene	0.7671	0.8461	10	TM**	
76	TM*	Ethylbenzene	0.6554	0.7142	9.0	TM*	
77	TM**	Bromoform	0.2528	0.2746	8.6	TM**	
78	I	1,4-Dichlorobenzene-D (IS)	ISTD			I	
79	TM	Isopropylbenzene	2.174	2.350	8.1	TM	
80	TM**	1,1,2,2-Tetrachloroethane	0.7518	0.7208	4.1	TM**	

Average

11.5

VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 7

Ending Continuing Calibration

Lab Name: APPL, Inc.

SDG No: \_\_\_\_\_

Case No: \_\_\_\_\_

Date Analyzed: 01/30/19

Matrix: 0

Instrument: Loki

Cal. Date: 01/28/19

Data File: 0130L28.D

		Compound	MEAN	CCRF	%D	%Drift	
81	TML	1,2,3-Trichloropropane	0.1402	0.1409	0.45	TML	9.0
82	TML	t-1,4-Dichloro-2-Butene	0.1593	0.1473	7.5	TML	17
83	TM	Bromobenzene	0.3598	0.3734	3.8	TM	
84	TM	n-Propylbenzene	1.337	1.506	13	TM	
85	TM	4-Ethyltoluene	1.977	2.274	15	TM	
86	TM	2-Chlorotoluene	0.8183	0.8833	7.9	TM	
87	TM	1,3,5-Trimethylbenzene	1.686	1.828	8.4	TM	
88	TM	4-Chlorotoluene	0.9298	1.035	11	TM	
89	TM	Tert-Butylbenzene	1.721	1.991	16	TM	
90	TM	1,2,4-Trimethylbenzene	1.597	1.804	13	TM	
91	TM	Sec-Butylbenzene	2.104	2.378	13	TM	
92	TM	p-Isopropyltoluene	0.9818	1.118	14	TM	
93	TM	Benzyl Chloride	0.9035	0.7685	15	TM	
94	TM	1,3-DCB	0.6285	0.6749	7.4	TM	
95	TM	1,4-DCB	1.219	1.332	9.3	TM	
96	TM	n-Butylbenzene	0.9035	0.7685	15	TM	
97	TM	1,2-DCB	1.167	1.348	15	TM	
98	TM	Hexachloroethane	0.4221	0.4574	8.4	TM	
99	TML	1,2-Dibromo-3-chloropropane	0.1520	0.1454	4.3	TML	7.4
100	TM	1,2,4-Trichlorobenzene	0.7361	0.8173	11	TM	
101	TM	Hexachlorobutadiene	0.3627	0.4196	16	TM	
102	TM	Naphthalene	1.563	1.671	6.9	TM	
103	TM	1,2,3-Trichlorobenzene	0.3362	0.3846	14	TM	
104							
105							
106							
107							
108							
109							
110							
111							
112							
113							
114							
115							
116							
117							
118							
119							
120							

Average

10.7

Data File : M:\LOKI\DATA\190128\0130L28.D  
 Acq On : 30 Jan 19 21:07  
 Sample : Ending CCV 10ug/L 01/30/19  
 Misc : IS&S 11/8/18

Vial: 27  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 31 8:23 2019

Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	320320	25.0000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.97	117	279680	25.0000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.53	152	149184	25.0000	ppb	0.00
System Monitoring Compounds						
38) Dibromofluoromethane(S)	5.65	111	159934	25.3946	ppb	0.00
Spiked Amount	25.000		Recovery	=	101.580%	
43) 1,2-DCA-D4(S)	6.07	65	178808	24.4021	ppb	0.00
Spiked Amount	25.000		Recovery	=	97.608%	
64) Toluene-D8(S)	8.37	98	612857	21.8948	ppb	0.00
Spiked Amount	25.000		Recovery	=	87.580%	
72) 4-Bromofluorobenzene(S)	11.26	95	231222	27.5718	ppb	0.00
Spiked Amount	25.000		Recovery	=	110.288%	
Target Compounds						
2) Freon 1113	1.11	116	114519	87.9120	ppb	99
3) Dichlorodifluoromethane	1.14	85	21929	10.2578	ppb	96
4) Freon 114	1.25	85	19136	11.4874	ppb	95
5) Chloromethane	1.29	50	31816	9.2055	ppb	99
6) Vinyl chloride	1.38	62	22553	8.9448	ppb	99
7) 2-Chloro-1,1,1-trifluoroet	1.48	118	195392	91.7428	ppb	98
8) Bromomethane	1.65	94	18152	11.8594	ppb	97
9) Chloroethane	1.76	64	11829	9.7348	ppb	99
10) Dichlorofluoromethane	1.95	67	43565	10.1316	ppb	95
11) Trichlorofluoromethane	2.00	101	38075	10.8579	ppb	98
12) Acrolein	2.42	56	51268	88.8817	ppb	# 99
13) Acetone	2.60	43	5348	9.0054	ppb	94
14) Freon-113	2.54	101	21106	11.2518	ppb	96
15) 1,1-DCE	2.52	63	5165	9.4009	ppb	91
16) t-Butanol	3.37	59	28079	88.9551	ppb	99
17) 2-Propanol	2.83	45	12433	61.5292	ppb	# 95
18) Acetonitrile	2.92	41	39576	93.5240	ppb	91
19) Methyl Acetate	3.01	43	21069	9.3005	ppb	94
20) Iodomethane	2.67	142	5748	7.5980	ppb	100
21) Acrylonitrile	3.44	52	8420	7.4329	ppb	# 54
22) Methylene chloride	3.10	84	26174	9.8361	ppb	88
23) Carbon disulfide	2.73	76	62658	9.3814	ppb	100
24) Methyl t-butyl ether (MtBE)	3.53	73	77501	10.1805	ppb	96
25) Trans-1,2-DCE	2.52	96	12800	11.3984	ppb	91
26) Diisopropyl Ether	4.33	45	74232	9.1639	ppb	96
28) 1,1-DCA	4.10	63	47043	10.3871	ppb	99
29) Vinyl Acetate	4.27	43	14952	6.9514	ppb	99
30) Ethyl tert Butyl Ether	4.86	59	76954	10.0049	ppb	92
31) MEK (2-Butanone)	5.07	43	13431	8.1782	ppb	# 83
32) Cis-1,2-DCE	4.98	96	33045	11.0532	ppb	85
33) 2,2-Dichloropropane	4.96	77	39428	9.8252	ppb	96
36) Chloroform	5.45	83	53168	11.0354	ppb	94
37) Bromochloromethane	5.30	128	9013	12.1073	ppb	91
39) 1,1,1-TCA	5.65	97	19280	10.5673	ppb	99
40) Cyclohexane	5.72	41	19585	9.4641	ppb	81
41) 1,1-Dichloropropene	5.88	75	34831	10.5402	ppb	95
42) 2,2,4-Trimethylpentane	6.29	57	66596	10.0355	ppb	# 91
44) Carbon Tetrachloride	5.86	117	40928	11.5875	ppb	100
45) Tert Amyl Methyl Ether	6.36	73	81006	10.0233	ppb	99

(#) = qualifier out of range (m) = manual integration

Data File : M:\LOKI\DATA\190128\0130L28.D  
 Acq On : 30 Jan 19 21:07  
 Sample : Ending CCV 10ug/L 01/30/19  
 Misc : IS&S 11/8/18

Vial: 27  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 31 8:23 2019

Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
47) 1,2-DCA	6.17	62	41063	10.5121	ppb	# 91
48) Benzene	6.13	78	115633	11.0337	ppb	99
49) TCE	6.95	130	18216	11.9176	ppb	97
50) 2-Pentanone	7.22	43	270172	107.0185	ppb	97
51) 1,2-Dichloropropane	7.20	63	32209	11.1475	ppb	95
52) Bromodichloromethane	7.54	83	22296	10.5836	ppb	# 96
53) Methyl Cyclohexane	7.17	83	37786	10.5871	ppb	100
54) Dibromomethane	7.34	93	21989	11.0844	ppb	94
55) 2-Chloroethyl vinyl ether	8.00	43	275	3.7881	ppb	# 34
56) MIBK (methyl isobutyl ket	8.28	43	26560	8.8336	ppb	95
57) 1-Bromo-2-chloroethane	7.88	63	24200	10.6629	ppb	97
58) Cis-1,3-Dichloropropene	8.07	75	49703	10.8624	ppb	96
59) Toluene	8.44	91	72128	12.0977	ppb	99
60) Trans-1,3-Dichloropropene	8.71	75	47138	10.9182	ppb	96
61) 1,1,2-TCA	8.90	83	25990	11.4145	ppb	92
62) 2-Hexanone	9.22	43	19290	9.5967	ppb	98
65) 1,2-EDB	9.44	107	17432	9.0943	ppb	98
66) Tetrachloroethene	9.05	166	21000	10.2642	ppb	98
67) 1-Chlorohexane	10.00	91	35323	10.3190	ppb	93
68) 1,1,1,2-Tetrachloroethane	10.09	131	38495	11.3631	ppb	90
69) m&p-Xylene	10.26	91	217170	22.9878	ppb	96
70) o-Xylene	10.70	106	31296	12.7199	ppb	98
71) Styrene	10.71	104	96186	12.4156	ppb	95
73) 1,3-Dichloropropane	9.08	76	50370	9.2818	ppb	93
74) Dibromochloromethane	9.33	129	39256	9.9407	ppb	99
75) Chlorobenzene	9.99	112	94658	11.0303	ppb	95
76) Ethylbenzene	10.13	91	79904	10.8980	ppb	99
77) Bromoform	10.90	173	30718	10.8599	ppb	98
79) Isopropylbenzene	11.11	105	140211	10.8072	ppb	96
80) 1,1,2,2-Tetrachloroethane	11.43	83	43012	9.5881	ppb	92
81) 1,2,3-Trichloropropane	11.47	110	8406	10.8989	ppb	94
82) t-1,4-Dichloro-2-Butene	11.49	53	8790	8.2971	ppb	84
83) Bromobenzene	11.42	156	22280	10.3756	ppb	95
84) n-Propylbenzene	11.56	91	89895	11.2704	ppb	95
85) 4-Ethyltoluene	11.69	105	135724	11.5041	ppb	99
86) 2-Chlorotoluene	11.64	91	52712	10.7947	ppb	99
87) 1,3,5-Trimethylbenzene	11.76	105	109066	10.8419	ppb	100
88) 4-Chlorotoluene	11.76	91	61752	11.1293	ppb	100
89) Tert-Butylbenzene	12.11	119	118823	11.5700	ppb	100
90) 1,2,4-Trimethylbenzene	12.17	105	107663	11.2961	ppb	97
91) Sec-Butylbenzene	12.36	105	141916	11.3053	ppb	98
92) p-Isopropyltoluene	12.52	119	66728	11.3895	ppb	97
93) Benzyl Chloride	12.71	91	45862	8.5067	ppb	97
94) 1,3-DCB	12.46	146	40272	10.7379	ppb	95
95) 1,4-DCB	12.56	146	79506	10.9306	ppb	98
96) n-Butylbenzene	12.71	91	45862	8.5067	ppb	99
97) 1,2-DCB	12.97	146	80445	11.5485	ppb	97
98) Hexachloroethane	13.26	117	27295	10.8365	ppb	91
99) 1,2-Dibromo-3-chloropropan	13.82	75	8679	10.7439	ppb	# 79
100) 1,2,4-Trichlorobenzene	14.74	180	48773	11.1036	ppb	97
101) Hexachlorobutadiene	14.94	225	25037	11.5689	ppb	99
102) Naphthalene	15.01	128	99721	10.6911	ppb	96
103) 1,2,3-Trichlorobenzene	15.27	180	22952	11.4399	ppb	94

(#) = qualifier out of range (m) = manual integration

Quantitation Report

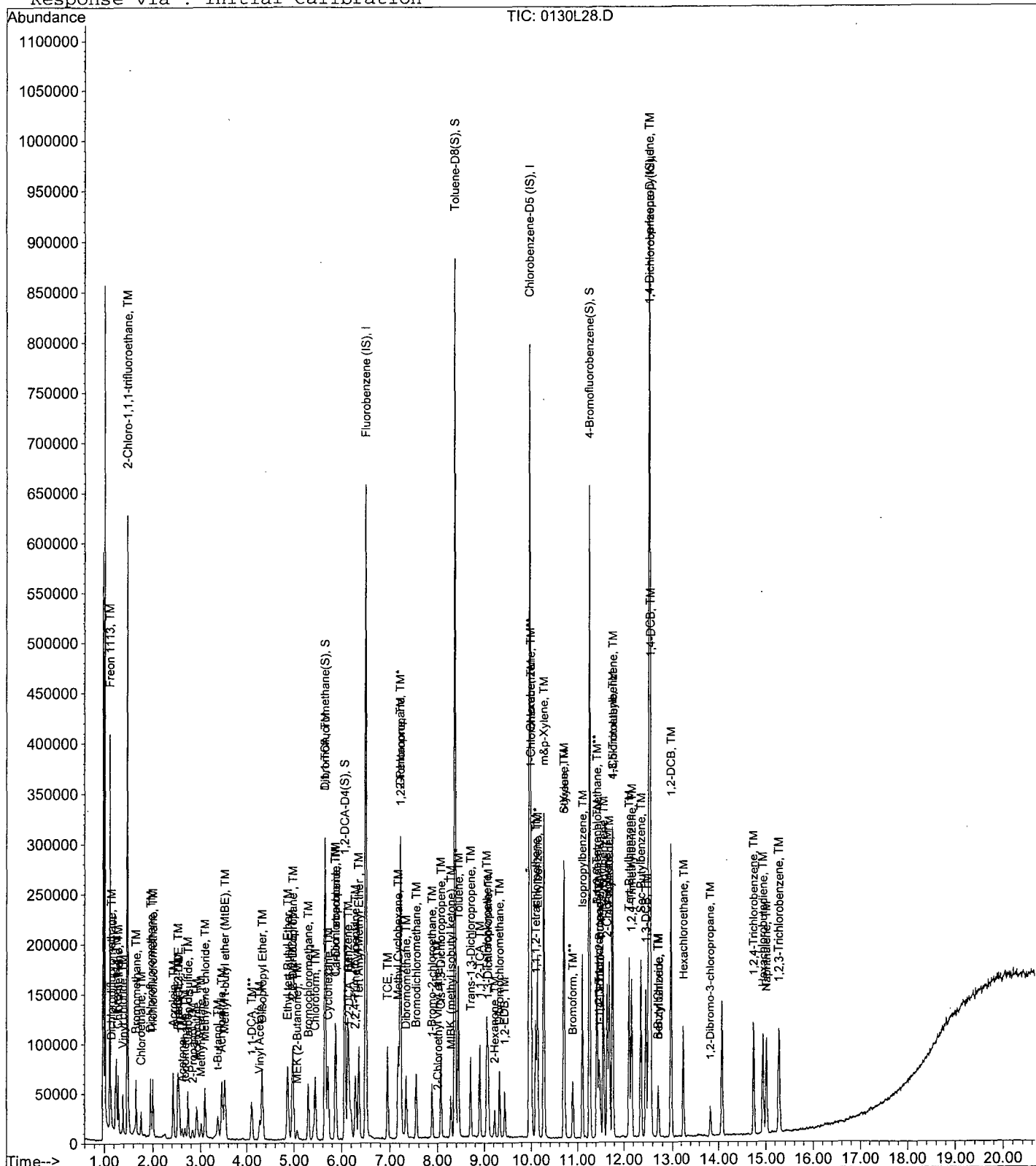
Data File : M:\LOKI\DATA\190128\0130L28.D  
Acq On : 30 Jan 19 21:07  
Sample : Ending CCV 10ug/L 01/30/19  
Misc : IS&S 11/8/18

Vial: 27  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 31 8:23 2019

Quant Results File: L0128W.RES

Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Jan 29 09:06:22 2019  
Response via : Initial Calibration



**ORGANICS**  
**Raw Data**

Data File : M:\LOKI\DATA\190128\0128L34.D  
 Acq On : 29 Jan 19 5:49  
 Sample : AZ85642W01  
 Misc : IS&S 11/8/18

Vial: 33  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 30 11:39 2019

Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	377280	25.0000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.97	117	300928	25.0000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.54	152	131392	25.0000	ppb	0.00

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
38) Dibromofluoromethane(S)	5.65	111	196682	26.5146	ppb	0.00
Spiked Amount 25.000						
					Recovery = 106.060%	
43) 1,2-DCA-D4(S)	6.07	65	218537	25.3213	ppb	0.00
Spiked Amount 25.000						
					Recovery = 101.284%	
64) Toluene-D8(S)	8.37	98	702466	23.3241	ppb	0.00
Spiked Amount 25.000						
					Recovery = 93.296%	
72) 4-Bromofluorobenzene(S)	11.26	95	239800	26.5756	ppb	0.00
Spiked Amount 25.000						
					Recovery = 106.304%	

Target Compounds Qvalue

Quantitation Report

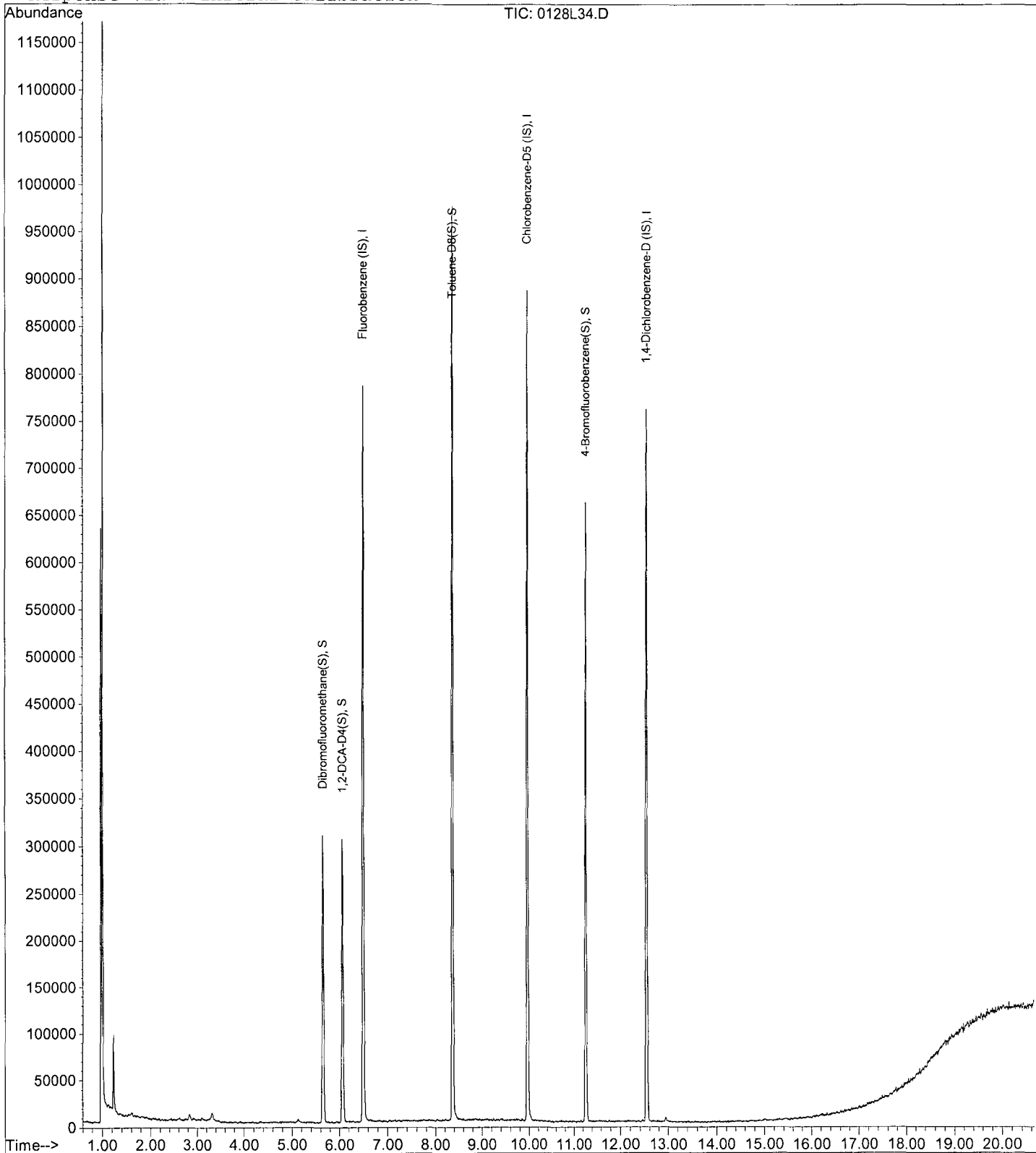
Data File : M:\LOKI\DATA\190128\0128L34.D  
Acq On : 29 Jan 19 5:49  
Sample : AZ85642W01  
Misc : IS&S 11/8/18

Vial: 33  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 30 11:39 2019

Quant Results File: L0128W.RES

Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Jan 29 09:06:22 2019  
Response via : Initial Calibration





Data File : M:\LOKI\DATA\190128\0130L21.D Vial: 20  
 Acq On : 30 Jan 19 17:47 Operator: PM, DG, SV, CMM, KV  
 Sample : AZ85643W01 Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Feb 4 9:18 2019 Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	325504	25.0000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.97	117	276480	25.0000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.54	152	136128	25.0000	ppb	0.00
System Monitoring Compounds						
38) Dibromofluoromethane(S)	5.65	111	164511	25.7053	ppb	0.00
Spiked Amount				25.000		
					Recovery = 102.820%	
43) 1,2-DCA-D4(S)	6.07	65	186728	25.0772	ppb	0.00
Spiked Amount				25.000		
					Recovery = 100.308%	
64) Toluene-D8(S)	8.37	98	619641	22.3934	ppb	0.00
Spiked Amount				25.000		
					Recovery = 89.572%	
72) 4-Bromofluorobenzene(S)	11.26	95	227072	27.3903	ppb	0.00
Spiked Amount				25.000		
					Recovery = 109.560%	

Target Compounds Qvalue

Quantitation Report

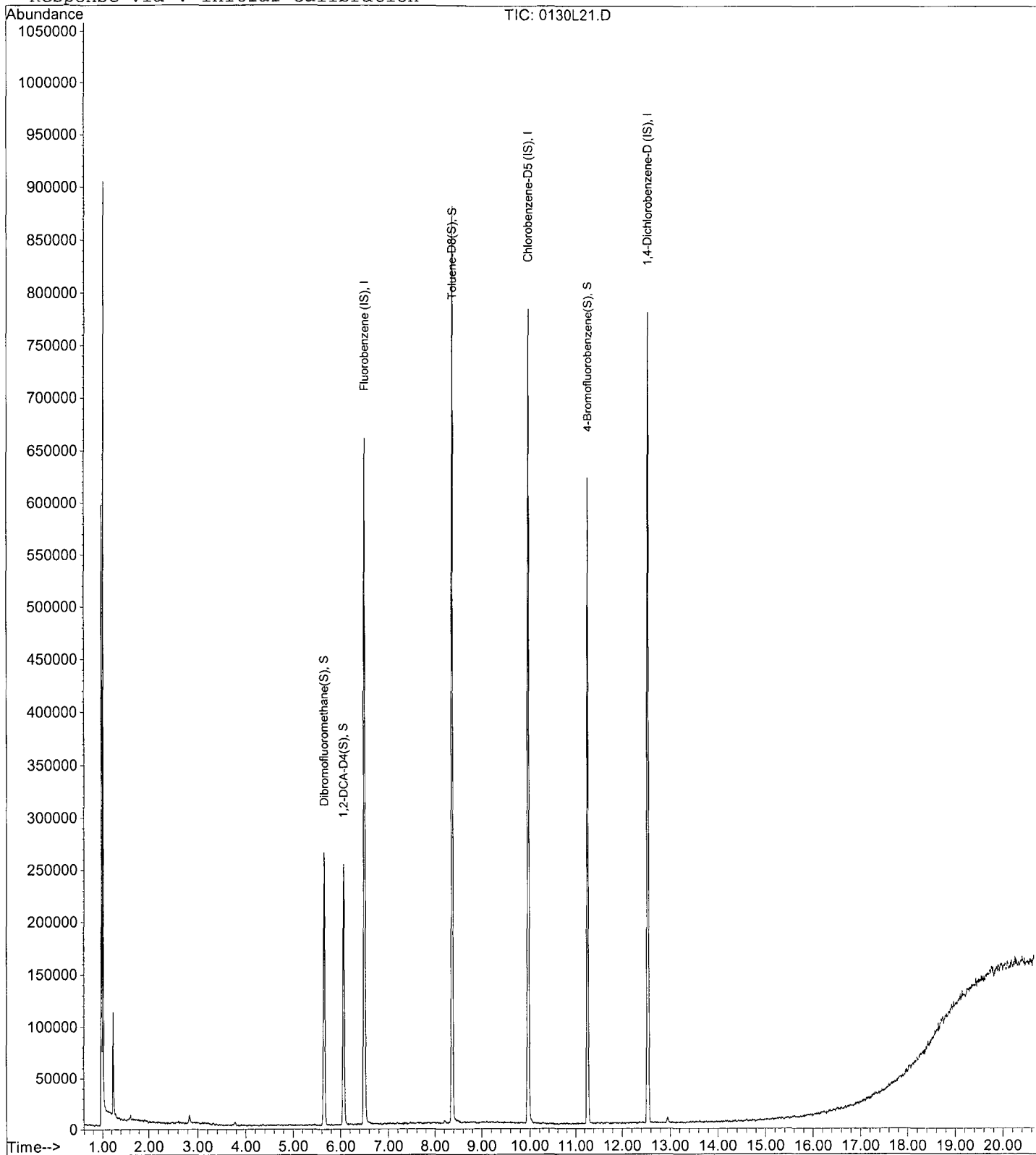
Data File : M:\LOKI\DATA\190128\0130L21.D  
Acq On : 30 Jan 19 17:47  
Sample : AZ85643W01  
Misc : IS&S 11/8/18

Vial: 20  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 4 9:18 2019

Quant Results File: L0128W.RES

Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Jan 29 09:06:22 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190128\0128L35.D Vial: 34  
 Acq On : 29 Jan 19 6:18 Operator: PM, DG, SV, CMM, KV  
 Sample : AZ85644W01 Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Jan 30 11:39 2019 Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	376832	25.0000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.97	117	294656	25.0000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.54	152	127824	25.0000	ppb	0.00

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
38) Dibromofluoromethane(S)	5.65	111	188196	25.4008	ppb	0.00
Spiked Amount				25.000		
					Recovery = 101.604%	
43) 1,2-DCA-D4(S)	6.07	65	216893	25.1607	ppb	0.00
Spiked Amount				25.000		
					Recovery = 100.644%	
64) Toluene-D8(S)	8.37	98	693172	23.5055	ppb	0.00
Spiked Amount				25.000		
					Recovery = 94.020%	
72) 4-Bromofluorobenzene(S)	11.27	95	238533	26.9979	ppb	0.00
Spiked Amount				25.000		
					Recovery = 107.992%	

Target Compounds Qvalue

Quantitation Report

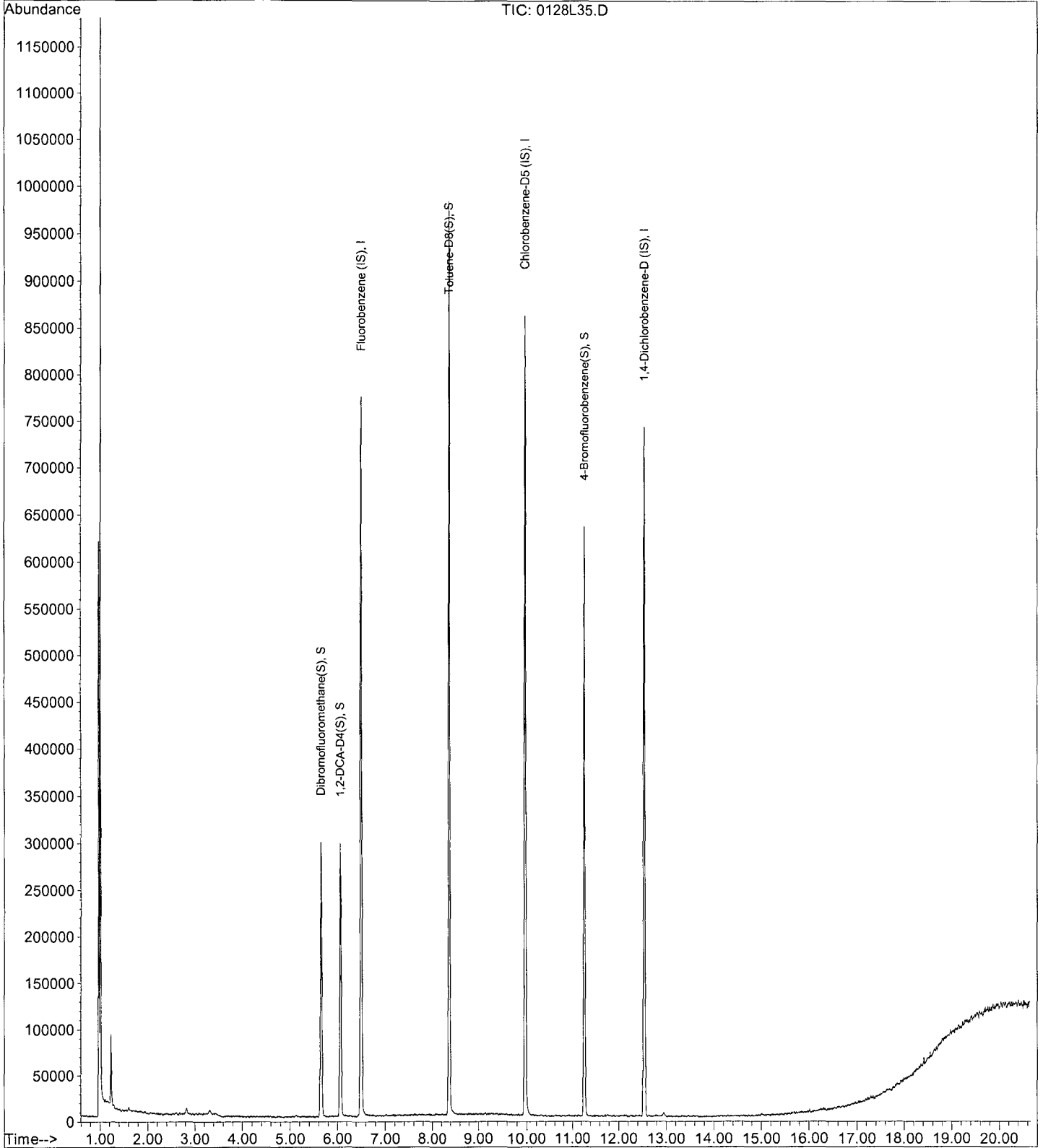
Data File : M:\LOKI\DATA\190128\0128L35.D  
Acq On : 29 Jan 19 6:18  
Sample : AZ85644W01  
Misc : IS&S 11/8/18

Vial: 34  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 30 11:39 2019

Quant Results File: L0128W.RES

Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Jan 29 09:06:22 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190128\0128L23.D  
 Acq On : 29 Jan 19 00:35  
 Sample : AZ85645W01  
 Misc : IS&S 11/8/18

Vial: 22  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 30, 11:24 2019

Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	426944	25.0000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.97	117	313088	25.0000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.54	152	118448	25.0000	ppb	0.00
System Monitoring Compounds						
38) Dibromofluoromethane(S)	5.65	111	198430	23.6385	ppb	0.00
Spiked Amount				25.000		
				Recovery	=	94.556%
43) 1,2-DCA-D4(S)	6.07	65	227960	23.3406	ppb	0.00
Spiked Amount				25.000		
				Recovery	=	93.364%
64) Toluene-D8(S)	8.37	98	726807	23.1951	ppb	0.00
Spiked Amount				25.000		
				Recovery	=	92.780%
72) 4-Bromofluorobenzene(S)	11.26	95	232647	24.7815	ppb	0.00
Spiked Amount				25.000		
				Recovery	=	99.128%

Target Compounds

Qvalue

Quantitation Report

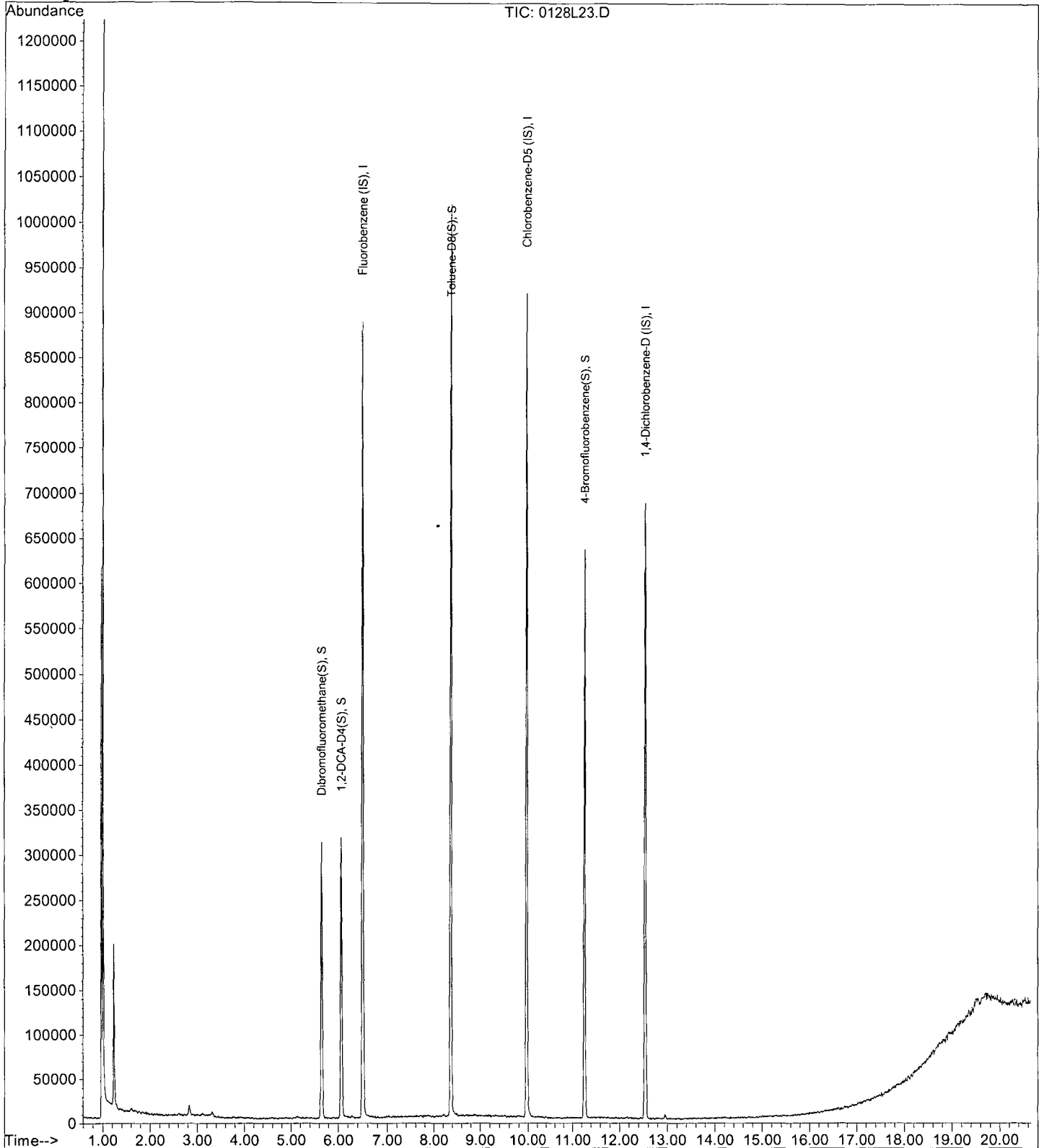
Data File : M:\LOKI\DATA\190128\0128L23.D  
Acq On : 29 Jan 19 00:35  
Sample : AZ85645W01  
Misc : IS&S 11/8/18

Vial: 22  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 30 11:24 2019

Quant Results File: L0128W.RES

Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Jan 29 09:06:22 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190128\0128L36.D  
 Acq On : 29 Jan 19 6:46  
 Sample : AZ85646W01  
 Misc : IS&S 11/8/18

Vial: 35  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 30 11:40 2019

Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	385536	25.0000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.97	117	307968	25.0000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.53	152	126504	25.0000	ppb	0.00

System Monitoring Compounds

38) Dibromofluoromethane(S)	5.65	111	188347	24.8472	ppb	0.00
Spiked Amount				25.000		
				Recovery	=	99.388%
43) 1,2-DCA-D4(S)	6.07	65	211633	23.9963	ppb	0.00
Spiked Amount				25.000		
				Recovery	=	95.984%
64) Toluene-D8(S)	8.37	98	678653	22.0184	ppb	0.00
Spiked Amount				25.000		
				Recovery	=	88.072%
72) 4-Bromofluorobenzene(S)	11.26	95	235664	25.5202	ppb	0.00
Spiked Amount				25.000		
				Recovery	=	102.080%

Target Compounds

Qvalue

Quantitation Report

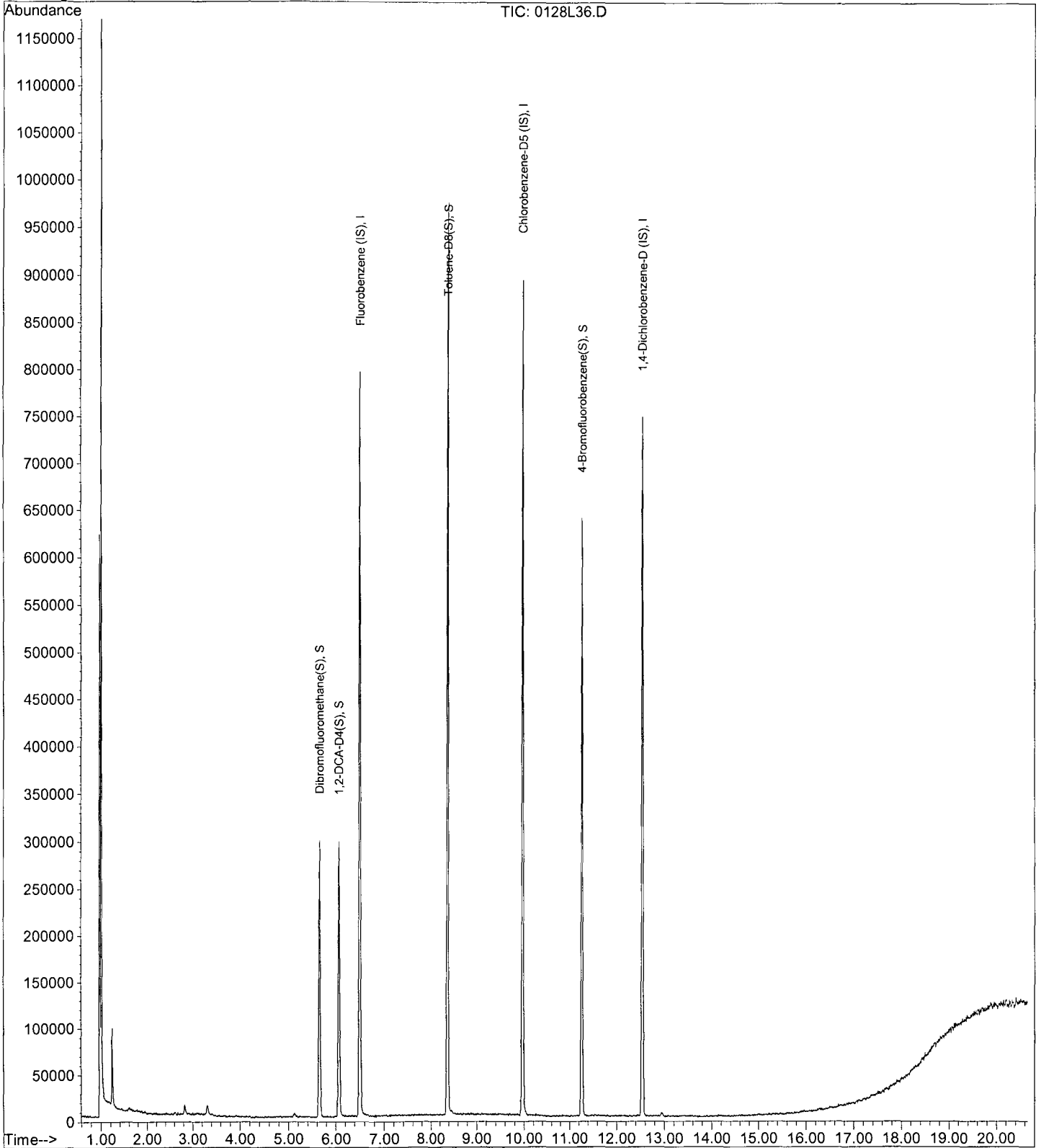
Data File : M:\LOKI\DATA\190128\0128L36.D  
Acq On : 29 Jan 19 6:46  
Sample : AZ85646W01  
Misc : IS&S 11/8/18

Vial: 35  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 30 11:40 2019

Quant Results File: L0128W.RES

Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Jan 29 09:06:22 2019  
Response via : Initial Calibration





Data File : M:\LOKI\DATA\190204\0204L56.D  
 Acq On : 5 Feb 19 10:42  
 Sample : AZ85646W02  
 Misc : IS&S 11/8/18

Vial: 53  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

*Reanalysis*

Quant Time: Feb 12 14:38 2019

Quant Results File: L0204W.RES

Quant Method : M:\LOKI\DATA\190204\L0204W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Feb 05 09:29:16 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	359680	25.000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.97	117	272320	25.000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.53	152	128968	25.000	ppb	0.00
System Monitoring Compounds						
38) Dibromofluoromethane(S)	5.65	111	165708	27.304	ppb	0.00
Spiked Amount				25.000		
					Recovery =	109.216%
43) 1,2-DCA-D4(S)	6.07	65	207215	27.262	ppb	0.00
Spiked Amount				25.000		
					Recovery =	109.048%
64) Toluene-D8(S)	8.37	98	572870	24.775	ppb	0.00
Spiked Amount				25.000		
					Recovery =	99.100%
72) 4-Bromofluorobenzene(S)	11.26	95	200409	24.231	ppb	0.00
Spiked Amount				25.000		
					Recovery =	96.924%

Target Compounds Qvalue

Quantitation Report

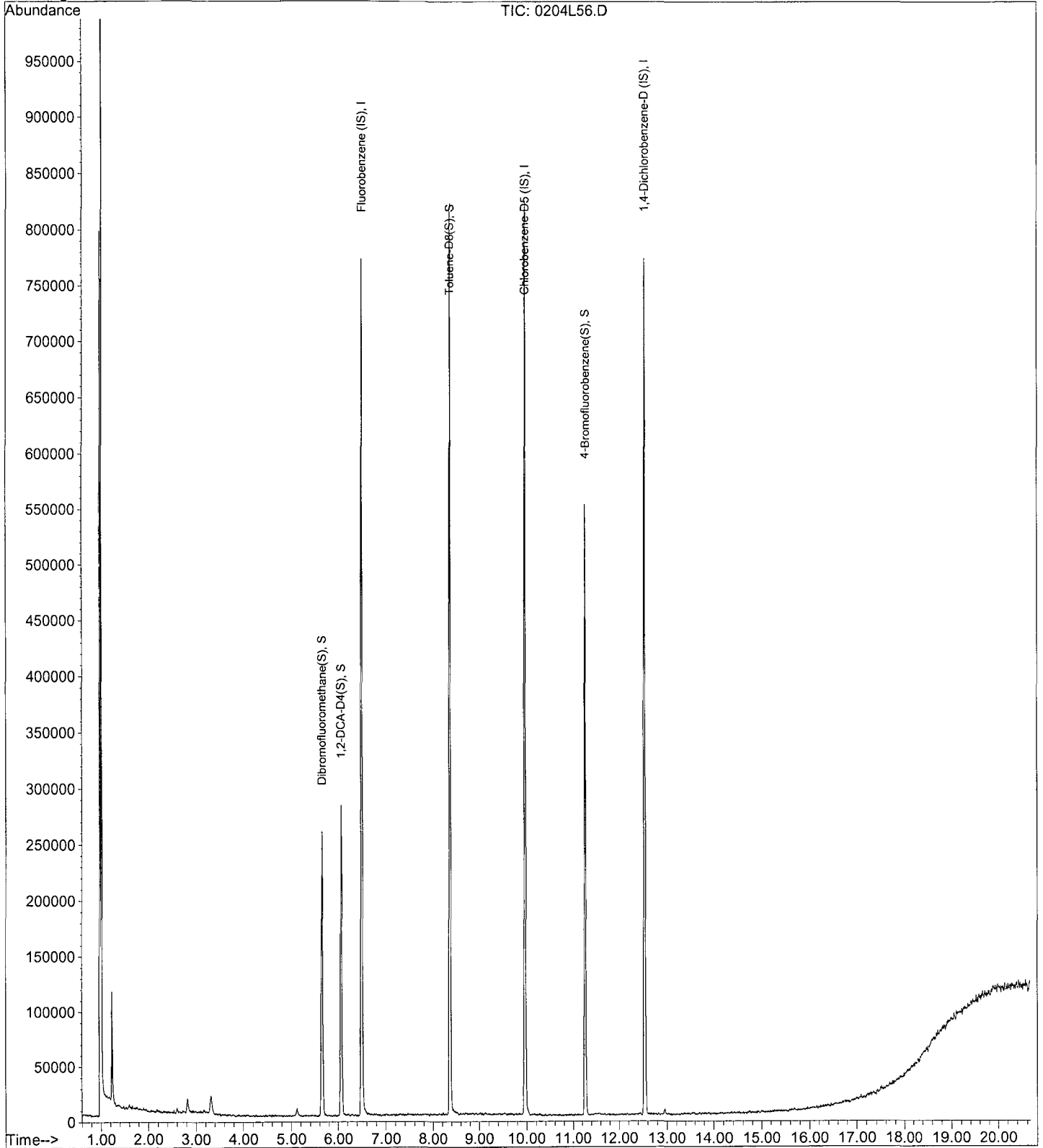
Data File : M:\LOKI\DATA\190204\0204L56.D  
Acq On : 5 Feb 19 10:42  
Sample : AZ85646W02  
Misc : IS&S 11/8/18

Vial: 53  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 12 14:38 2019

Quant Results File: L0204W.RES

Method : M:\LOKI\DATA\190204\L0204W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Feb 05 09:29:16 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190128\0128L24.D  
 Acq On : 29 Jan 19 1:04  
 Sample : AZ85652W01  
 Misc : IS&S 11/8/18

Vial: 23  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 30 11:25 2019

Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev (Min)
1) Fluorobenzene (IS)	6.50	96	387584	25.0000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.97	117	291904	25.0000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.54	152	119232	25.0000	ppb	0.00

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev (Min)
38) Dibromofluoromethane(S)	5.65	111	193697	25.4180	ppb	0.00
Spiked Amount				25.000		
					Recovery =	101.672%
43) 1,2-DCA-D4(S)	6.07	65	220428	24.8614	ppb	0.00
Spiked Amount				25.000		
					Recovery =	99.444%
64) Toluene-D8(S)	8.37	98	698122	23.8965	ppb	0.00
Spiked Amount				25.000		
					Recovery =	95.588%
72) 4-Bromofluorobenzene(S)	11.26	95	222480	25.4184	ppb	0.00
Spiked Amount				25.000		
					Recovery =	101.672%

Target Compounds Qvalue

Quantitation Report

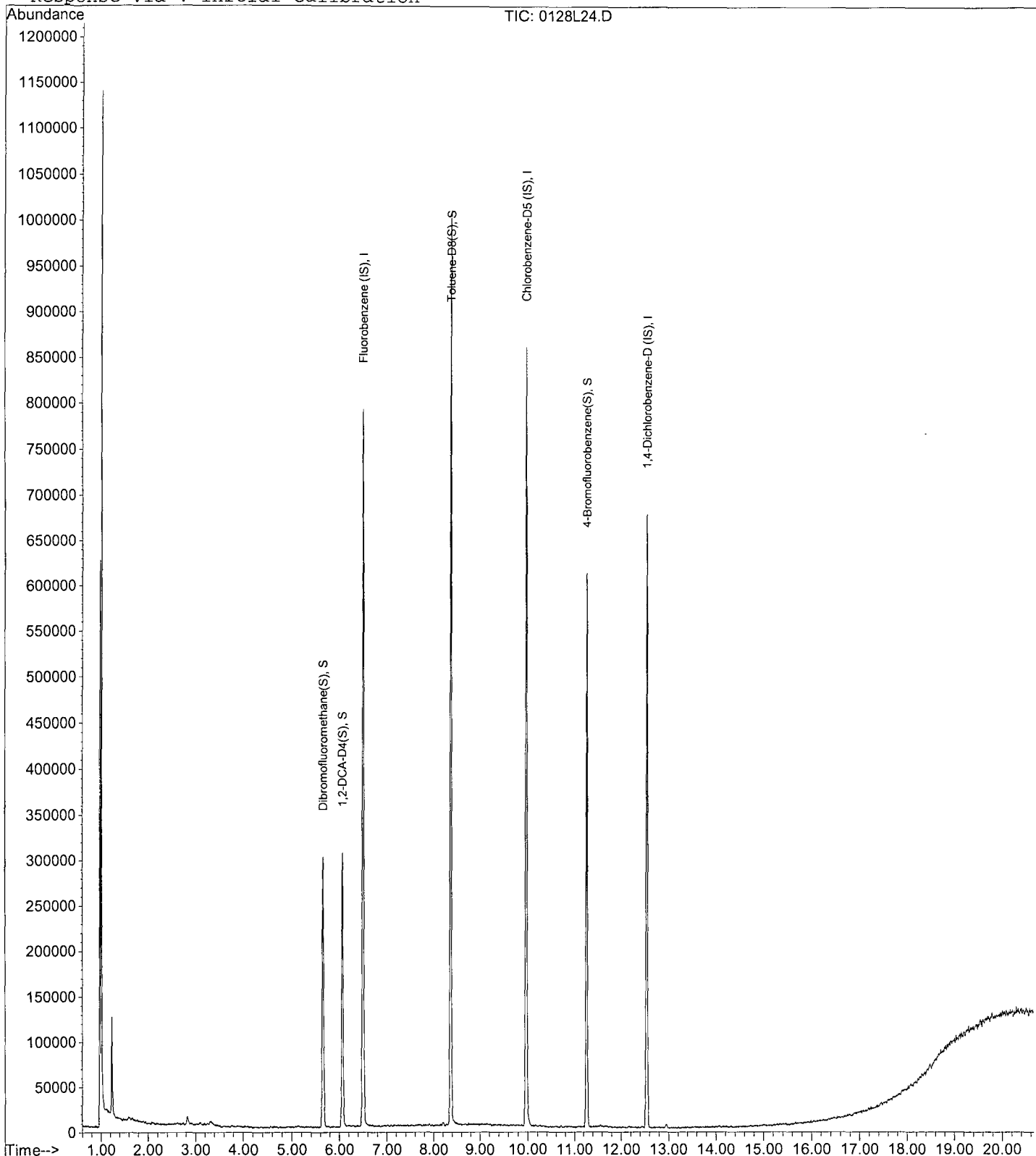
Data File : M:\LOKI\DATA\190128\0128L24.D  
Acq On : 29 Jan 19 1:04  
Sample : AZ85652W01  
Misc : IS&S 11/8/18

Vial: 23  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 30 11:25 2019

Quant Results File: L0128W.RES

Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Jan 29 09:06:22 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190128\0128L37.D Vial: 36  
 Acq On : 29 Jan 19 7:15 Operator: PM, DG, SV, CMM, KV  
 Sample : AZ85653W01 Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Jan 30 11:40 2019 Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	363200	25.0000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.97	117	297856	25.0000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.53	152	128072	25.0000	ppb	0.00
System Monitoring Compounds						
38) Dibromofluoromethane(S)	5.65	111	188199	26.3545	ppb	0.00
Spiked Amount				25.000		
					Recovery = 105.420%	
43) 1,2-DCA-D4(S)	6.07	65	210782	25.3696	ppb	0.00
Spiked Amount				25.000		
					Recovery = 101.480%	
64) Toluene-D8(S)	8.37	98	678048	22.7456	ppb	0.00
Spiked Amount				25.000		
					Recovery = 90.984%	
72) 4-Bromofluorobenzene(S)	11.27	95	233007	26.0891	ppb	0.00
Spiked Amount				25.000		
					Recovery = 104.356%	

Target Compounds Qvalue

Quantitation Report

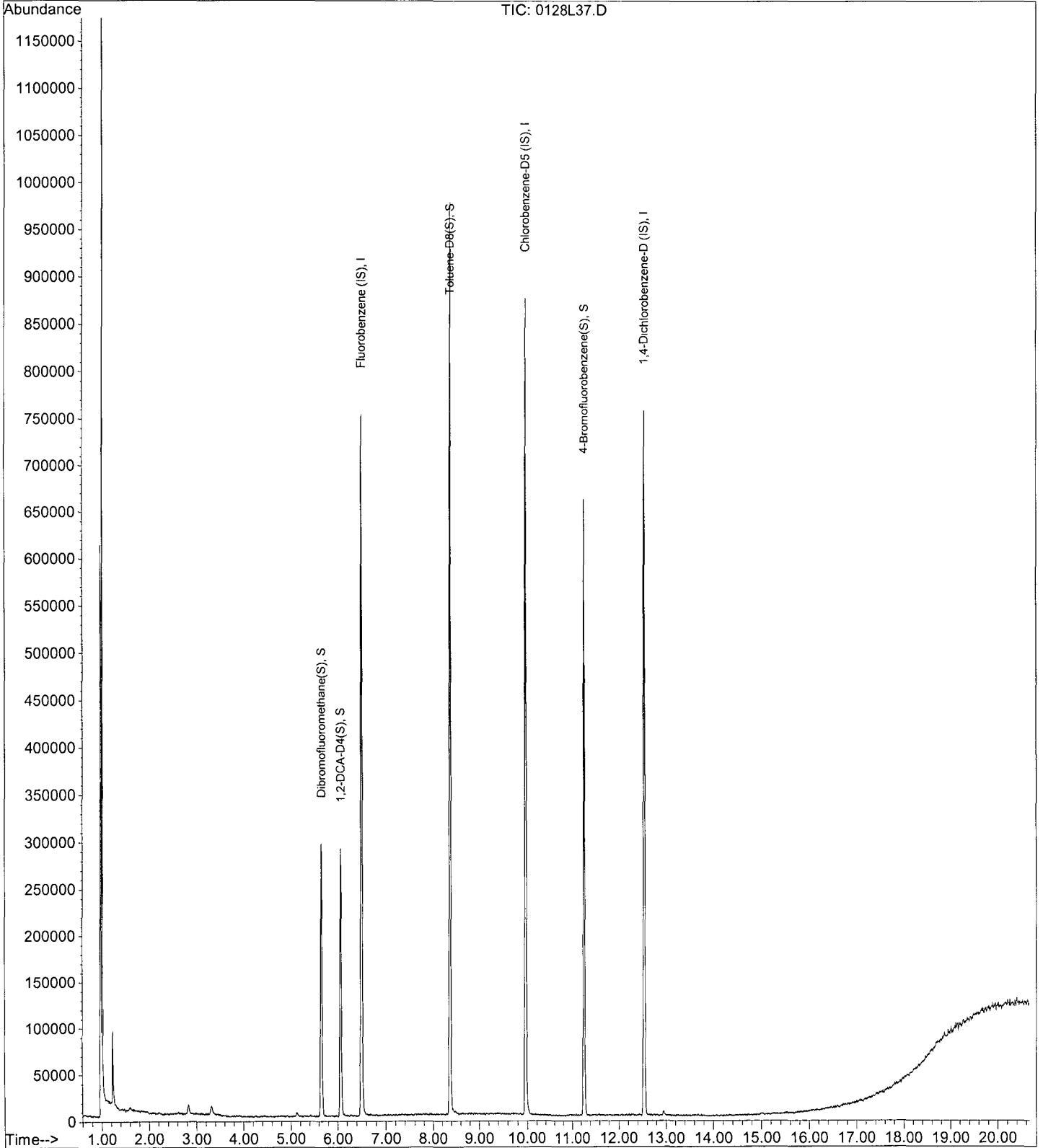
Data File : M:\LOKI\DATA\190128\0128L37.D  
Acq On : 29 Jan 19 7:15  
Sample : AZ85653W01  
Misc : IS&S 11/8/18

Vial: 36  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 30 11:40 2019

Quant Results File: L0128W.RES

Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Jan 29 09:06:22 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190128\0128L22.D  
 Acq On : 29 Jan 19 00:06  
 Sample : 190128A blk  
 Misc : IS&S 11/8/18

Vial: 21  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 29 9:23 2019

Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	381568	25.0000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.97	117	292096	25.0000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.53	152	111128	25.0000	ppb	0.00
System Monitoring Compounds						
38) Dibromofluoromethane(S)	5.65	111	188308	25.1004	ppb	0.00
Spiked Amount				25.000		
					Recovery =	100.400%
43) 1,2-DCA-D4(S)	6.07	65	215707	24.7125	ppb	0.00
Spiked Amount				25.000		
					Recovery =	98.852%
64) Toluene-D8(S)	8.37	98	687717	23.5249	ppb	0.00
Spiked Amount				25.000		
					Recovery =	94.100%
72) 4-Bromofluorobenzene(S)	11.27	95	216438	24.7118	ppb	0.00
Spiked Amount				25.000		
					Recovery =	98.848%

Target Compounds

Qvalue

Quantitation Report

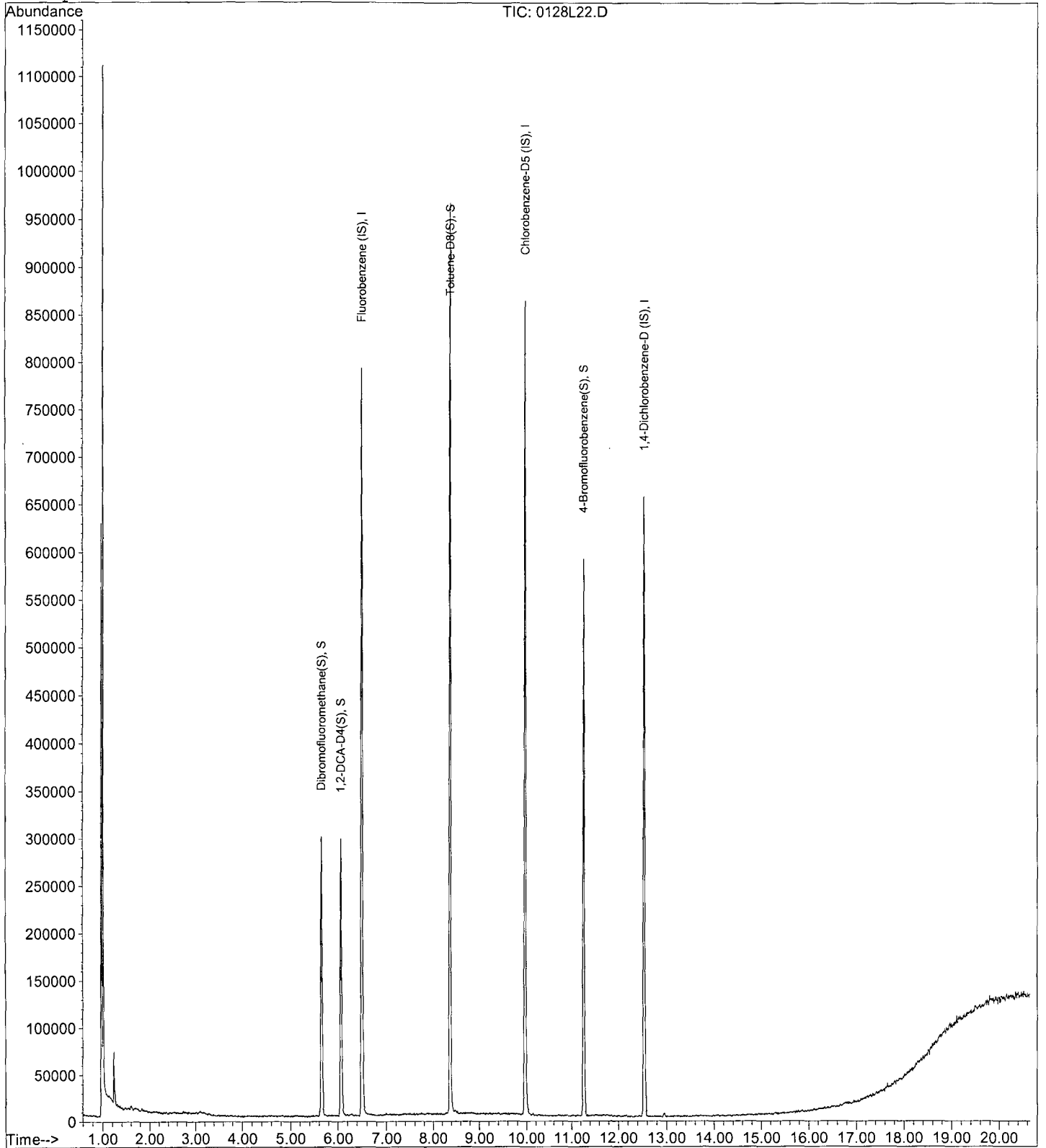
Data File : M:\LOKI\DATA\190128\0128L22.D  
Acq On : 29 Jan 19 00:06  
Sample : 190128A blk  
Misc : IS&S 11/8/18

Vial: 21  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 29 9:23 2019

Quant Results File: L0128W.RES

Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Jan 29 09:06:22 2019  
Response via : Initial Calibration





Data File : M:\LOKI\DATA\190128\0130L15.D Vial: 14  
 Acq On : 30 Jan 19 14:55 Operator: PM,DG,SV,CMM,KV  
 Sample : 190130A Blk Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Jan 31 8:32 2019 Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	343168	25.0000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.97	117	294208	25.0000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.53	152	140288	25.0000	ppb	0.00

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
38) Dibromofluoromethane(S)	5.65	111	174180	25.8152	ppb	0.00
Spiked Amount				25.000		
				Recovery =	103.260%	
43) 1,2-DCA-D4(S)	6.07	65	193196	24.6103	ppb	0.00
Spiked Amount				25.000		
				Recovery =	98.440%	
64) Toluene-D8(S)	8.37	98	652790	22.1698	ppb	0.00
Spiked Amount				25.000		
				Recovery =	88.680%	
72) 4-Bromofluorobenzene(S)	11.26	95	232325	26.3353	ppb	0.00
Spiked Amount				25.000		
				Recovery =	105.340%	

Target Compounds Qvalue

Quantitation Report

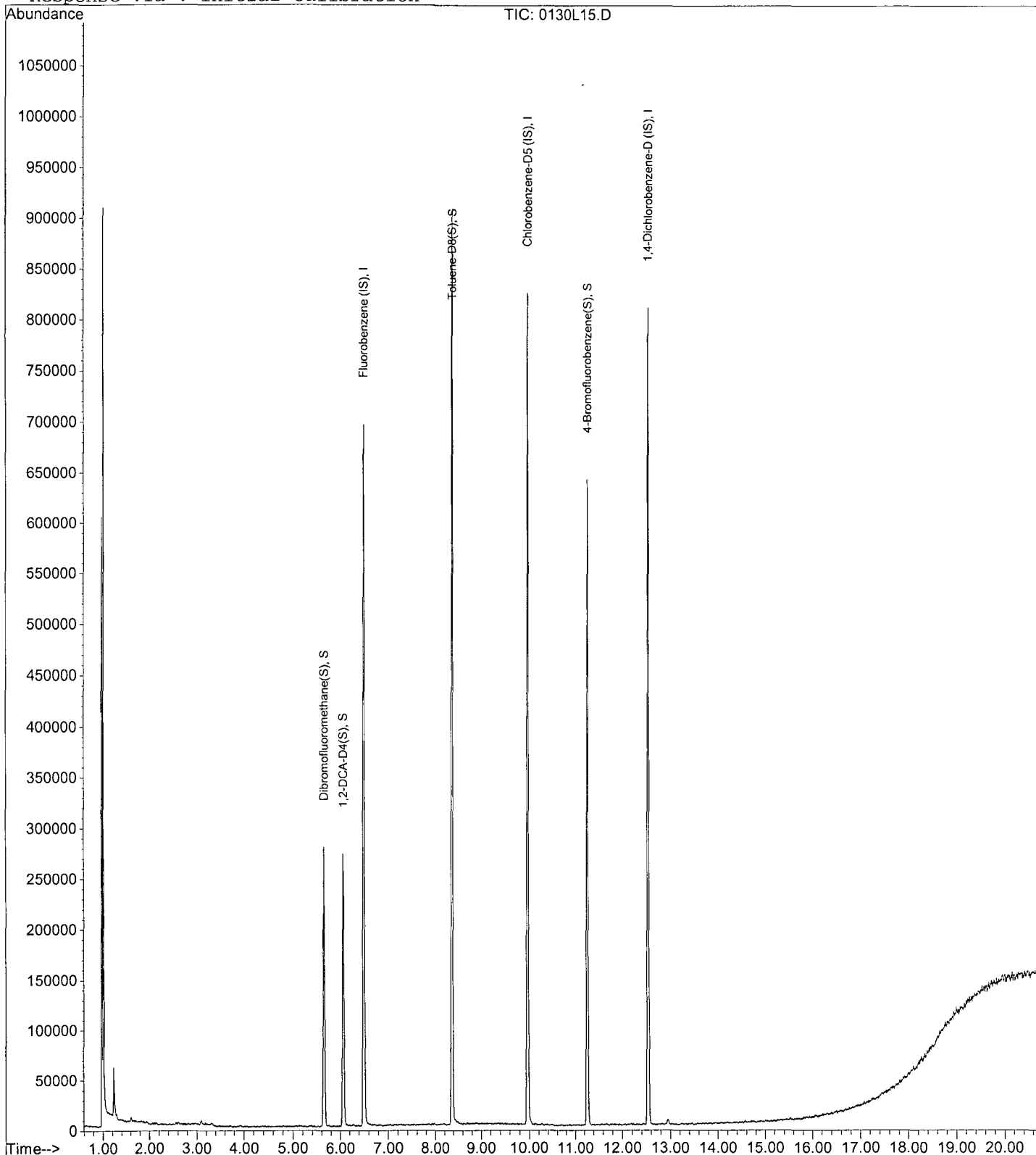
Data File : M:\LOKI\DATA\190128\0130L15.D  
Acq On : 30 Jan 19 14:55  
Sample : 190130A Blk  
Misc : IS&S 11/8/18

Vial: 14  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 31 8:32 2019

Quant Results File: L0128W.RES

Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Jan 29 09:06:22 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190128\0128L16.D  
 Acq On : 28 Jan 19 21:15  
 Sample : 190128A LCS 10ug/L  
 Misc : IS&S 11/8/18

Vial: 15  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 29 9:16 2019

Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	418368	25.0000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.97	117	328000	25.0000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.54	152	133440	25.0000	ppb	0.00

System Monitoring Compounds

38) Dibromofluoromethane(S)	5.65	111	203586	24.7499	ppb	0.00
Spiked Amount			25.000	Recovery =		99.000%
43) 1,2-DCA-D4(S)	6.07	65	236084	24.6680	ppb	0.00
Spiked Amount			25.000	Recovery =		98.672%
64) Toluene-D8(S)	8.37	98	751236	22.8847	ppb	0.00
Spiked Amount			25.000	Recovery =		91.540%
72) 4-Bromofluorobenzene(S)	11.26	95	240636	24.4672	ppb	0.00
Spiked Amount			25.000	Recovery =		97.868%

Target Compounds

	R.T.	QIon	Response	Conc	Units	Qvalue
2) Freon 1113	1.12	116	184569	108.4814	ppb	100
3) Dichlorodifluoromethane	1.14	85	32185	11.5262	ppb	98
4) Freon 114	1.25	85	26032	12.0615	ppb	100
5) Chloromethane	1.29	50	45171	10.0459	ppb	95
6) Vinyl chloride	1.38	62	35233	10.6990	ppb	97
7) 2-Chloro-1,1,1-trifluoroet	1.48	118	323264	116.2113	ppb	99
8) Bromomethane	1.65	94	23816	11.9162	ppb	98
9) Chloroethane	1.75	64	16600	10.5002	ppb	90
10) Dichlorofluoromethane	1.95	67	57525	10.2429	ppb	98
11) Trichlorofluoromethane	2.00	101	50768	11.0847	ppb	97
12) Acrolein	2.43	56	86672	115.0457	ppb	# 99
13) Acetone	2.61	43	6566	8.3303	ppb	# 88
14) Freon-113	2.54	101	27601	11.2659	ppb	93
15) 1,1-DCE	2.52	63	7621	10.5975	ppb	83
16) t-Butanol	3.38	59	40357	98.6427	ppb	99
17) 2-Propanol	2.84	45	23530	92.6462	ppb	# 93
18) Acetonitrile	2.92	41	63097	114.1630	ppb	90
19) Methyl Acetate	3.01	43	28577	9.6889	ppb	90
20) Iodomethane	2.67	142	9231	8.7405	ppb	96
21) Acrylonitrile	3.45	52	13139	8.8804	ppb	72
22) Methylene chloride	3.10	84	36238	10.4917	ppb	93
23) Carbon disulfide	2.73	76	89586	10.2697	ppb	98
24) Methyl t-butyl ether (MtBE)	3.53	73	104898	10.5500	ppb	98
25) Trans-1,2-DCE	2.52	96	14919	10.1719	ppb	88
26) Diisopropyl Ether	4.33	45	107656	10.1754	ppb	97
28) 1,1-DCA	4.10	63	61478	10.3931	ppb	97
29) Vinyl Acetate	4.27	43	28807	10.2540	ppb	96
30) Ethyl tert Butyl Ether	4.87	59	109589	10.9087	ppb	98
31) MEK (2-Butanone)	5.07	43	19325	9.1148	ppb	92
32) Cis-1,2-DCE	4.98	96	41704	10.6804	ppb	93
33) 2,2-Dichloropropane	4.96	77	52777	10.0695	ppb	95
36) Chloroform	5.45	83	66982	10.6444	ppb	95
37) Bromochloromethane	5.29	128	10568	10.8692	ppb	95
39) 1,1,1-TCA	5.65	97	26408	11.0820	ppb	97
40) Cyclohexane	5.71	41	29011	10.7006	ppb	97
41) 1,1-Dichloropropene	5.88	75	44974	10.4201	ppb	99
42) 2,2,4-Trimethylpentane	6.29	57	90231	10.4106	ppb	97
44) Carbon Tetrachloride	5.87	117	50135	10.8677	ppb	98
45) Tert Amyl Methyl Ether	6.36	73	108321	10.2620	ppb	98

(#) = qualifier out of range (m) = manual integration

Quantitation Report (Not Reviewed)

Data File : M:\LOKI\DATA\190128\0128L16.D  
 Acq On : 28 Jan 19 21:15  
 Sample : 190128A LCS 10ug/L  
 Misc : IS&S 11/8/18

Vial: 15  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 29 9:16 2019

Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
47) 1,2-DCA	6.17	62	54693	10.7200	ppb	98
48) Benzene	6.13	78	147811	10.7987	ppb	95
49) TCE	6.95	130	21632	10.8357	ppb	96
50) 2-Pentanone	7.22	43	397652	120.6000	ppb	100
51) 1,2-Dichloropropane	7.20	63	39244	10.3992	ppb	100
52) Bromodichloromethane	7.54	83	27736	10.0803	ppb	97
53) Methyl Cyclohexane	7.17	83	51891	11.1317	ppb	92
54) Dibromomethane	7.34	93	29122	11.2396	ppb	92
55) 2-Chloroethyl vinyl ether	7.93	43	878	9.2599	ppb	90
56) MIBK (methyl isobutyl ket	8.28	43	39626	10.1163	ppb	94
57) 1-Bromo-2-chloroethane	7.89	63	31280	10.5524	ppb	92
58) Cis-1,3-Dichloropropene	8.07	75	62691	10.4899	ppb	96
59) Toluene	8.44	91	88264	11.3346	ppb	99
60) Trans-1,3-Dichloropropene	8.71	75	59637	10.5760	ppb	98
61) 1,1,2-TCA	8.90	83	31604	10.6272	ppb	98
62) 2-Hexanone	9.22	43	27174	10.3247	ppb	94
65) 1,2-EDB	9.44	107	21824	9.7083	ppb	100
66) Tetrachloroethene	9.05	166	24072	10.0077	ppb	98
67) 1-Chlorohexane	10.00	91	42776	10.6432	ppb	96
68) 1,1,1,2-Tetrachloroethane	10.09	131	42119	10.6012	ppb	89
69) m&p-Xylene	10.26	91	244863	22.1009	ppb	99
70) o-Xylene	10.70	106	31528	10.9265	ppb	99
71) Styrene	10.71	104	100007	11.0071	ppb	94
73) 1,3-Dichloropropane	9.08	76	63476	9.9737	ppb	99
74) Dibromochloromethane	9.33	129	47694	10.2982	ppb	92
75) Chlorobenzene	9.99	112	104700	10.4032	ppb	98
76) Ethylbenzene	10.13	91	91136	10.5988	ppb	99
77) Bromoform	10.90	173	33242	10.0209	ppb	91
79) Isopropylbenzene	11.11	105	144243	12.4298	ppb	99
80) 1,1,2,2-Tetrachloroethane	11.43	83	45364	11.3056	ppb	96
81) 1,2,3-Trichloropropane	11.47	110	8105	11.8514	ppb	97
82) t-1,4-Dichloro-2-Butene	11.49	53	10517	11.1981	ppb	94
83) Bromobenzene	11.42	156	21824	11.3624	ppb	98
84) n-Propylbenzene	11.56	91	88296	12.3761	ppb	100
85) 4-Ethyltoluene	11.69	105	132672	12.5722	ppb	97
86) 2-Chlorotoluene	11.64	91	54235	12.4171	ppb	95
87) 1,3,5-Trimethylbenzene	11.76	105	107418	11.9380	ppb	97
88) 4-Chlorotoluene	11.77	91	61168	12.3248	ppb	96
89) Tert-Butylbenzene	12.11	119	107799	11.7350	ppb	94
90) 1,2,4-Trimethylbenzene	12.17	105	100251	11.7594	ppb	94
91) Sec-Butylbenzene	12.36	105	124791	11.1140	ppb	97
92) p-Isopropyltoluene	12.52	119	55336	10.5594	ppb	96
93) Benzyl Chloride	12.71	91	41513	8.6085	ppb	97
94) 1,3-DCB	12.46	146	34664	10.3331	ppb	96
95) 1,4-DCB	12.56	146	69882	10.7411	ppb	98
96) n-Butylbenzene	12.71	91	41513	8.6085	ppb	98
97) 1,2-DCB	12.97	146	66767	10.7158	ppb	95
98) Hexachloroethane	13.26	117	23947	10.6290	ppb	98
99) 1,2-Dibromo-3-chloropropan	13.82	75	7415	10.2629	ppb	94
100) 1,2,4-Trichlorobenzene	14.74	180	40549	10.3205	ppb	93
101) Hexachlorobutadiene	14.94	225	20542	10.6118	ppb	86
102) Naphthalene	15.01	128	83151	9.9664	ppb	97
103) 1,2,3-Trichlorobenzene	15.27	180	18760	10.4537	ppb	98

(#) = qualifier out of range (m) = manual integration

Quantitation Report

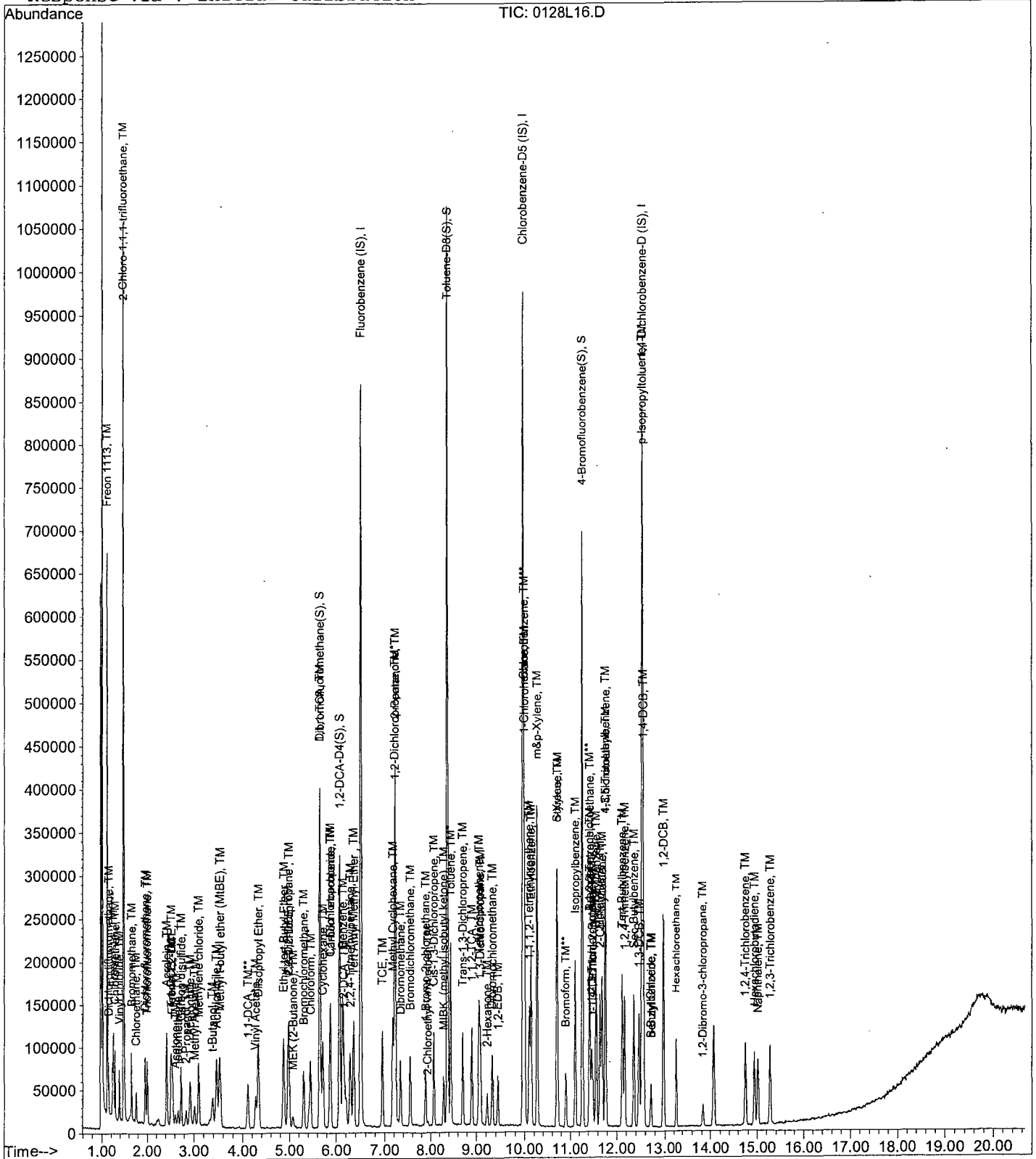
Data File : M:\LOKI\DATA\190128\0128L16.D  
Acq On : 28 Jan 19 21:15  
Sample : 190128A LCS 10ug/L  
Misc : IS&S 11/8/18

Vial: 15  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 29 9:16 2019

Quant Results File: L0128W.RES

Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Jan 29 09:06:22 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190128\0128L17.D  
 Acq On : 28 Jan 19 21:44  
 Sample : 190128A LCSD 10ug/L  
 Misc : IS&S 11/8/18

Vial: 16  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 29 9:16 2019

Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	401792	25.0000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.97	117	308096	25.0000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.53	152	128800	25.0000	ppb	0.00

System Monitoring Compounds

38) Dibromofluoromethane(S)	5.65	111	202666	25.6545	ppb	0.00
Spiked Amount	25.000		Recovery	= 102.620%		
43) 1,2-DCA-D4(S)	6.07	65	225348	24.5176	ppb	0.00
Spiked Amount	25.000		Recovery	= 98.072%		
64) Toluene-D8(S)	8.37	98	726079	23.5473	ppb	0.00
Spiked Amount	25.000		Recovery	= 94.188%		
72) 4-Bromofluorobenzene(S)	11.26	95	234975	25.4351	ppb	0.00
Spiked Amount	25.000		Recovery	= 101.740%		

Target Compounds

	R.T.	QIon	Response	Conc	Units	Qvalue
2) Freon 1113	1.12	116	163606	100.1274	ppb	100
3) Dichlorodifluoromethane	1.14	85	27426	10.2278	ppb	98
4) Freon 114	1.25	85	24312	11.6652	ppb	90
5) Chloromethane	1.29	50	45967	10.6716	ppb	100
6) Vinyl chloride	1.38	62	34055	10.7679	ppb	96
7) 2-Chloro-1,1,1-trifluoroet	1.48	118	283968	106.2961	ppb	99
8) Bromomethane	1.65	94	22079	11.4806	ppb	97
9) Chloroethane	1.76	64	16737	11.0509	ppb	97
10) Dichlorofluoromethane	1.95	67	53566	9.9314	ppb	95
11) Trichlorofluoromethane	2.00	101	47435	10.7842	ppb	99
12) Acrolein	2.42	56	79940	110.4875	ppb	# 97
13) Acetone	2.61	43	6183	8.1242	ppb	# 84
14) Freon-113	2.54	101	25590	10.8760	ppb	98
15) 1,1-DCE	2.52	63	6730	9.7587	ppb	85
16) t-Butanol	3.37	59	46300	119.2982	ppb	96
17) 2-Propanol	2.83	45	22542	92.3986	ppb	# 86
18) Acetonitrile	2.92	41	61595	116.0431	ppb	92
19) Methyl Acetate	3.01	43	26107	9.1779	ppb	89
20) Iodomethane	2.67	142	9285	9.0302	ppb	94
21) Acrylonitrile	3.44	52	13113	9.2284	ppb	88
22) Methylene chloride	3.09	84	33676	10.1171	ppb	98
23) Carbon disulfide	2.73	76	83925	10.0176	ppb	97
24) Methyl t-butyl ether (MtBE)	3.53	73	94564	9.9030	ppb	95
25) Trans-1,2-DCE	2.52	96	14610	10.3721	ppb	99
26) Diisopropyl Ether	4.33	45	99357	9.7784	ppb	100
28) 1,1-DCA	4.10	63	58724	10.3371	ppb	98
29) Vinyl Acetate	4.26	43	25219	9.3472	ppb	99
30) Ethyl tert Butyl Ether	4.86	59	98984	10.2595	ppb	99
31) MEK (2-Butanone)	5.07	43	18443	9.0512	ppb	93
32) Cis-1,2-DCE	4.98	96	37185	9.9159	ppb	88
33) 2,2-Dichloropropane	4.96	77	48683	9.6716	ppb	98
36) Chloroform	5.44	83	62508	10.3432	ppb	93
37) Bromochloromethane	5.30	128	9856	10.5551	ppb	95
39) 1,1,1-TCA	5.65	97	23624	10.3227	ppb	98
40) Cyclohexane	5.72	41	27892	10.7120	ppb	97
41) 1,1-Dichloropropene	5.88	75	44141	10.6490	ppb	96
42) 2,2,4-Trimethylpentane	6.28	57	86221	10.3583	ppb	# 87
44) Carbon Tetrachloride	5.87	117	45505	10.2710	ppb	96
45) Tert Amyl Methyl Ether	6.36	73	99990	9.8636	ppb	97

(#) = qualifier out of range (m) = manual integration

Data File : M:\LOKI\DATA\190128\0128L17.D  
 Acq On : 28 Jan 19 21:44  
 Sample : 190128A LCSD 10ug/L  
 Misc : IS&S 11/8/18

Vial: 16  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 29 9:16 2019

Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
47) 1,2-DCA	6.16	62	50937	10.3957	ppb	98
48) Benzene	6.13	78	134780	10.2529	ppb	97
49) TCE	6.95	130	20064	10.4649	ppb	97
50) 2-Pentanone	7.22	43	367521	116.0603	ppb	99
51) 1,2-Dichloropropane	7.21	63	35700	9.8504	ppb	100
52) Bromodichloromethane	7.54	83	26880	10.1723	ppb #	99
53) Methyl Cyclohexane	7.17	83	46875	10.4705	ppb	97
54) Dibromomethane	7.34	93	25305	10.1694	ppb	87
55) 2-Chloroethyl vinyl ether	7.95	43	943	10.3558	ppb	98
56) MIBK (methyl isobutyl ket	8.28	43	37775	10.0403	ppb	93
57) 1-Bromo-2-chloroethane	7.88	63	29536	10.3751	ppb	95
58) Cis-1,3-Dichloropropene	8.07	75	57449	10.0094	ppb	97
59) Toluene	8.44	91	80672	10.7871	ppb	99
60) Trans-1,3-Dichloropropene	8.71	75	55836	10.3105	ppb	96
61) 1,1,2-TCA	8.90	83	29137	10.2019	ppb	96
62) 2-Hexanone	9.22	43	25715	10.1783	ppb	98
65) 1,2-EDB	9.44	107	18720	8.8655	ppb	96
66) Tetrachloroethene	9.05	166	23656	10.5206	ppb	96
67) 1-Chlorohexane	10.00	91	39808	10.5481	ppb	94
68) 1,1,1,2-Tetrachloroethane	10.09	131	38966	10.4413	ppb	82
69) m&p-Xylene	10.26	91	224887	21.6092	ppb	97
70) o-Xylene	10.70	106	29712	10.9623	ppb	97
71) Styrene	10.71	104	91665	10.7408	ppb	97
73) 1,3-Dichloropropane	9.08	76	59490	9.9513	ppb	91
74) Dibromochloromethane	9.33	129	41715	9.5891	ppb	89
75) Chlorobenzene	9.99	112	100684	10.6504	ppb	99
76) Ethylbenzene	10.13	91	86016	10.6496	ppb	100
77) Bromoform	10.89	173	31446	10.0919	ppb	97
79) Isopropylbenzene	11.11	105	139416	12.4466	ppb	99
80) 1,1,2,2-Tetrachloroethane	11.43	83	42231	10.9039	ppb	93
81) 1,2,3-Trichloropropane	11.47	110	7827	11.8578	ppb	95
82) t-1,4-Dichloro-2-Butene	11.49	53	9228	10.1527	ppb	92
83) Bromobenzene	11.42	156	21384	11.5344	ppb	99
84) n-Propylbenzene	11.56	91	82699	12.0091	ppb	99
85) 4-Ethyltoluene	11.69	105	123806	12.1547	ppb	98
86) 2-Chlorotoluene	11.64	91	50528	11.9851	ppb	99
87) 1,3,5-Trimethylbenzene	11.76	105	103022	11.8619	ppb	95
88) 4-Chlorotoluene	11.76	91	54832	11.4461	ppb	95
89) Tert-Butylbenzene	12.11	119	102399	11.5487	ppb	98
90) 1,2,4-Trimethylbenzene	12.16	105	96013	11.6680	ppb	96
91) Sec-Butylbenzene	12.35	105	119869	11.0603	ppb	99
92) p-Isopropyltoluene	12.52	119	53704	10.6172	ppb	96
93) Benzyl Chloride	12.71	91	38795	8.3347	ppb	97
94) 1,3-DCB	12.46	146	33152	10.2384	ppb	95
95) 1,4-DCB	12.56	146	62808	10.0015	ppb	98
96) n-Butylbenzene	12.71	91	38795	8.3347	ppb	98
97) 1,2-DCB	12.97	146	63351	10.5338	ppb	96
98) Hexachloroethane	13.26	117	23726	10.9103	ppb	93
99) 1,2-Dibromo-3-chloropropan	13.81	75	7111	10.1969	ppb	88
100) 1,2,4-Trichlorobenzene	14.74	180	38141	10.0573	ppb	96
101) Hexachlorobutadiene	14.94	225	20359	10.8961	ppb	89
102) Naphthalene	15.01	128	80105	9.9472	ppb	95
103) 1,2,3-Trichlorobenzene	15.28	180	17616	10.1699	ppb	97

Quantitation Report

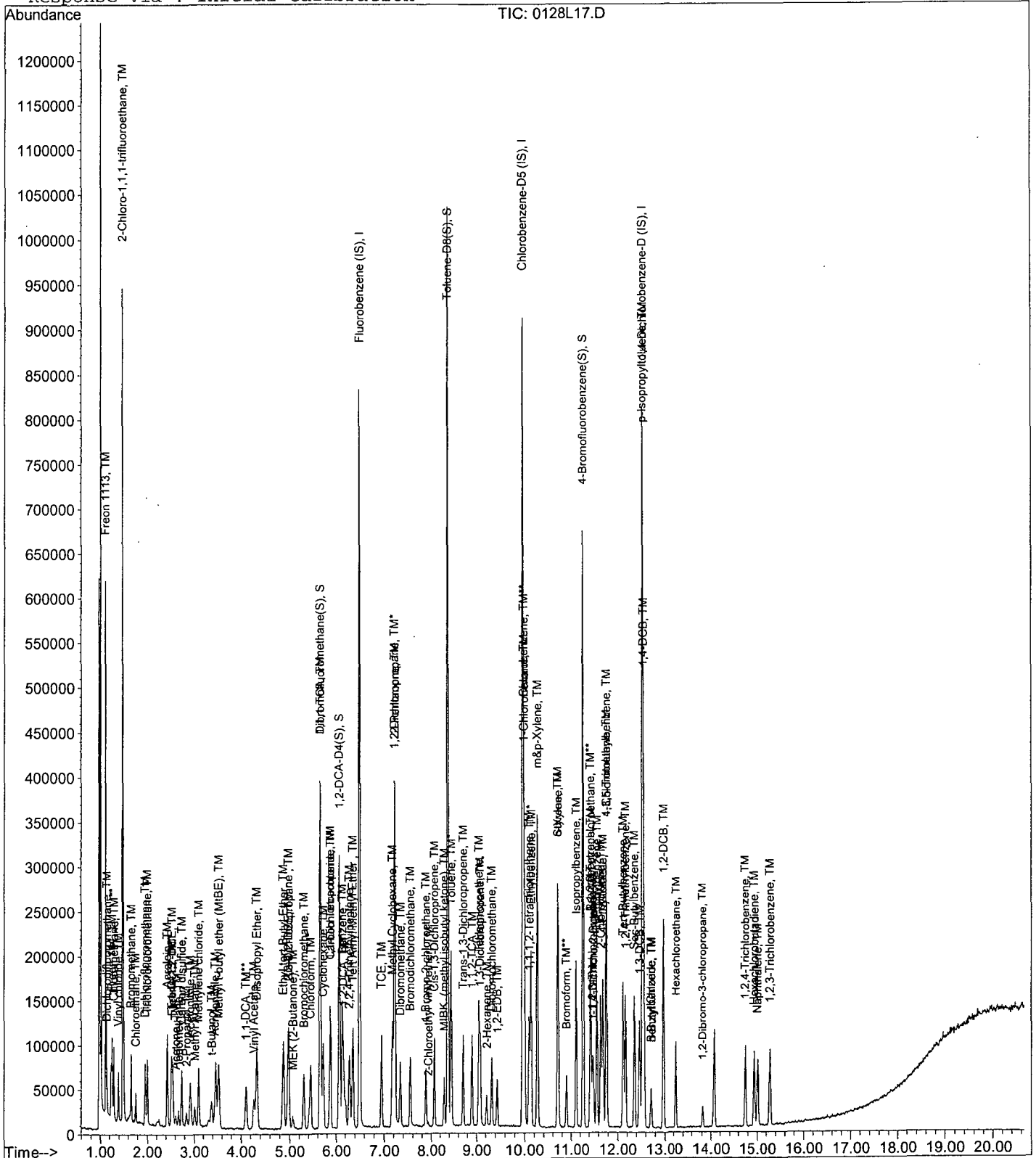
Data File : M:\LOKI\DATA\190128\0128L17.D  
 Acq On : 28 Jan 19 21:44  
 Sample : 190128A LCSD 10ug/L  
 Misc : IS&S 11/8/18

Vial: 16  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 29 9:16 2019

Quant Results File: L0128W.RES

Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration





Data File : M:\LOKI\DATA\190128\0130L05.D  
 Acq On : 30 Jan 19 10:08  
 Sample : 190130A LCS 10ug/L  
 Misc : IS&S 11/8/18

Vial: 4  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 31 8:22 2019

Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev (Min)
1) Fluorobenzene (IS)	6.50	96	373120	25.0000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.97	117	318656	25.0000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.54	152	165632	25.0000	ppb	0.00

System Monitoring Compounds

38) Dibromofluoromethane(S)	5.65	111	179659	24.4898	ppb	0.00
Spiked Amount	25.000		Recovery	=	97.960%	
43) 1,2-DCA-D4(S)	6.07	65	201258	23.5792	ppb	0.00
Spiked Amount	25.000		Recovery	=	94.316%	
64) Toluene-D8(S)	8.37	98	679801	21.3159	ppb	0.00
Spiked Amount	25.000		Recovery	=	85.264%	
72) 4-Bromofluorobenzene(S)	11.26	95	256625	26.8580	ppb	0.00
Spiked Amount	25.000		Recovery	=	107.432%	

Target Compounds

	R.T.	QIon	Response	Conc	Units	Qvalue
2) Freon 1113	1.12	116	173269	114.1898	ppb	98
3) Dichlorodifluoromethane	1.15	85	22830	9.1687	ppb	98
4) Freon 114	1.25	85	21240	10.8365	ppb	95
5) Chloromethane	1.29	50	37232	9.2502	ppb	93
6) Vinyl chloride	1.38	62	27153	9.2453	ppb	98
7) 2-Chloro-1,1,1-trifluoroet	1.48	118	273856	110.3883	ppb	99
8) Bromomethane	1.65	94	20542	11.5034	ppb	96
9) Chloroethane	1.75	64	12709	8.9364	ppb	98
10) Dichlorofluoromethane	1.95	67	46443	9.2725	ppb	95
11) Trichlorofluoromethane	2.00	101	37089	9.0801	ppb	92
12) Acrolein	2.42	56	62402	92.8753	ppb #	97
13) Acetone	2.61	43	6681	9.8211	ppb	94
14) Freon-113	2.55	101	21417	9.8019	ppb	97
15) 1,1-DCE	2.52	63	6099	9.5276	ppb	86
16) t-Butanol	3.37	59	32268	87.6592	ppb	98
17) 2-Propanol	2.84	45	17188	74.4761	ppb #	99
18) Acetonitrile	2.92	41	47721	96.8136	ppb	91
19) Methyl Acetate	3.01	43	24604	9.3260	ppb	88
20) Iodomethane	2.66	142	9116	9.3970	ppb	97
21) Acrylonitrile	3.45	52	10769	8.1612	ppb #	67
22) Methylene chloride	3.09	84	33071	10.7612	ppb	93
23) Carbon disulfide	2.73	76	68804	8.8438	ppb	100
24) Methyl t-butyl ether (MtBE)	3.53	73	81923	9.2385	ppb	96
25) Trans-1,2-DCE	2.52	96	12682	9.6953	ppb	96
26) Diisopropyl Ether	4.33	45	81329	8.6192	ppb	96
28) 1,1-DCA	4.10	63	50617	9.5947	ppb	89
29) Vinyl Acetate	4.27	43	18080	7.2161	ppb	96
30) Ethyl tert Butyl Ether	4.87	59	84425	9.4229	ppb	98
31) MEK (2-Butanone)	5.06	43	15705	8.2136	ppb #	85
32) Cis-1,2-DCE	4.98	96	34261	9.8383	ppb	95
33) 2,2-Dichloropropane	4.96	77	46896	10.0325	ppb	97
36) Chloroform	5.45	83	56132	10.0019	ppb	96
37) Bromochloromethane	5.30	128	9288	10.7112	ppb	99
39) 1,1,1-TCA	5.65	97	21352	10.0469	ppb	96
40) Cyclohexane	5.72	41	23526	9.7521	ppb	90
41) 1,1-Dichloropropene	5.88	75	37749	9.8067	ppb	98
42) 2,2,4-Trimethylpentane	6.29	57	76235	9.8624	ppb #	90
44) Carbon Tetrachloride	5.87	117	43971	10.6874	ppb	96
45) Tert Amyl Methyl Ether	6.36	73	85716	9.1053	ppb	97

(#) = qualifier out of range (m) = manual integration

Data File : M:\LOKI\DATA\190128\0130L05.D  
 Acq On : 30 Jan 19 10:08  
 Sample : 190130A LCS 10ug/L  
 Misc : IS&S 11/8/18

Vial: 4  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 31 8:22 2019

Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)

Title : METHOD 8260B

Last Update : Tue Jan 29 09:06:22 2019

Response via : Initial Calibration

DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
47) 1,2-DCA	6.16	62	46154	10.1434	ppb	# 92
48) Benzene	6.13	78	123217	10.0936	ppb	97
49) TCE	6.95	130	19304	10.8422	ppb	95
50) 2-Pentanone	7.22	43	303671	103.2660	ppb	96
51) 1,2-Dichloropropane	7.20	63	32004	9.5091	ppb	97
52) Bromodichloromethane	7.54	83	24456	9.9661	ppb	99
53) Methyl Cyclohexane	7.17	83	40407	9.7193	ppb	93
54) Dibromomethane	7.33	93	23955	10.3666	ppb	86
55) 2-Chloroethyl vinyl ether	7.94	43	613	7.2491	ppb	90
56) MIBK (methyl isobutyl ket	8.28	43	30397	8.6759	ppb	98
57) 1-Bromo-2-chloroethane	7.88	63	26248	9.9286	ppb	99
58) Cis-1,3-Dichloropropene	8.07	75	54761	10.2742	ppb	99
59) Toluene	8.44	91	74808	10.7716	ppb	97
60) Trans-1,3-Dichloropropene	8.71	75	52299	10.3994	ppb	98
61) 1,1,2-TCA	8.90	83	27944	10.5360	ppb	97
62) 2-Hexanone	9.22	43	20896	8.9478	ppb	94
65) 1,2-EDB	9.44	107	19424	8.8940	ppb	93
66) Tetrachloroethene	9.05	166	24144	10.3674	ppb	93
67) 1-Chlorohexane	10.00	91	38477	9.8820	ppb	97
68) 1,1,1,2-Tetrachloroethane	10.09	131	39784	10.3072	ppb	90
69) m&p-Xylene	10.27	91	219889	20.4287	ppb	95
70) o-Xylene	10.70	106	29104	10.3822	ppb	95
71) Styrene	10.71	104	92604	10.4912	ppb	96
73) 1,3-Dichloropropane	9.08	76	56258	9.0988	ppb	94
74) Dibromochloromethane	9.33	129	41938	9.3209	ppb	100
75) Chlorobenzene	10.00	112	98023	10.0253	ppb	99
76) Ethylbenzene	10.13	91	82696	9.8993	ppb	97
77) Bromoform	10.90	173	32426	10.0615	ppb	98
79) Isopropylbenzene	11.11	105	140794	9.7745	ppb	98
80) 1,1,2,2-Tetrachloroethane	11.43	83	44068	8.8480	ppb	87
81) 1,2,3-Trichloropropane	11.47	110	7855	8.9642	ppb	97
82) t-1,4-Dichloro-2-Butene	11.49	53	9606	8.1623	ppb	95
83) Bromobenzene	11.42	156	23640	9.9157	ppb	93
84) n-Propylbenzene	11.56	91	87928	9.9291	ppb	99
85) 4-Ethyltoluene	11.69	105	136034	10.3853	ppb	96
86) 2-Chlorotoluene	11.64	91	54120	9.9825	ppb	99
87) 1,3,5-Trimethylbenzene	11.76	105	109726	9.8244	ppb	95
88) 4-Chlorotoluene	11.76	91	63808	10.3579	ppb	97
89) Tert-Butylbenzene	12.11	119	115779	10.1540	ppb	98
90) 1,2,4-Trimethylbenzene	12.17	105	105452	9.9654	ppb	100
91) Sec-Butylbenzene	12.35	105	141376	10.1439	ppb	98
92) p-Isopropyltoluene	12.52	119	62328	9.5820	ppb	94
93) Benzyl Chloride	12.71	91	56641	9.4627	ppb	98
94) 1,3-DCB	12.46	146	42488	10.2037	ppb	95
95) 1,4-DCB	12.56	146	79412	9.8335	ppb	99
96) n-Butylbenzene	12.71	91	56641	9.4627	ppb	96
97) 1,2-DCB	12.97	146	80012	10.3457	ppb	99
98) Hexachloroethane	13.26	117	28336	10.1326	ppb	89
99) 1,2-Dibromo-3-chloropropan	13.82	75	9229	10.2909	ppb	94
100) 1,2,4-Trichlorobenzene	14.74	180	45075	9.2427	ppb	96
101) Hexachlorobutadiene	14.94	225	26167	10.8903	ppb	94
102) Naphthalene	15.01	128	93717	9.0497	ppb	97
103) 1,2,3-Trichlorobenzene	15.27	180	20640	9.2659	ppb	97

(#) = qualifier out of range (m) = manual integration

Quantitation Report

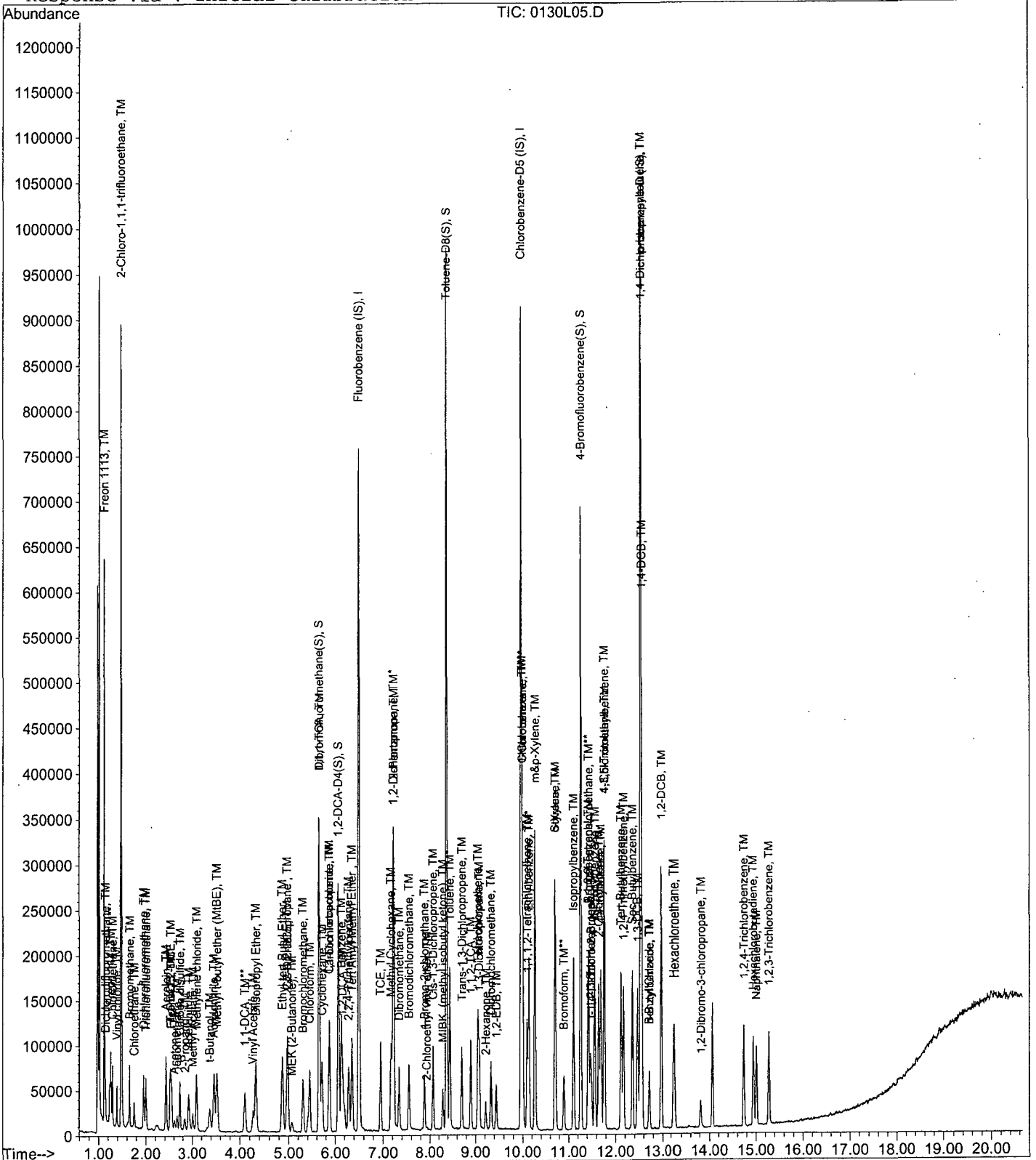
Data File : M:\LOKI\DATA\190128\0130L05.D  
Acq On : 30 Jan 19 10:08  
Sample : 190130A LCS 10ug/L  
Misc : IS&S 11/8/18

Vial: 4  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 31 8:22 2019

Quant Results File: L0128W.RES

Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Jan 29 09:06:22 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190128\0130L06.D  
 Acq On : 30 Jan 19 10:37  
 Sample : 190130A LCSD 10ug/L  
 Misc : IS&S 11/8/18

Vial: 5  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 31 8:23 2019

Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	370368	25.0000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.97	117	313152	25.0000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.54	152	163520	25.0000	ppb	0.00

System Monitoring Compounds

38) Dibromofluoromethane(S)	5.65	111	178924	24.5708	ppb	0.00
Spiked Amount	25.000		Recovery	=	98.284%	
43) 1,2-DCA-D4(S)	6.07	65	198222	23.3961	ppb	0.00
Spiked Amount	25.000		Recovery	=	93.584%	
64) Toluene-D8(S)	8.37	98	672019	21.4422	ppb	0.00
Spiked Amount	25.000		Recovery	=	85.768%	
72) 4-Bromofluorobenzene(S)	11.27	95	251877	26.8244	ppb	0.00
Spiked Amount	25.000		Recovery	=	107.296%	

Target Compounds

	R.T.	QIon	Response	Conc	Units	Qvalue
2) Freon 1113	1.12	116	179358	119.0809	ppb	96
3) Dichlorodifluoromethane	1.15	85	23307	9.4296	ppb	97
4) Freon 114	1.25	85	20928	10.7395	ppb	99
5) Chloromethane	1.29	50	38160	9.5659	ppb	97
6) Vinyl chloride	1.38	62	27523	9.4409	ppb	98
7) 2-Chloro-1,1,1-trifluoroet	1.48	118	270336	109.7791	ppb	98
8) Bromomethane	1.65	94	19704	11.0945	ppb	95
9) Chloroethane	1.75	64	14559	10.3976	ppb	98
10) Dichlorofluoromethane	1.95	67	46549	9.3627	ppb	92
11) Trichlorofluoromethane	2.00	101	42091	10.3812	ppb	97
12) Acrolein	2.42	56	63397	95.0573	ppb	# 96
13) Acetone	2.61	43	6716	9.9744	ppb	# 86
14) Freon-113	2.54	101	20812	9.5958	ppb	84
15) 1,1-DCE	2.52	63	6532	10.2660	ppb	80
16) t-Butanol	3.38	59	43311	121.1763	ppb	99
17) 2-Propanol	2.84	45	18233	80.1249	ppb	# 93
18) Acetonitrile	2.92	41	47761	97.6147	ppb	94
19) Methyl Acetate	3.01	43	22603	8.5719	ppb	# 76
20) Iodomethane	2.67	142	7906	8.5414	ppb	# 89
21) Acrylonitrile	3.45	52	10793	8.2402	ppb	77
22) Methylene chloride	3.09	84	32360	10.5927	ppb	99
23) Carbon disulfide	2.73	76	71502	9.2589	ppb	99
24) Methyl t-butyl ether (MtBE)	3.52	73	85081	9.6659	ppb	96
25) Trans-1,2-DCE	2.52	96	13134	10.1154	ppb	97
26) Diisopropyl Ether	4.33	45	84730	9.0464	ppb	99
28) 1,1-DCA	4.10	63	54132	10.3373	ppb	99
29) Vinyl Acetate	4.33	43	16520	6.6425	ppb	# 72
30) Ethyl tert Butyl Ether	4.87	59	86061	9.6769	ppb	98
31) MEK (2-Butanone)	5.06	43	17764	9.5042	ppb	# 82
32) Cis-1,2-DCE	4.98	96	35129	10.1625	ppb	94
33) 2,2-Dichloropropane	4.96	77	49161	10.5952	ppb	98
36) Chloroform	5.45	83	57462	10.3150	ppb	96
37) Bromochloromethane	5.30	128	9903	11.5053	ppb	90
39) 1,1,1-TCA	5.65	97	22192	10.5197	ppb	100
40) Cyclohexane	5.71	41	22495	9.4031	ppb	94
41) 1,1-Dichloropropene	5.88	75	40974	10.7237	ppb	93
42) 2,2,4-Trimethylpentane	6.28	57	75289	9.8124	ppb	92
44) Carbon Tetrachloride	5.87	117	45764	11.2058	ppb	93
45) Tert Amyl Methyl Ether	6.35	73	89638	9.5926	ppb	94

(#) = qualifier out of range (m) = manual integration

Data File : M:\LOKI\DATA\190128\0130L06.D  
 Acq On : 30 Jan 19 10:37  
 Sample : 190130A LCSD 10ug/L  
 Misc : IS&S 11/8/18

Vial: 5  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 31 8:23 2019

Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
47) 1,2-DCA	6.16	62	46629	10.3239	ppb	# 92
48) Benzene	6.13	78	124524	10.2765	ppb	99
49) TCE	6.95	130	19064	10.7870	ppb	96
50) 2-Pentanone	7.22	43	326817	111.9628	ppb	97
51) 1,2-Dichloropropane	7.20	63	33231	9.9471	ppb	96
52) Bromodichloromethane	7.55	83	25288	10.3817	ppb	93
53) Methyl Cyclohexane	7.17	83	41964	10.1689	ppb	96
54) Dibromomethane	7.34	93	24682	10.7606	ppb	95
55) 2-Chloroethyl vinyl ether	7.94	43	871	10.3766	ppb	# 83
56) MIBK (methyl isobutyl ket	8.28	43	32265	9.2901	ppb	95
57) 1-Bromo-2-chloroethane	7.89	63	27136	10.3408	ppb	98
58) Cis-1,3-Dichloropropene	8.07	75	53700	10.1500	ppb	94
59) Toluene	8.44	91	77112	11.1859	ppb	98
60) Trans-1,3-Dichloropropene	8.71	75	51731	10.3629	ppb	93
61) 1,1,2-TCA	8.90	83	27784	10.5535	ppb	90
62) 2-Hexanone	9.22	43	23191	9.9652	ppb	90
65) 1,2-EDB	9.44	107	19264	8.9758	ppb	97
66) Tetrachloroethene	9.05	166	24992	10.9784	ppb	96
67) 1-Chlorohexane	10.00	91	39036	10.1897	ppb	94
68) 1,1,1,2-Tetrachloroethane	10.09	131	41461	10.9304	ppb	81
69) m&p-Xylene	10.27	91	228751	21.6256	ppb	99
70) o-Xylene	10.70	106	31984	11.6101	ppb	92
71) Styrene	10.71	104	97067	11.1901	ppb	98
73) 1,3-Dichloropropane	9.08	76	57881	9.5258	ppb	94
74) Dibromochloromethane	9.33	129	42820	9.6842	ppb	100
75) Chlorobenzene	10.00	112	100283	10.4368	ppb	96
76) Ethylbenzene	10.14	91	85872	10.4601	ppb	97
77) Bromoform	10.90	173	33742	10.6539	ppb	98
79) Isopropylbenzene	11.11	105	145996	10.2665	ppb	97
80) 1,1,2,2-Tetrachloroethane	11.43	83	46467	9.4502	ppb	# 92
81) 1,2,3-Trichloropropane	11.47	110	8418	9.8436	ppb	93
82) t-1,4-Dichloro-2-Butene	11.50	53	10945	9.4656	ppb	93
83) Bromobenzene	11.43	156	24240	10.2987	ppb	92
84) n-Propylbenzene	11.56	91	95141	10.8824	ppb	98
85) 4-Ethyltoluene	11.69	105	137278	10.6157	ppb	99
86) 2-Chlorotoluene	11.65	91	55432	10.3565	ppb	99
87) 1,3,5-Trimethylbenzene	11.76	105	111959	10.1538	ppb	98
88) 4-Chlorotoluene	11.77	91	64400	10.5890	ppb	97
89) Tert-Butylbenzene	12.12	119	123027	10.9291	ppb	99
90) 1,2,4-Trimethylbenzene	12.17	105	109854	10.5154	ppb	97
91) Sec-Butylbenzene	12.36	105	150141	10.9120	ppb	99
92) p-Isopropyltoluene	12.52	119	66016	10.2801	ppb	93
93) Benzyl Chloride	12.71	91	57579	9.7437	ppb	98
94) 1,3-DCB	12.47	146	39688	9.6544	ppb	95
95) 1,4-DCB	12.57	146	82765	10.3811	ppb	97
96) n-Butylbenzene	12.71	91	57579	9.7437	ppb	100
97) 1,2-DCB	12.98	146	78277	10.2521	ppb	98
98) Hexachloroethane	13.26	117	28547	10.3399	ppb	91
99) 1,2-Dibromo-3-chloropropan	13.82	75	9630	10.8758	ppb	90
100) 1,2,4-Trichlorobenzene	14.75	180	48040	9.9779	ppb	96
101) Hexachlorobutadiene	14.95	225	26685	11.2494	ppb	94
102) Naphthalene	15.02	128	100319	9.8123	ppb	94
103) 1,2,3-Trichlorobenzene	15.28	180	22432	10.2005	ppb	93

(#) = qualifier out of range (m) = manual integration

Quantitation Report

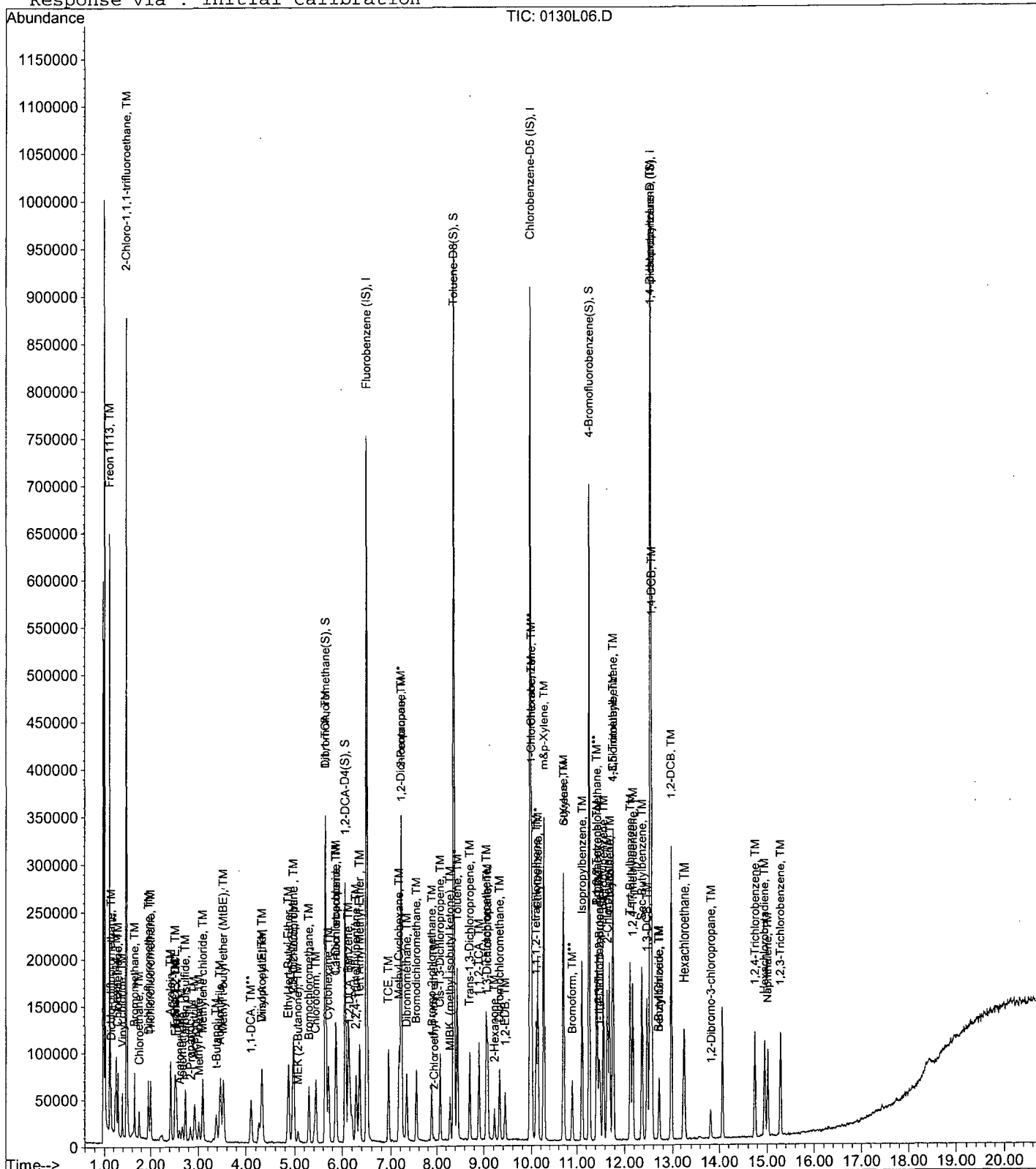
Data File : M:\LOKI\DATA\190128\0130L06.D  
Acq On : 30 Jan 19 10:37  
Sample : 190130A LCSD 10ug/L  
Misc : IS&S 11/8/18

Vial: 5  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 31 8:23 2019

Quant Results File: L0128W.RES

Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Jan 29 09:06:22 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190128\0130L24.D  
 Acq On : 30 Jan 19 19:13  
 Sample : AZ85643W02 MS 10ug/L  
 Misc : IS&S 11/8/18

Vial: 23  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 31 8:23 2019

Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260.

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	319296	25.0000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.97	117	283840	25.0000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.54	152	151680	25.0000	ppb	0.00

System Monitoring Compounds

38) Dibromofluoromethane(S)	5.65	111	163353	26.0206	ppb	0.00
Spiked Amount	25.000		Recovery	=	104.084%	
43) 1,2-DCA-D4(S)	6.07	65	185862	25.4462	ppb	0.00
Spiked Amount	25.000		Recovery	=	101.784%	
64) Toluene-D8(S)	8.37	98	633614	22.3046	ppb	0.00
Spiked Amount	25.000		Recovery	=	89.220%	
72) 4-Bromofluorobenzene(S)	11.27	95	239384	28.1267	ppb	0.00
Spiked Amount	25.000		Recovery	=	112.508%	

Target Compounds

	R.T.	QIon	Response	Conc	Units	Qvalue
3) Dichlorodifluoromethane	1.14	85	24576	11.5321	ppb	97
4) Freon 114	1.25	85	21176	13.0091	ppb	97
5) Chloromethane	1.29	50	34596	10.0830	ppb	90
6) Vinyl chloride	1.38	62	24891	9.9038	ppb	99
8) Bromomethane	1.66	94	19704	12.9717	ppb	95
9) Chloroethane	1.76	64	14848	12.4003	ppb	94
10) Dichlorofluoromethane	1.95	67	43885	10.2387	ppb	100
11) Trichlorofluoromethane	2.00	101	43539	12.4559	ppb	98
12) Acrolein	2.42	56	53929	93.7949	ppb	# 99
13) Acetone	2.61	43	5103	8.5243	ppb	96
14) Freon-113	2.54	101	21561	11.5312	ppb	96
15) 1,1-DCE	2.52	63	6496	11.8155	ppb	# 67
16) t-Butanol	3.37	59	49374	162.6544	ppb	99
17) 2-Propanol	2.83	45	14532	73.4888	ppb	# 91
18) Acetonitrile	2.91	41	44016	104.3500	ppb	92
19) Methyl Acetate	3.01	43	19164	8.4171	ppb	# 86
20) Iodomethane	2.67	142	5957	7.7954	ppb	99
21) Acrylonitrile	3.45	52	9172	8.1227	ppb	86
22) Methylene chloride	3.10	84	23401	8.7103	ppb	97
23) Carbon disulfide	2.73	76	63675	9.5642	ppb	99
24) Methyl t-butyl ether (MtBE)	3.53	73	77567	10.2218	ppb	98
25) Trans-1,2-DCE	2.52	96	12494	11.1616	ppb	93
26) Diisopropyl Ether	4.32	45	76511	9.4755	ppb	94
28) 1,1-DCA	4.10	63	46735	10.3522	ppb	97
29) Vinyl Acetate	4.27	43	14529	6.7764	ppb	96
30) Ethyl tert Butyl Ether	4.87	59	77292	10.0810	ppb	100
31) MEK (2-Butanone)	5.07	43	14899	9.2182	ppb	# 86
32) Cis-1,2-DCE	4.98	96	33075	11.0987	ppb	77
33) 2,2-Dichloropropane	4.96	77	41926	10.4812	ppb	93
36) Chloroform	5.45	83	54815	11.4137	ppb	90
37) Bromochloromethane	5.29	128	7994	10.7729	ppb	98
39) 1,1,1-TCA	5.65	97	21536	11.8417	ppb	96
40) Cyclohexane	5.72	41	20768	10.0523	ppb	90
41) 1,1-Dichloropropene	5.88	75	38434	11.6678	ppb	98
42) 2,2,4-Trimethylpentane	6.28	57	68910	10.4176	ppb	96
44) Carbon Tetrachloride	5.87	117	44553	12.6543	ppb	90
45) Tert Amyl Methyl Ether	6.36	73	82187	10.2021	ppb	96
47) 1,2-DCA	6.16	62	40073	10.2916	ppb	94
48) Benzene	6.13	78	113842	10.8977	ppb	98

(#) = qualifier out of range (m) = manual integration

Data File : M:\LOKI\DATA\190128\0130L24.D  
 Acq On : 30 Jan 19 19:13  
 Sample : AZ85643W02 MS 10ug/L  
 Misc : IS&S 11/8/18

Vial: 23  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 31 8:23 2019

Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
49) TCE	6.95	130	18536	12.1659	ppb	95
50) 2-Pentanone	7.22	43	280999	111.6642	ppb	97
51) 1,2-Dichloropropane	7.21	63	30505	10.5916	ppb	98
52) Bromodichloromethane	7.54	83	23568	11.2232	ppb	# 96
53) Methyl Cyclohexane	7.17	83	39170	11.0100	ppb	99
54) Dibromomethane	7.34	93	21382	10.8129	ppb	89
55) 2-Chloroethyl vinyl ether	8.00	43	365	5.0440	ppb	# 34
56) MIBK (methyl isobutyl ket	8.28	43	31833	10.6579	ppb	99
57) 1-Bromo-2-chloroethane	7.88	63	24184	10.6900	ppb	99
58) Cis-1,3-Dichloropropene	8.07	75	50247	11.0165	ppb	95
59) Toluene	8.44	91	73488	12.3653	ppb	99
60) Trans-1,3-Dichloropropene	8.70	75	47681	11.0794	ppb	98
61) 1,1,2-TCA	8.90	83	26384	11.6247	ppb	93
62) 2-Hexanone	9.22	43	19945	9.9421	ppb	90
65) 1,2-EDB	9.44	107	18032	9.2694	ppb	100
66) Tetrachloroethene	9.05	166	22776	11.0441	ppb	91
67) 1-Chlorohexane	10.00	91	35431	10.2032	ppb	93
68) 1,1,1,2-Tetrachloroethane	10.09	131	37867	11.0139	ppb	88
69) m&p-Xylene	10.27	91	219922	22.9380	ppb	98
70) o-Xylene	10.70	106	29440	11.7902	ppb	97
71) Styrene	10.71	104	92257	11.7339	ppb	95
73) 1,3-Dichloropropane	9.08	76	52733	9.5748	ppb	93
74) Dibromochloromethane	9.32	129	39483	9.8516	ppb	93
75) Chlorobenzene	9.99	112	94289	10.8263	ppb	94
76) Ethylbenzene	10.13	91	83192	11.1802	ppb	96
77) Bromoform	10.90	173	31397	10.9372	ppb	99
79) Isopropylbenzene	11.11	105	137212	10.4020	ppb	99
80) 1,1,2,2-Tetrachloroethane	11.43	83	46035	10.0931	ppb	# 98
81) 1,2,3-Trichloropropane	11.47	110	7615	9.5670	ppb	95
82) t-1,4-Dichloro-2-Butene	11.49	53	9118	8.4711	ppb	96
83) Bromobenzene	11.42	156	23288	10.6666	ppb	90
84) n-Propylbenzene	11.56	91	88574	10.9221	ppb	97
85) 4-Ethyltoluene	11.69	105	140604	11.7216	ppb	97
86) 2-Chlorotoluene	11.64	91	52792	10.6332	ppb	98
87) 1,3,5-Trimethylbenzene	11.76	105	114001	11.1460	ppb	95
88) 4-Chlorotoluene	11.76	91	63368	11.2327	ppb	99
89) Tert-Butylbenzene	12.11	119	120320	11.5229	ppb	99
90) 1,2,4-Trimethylbenzene	12.17	105	110303	11.3826	ppb	96
91) Sec-Butylbenzene	12.35	105	144737	11.3403	ppb	96
92) p-Isopropyltoluene	12.52	119	65712	11.0315	ppb	94
93) Benzyl Chloride	12.71	91	59186	10.7974	ppb	99
94) 1,3-DCB	12.46	146	40176	10.5360	ppb	97
95) 1,4-DCB	12.56	146	82503	11.1560	ppb	97
96) n-Butylbenzene	12.71	91	59186	10.7974	ppb	96
97) 1,2-DCB	12.97	146	76950	10.8650	ppb	97
98) Hexachloroethane	13.26	117	31798	12.4165	ppb	84
99) 1,2-Dibromo-3-chloropropan	13.82	75	9408	11.4536	ppb	# 86
100) 1,2,4-Trichlorobenzene	14.74	180	50109	11.2200	ppb	93
101) Hexachlorobutadiene	14.94	225	26913	12.2311	ppb	83
102) Naphthalene	15.01	128	125983	13.2844	ppb	94
103) 1,2,3-Trichlorobenzene	15.27	180	22000	10.7849	ppb	91

(#) = qualifier out of range (m) = manual integration

0130L24.D L0128W.M

Thu Jan 31 10:46:01 2019



Quantitation Report

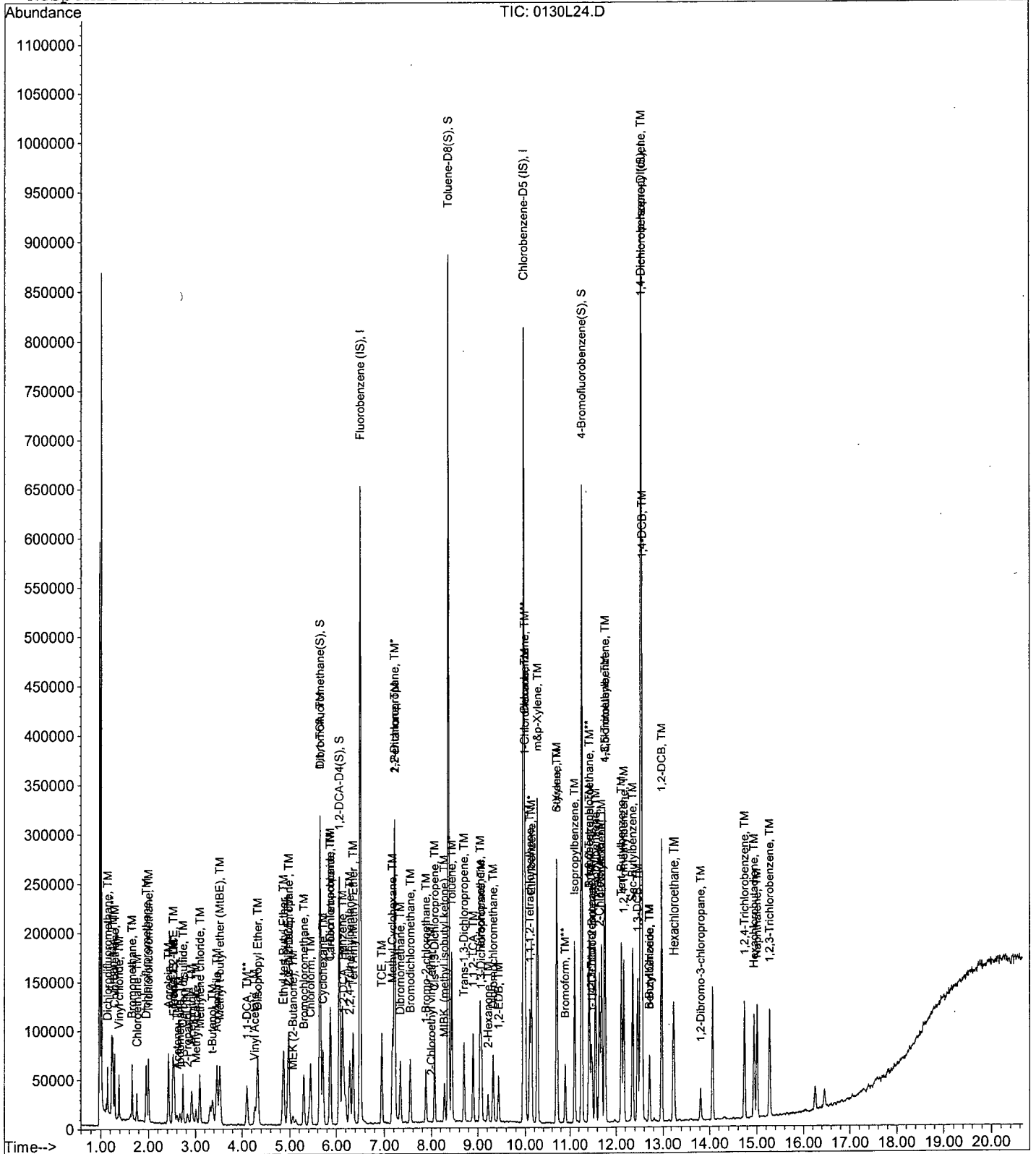
Data File : M:\LOKI\DATA\190128\0130L24.D  
Acq On : 30 Jan 19 19:13  
Sample : AZ85643W02 MS 10ug/L  
Misc : IS&S 11/8/18

Vial: 23  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 31 8:23 2019

Quant Results File: L0128W.RES

Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Jan 29 09:06:22 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190128\0130L25.D  
 Acq On : 30 Jan 19 19:42  
 Sample : AZ85643W03 MSD 10ug/L  
 Misc : IS&S 11/8/18

Vial: 24  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 31 8:23 2019

Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	323712	25.0000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.97	117	286208	25.0000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.54	152	149568	25.0000	ppb	0.00
System Monitoring Compounds						
38) Dibromofluoromethane(S)	5.65	111	165466	25.9976	ppb	0.00
Spiked Amount	25.000		Recovery	=	103.992%	
43) 1,2-DCA-D4(S)	6.07	65	187071	25.2623	ppb	0.00
Spiked Amount	25.000		Recovery	=	101.048%	
64) Toluene-D8(S)	8.37	98	631405	22.0429	ppb	0.00
Spiked Amount	25.000		Recovery	=	88.172%	
72) 4-Bromofluorobenzene(S)	11.26	95	233419	27.1989	ppb	0.00
Spiked Amount	25.000		Recovery	=	108.796%	
Target Compounds						
3) Dichlorodifluoromethane	1.15	85	16808	7.7814	ppb	90
4) Freon 114	1.25	85	20032	11.9827	ppb	97
5) Chloromethane	1.29	50	26512	7.5112	ppb	96
6) Vinyl chloride	1.38	62	18331	7.1941	ppb	98
8) Bromomethane	1.66	94	16145	10.3607	ppb	87
9) Chloroethane	1.76	64	10389	8.3885	ppb	96
10) Dichlorofluoromethane	1.95	67	43845	10.0898	ppb	98
11) Trichlorofluoromethane	2.00	101	30534	8.6162	ppb	96
12) Acrolein	2.42	56	55519	95.2430	ppb	# 100
13) Acetone	2.61	43	6503	11.2927	ppb	95
14) Freon-113	2.54	101	21609	11.3992	ppb	96
15) 1,1-DCE	2.52	63	6506	11.6744	ppb	# 68
16) t-Butanol	3.37	59	48233	156.4545	ppb	100
17) 2-Propanol	2.83	45	15471	77.5594	ppb	# 97
18) Acetonitrile	2.91	41	40795	95.3945	ppb	99
19) Methyl Acetate	3.01	43	19507	8.4540	ppb	# 82
20) Iodomethane	2.67	142	5780	7.5732	ppb	94
21) Acrylonitrile	3.44	52	9835	8.5910	ppb	82
22) Methylene chloride	3.09	84	25504	9.4450	ppb	93
23) Carbon disulfide	2.73	76	67695	10.0294	ppb	97
24) Methyl t-butyl ether (MtBE)	3.53	73	79486	10.3318	ppb	96
25) Trans-1,2-DCE	2.52	96	12278	10.8190	ppb	94
26) Diisopropyl Ether	4.33	45	76770	9.3779	ppb	95
28) 1,1-DCA	4.10	63	48488	10.5940	ppb	99
29) Vinyl Acetate	4.27	43	15375	7.0731	ppb	92
30) Ethyl tert Butyl Ether	4.87	59	80406	10.3441	ppb	100
31) MEK (2-Butanone)	5.06	43	14679	8.9290	ppb	# 78
32) Cis-1,2-DCE	4.98	96	34337	11.3650	ppb	86
33) 2,2-Dichloropropane	4.97	77	44028	10.8565	ppb	92
36) Chloroform	5.45	83	55105	11.3176	ppb	97
37) Bromochloromethane	5.30	128	8558	11.3757	ppb	90
39) 1,1,1-TCA	5.65	97	21256	11.5283	ppb	92
40) Cyclohexane	5.72	41	21324	10.1774	ppb	90
41) 1,1-Dichloropropene	5.88	75	36046	10.7936	ppb	93
42) 2,2,4-Trimethylpentane	6.28	57	70278	10.4794	ppb	96
44) Carbon Tetrachloride	5.87	117	43962	12.3161	ppb	96
45) Tert Amyl Methyl Ether	6.36	73	81947	10.0335	ppb	96
47) 1,2-DCA	6.16	62	42306	10.7168	ppb	95
48) Benzene	6.13	78	117618	11.1055	ppb	97

Data File : M:\LOKI\DATA\190128\0130L25.D  
 Acq On : 30 Jan 19 19:42  
 Sample : AZ85643W03 MSD 10ug/L  
 Misc : IS&S 11/8/18

Vial: 24  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 31 8:23 2019

Quant Results File: L0128W.RES

Quant Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
49) TCE	6.95	130	18952	12.2692	ppb	98
50) 2-Pentanone	7.22	43	302745	118.6645	ppb	97
51) 1,2-Dichloropropane	7.20	63	30817	10.5540	ppb	99
52) Bromodichloromethane	7.54	83	25608	12.0283	ppb	96
53) Methyl Cyclohexane	7.17	83	40333	11.1823	ppb	92
54) Dibromomethane	7.33	93	23160	11.5523	ppb	98
55) 2-Chloroethyl vinyl ether	8.05	43	248	3.3804	ppb #	34
56) MIBK (methyl isobutyl ket	8.28	43	29462	9.7138	ppb	93
57) 1-Bromo-2-chloroethane	7.88	63	24288	10.5895	ppb	94
58) Cis-1,3-Dichloropropene	8.07	75	50347	10.8878	ppb	97
59) Toluene	8.44	91	75032	12.4529	ppb	97
60) Trans-1,3-Dichloropropene	8.71	75	49789	11.4114	ppb	98
61) 1,1,2-TCA	8.90	83	26217	11.3936	ppb	96
62) 2-Hexanone	9.21	43	20822	10.2278	ppb #	97
65) 1,2-EDB	9.44	107	19880	10.1348	ppb	88
66) Tetrachloroethene	9.05	166	22000	10.5336	ppb	98
67) 1-Chlorohexane	10.00	91	37528	10.6988	ppb	89
68) 1,1,1,2-Tetrachloroethane	10.09	131	38388	11.0730	ppb	87
69) m&p-Xylene	10.26	91	220451	22.8029	ppb	97
70) o-Xylene	10.70	106	29968	11.9024	ppb	96
71) Styrene	10.71	104	93810	11.8327	ppb	95
73) 1,3-Dichloropropane	9.08	76	54541	9.8212	ppb	94
74) Dibromochloromethane	9.33	129	41289	10.2170	ppb	99
75) Chlorobenzene	10.00	112	99293	11.3066	ppb	97
76) Ethylbenzene	10.13	91	84480	11.2593	ppb	99
77) Bromoform	10.90	173	32174	11.1152	ppb	98
79) Isopropylbenzene	11.11	105	141524	10.8804	ppb	98
80) 1,1,2,2-Tetrachloroethane	11.43	83	45666	10.1536	ppb	99
81) 1,2,3-Trichloropropane	11.47	110	7500	9.5540	ppb	93
82) t-1,4-Dichloro-2-Butene	11.50	53	9082	8.5597	ppb	87
83) Bromobenzene	11.43	156	23392	10.8655	ppb	95
84) n-Propylbenzene	11.56	91	87812	10.9810	ppb	98
85) 4-Ethyltoluene	11.69	105	138611	11.7186	ppb	97
86) 2-Chlorotoluene	11.65	91	53928	11.0154	ppb	100
87) 1,3,5-Trimethylbenzene	11.76	105	112636	11.1681	ppb	99
88) 4-Chlorotoluene	11.77	91	59688	10.7297	ppb	94
89) Tert-Butylbenzene	12.12	119	121338	11.7845	ppb	97
90) 1,2,4-Trimethylbenzene	12.17	105	109819	11.4927	ppb	97
91) Sec-Butylbenzene	12.36	105	144498	11.4815	ppb	96
92) p-Isopropyltoluene	12.52	119	69120	11.7675	ppb	95
93) Benzyl Chloride	12.71	91	38739	7.1670	ppb	97
94) 1,3-DCB	12.46	146	42272	11.2422	ppb	93
95) 1,4-DCB	12.56	146	83162	11.4039	ppb	94
96) n-Butylbenzene	12.71	91	38739	7.1670	ppb	99
97) 1,2-DCB	12.97	146	77325	11.0721	ppb	95
98) Hexachloroethane	13.26	117	20300	8.0387	ppb	96
99) 1,2-Dibromo-3-chloropropan	13.82	75	9169	11.3205	ppb	89
100) 1,2,4-Trichlorobenzene	14.74	180	51117	11.6074	ppb	96
101) Hexachlorobutadiene	14.94	225	25758	11.8715	ppb	96
102) Naphthalene	15.01	128	116696	12.4789	ppb	98
103) 1,2,3-Trichlorobenzene	15.28	180	22392	11.1321	ppb	91

Quantitation Report

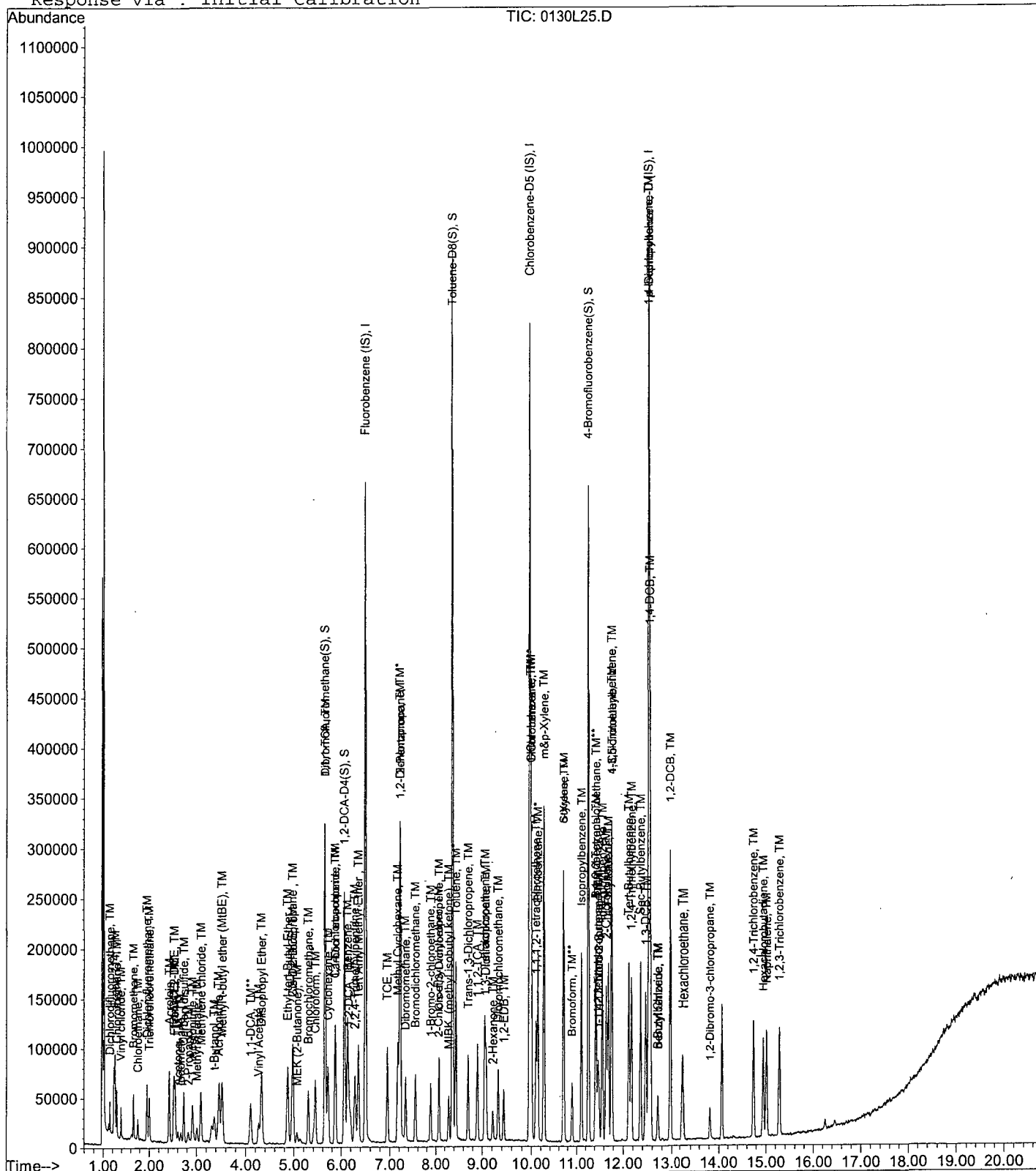
Data File : M:\LOKI\DATA\190128\0130L25.D  
Acq On : 30 Jan 19 19:42  
Sample : AZ85643W03 MSD 10ug/L  
Misc : IS&S 11/8/18

Vial: 24  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 31 8:23 2019

Quant Results File: L0128W.RES

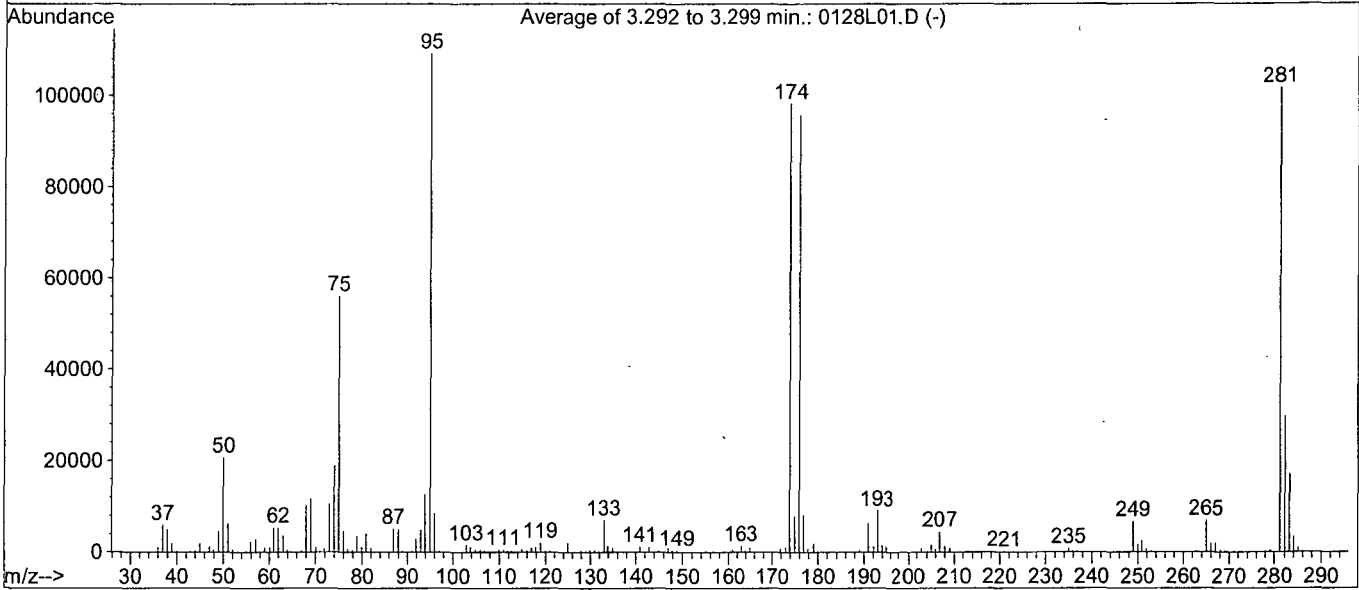
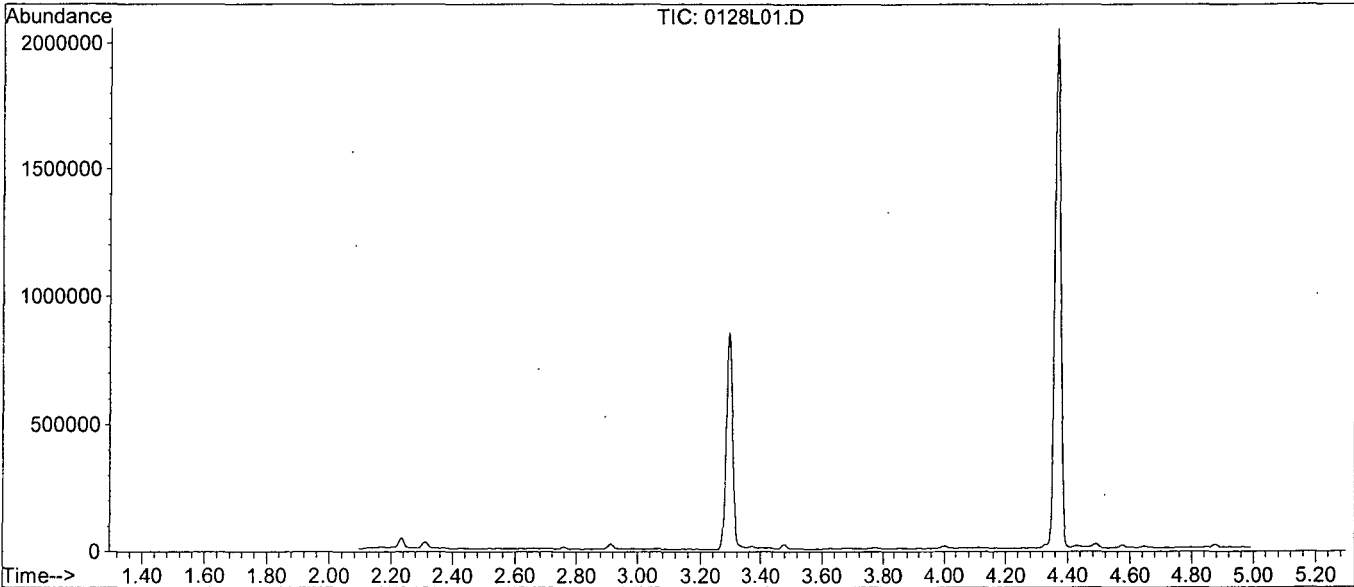
Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Jan 29 09:06:22 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190128\0128L01.D  
 Acq On : 28 Jan 19 14:12  
 Sample : 25ug/L BFB STD 1/18/19  
 Misc : 2ul

Vial: 1  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B



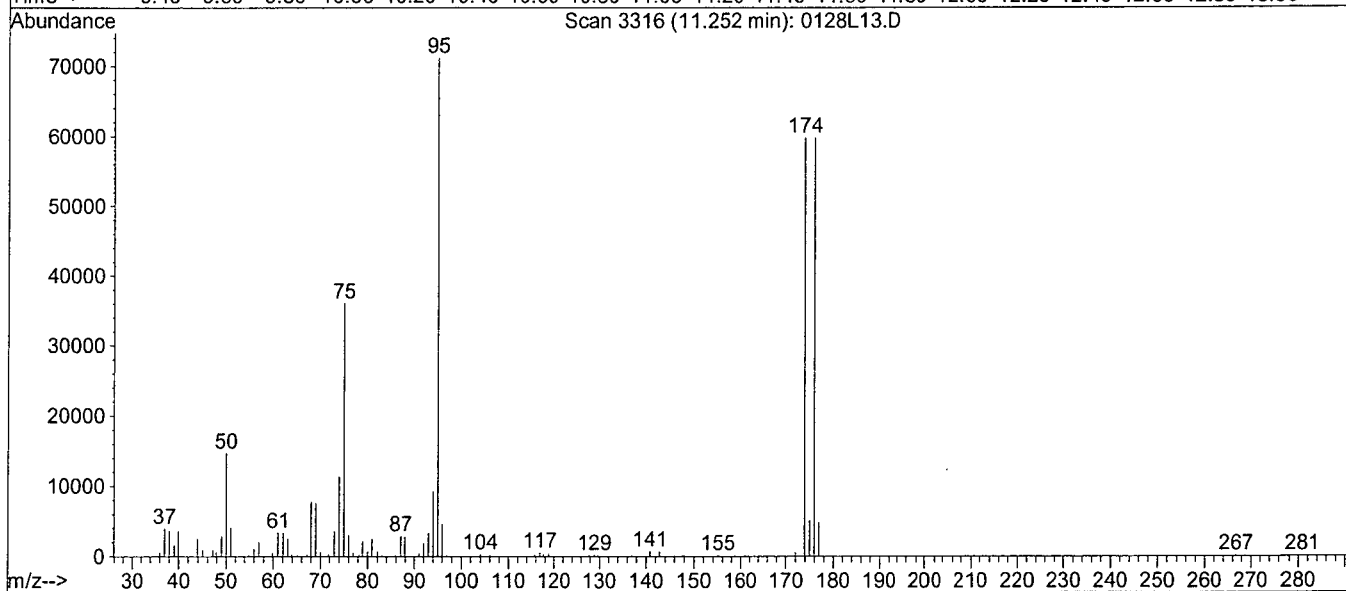
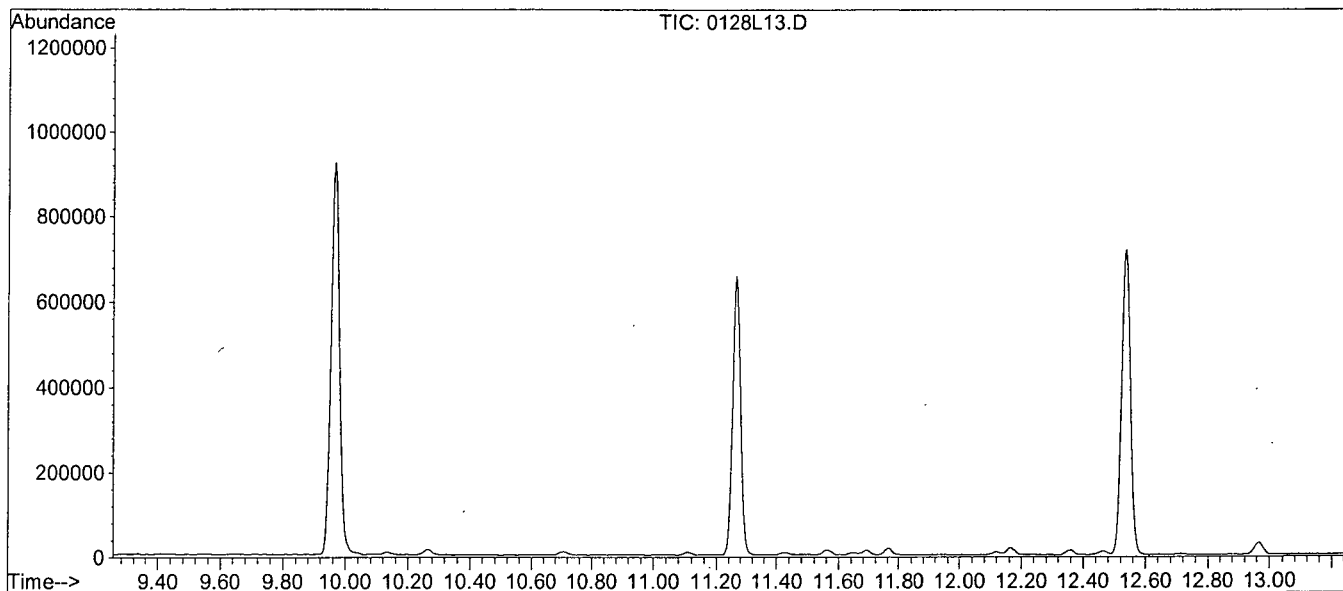
Spectrum Information: Average of 3.292 to 3.299 min.

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	18.9	20635	PASS
75	95	30	60	51.4	56100	PASS
95	95	100	100	100.0	109163	PASS
96	95	5	9	7.7	8377	PASS
173	174	0.00	2	1.2	1136	PASS
174	95	50	100	90.0	98219	PASS
175	174	5	9	8.0	7810	PASS
176	174	95	101	97.5	95717	PASS
177	176	5	9	8.4	8083	PASS

Data File : M:\LOKI\DATA\190128\0128L13.D  
 Acq On : 28 Jan 19 19:49  
 Sample : 25ug/L BFB STD 1/18/19  
 Misc : IS&S 11/8/18

Vial: 12  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
 Title : METHOD 8260B



Spectrum Information: Scan 3316

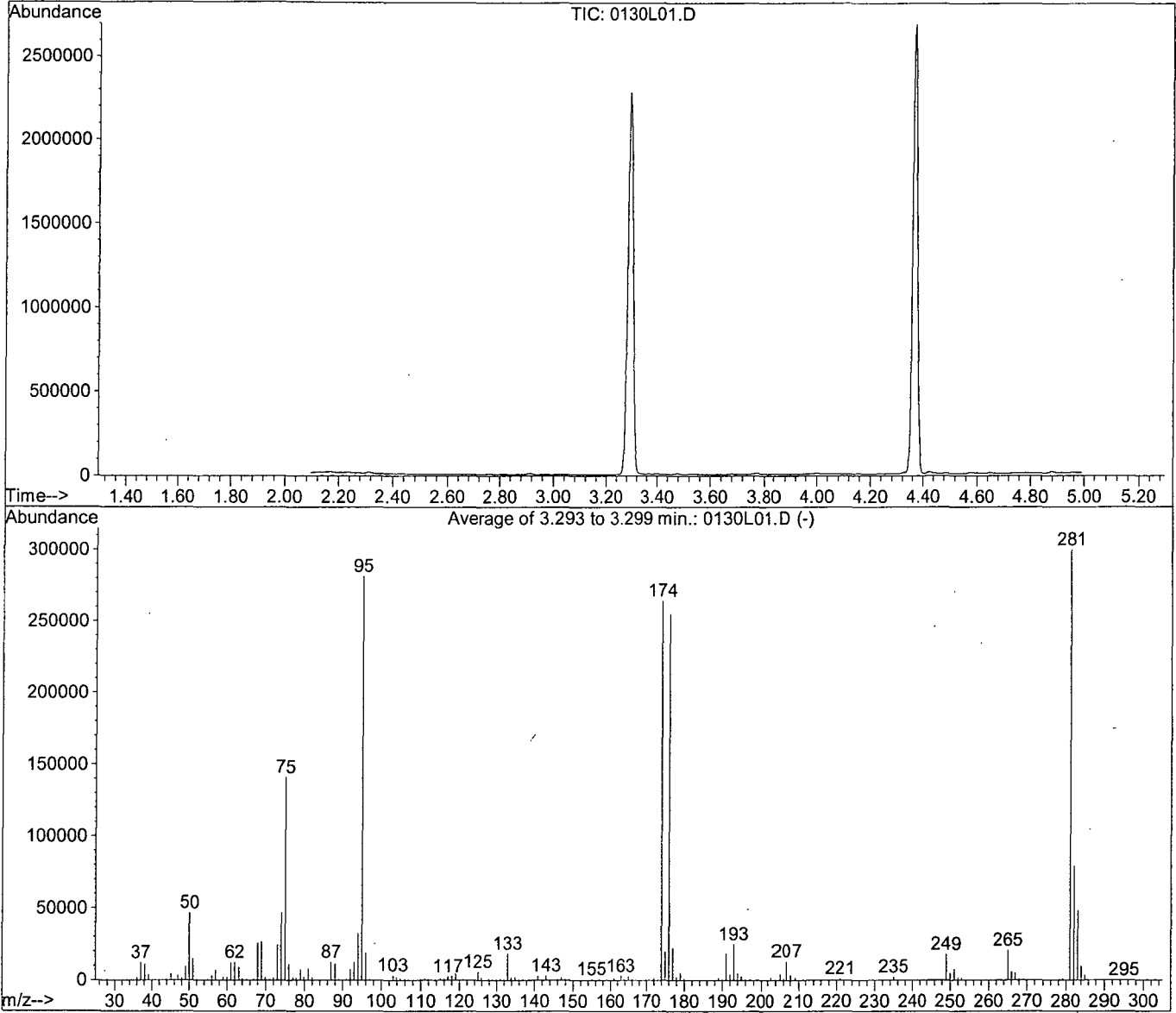
Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	20.6	14697	PASS
75	95	30	60	50.7	36072	PASS
95	95	100	100	100.0	71176	PASS
96	95	5	9	6.4	4569	PASS
173	174	0.00	2	0.0	0	PASS
174	95	50	100	83.9	59752	PASS
175	174	5	9	8.5	5099	PASS
176	174	95	101	100.0	59744	PASS
177	176	5	9	8.1	4842	PASS

BFB

Data File : M:\LOKI\DATA\190128\0130L01.D  
Acq On : 30 Jan 19 8:19  
Sample : 25ug/L BFB STD 1/18/19  
Misc : 2ul

Vial: 1  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

Method : M:\LOKI\DATA\190128\L0128W.M (RTE Integrator)  
Title : METHOD 8260B



AutoFind: Scans 374, 375, 376; Background Corrected with Scan 362

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	16.7	46987	PASS
75	95	30	60	50.1	140971	PASS
95	95	100	100	100.0	281536	PASS
96	95	5	9	6.8	19083	PASS
173	174	0.00	2	0.0	0	PASS
174	95	50	100	93.9	264363	PASS
175	174	5	9	7.6	20120	PASS
176	174	95	101	96.5	255040	PASS
177	176	5	9	8.8	22440	PASS

## Loki 8260 Standard Prep

Loki 8260 Water Calibration Curve										
0.3ug/L										
						Prepared By (Initials): <u>PC</u>				
Prepared: 01/28/19										
Expires: 02/27/19										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 9	O2SI	0.3ug/L	5	Prepared 01/28/19	02/01/19	N/A	3uL	50mL	P&T Water	0.3
VOA STD. 10	O2SI		5	Prepared 01/28/19	03/29/19	N/A	3uL			0.3
VOA STD. 12	O2SI		5	Prepared 01/28/19	03/29/19	N/A	3uL			0.3
VOA STD. TBA	Various		250	Prepared 01/28/19	02/01/19	N/A	2uL			10
0.5ug/L										
Prepared: 01/28/19										
Expires: 02/27/19										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 9	O2SI	0.5ug/L	5	Prepared 01/28/19	02/01/19	N/A	5uL	50mL	P&T Water	0.5
VOA STD. 10	O2SI		5	Prepared 01/28/19	03/29/19	N/A	5uL			0.5
VOA STD. 12	O2SI		5	Prepared 01/28/19	03/29/19	N/A	5uL			0.5
VOA STD. TBA	Various		250	Prepared 01/28/19	02/01/19	N/A	5uL			25
1.0ug/L										
Prepared: 01/28/19										
Expires: 02/27/19										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 9	O2SI	1.0ug/L	5	Prepared 01/28/19	02/01/19	N/A	10uL	50mL	P&T Water	1
VOA STD. 10	O2SI		5	Prepared 01/28/19	03/29/19	N/A	10uL			1
VOA STD. 12	O2SI		5	Prepared 01/28/19	03/29/19	N/A	10uL			1
VOA STD. TBA	Various		250	Prepared 01/28/19	02/01/19	N/A	10uL			50
2.0ug/L										
Prepared: 01/28/19										
Expires: 02/27/19										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 9	O2SI	2.0ug/L	5	Prepared 01/28/19	02/01/19	N/A	20uL	50mL	P&T Water	2
VOA STD. 10	O2SI		5	Prepared 01/28/19	03/29/19	N/A	20uL			2
VOA STD. 12	O2SI		5	Prepared 01/28/19	03/29/19	N/A	20uL			2
VOA STD. TBA	Various		250	Prepared 01/28/19	02/01/19	N/A	15uL			75
5ug/L										
Prepared: 01/28/19										
Expires: 02/27/19										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 7	Various	5ug/L	50	Prepared 01/28/19	03/29/19	N/A	5uL	50mL	P&T Water	5
VOA STD. 8	Phenova		50	Prepared 01/28/19	02/01/19	N/A	5uL			5
VOA STD. 1	O2SI		50	Prepared 01/28/19	03/29/19	N/A	5uL			5
VOA STD. 2	O2SI		50	Prepared 01/28/19	03/29/19	N/A	5uL			5
VOA STD. TBA	Various		250	Prepared 01/28/19	02/01/19	N/A	20uL			100
10ug/L										
Prepared: 01/28/19										
Expires: 02/27/19										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 7	Various	10ug/L	50	Prepared 01/28/19	03/29/19	N/A	10uL	50mL	P&T Water	10
VOA STD. 8	Phenova		50	Prepared 01/28/19	02/01/19	N/A	10uL			10
VOA STD. 1	O2SI		50	Prepared 01/28/19	03/29/19	N/A	10uL			10
VOA STD. 2	O2SI		50	Prepared 01/28/19	03/29/19	N/A	10uL			10
VOA STD. TBA	Various		250	Prepared 01/28/19	02/01/19	N/A	25uL			125



20ug/L										
Prepared: 01/28/19										
Expires: 02/27/19										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 7	Various	20ug/L	50	Prepared 01/28/19	03/29/19	N/A	20uL	50mL	P&T Water	20
VOA STD. 8	Phenova		50	Prepared 01/28/19	02/01/19	N/A	20uL			20
VOA STD. 1	O2SI		50	Prepared 01/28/19	03/29/19	N/A	20uL			20
VOA STD. 2	O2SI		50	Prepared 01/28/19	03/29/19	N/A	20uL			20
VOA STD. TBA	Various		250	Prepared 01/28/19	02/01/19	N/A	30uL			150
40ug/L										
Prepared: 01/28/19										
Expires: 02/27/19										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 7	Various	40ug/L	50	Prepared 01/28/19	03/29/19	N/A	40uL	50mL	P&T Water	40
VOA STD. 8	Phenova		50	Prepared 01/28/19	02/01/19	N/A	40uL			40
VOA STD. 1	O2SI		50	Prepared 01/28/19	03/29/19	N/A	40uL			40
VOA STD. 2	O2SI		50	Prepared 01/28/19	03/29/19	N/A	40uL			40
VOA STD. TBA	Various		250	Prepared 01/28/19	02/01/19	N/A	35uL			175
100ug/L										
Prepared: 01/28/19										
Expires: 02/27/19										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 7	Various	100ug/L	50	Prepared 01/28/19	03/29/19	N/A	100uL	50mL	P&T Water	100
VOA STD. 8	Phenova		50	Prepared 01/28/19	02/01/19	N/A	100uL			100
VOA STD. 1	O2SI		50	Prepared 01/28/19	03/29/19	N/A	100uL			100
VOA STD. 2	O2SI		50	Prepared 01/28/19	03/29/19	N/A	100uL			100
VOA STD. TBA	Various		250	Prepared 01/28/19	02/01/19	N/A	40uL			200
Loki 8260 Water Second Source (SS)										
Prepared: 01/28/19						Prepared By (Initials): PC				
Expires: 02/27/19										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 4	Phenova	8260 Water SS	50	Prepared 01/28/19	03/29/19	N/A	10uL	50mL	P&T Water	10
VOA STD. 5	O2SI	8260 Water SS	50	Prepared 01/28/19	03/29/19	N/A	10uL			10
VOA STD. 6	Various	8260 Water SS	50	Prepared 01/28/19	02/13/19	N/A	10uL			10
VOA STD. TBA	Various	8260 Water SS	250	Prepared 01/28/19	02/13/19	N/A	25uL			250
8260 Water Continuing Calibrations (CCV/ Lab Control Spikes (LCS))										
Prepared: 01/28/19						Prepared By (Initials): PC				
Expires: 01/29/19										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 7	Various	CCV/ LCS	50	Prepared 01/28/19	03/29/19	N/A	10uL	50mL	P&T Water	10
VOA STD. 8	Phenova	CCV/ LCS	50	Prepared 01/28/19	02/01/19	N/A	10uL			10
VOA STD. 1	O2SI	CCV/ LCS	50	Prepared 01/28/19	03/29/19	N/A	10uL			10
VOA STD. 2	O2SI	CCV/ LCS	50	Prepared 01/28/19	03/29/19	N/A	10uL			10
VOA STD. TBA	Various	CCV/ LCS	250	Prepared 01/28/19	02/01/19	N/A	25uL			125
LCS (X4 Ketones)										
Prepared: 01/28/19						Prepared By (Initials): PC				
Expires: 01/29/19										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 7	Various	LCS X4 Ketones	50	Prepared 01/28/19	03/29/19	N/A	10uL	50mL	P&T Water	10
VOA STD. 8	Phenova	LCS X4 Ketones	50	Prepared 01/28/19	02/01/19	N/A	10uL			10
VOA STD. 1	O2SI	LCS X4 Ketones	50	Prepared 01/28/19	03/29/19	N/A	10uL			10
VOA STD. 2	O2SI	LCS X4 Ketones	50	Prepared 01/28/19	03/29/19	N/A	40uL			40
VOA STD. TBA	Various	LCS X4 Ketones	250	Prepared 01/28/19	02/01/19	N/A	25uL			125

<b>Loki 8260 Water Surrogate</b>										
Prepared: 12/13/18						Prepared By (Initials): DG				
Expires: 04/02/19										
Methanol Lot No: 202404-9077										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr.)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
8260 Surrogate Solution	O2SI	120002-01	2,000	275545-36335	07/28/19	04/02/19	375uL	15mL	Methanol	50
<b>Loki 8260 Water Internal Standard</b>										
Prepared: 11/08/18						Prepared By (Initials): DG				
Expires: 10/05/19										
Methanol Lot No: 202404-9077										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr.)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
Internal Standard Solution	O2SI	120004-02	2,000	326533-38441	10/05/19	04/27/21	375uL	15mL	Methanol	50

### Primary and Secondary Working Standards

Primary Standards										
VOA STD 7										
Prepared: 01/28/19 E										
Expires: 03/29/19										
Prepared By (Initials): PC										
Methanol Lot No. 907702-202404										
Initial Standard Information							Final Standard Information			
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
VOA Gasses STD	Phenova	ALO-101206	2,000	CL12966-39990	10/31/23	10/31/23	100uL	4mL	Methanol	50
Hexachloroethane	Absolute	70199	1,000	091818-40038	01/17/20	09/18/23	200uL			50
Benzyl Chloride	O2SI	020228-02	1,000	082218-39817	01/17/20	12/04/19	200uL			50
VOA STD 8										
Prepared: 01/28/19 F										
Expires: 02/01/19										
Prepared By (Initials): PC										
Methanol Lot No. 907702-202404										
Initial Standard Information							Final Standard Information			
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
VOA Additions STD	Phenova	ALO-130175	2,000	CL39322-39479	01/17/20	06/30/20	100uL	4mL	Methanol	50
502.2 Cal. Std.	Phenova	ALO-101200	2,000	CL12490-39491	01/17/20	05/31/23	100uL			50
Vinyl Acetate	Phenova	ALO-101228	2,000	CL13125-40120	02/01/19	02/01/19	100uL			50
VOA STD TBA										
Prepared: 01/28/19 G										
Expires: 02/01/19										
Prepared By (Initials): PC										
Methanol Lot No. 907702-202404										
Initial Standard Information							Final Standard Information			
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
Custom VOC Mix	Phenova	ALO-130176	2,000	CL12542-39530	01/17/20	05/31/20	500uL	4mL	Methanol	250
Acrolein	Phenova	ALO-130549	10,000	CL13149-40121	02/01/19	02/01/19	100uL			250
VOA STD 1										
Prepared: 01/28/19 H										
Expires: 03/29/19										
Prepared By (Initials): PC										
Methanol Lot No. 907702-202404										
Initial Standard Information							Final Standard Information			
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
2-CEVE	O2SI	020145-02	2,000	071018-39809	07/10/21	11/12/19	50	2mL	Methanol	50
VOA STD 2										
Prepared: 01/28/19 I										
Expires: 03/29/19										
Prepared By (Initials): PC										
Methanol Lot No. 907702-202404										
Initial Standard Information							Final Standard Information			
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
Ketones Std	Phenova	ALO-109211	2,000	CL10956-39506	01/17/20	08/30/23	100	4mL	Methanol	50
VOA STD 9										
Prepared: 01/28/19 J										
Expires: 02/01/19										
Prepared By (Initials): PC										
Methanol Lot No. 907702-202404										
Initial Standard Information							Final Standard Information			
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
VOA STD. 7		VOA STD. 9	50	Prepared 01/28/19	12/04/19	N/A	200uL	2mL	Methanol	5
VOA STD. 8			50	Prepared 01/28/19	02/01/19	N/A	200uL			5
VOA STD. 10										
Prepared: 01/28/19 K										
Expires: 03/29/19										
Prepared By (Initials): PC										
Methanol Lot No. 907702-202404										
Initial Standard Information							Final Standard Information			
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
VOA STD. 1		VOA STD. 10	50	Prepared 01/28/19	01/17/20	N/A	200uL	2mL	Methanol	5
VOA STD. 12										
Prepared: 01/28/19 L										
Expires: 03/29/19										
Prepared By (Initials): PC										
Methanol Lot No. 907702-202404										
Initial Standard Information							Final Standard Information			
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
VOA STD. 2		VOA STD. 12	50	Prepared 01/28/19	01/17/20	N/A	200uL	2mL	Methanol	5

Second Source (SS) Standards										
VOA STD. 3										
Prepared: 01/28/19 M										
Expires: 03/29/19										
Methanol Lot No. 907702-202404										
Prepared By (Initials): PC										
Initial Standard Information							Final Standard Information			
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
Ketones Standard	Phenova	ALO-101211	2,000	CL12730-39671	01/17/20	08/31/28	50uL	2mL	Methanol	50
VOA STD. 5										
Prepared: 01/28/19 N										
Expires: 03/29/19										
Methanol Lot No. 907702-202404										
Prepared By (Initials): PC										
Initial Standard Information							Final Standard Information			
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
8260 Gases (SS)	Phenova	ALO-101206	2,000	CL12965-39986	10/31/23	10/31/23	50uL	2mL	Methanol	50
2-CEVE (SS)	Absolute	82408	2,000	112917-402102	11/29/20	07/10/21	50uL			50
VOA STD. 6										
Prepared: 01/28/19 O										
Expires: 02/13/19										
Methanol Lot No. 907702-202404										
Prepared By (Initials): PC										
Initial Standard Information							Final Standard Information			
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
502.2 Calibration STD. (54-compounds)	Phenova	ALO-101200	2,000	CL12489-39970	01/17/20	05/31/23	50uL	2mL	Methanol	50
Vinyl Acetate	Phenova	ALO-101228	2,000	CL13145-40120	01/17/20	02/13/19	50uL			50
Hexachloroethane	Accustan	AS-E0011	1,000	218051281-39858	01/02/20	05/14/28	100uL			50
Benzyl Chloride	Accustan	M-8010-01	200	214101335-04-39960	01/17/20	10/18/20	500uL			50
VOA STD. TBA										
Prepared: 01/28/19 P										
Expires: 02/13/19										
Methanol Lot No. 907702-202404										
Prepared By (Initials): PC										
Initial Standard Information							Final Standard Information			
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
Custom VOA Mix (4-3)	Phenova	ALO-130176	2,000	CL12542-39679	01/17/20	05/31/20	250uL	2mL	Methanol	250
Acrolein	Phenova	ALO-101224	10,000	CL13181-40203	02/13/19	02/13/19	50uL			250
VOA STD. 0										
Prepared: 01/28/19 Q										
Expires: 03/29/19										
Methanol Lot No. 907702-202404										
Prepared By (Initials): PC										
Initial Standard Information							Final Standard Information			
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
VOA Addition STD.	Phenova	ALO-130175	2,000	CL12744-40002	01/17/20	08/30/20	50uL	2mL	Methanol	50
BFB Tune										
Prepared: 01/18/19										
Expires: 12/12/19										
Methanol Lot No. 202404-00945										
Prepared By (Initials): DG										
Initial Standard Information							Final Standard Information			
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
4-Bromofluorobenzene	O2SI	020135-03	2,500	342387-39075	12/12/19	01/19/21	20uL	2mL	Methanol	25

## Injection Log

Directory: M:\LOK\DATA\190128\

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1	1	0128L01.D	1	25ug/L BFB STD 1/18/19	2ul	28 Jan 19 14:12
2	2	0128L03.D	1	0.3ug/L VOC STD 01/28/19	IS&S 11/8/18	28 Jan 19 15:03
3	3	0128L04.D	1	0.5ug/L VOC STD 01/28/19	IS&S 11/8/18	28 Jan 19 15:31
4	4	0128L05.D	1	1.0ug/L VOC STD 01/28/19	IS&S 11/8/18	28 Jan 19 16:00
5	5	0128L06.D	1	2.0ug/L VOC STD 01/28/19	IS&S 11/8/18	28 Jan 19 16:29
6	6	0128L07.D	1	5.0ug/L VOC STD 01/28/19	IS&S 11/8/18	28 Jan 19 16:57
7	7	0128L08.D	1	10ug/L VOC STD 01/28/19	IS&S 11/8/18	28 Jan 19 17:26
8	8	0128L09.D	1	20ug/L VOC STD 01/28/19	IS&S 11/8/18	28 Jan 19 17:55
9	9	0128L10.D	1	40ug/L VOC STD 01/28/19	IS&S 11/8/18	28 Jan 19 18:23
10	10	0128L11.D	1	50ug/L VOC STD 01/28/19	IS&S 11/8/18	28 Jan 19 18:52
11	11	0128L12.D	1	100ug/L VOC STD 01/28/19	IS&S 11/8/18	28 Jan 19 19:21
12	12	0128L13.D	1	25ug/L BFB STD 1/18/19	IS&S 11/8/18	28 Jan 19 19:49
13	13	0128L14.D	1	(SS)10ug/L VOC STD 01/28/19	IS&S 11/8/18	28 Jan 19 20:18
14	15	0128L16.D	1	190128A LCS 10ug/L	IS&S 11/8/18	28 Jan 19 21:15
15	16	0128L17.D	1	190128A LCSD 10ug/L	IS&S 11/8/18	28 Jan 19 21:44
16	21	0128L22.D	1	190128A blk	IS&S 11/8/18	29 Jan 19 00:06
17	22	0128L23.D	1	AZ85645W01	IS&S 11/8/18	29 Jan 19 00:35
18	23	0128L24.D	1	AZ85652W01	IS&S 11/8/18	29 Jan 19 1:04
19	33	0128L34.D	1	AZ85642W01	IS&S 11/8/18	29 Jan 19 5:49
20	34	0128L35.D	1	AZ85644W01	IS&S 11/8/18	29 Jan 19 6:18
21	35	0128L36.D	1	AZ85646W01	IS&S 11/8/18	29 Jan 19 6:46
22	36	0128L37.D	1	AZ85653W01	IS&S 11/8/18	29 Jan 19 7:15
23	37	0128L38.D	1	Ending CCV 10ug/L 01/28/19	IS&S 11/8/18	29 Jan 19 7:43
24	1	0130L01.D	1	25ug/L BFB STD 1/18/19	2ul	30 Jan 19 8:19
25	3	0130L04.D	1	190130A CCV 10ug/L	IS&S 11/8/18	30 Jan 19 9:40
26	4	0130L05.D	1	190130A LCS 10ug/L	IS&S 11/8/18	30 Jan 19 10:08
27	5	0130L06.D	1	190130A LCSD 10ug/L	IS&S 11/8/18	30 Jan 19 10:37
28	14	0130L15.D	1	190130A Blk	IS&S 11/8/18	30 Jan 19 14:55
29	20	0130L21.D	1	AZ85643W01	IS&S 11/8/18	30 Jan 19 17:47
30	23	0130L24.D	1	AZ85643W02 MS 10ug/L	IS&S 11/8/18	30 Jan 19 19:13
31	24	0130L25.D	1	AZ85643W03 MSD 10ug/L	IS&S 11/8/18	30 Jan 19 19:42
32	27	0130L28.D	1	Ending CCV 10ug/L 01/30/19	IS&S 11/8/18	30 Jan 19 21:07

**ORGANICS  
Calibration Data**

VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 6  
Initial Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: water

SDG No: \_\_\_\_\_  
Initial Cal. Date: 01/22/19  
Instrument: Loki

Initials: \_\_\_\_\_

0122L03.D    0122L04.D    0122L05.D    0122L06.D    0122L07.D    0122L08.D    0122L09.D

	Compound	1	2	3	4	5	6	7				Avg	%RSD	Type	r <sup>2</sup>	Q	MRF
1	I Fluorobenzene (IS)																
2	TMHBL Gasoline C6-C10	14.2	5.991	3.156	1.510	0.9912	0.8940	0.8282				3.9	124	TMHBL	0.998		
3	I Chlorobenzene-D5 (IS)																
4	I 1,4-Dichlorobenzene-D (IS)																
5																	
6																	
7																	
8																	
9																	
10																	
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34																	
35																	

Data File : M:\LOKI\DATA\190121\0122L03.D  
 Acq On : 22 Jan 19 14:10  
 Sample : 20ug/L GAS STD 1/21/19  
 Misc : IS&S 11/8/18

Vial: 2  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 24 9:19 2019

Quant Results File: LGAS0122.RES

Quant Method : M:\LOKI\DATA\190121\LGAS0122.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Thu Jan 24 09:17:29 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	657725	25.000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.97	TIC	773287	25.000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.54	TIC	888330	25.000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Gasoline C6-C10	8.37	TIC	7468095m	27.796	ppb	100



Data File : M:\LOKI\DATA\190121\0122L03.D  
 Acq On : 22 Jan 19 14:10  
 Sample : 20ug/L GAS STD 1/21/19  
 Misc : IS&S 11/8/18

Vial: 2  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 24 9:53 2019

Quant Results File: L0121SUR.RES

Quant Method : M:\LOKI\DATA\190121\L0121SUR.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 22 12:46:40 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	315648	25.0000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	269696	25.0000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.54	152	161216	25.0000	ppb	0.00
System Monitoring Compounds						
2) Dibromofluoromethane(S)	5.65	111	157557	26.4882	ppb	0.00
Spiked Amount	25.000		Recovery	=	105.952%	
3) 1,2-DCA-D4(S)	6.07	65	182006	26.2414	ppb	0.00
Spiked Amount	25.000		Recovery	=	104.964%	
5) Toluene-D8(S)	8.37	98	583651	26.4866	ppb	0.00
Spiked Amount	25.000		Recovery	=	105.948%	
6) 4-Bromofluorobenzene(S)	11.27	95	236797	25.6167	ppb	0.00
Spiked Amount	25.000		Recovery	=	102.468%	

Target Compounds

Qvalue

(#) = qualifier out of range (m) = manual integration

Quantitation Report

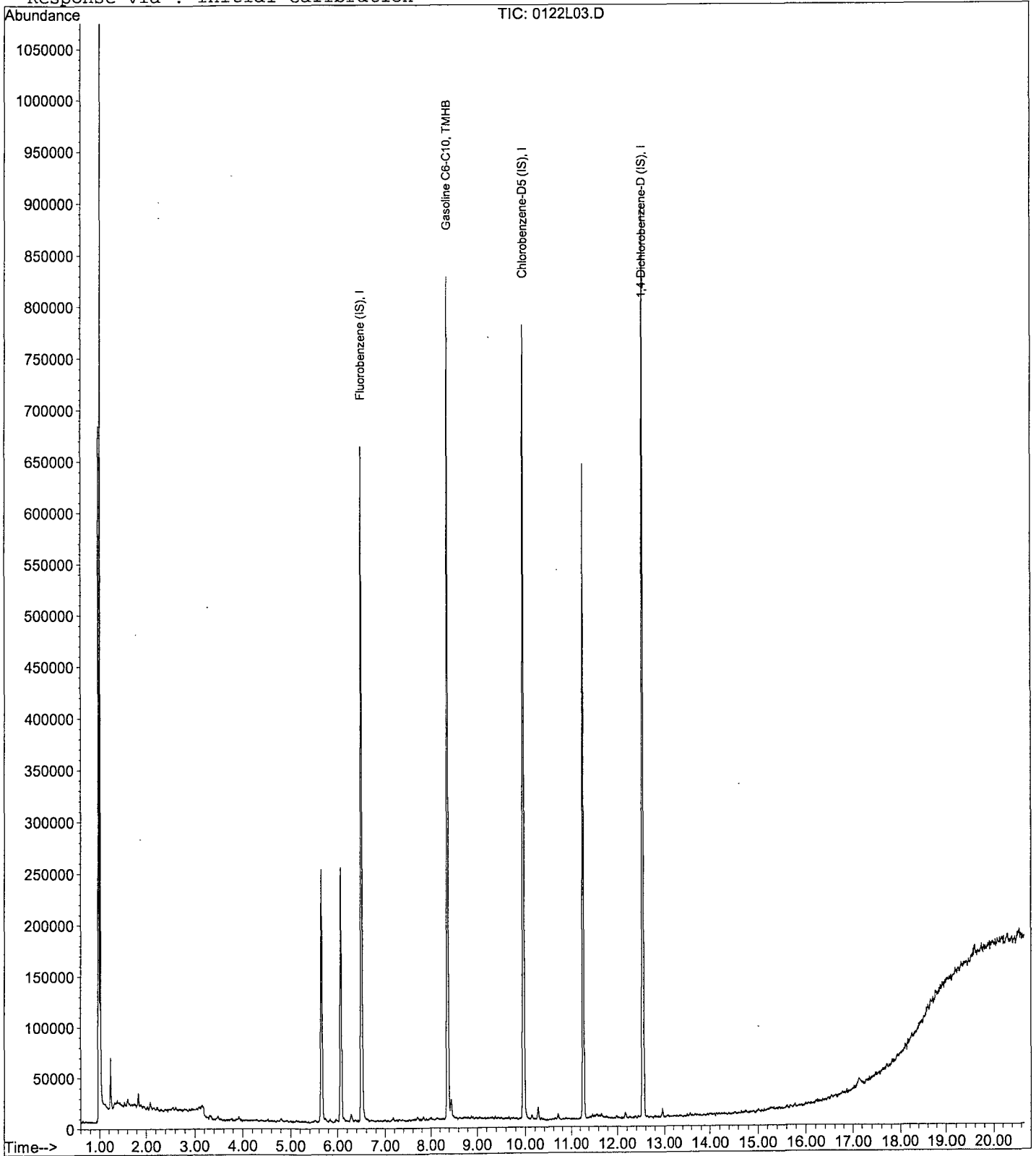
Data File : M:\LOKI\DATA\190121\0122L03.D  
Acq On : 22 Jan 19 14:10  
Sample : 20ug/L GAS STD 1/21/19  
Misc : IS&S 11/8/18

Vial: 2  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 24 9:19 2019

Quant Results File: LGAS0122.RES

Method : M:\LOKI\DATA\190121\LGAS0122.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Thu Jan 24 09:25:37 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190121\0122L04.D  
 Acq On : 22 Jan 19 14:39  
 Sample : 50ug/L GAS STD 1/21/19  
 Misc : IS&S 11/8/18

Vial: 3  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 24 9:21 2019

Quant Results File: LGAS0122.RES

Quant Method : M:\LOKI\DATA\190121\LGAS0122.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Thu Jan 24 09:17:29 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	691706	25.000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.97	TIC	846157	25.000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.54	TIC	858020	25.000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Gasoline C6-C10	9.97	TIC	8287767m	56.195	ppb	100

Data File : M:\LOKI\DATA\190121\0122L04.D  
 Acq On : 22 Jan 19 14:39  
 Sample : 50ug/L GAS STD 1/21/19  
 Misc : IS&S 11/8/18

Vial: 3  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 24 9:53 2019

Quant Results File: L0121SUR.RES

Quant Method : M:\LOKI\DATA\190121\L0121SUR.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 22 12:46:40 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	335552	25.0000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	300864	25.0000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.54	152	155712	25.0000	ppb	0.00
System Monitoring Compounds						
2) Dibromofluoromethane(S)	5.65	111	156820	24.8005	ppb	0.00
Spiked Amount	25.000			Recovery	=	99.200%
3) 1,2-DCA-D4(S)	6.07	65	181620	24.6325	ppb	0.00
Spiked Amount	25.000			Recovery	=	98.532%
5) Toluene-D8(S)	8.37	98	586804	23.8710	ppb	0.00
Spiked Amount	25.000			Recovery	=	95.484%
6) 4-Bromofluorobenzene(S)	11.26	95	234045	22.6961	ppb	0.00
Spiked Amount	25.000			Recovery	=	90.784%

Target Compounds

Qvalue

Quantitation Report

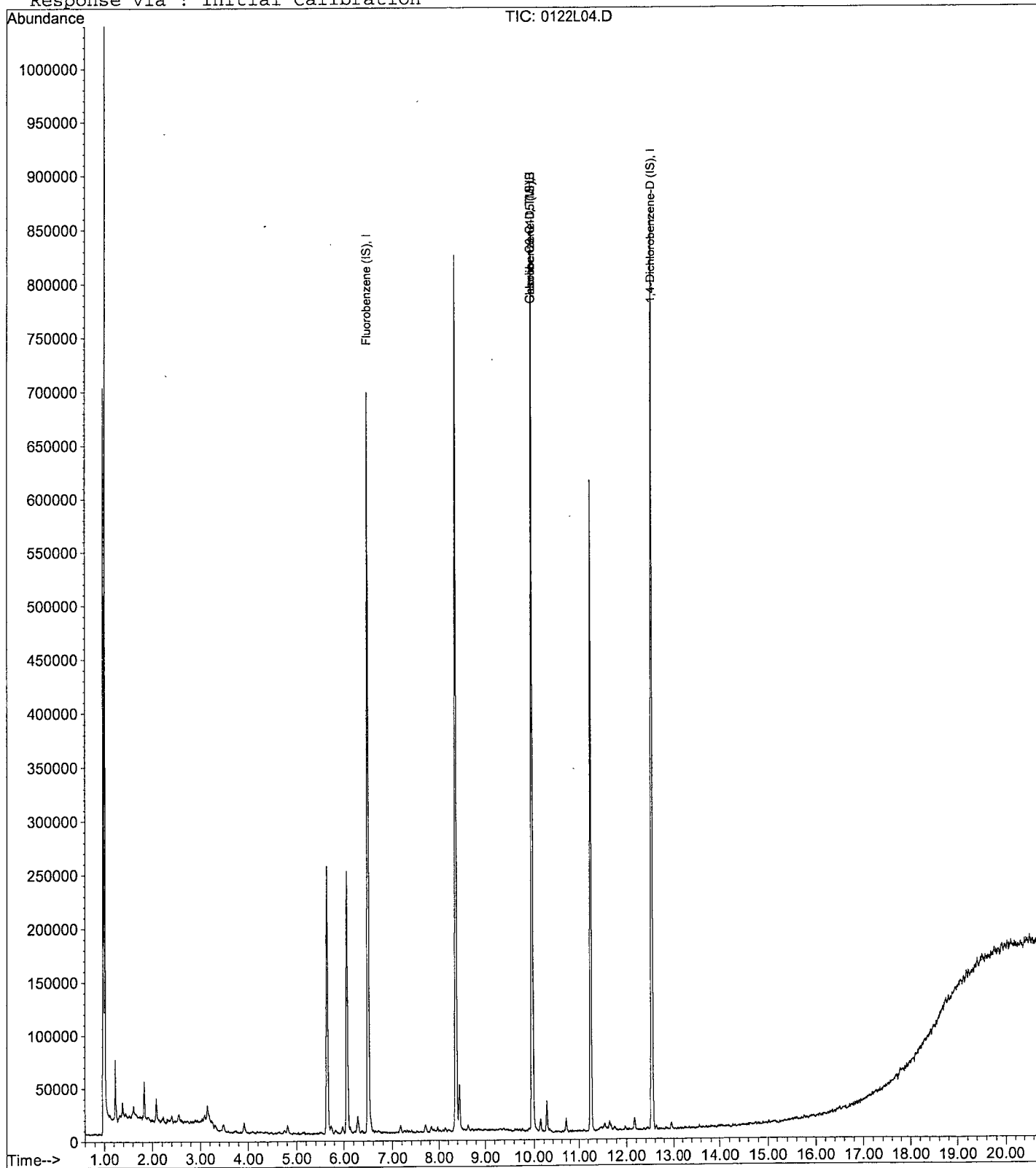
Data File : M:\LOKI\DATA\190121\0122L04.D  
Acq On : 22 Jan 19 14:39  
Sample : 50ug/L GAS STD 1/21/19  
Misc : IS&S 11/8/18

Vial: 3  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 24 9:21 2019

Quant Results File: LGAS0122.RES

Method : M:\LOKI\DATA\190121\LGAS0122.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Thu Jan 24 09:25:37 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190121\0122L05.D Vial: 4  
 Acq On : 22 Jan 19 15:07 Operator: PM,DG,SV,CMM,KV  
 Sample : 100ug/L GAS STD 1/21/19 Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Jan 24 9:21 2019 Quant Results File: LGAS0122.RES

Quant Method : M:\LOKI\DATA\190121\LGAS0122.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Thu Jan 24 09:17:29 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	795029	25.000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.97	TIC	937148	25.000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.54	TIC	1003701	25.000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Gasoline C6-C10	9.97	TIC	10034916m	85.194	ppb	100

Data File : M:\LOKI\DATA\190121\0122L05.D  
 Acq On : 22 Jan 19 15:07  
 Sample : 100ug/L GAS STD 1/21/19  
 Misc : IS&S 11/8/18

Vial: 4  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 24 9:53 2019

Quant Results File: L0121SUR.RES

Quant Method : M:\LOKI\DATA\190121\L0121SUR.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 22 12:46:40 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	387456	25.0000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	333184	25.0000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.53	152	174272	25.0000	ppb	0.00
System Monitoring Compounds						
2) Dibromofluoromethane(S)	5.65	111	156930	21.4932	ppb	0.00
Spiked Amount	25.000		Recovery	=	85.972%	
3) 1,2-DCA-D4(S)	6.07	65	181170	21.2799	ppb	0.00
Spiked Amount	25.000		Recovery	=	85.120%	
5) Toluene-D8(S)	8.37	98	575279	21.1321	ppb	0.00
Spiked Amount	25.000		Recovery	=	84.528%	
6) 4-Bromofluorobenzene(S)	11.26	95	227110	19.8872	ppb	0.00
Spiked Amount	25.000		Recovery	=	79.548%	

Target Compounds

Qvalue

Quantitation Report

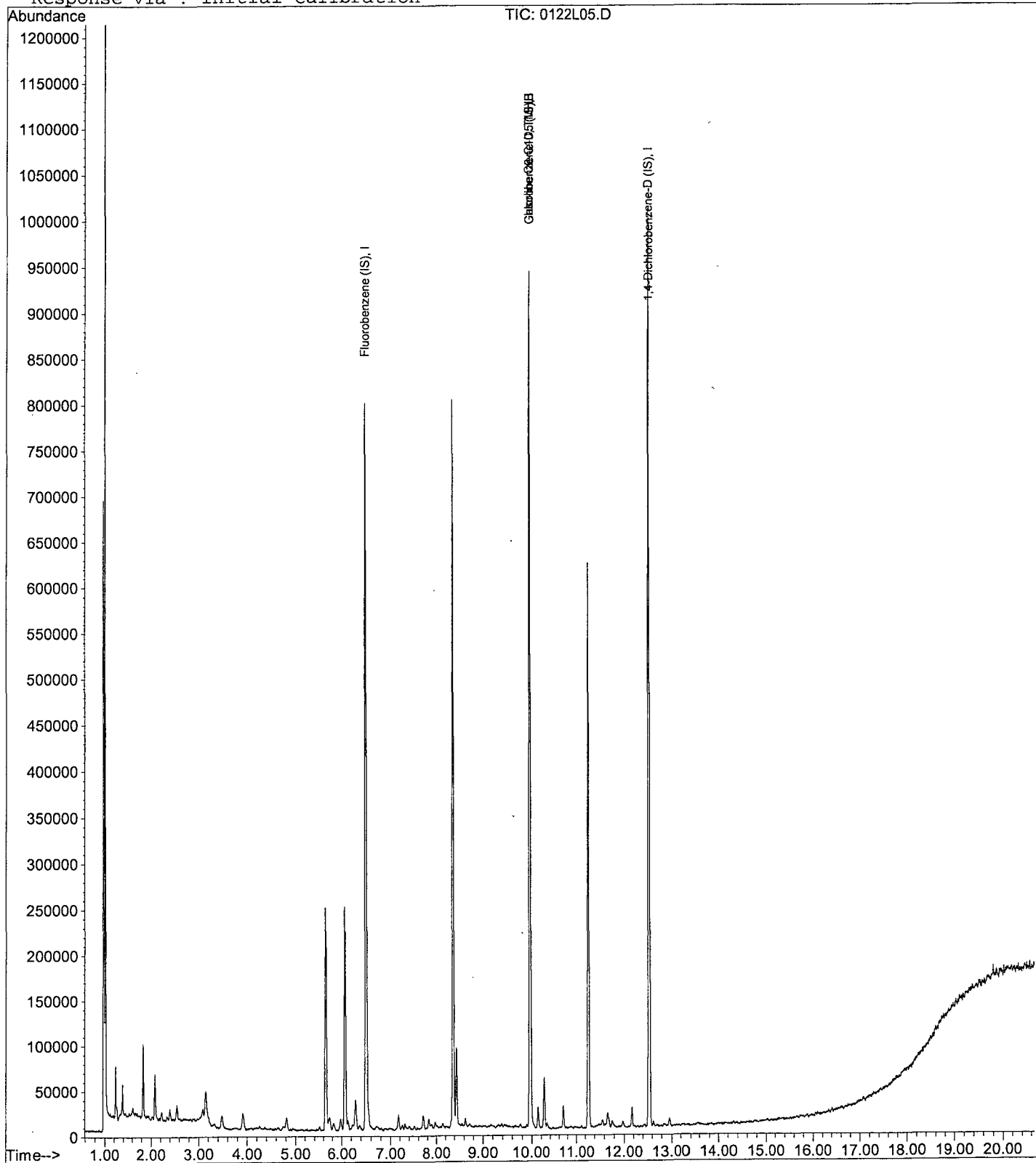
Data File : M:\LOKI\DATA\190121\0122L05.D  
Acq On : 22 Jan 19 15:07  
Sample : 100ug/L GAS STD 1/21/19  
Misc : IS&S 11/8/18

Vial: 4  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 24 9:21 2019

Quant Results File: LGAS0122.RES

Method : M:\LOKI\DATA\190121\LGAS0122.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Thu Jan 24 09:25:37 2019  
Response via : Initial Calibration





Data File : M:\LOKI\DATA\190121\0122L06.D  
 Acq On : 22 Jan 19 15:36  
 Sample : 300ug/L GAS STD 1/21/19  
 Misc : IS&S 11/8/18

Vial: 5  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 24 9:22 2019

Quant Results File: LGAS0122.RES

Quant Method : M:\LOKI\DATA\190121\LGAS0122.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Thu Jan 24 09:17:29 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	658006	25.000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.97	TIC	790181	25.000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.54	TIC	849355	25.000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Gasoline C6-C10	8.37	TIC	11919364m	333.880	ppb	100

Quantitation Report (Not Reviewed)

Data File : M:\LOKI\DATA\190121\0122L06.D  
 Acq On : 22 Jan 19 15:36  
 Sample : 300ug/L GAS STD 1/21/19  
 Misc : IS&S 11/8/18

Vial: 5  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 24 9:53 2019

Quant Results File: L0121SUR.RES

Quant Method : M:\LOKI\DATA\190121\L0121SUR.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 22 12:46:40 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	315520	25.0000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	280000	25.0000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.54	152	151296	25.0000	ppb	0.00
System Monitoring Compounds						
2) Dibromofluoromethane(S)	5.65	111	160111	26.9285	ppb	0.00
Spiked Amount	25.000					
					Recovery = 107.716%	
3) 1,2-DCA-D4(S)	6.07	65	184739	26.6463	ppb	0.00
Spiked Amount	25.000					
					Recovery = 106.584%	
5) Toluene-D8(S)	8.37	98	591987	25.8763	ppb	0.00
Spiked Amount	25.000					
					Recovery = 103.504%	
6) 4-Bromofluorobenzene(S)	11.26	95	238857	24.8887	ppb	0.00
Spiked Amount	25.000					
					Recovery = 99.556%	

Target Compounds

Qvalue

Quantitation Report

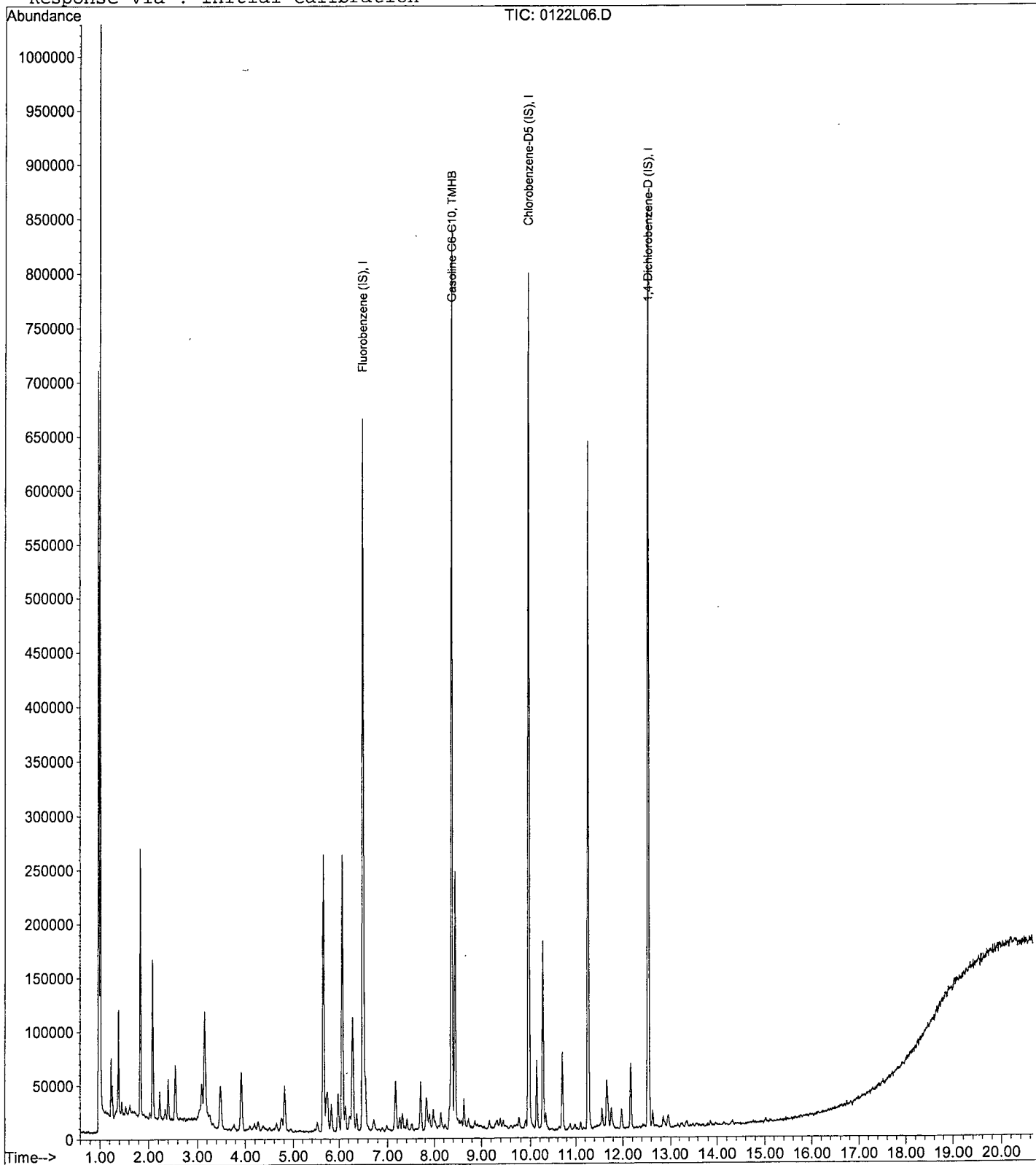
Data File : M:\LOKI\DATA\190121\0122L06.D  
Acq On : 22 Jan 19 15:36  
Sample : 300ug/L GAS STD 1/21/19  
Misc : IS&S 11/8/18

Vial: 5  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 24 9:22 2019

Quant Results File: LGAS0122.RES

Method : M:\LOKI\DATA\190121\LGAS0122.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Thu Jan 24 09:25:37 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190121\0122L07.D  
 Acq On : 22 Jan 19 16:04  
 Sample : 600ug/L GAS STD 1/21/19  
 Misc : IS&S 11/8/18

Vial: 6  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 24 9:22 2019

Quant Results File: LGAS0122.RES

Quant Method : M:\LOKI\DATA\190121\LGAS0122.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Thu Jan 24 09:17:29 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	655093	25.000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.97	TIC	794318	25.000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.53	TIC	859138	25.000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Gasoline C6-C10	8.37	TIC	15583633m	590.796	ppb	100

Data File : M:\LOKI\DATA\190121\0122L07.D Vial: 6  
 Acq On : 22 Jan 19 16:04 Operator: PM, DG, SV, CMM, KV  
 Sample : 600ug/L GAS STD 1/21/19 Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Jan 24 9:53 2019 Quant Results File: L0121SUR.RES

Quant Method : M:\LOKI\DATA\190121\L0121SUR.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 22 12:46:40 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	321536	25.0000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	283584	25.0000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.54	152	151424	25.0000	ppb	0.00
System Monitoring Compounds						
2) Dibromofluoromethane(S)	5.65	111	153983	25.4133	ppb	0.00
Spiked Amount	25.000		Recovery	=	101.652%	
3) 1,2-DCA-D4(S)	6.07	65	182681	25.8564	ppb	0.00
Spiked Amount	25.000		Recovery	=	103.424%	
5) Toluene-D8(S)	8.37	98	569135	24.5630	ppb	0.00
Spiked Amount	25.000		Recovery	=	98.252%	
6) 4-Bromofluorobenzene(S)	11.26	95	230967	23.7624	ppb	0.00
Spiked Amount	25.000		Recovery	=	95.048%	

Target Compounds Qvalue

Quantitation Report

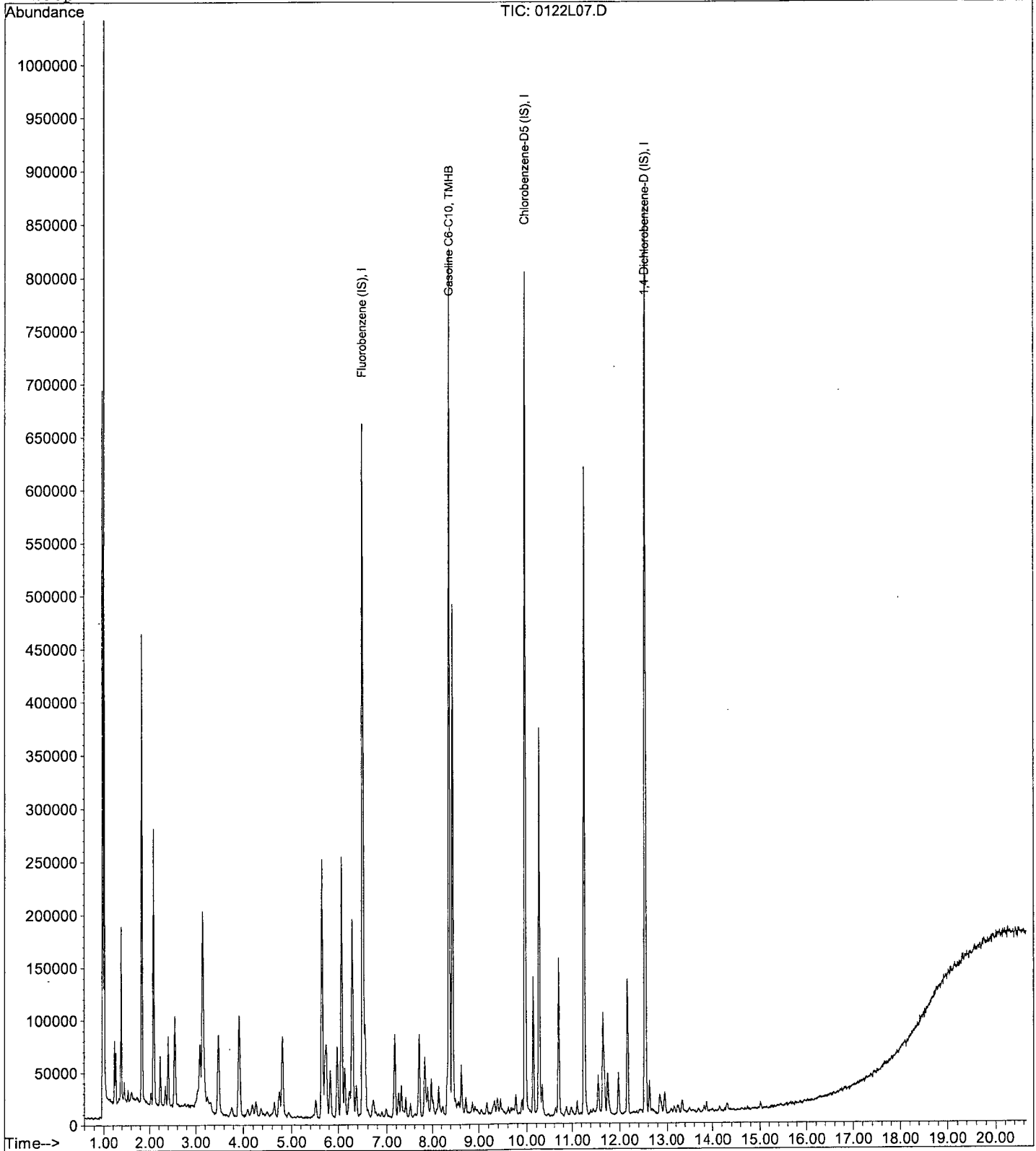
Data File : M:\LOKI\DATA\190121\0122L07.D  
Acq On : 22 Jan 19 16:04  
Sample : 600ug/L GAS STD 1/21/19  
Misc : IS&S 11/8/18

Vial: 6  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 24 9:22 2019

Quant Results File: LGAS0122.RES

Method : M:\LOKI\DATA\190121\LGAS0122.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Thu Jan 24 09:25:37 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190121\0122L08.D Vial: 7  
 Acq On : 22 Jan 19 16:33 Operator: PM,DG,SV,CMM,KV  
 Sample : 800ug/L GAS STD 1/21/19 Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Jan 24 9:22 2019 Quant Results File: LGAS0122.RES

Quant Method : M:\LOKI\DATA\190121\LGAS0122.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Thu Jan 24 09:17:29 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	650619	25.000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.97	TIC	767904	25.000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.54	TIC	822805	25.000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Gasoline C6-C10	8.37	TIC	18612406m	808.987	ppb	100

Data File : M:\LOKI\DATA\190121\0122L08.D  
 Acq On : 22 Jan 19 16:33  
 Sample : 800ug/L GAS STD 1/21/19  
 Misc : IS&S 11/8/18

Vial: 7  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 24 9:53 2019

Quant Results File: L0121SUR.RES

Quant Method : M:\LOKI\DATA\190121\L0121SUR.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 22 12:46:40 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	313920	25.0000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	275584	25.0000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.54	152	147456	25.0000	ppb	0.00
System Monitoring Compounds						
2) Dibromofluoromethane(S)	5.65	111	157489	26.6225	ppb	0.00
Spiked Amount	25.000					
					Recovery = 106.492%	
3) 1,2-DCA-D4(S)	6.07	65	179529	26.0268	ppb	0.00
Spiked Amount	25.000					
					Recovery = 104.108%	
5) Toluene-D8(S)	8.37	98	580104	25.7632	ppb	0.00
Spiked Amount	25.000					
					Recovery = 103.052%	
6) 4-Bromofluorobenzene(S)	11.27	95	236208	25.0071	ppb	0.00
Spiked Amount	25.000					
					Recovery = 100.028%	

Target Compounds

Qvalue



Quantitation Report

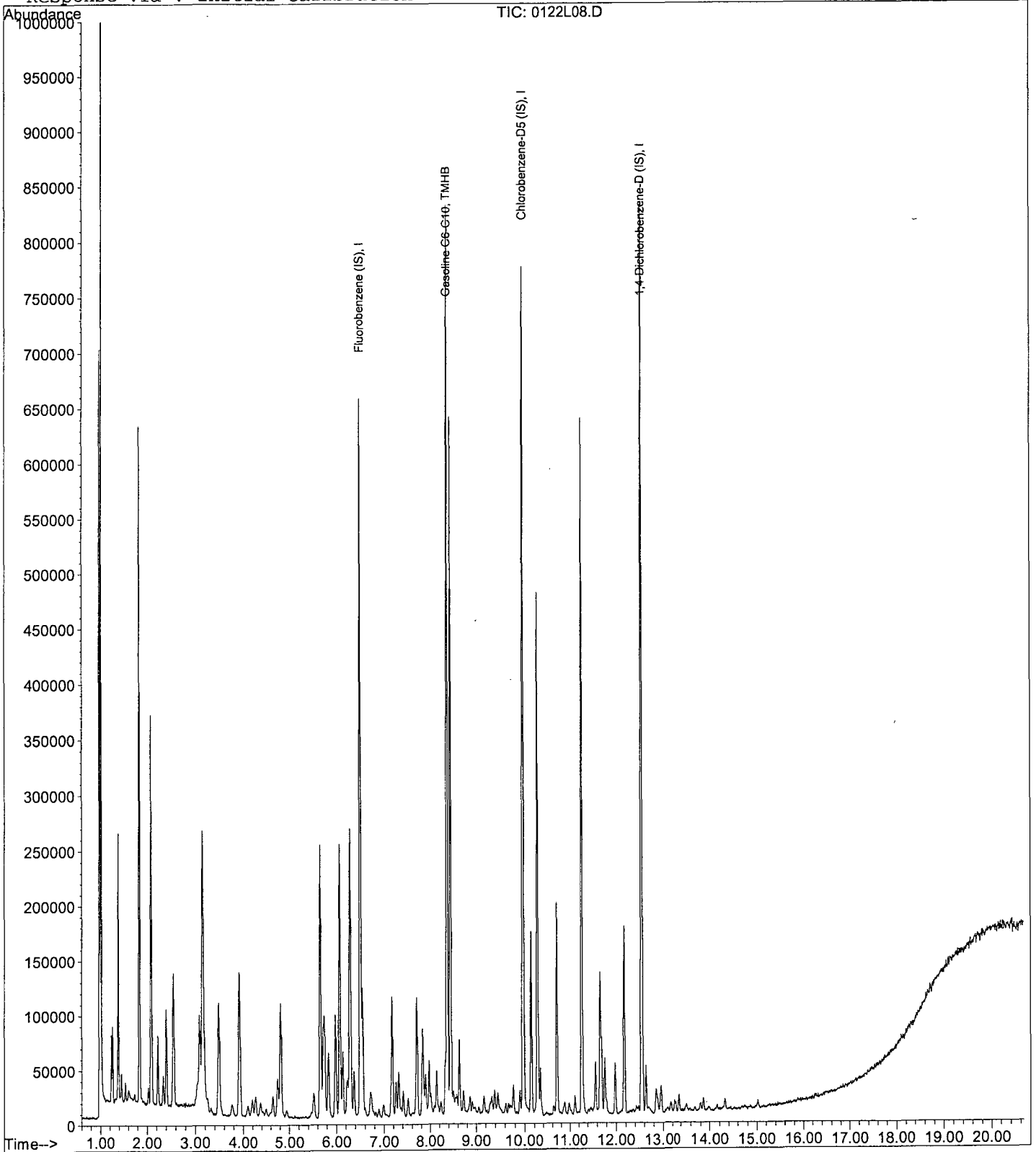
Data File : M:\LOKI\DATA\190121\0122L08.D  
Acq On : 22 Jan 19 16:33  
Sample : 800ug/L GAS STD 1/21/19  
Misc : IS&S 11/8/18

Vial: 7  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 24 9:22 2019

Quant Results File: LGAS0122.RES

Method : M:\LOKI\DATA\190121\LGAS0122.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Thu Jan 24 09:25:37 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190121\0122L09.D Vial: 8  
 Acq On : 22 Jan 19 17:01 Operator: PM,DG,SV,CMM,KV  
 Sample : 1000ug/L GAS STD 1/21/19 Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Jan 24 9:23 2019 Quant Results File: LGAS0122.RES

Quant Method : M:\LOKI\DATA\190121\LGAS0122.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Thu Jan 24 09:17:29 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	644633	25.000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.97	TIC	773447	25.000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.54	TIC	813437	25.000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Gasoline C6-C10	8.37	TIC	21356569m	1013.765	ppb	100

(#) = qualifier out of range (m) = manual integration

Data File : M:\LOKI\DATA\190121\0122L09.D  
 Acq On : 22 Jan 19 17:01  
 Sample : 1000ug/L GAS STD 1/21/19  
 Misc : IS&S 11/8/18

Vial: 8  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 24 9:53 2019

Quant Results File: L0121SUR.RES

Quant Method : M:\LOKI\DATA\190121\L0121SUR.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 22 12:46:40 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	315584	25.0000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	274176	25.0000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.54	152	146048	25.0000	ppb	0.00
System Monitoring Compounds						
2) Dibromofluoromethane(S)	5.65	111	153101	25.7443	ppb	0.00
Spiked Amount	25.000		Recovery	=	102.976%	
3) 1,2-DCA-D4(S)	6.07	65	179163	25.8368	ppb	0.00
Spiked Amount	25.000		Recovery	=	103.348%	
5) Toluene-D8(S)	8.37	98	581229	25.9457	ppb	0.00
Spiked Amount	25.000		Recovery	=	103.784%	
6) 4-Bromofluorobenzene(S)	11.26	95	233744	24.8733	ppb	0.00
Spiked Amount	25.000		Recovery	=	99.492%	

Target Compounds

Qvalue

Quantitation Report

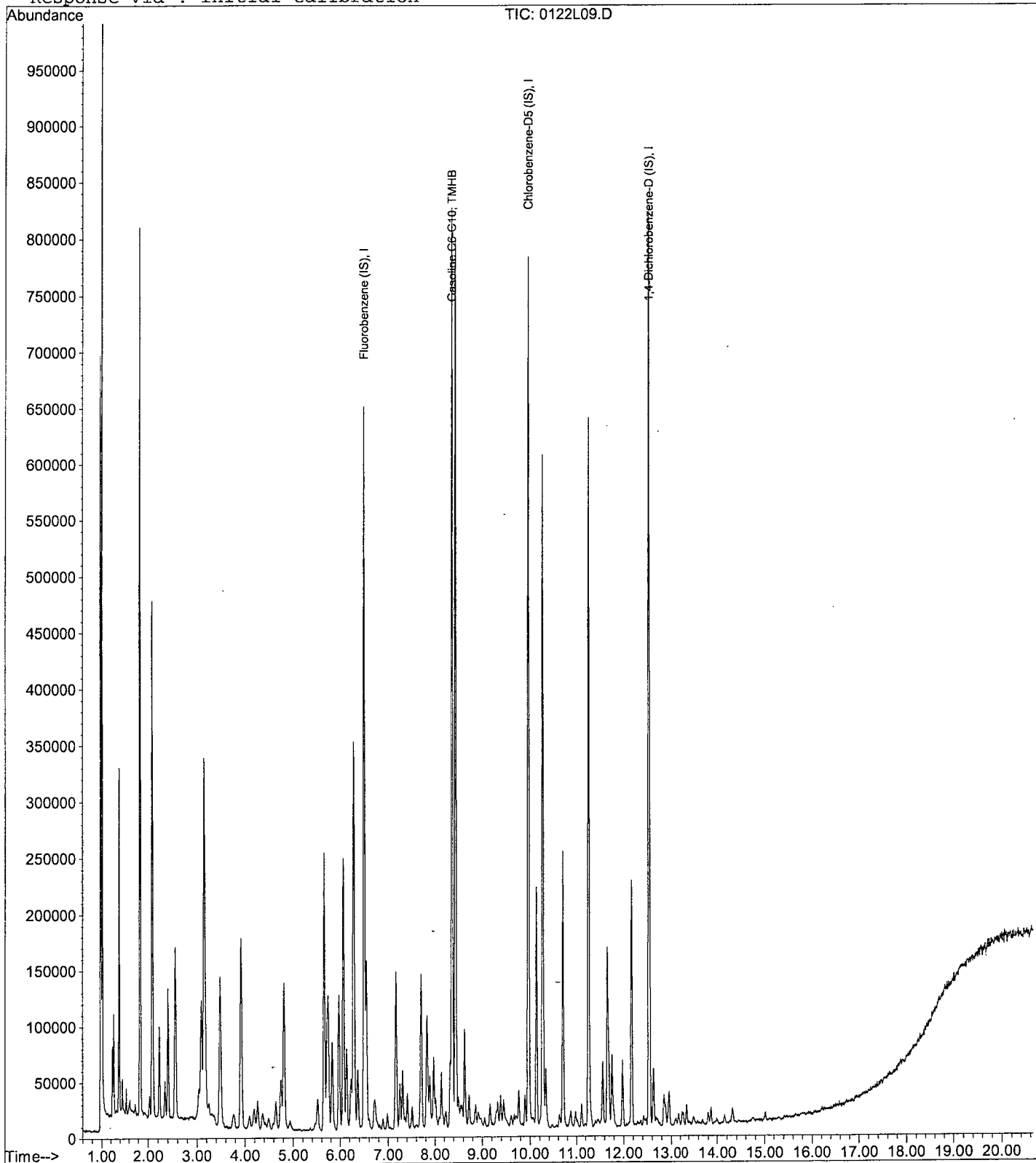
Data File : M:\LOKI\DATA\190121\0122L09.D  
Acq On : 22 Jan 19 17:01  
Sample : 1000ug/L GAS STD 1/21/19  
Misc : IS&S 11/8/18

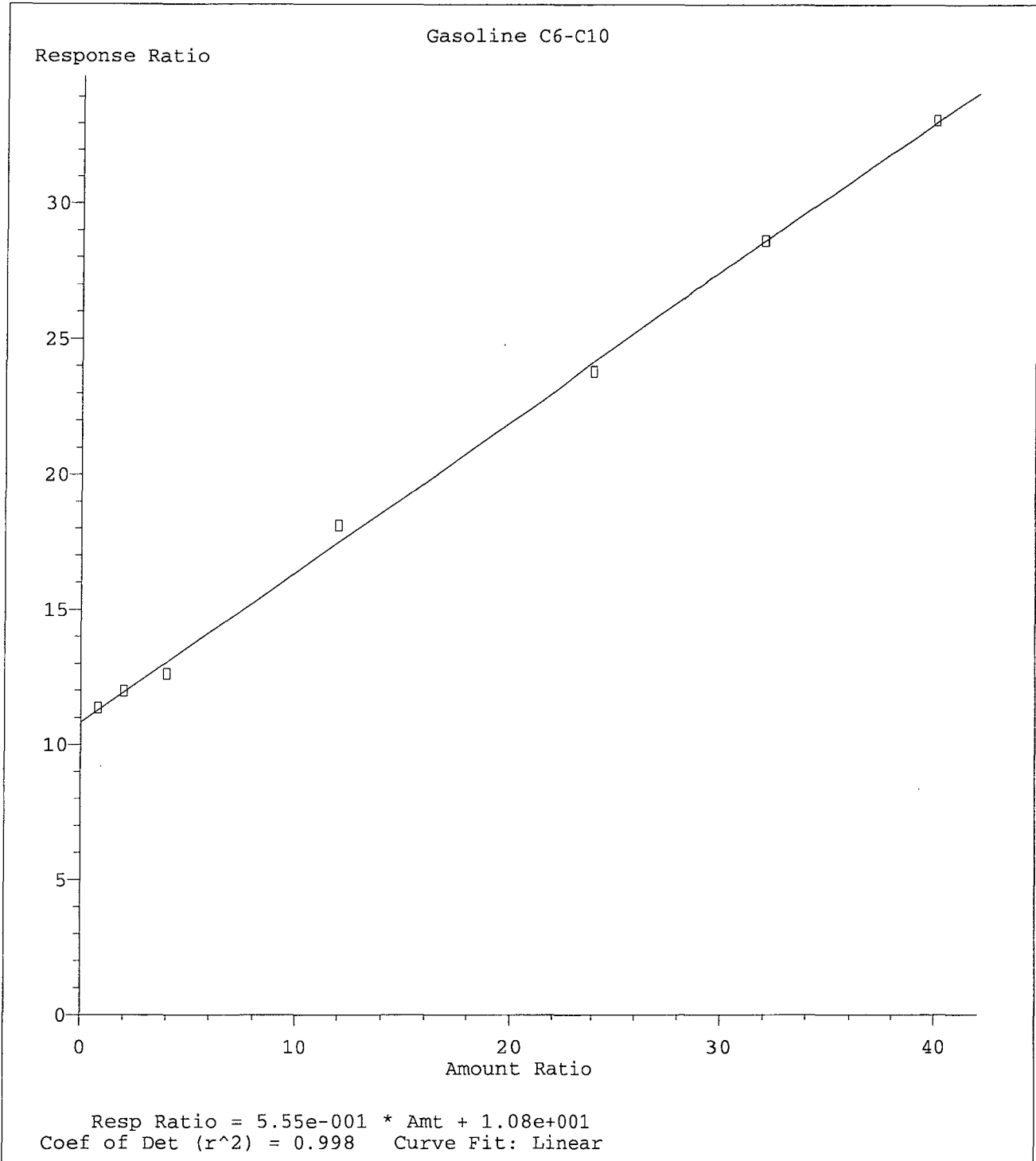
Vial: 8  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 24 9:23 2019

Quant Results File: LGAS0122.RES

Method : M:\LOKI\DATA\190121\LGAS0122.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Thu Jan 24 09:25:37 2019  
Response via : Initial Calibration





Method Name: M:\LOKI\DATA\190121\LGAS0122.M  
Calibration Table Last Updated: Thu Jan 24 09:25:37 2019

VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 7

Second Source Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: water

SDG No: \_\_\_\_\_  
Date Analyzed: 01/22/19  
Instrument: Loki  
Initial Cal. Date: 01/22/19  
Data File: 0122L12.D

	Compound	MEAN	CCRF	%D	%Drift
1	TMHB Gasoline C6-C10	3.937	1.468	63	1.7
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
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38					
39					
40					

Average

63.0

Data File : M:\LOKI\DATA\190121\0122L12.D  
 Acq On : 22 Jan 19 18:27  
 Sample : (SS)300ug/L GAS STD 1/21/19  
 Misc : IS&S 11/8/18

Vial: 11  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 24 9:30 2019

Quant Results File: LGAS0122.RES

Quant Method : M:\LOKI\DATA\190121\LGAS0122.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Thu Jan 24 09:25:37 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	661911	25.000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.97	TIC	791838	25.000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.54	TIC	820940	25.000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Gasoline C6-C10	8.37	TIC	11658465m	305.154	ppb	100

Data File : M:\LOKI\DATA\190121\0122L12.D Vial: 11  
 Acq On : 22 Jan 19 18:27 Operator: PM, DG, SV, CMM, KV  
 Sample : (SS)300ug/L GAS STD 1/21/19 Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Jan 24 10:26 2019 Quant Results File: L0121SUR.RES

Quant Method : M:\LOKI\DATA\190121\L0121SUR.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 22 12:46:40 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	322112	25.0000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	279488	25.0000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.54	152	144704	25.0000	ppb	0.00
System Monitoring Compounds						
2) Dibromofluoromethane(S)	5.65	111	152512	25.1255	ppb	0.00
Spiked Amount				25.000		
				Recovery	= 100.504%	
3) 1,2-DCA-D4(S)	6.07	65	178958	25.2842	ppb	0.00
Spiked Amount				25.000		
				Recovery	= 101.136%	
5) Toluene-D8(S)	8.37	98	563836	24.6909	ppb	0.00
Spiked Amount				25.000		
				Recovery	= 98.764%	
6) 4-Bromofluorobenzene(S)	11.27	95	231410	24.1569	ppb	0.00
Spiked Amount				25.000		
				Recovery	= 96.628%	

Target Compounds Qvalue

(#) = qualifier out of range (m) = manual integration



Quantitation Report

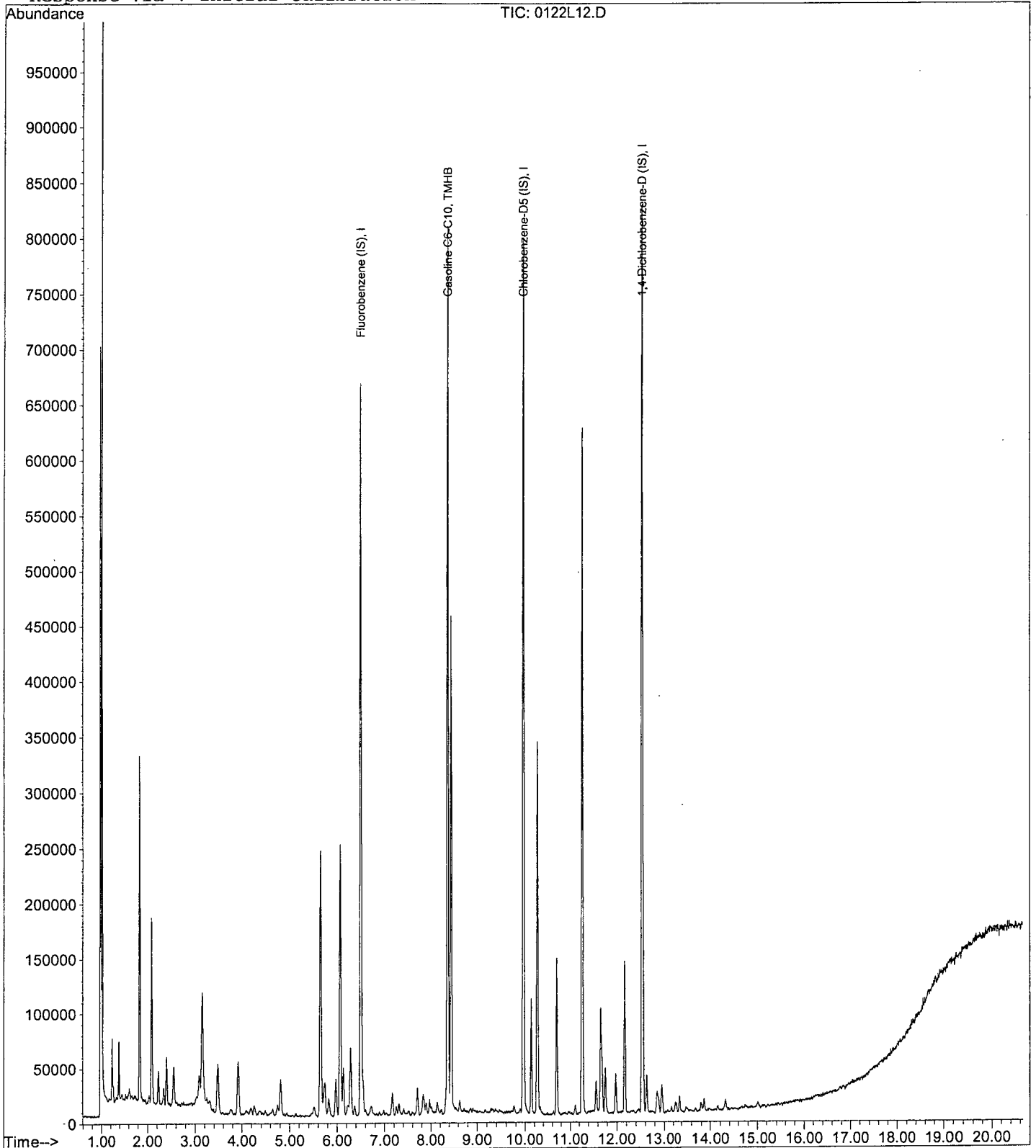
Data File : M:\LOKI\DATA\190121\0122L12.D  
Acq On : 22 Jan 19 18:27  
Sample : (SS)300ug/L GAS STD 1/21/19  
Misc : IS&S 11/8/18

Vial: 11  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 24 9:30 2019

Quant Results File: LGAS0122.RES

Method : M:\LOKI\DATA\190121\LGAS0122.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Thu Jan 24 09:25:37 2019  
Response via : Initial Calibration



VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 6  
Initial Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: \_\_\_\_\_

SDG No: \_\_\_\_\_  
Initial Cal. Date: 01/28/19  
Instrument: Loki

Initials: \_\_\_\_\_

0128L03.D 0128L04.D 0128L05.D 0128L06.D 0128L07.D 0128L08.D 0128L09.D 0128L10.D 0128L12.D 0128L11.D

	Compound	1	2	3	4	5	6	7	8	9	8A	Avg	%RSD	Type	r^2	Q	MRF
1	I Fluorobenzene (IS)																
2	S Dibromofluoromethane(S)	0.5786	0.5271	0.4726	0.4590	0.4831	0.4862	0.4858	0.4849	0.4728	0.4653	0.49	7.3	S			
3	S 1,2-DCA-D4(S)	0.6725	0.6469	0.5511	0.5503	0.5606	0.5609	0.5646	0.5474	0.5318	0.5328	0.57	8.4	S			
4	I Chlorobenzene-D5 (IS)																
5	S Toluene-D8(S)	3.031	3.045	2.442	2.383	2.511	2.462	2.471	2.288	2.132	2.256	2.5	12	S			
6	S 4-Bromofluorobenzene(S)	0.9081	0.8451	0.7081	0.6531	0.7094	0.6818	0.7052	0.7482	0.7785	0.7587	0.75	10	S			
7	I 1,4-Dichlorobenzene-D (IS)																
8																	
9																	
10																	
11																	
12																	
13																	
14																	
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34																	
35																	

Quantitation Report (Not Reviewed)

Data File : M:\LOKI\DATA\190128\0128L03.D  
 Acq On : 28 Jan 19 15:03  
 Sample : 0.3ug/L VOC STD 01/28/19  
 Misc : IS&S 11/8/18

Vial: 2  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 31 14:06 2019

Quant Results File: L0128SUR.RES

Quant Method : M:\LOKI\DATA\190128\L0128SUR.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	414464	25.0000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	262144	25.0000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.54	152	124304	25.0000	ppb	0.00
System Monitoring Compounds						
2) Dibromofluoromethane(S)	5.65	111	47965	5.8860	ppb	0.00
Spiked Amount	25.000		Recovery	=	23.544%	
3) 1,2-DCA-D4(S)	6.07	65	55743	5.8793	ppb	0.00
Spiked Amount	25.000		Recovery	=	23.516%	
5) Toluene-D8(S)	8.37	98	158889	6.0562	ppb	0.00
Spiked Amount	25.000		Recovery	=	24.224%	
6) 4-Bromofluorobenzene(S)	11.26	95	47612	6.0572	ppb	0.00
Spiked Amount	25.000		Recovery	=	24.228%	

Target Compounds

Qvalue

Quantitation Report

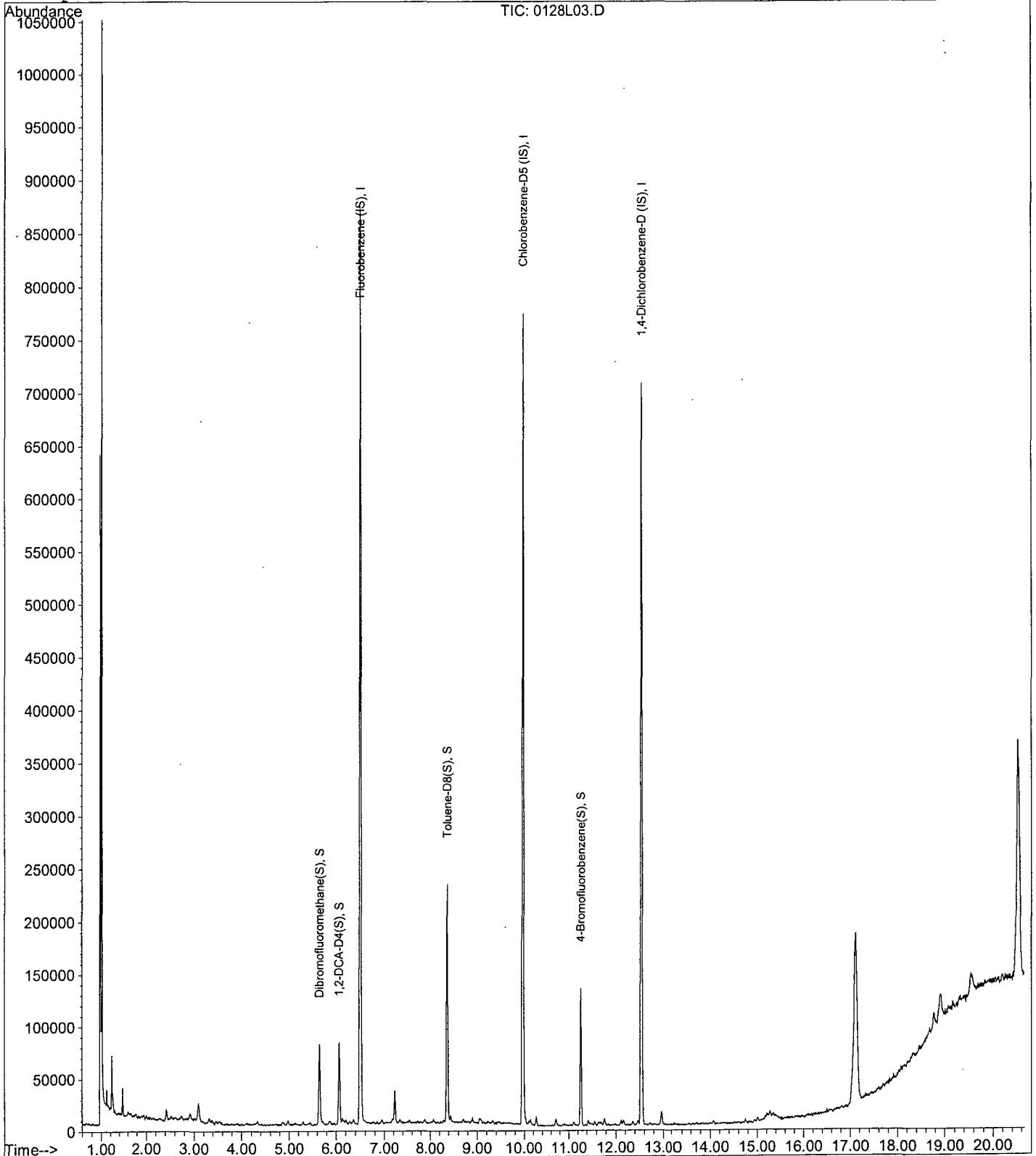
Data File : M:\LOKI\DATA\190128\0128L03.D  
Acq On : 28 Jan 19 15:03  
Sample : 0.3ug/L VOC STD 01/28/19  
Misc : IS&S 11/8/18

Vial: 2  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 31 14:06 2019

Quant Results File: L0128SUR.RES

Method : M:\LOKI\DATA\190128\L0128SUR.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Jan 29 09:06:22 2019  
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : M:\LOKI\DATA\190128\0128L04.D  
 Acq On : 28 Jan 19 15:31  
 Sample : 0.5ug/L VOC STD 01/28/19  
 Misc : IS&S 11/8/18

Vial: 3  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 31 14:06 2019

Quant Results File: L0128SUR.RES

Quant Method : M:\LOKI\DATA\190128\L0128SUR.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	419520	25.0000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	260416	25.0000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.53	152	125192	25.0000	ppb	0.00
System Monitoring Compounds						
2) Dibromofluoromethane(S)	5.65	111	44226	5.3618	ppb	0.00
Spiked Amount : 25.000			Recovery	=	21.448%	
3) 1,2-DCA-D4(S)	6.07	65	54279	5.6559	ppb	0.00
Spiked Amount : 25.000			Recovery	=	22.624%	
5) Toluene-D8(S)	8.37	98	158592	6.0849	ppb	0.00
Spiked Amount : 25.000			Recovery	=	24.340%	
6) 4-Bromofluorobenzene(S)	11.26	95	44018	5.6372	ppb	0.00
Spiked Amount : 25.000			Recovery	=	22.548%	

Target Compounds

Qvalue

(#) = qualifier out of range (m) = manual integration

Quantitation Report

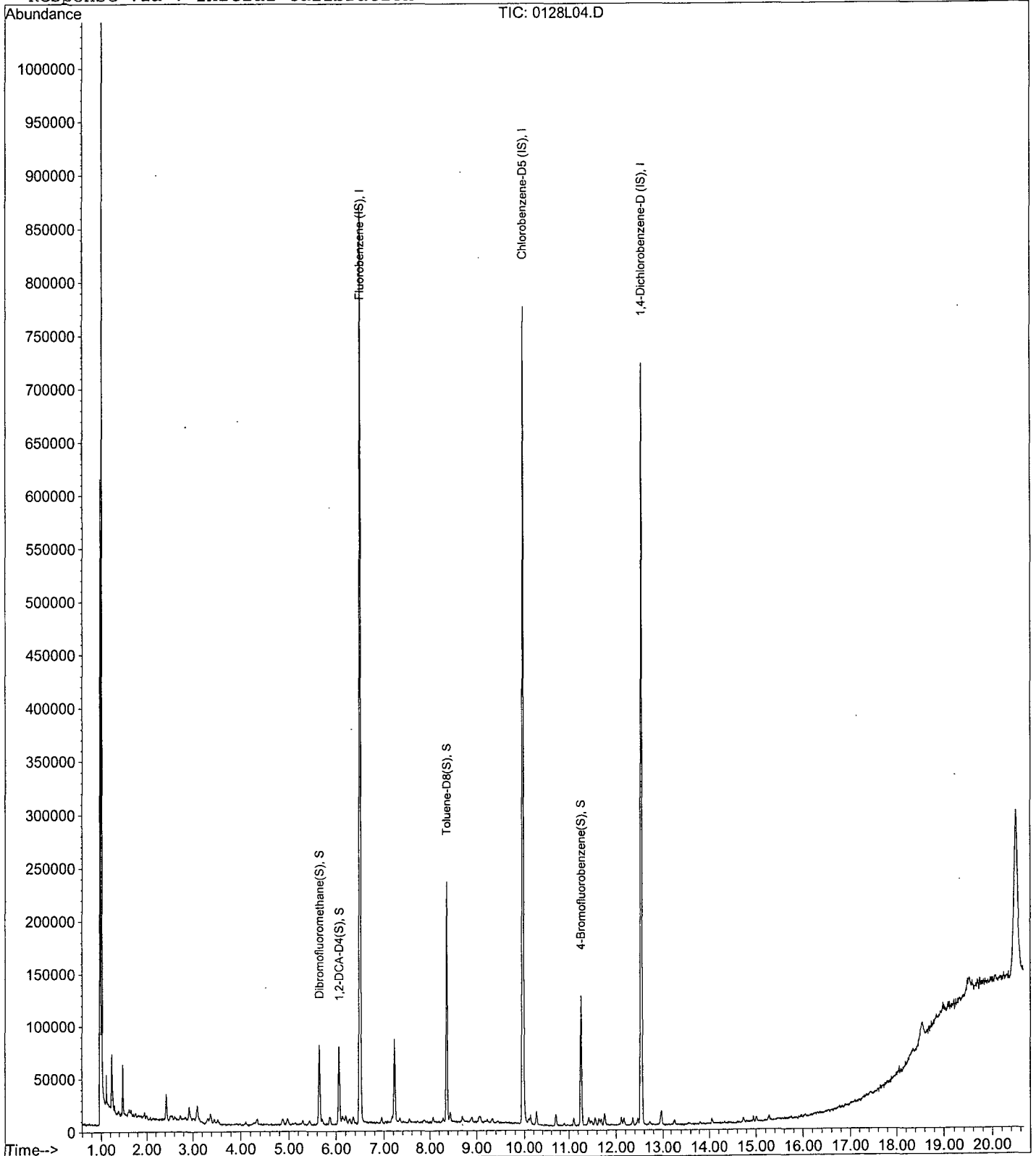
Data File : M:\LOKI\DATA\190128\0128L04.D  
Acq On : 28 Jan 19 15:31  
Sample : 0.5ug/L VOC STD 01/28/19  
Misc : IS&S 11/8/18

Vial: 3  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 31 14:06 2019

Quant Results File: L0128SUR.RES

Method : M:\LOKI\DATA\190128\L0128SUR.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Jan 29 09:06:22 2019  
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : M:\LOKI\DATA\190128\0128L05.D  
 Acq On : 28 Jan 19 16:00  
 Sample : 1.0ug/L VOC STD 01/28/19  
 Misc : IS&S 11/8/18

Vial: 4  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 31 14:06 2019

Quant Results File: L0128SUR.RES

Quant Method : M:\LOKI\DATA\190128\L0128SUR.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	400384	25.0000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	262528	25.0000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.54	152	116336	25.0000	ppb	0.00
<b>System Monitoring Compounds</b>						
2) Dibromofluoromethane(S)	5.65	111	75694	9.6154	ppb	0.00
Spiked Amount	25.000		Recovery	=	38.460%	
3) 1,2-DCA-D4(S)	6.07	65	88263	9.6367	ppb	0.00
Spiked Amount	25.000		Recovery	=	38.548%	
5) Toluene-D8(S)	8.37	98	256471	9.7613	ppb	0.00
Spiked Amount	25.000		Recovery	=	39.044%	
6) 4-Bromofluorobenzene(S)	11.26	95	74359	9.4462	ppb	0.00
Spiked Amount	25.000		Recovery	=	37.784%	

Target Compounds

Qvalue

Quantitation Report

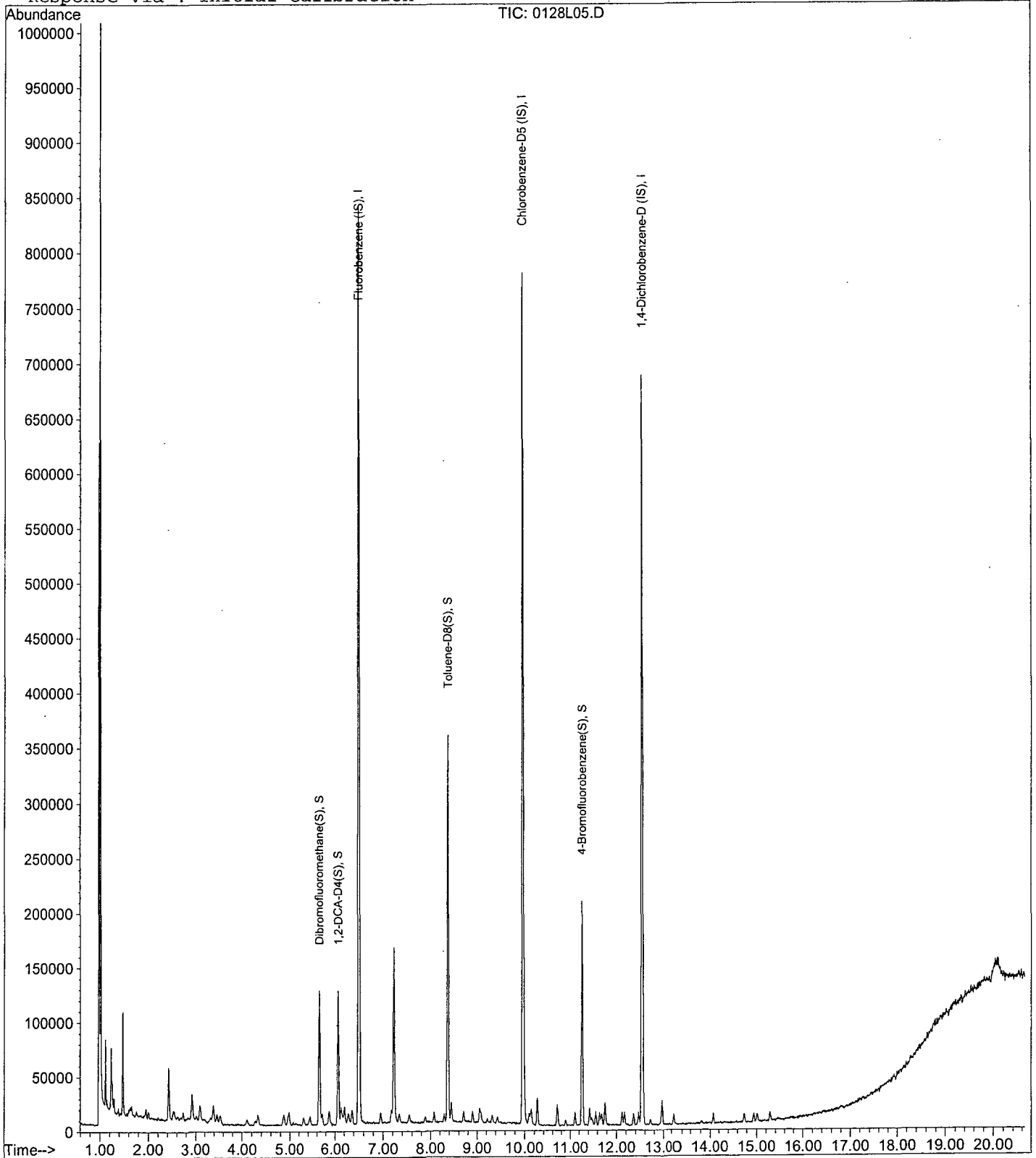
Data File : M:\LOKI\DATA\190128\0128L05.D  
Acq On : 28 Jan 19 16:00  
Sample : 1.0ug/L VOC STD 01/28/19  
Misc : IS&S 11/8/18

Vial: 4  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 31 14:06 2019

Quant Results File: L0128SUR.RES

Method : M:\LOKI\DATA\190128\L0128SUR.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Jan 29 09:06:22 2019  
Response via : Initial Calibration





Quantitation Report (Not Reviewed)

Data File : M:\LOKI\DATA\190128\0128L06.D  
 Acq On : 28 Jan 19 16:29  
 Sample : 2.0ug/L VOC STD 01/28/19  
 Misc : IS&S 11/8/18

Vial: 5  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 31 14:06 2019

Quant Results File: L0128SUR.RES

Quant Method : M:\LOKI\DATA\190128\L0128SUR.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	394368	25.0000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	273536	25.0000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.54	152	114176	25.0000	ppb	0.00
System Monitoring Compounds						
2) Dibromofluoromethane(S)	5.65	111	72400	9.3373	ppb	0.00
Spiked Amount	25.000		Recovery	=	37.348%	
3) 1,2-DCA-D4(S)	6.07	65	86807	9.6223	ppb	0.00
Spiked Amount	25.000		Recovery	=	38.488%	
5) Toluene-D8(S)	8.37	98	260744	9.5245	ppb	0.00
Spiked Amount	25.000		Recovery	=	38.100%	
6) 4-Bromofluorobenzene(S)	11.27	95	71461	8.7127	ppb	0.00
Spiked Amount	25.000		Recovery	=	34.852%	

Target Compounds

Qvalue

Quantitation Report

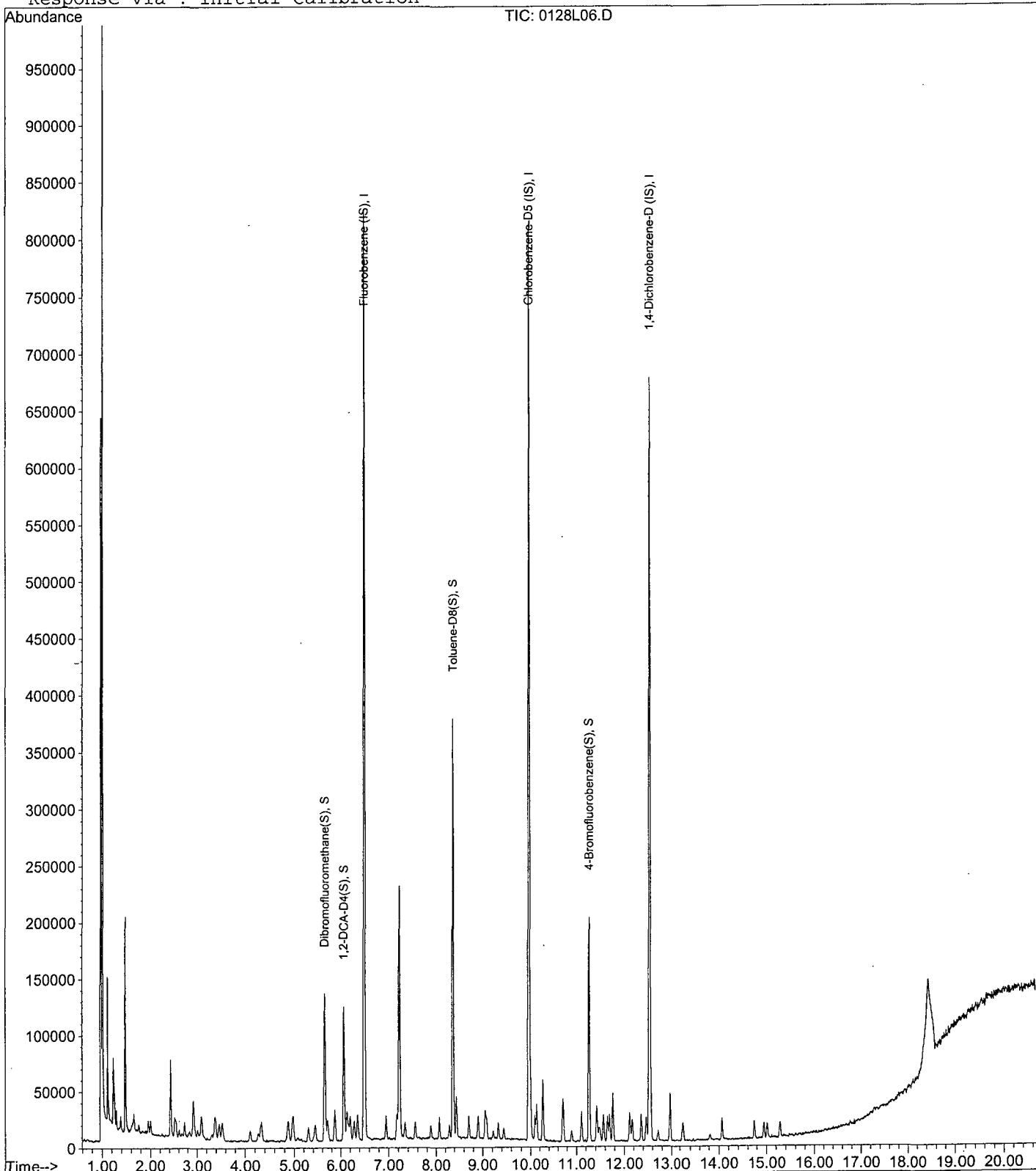
Data File : M:\LOKI\DATA\190128\0128L06.D  
Acq On : 28 Jan 19 16:29  
Sample : 2.0ug/L VOC STD 01/28/19  
Misc : IS&S 11/8/18

Vial: 5  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 31 14:06 2019

Quant Results File: L0128SUR.RES

Method : M:\LOKI\DATA\190128\L0128SUR.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Jan 29 09:06:22 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190128\0128L07.D  
 Acq On : 28 Jan 19 16:57  
 Sample : 5.0ug/L VOC STD 01/28/19  
 Misc : IS&S 11/8/18

Vial: 6  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 31 14:06 2019

Quant Results File: L0128SUR.RES

Quant Method : M:\LOKI\DATA\190128\L0128SUR.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	406976	25.0000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	273664	25.0000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.54	152	125568	25.0000	ppb	0.00
System Monitoring Compounds						
2) Dibromofluoromethane(S)	5.65	111	196617	24.5718	ppb	0.00
Spiked Amount	25.000		Recovery	=	98.288%	
3) 1,2-DCA-D4(S)	6.07	65	228144	24.5056	ppb	0.00
Spiked Amount	25.000		Recovery	=	98.024%	
5) Toluene-D8(S)	8.37	98	687108	25.0871	ppb	0.00
Spiked Amount	25.000		Recovery	=	100.348%	
6) 4-Bromofluorobenzene(S)	11.27	95	194145	23.6595	ppb	0.00
Spiked Amount	25.000		Recovery	=	94.640%	

Target Compounds

Qvalue

Quantitation Report

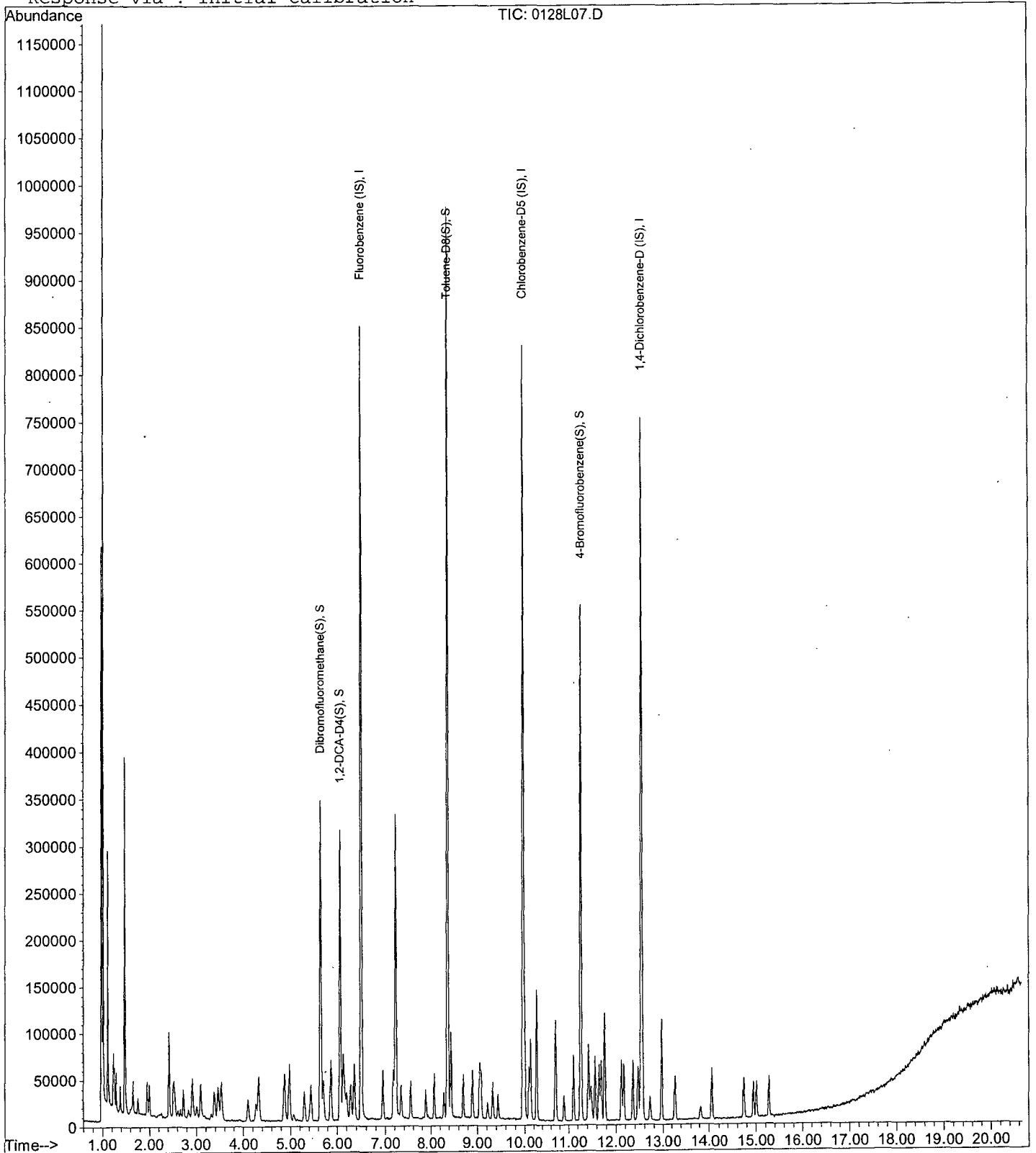
Data File : M:\LOKI\DATA\190128\0128L07.D  
Acq On : 28 Jan 19 16:57  
Sample : 5.0ug/L VOC STD 01/28/19  
Misc : IS&S 11/8/18

Vial: 6  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 31 14:06 2019

Quant Results File: L0128SUR.RES

Method : M:\LOKI\DATA\190128\L0128SUR.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Jan 29 09:06:22 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190128\0128L08.D  
 Acq On : 28 Jan 19 17:26  
 Sample : 10ug/L VOC STD 01/28/19  
 Misc : IS&S 11/8/18

Vial: 7  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 31 14:06 2019

Quant Results File: L0128SUR.RES

Quant Method : M:\LOKI\DATA\190128\L0128SUR.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	408128	25.0000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	289088	25.0000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.53	152	128392	25.0000	ppb	0.00
System Monitoring Compounds						
2) Dibromofluoromethane(S)	5.65	111	198416	24.7266	ppb	0.00
Spiked Amount	25.000		Recovery	=	98.908%	
3) 1,2-DCA-D4(S)	6.07	65	228932	24.5208	ppb	0.00
Spiked Amount	25.000		Recovery	=	98.084%	
5) Toluene-D8(S)	8.37	98	711839	24.6034	ppb	0.00
Spiked Amount	25.000		Recovery	=	98.412%	
6) 4-Bromofluorobenzene(S)	11.26	95	197094	22.7374	ppb	0.00
Spiked Amount	25.000		Recovery	=	90.948%	

Target Compounds Qvalue

Quantitation Report

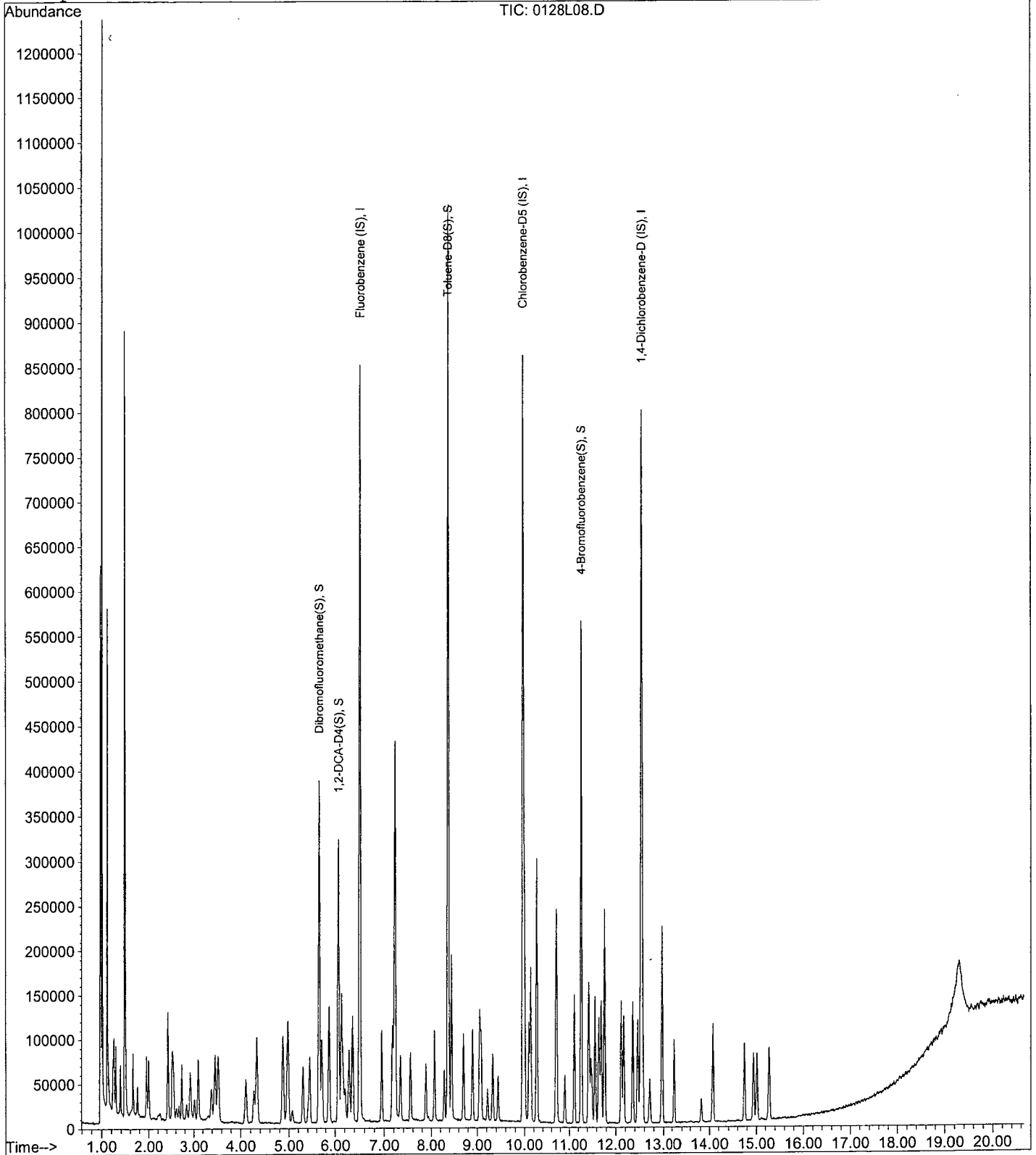
Data File : M:\LOKI\DATA\190128\0128L08.D  
Acq On : 28 Jan 19 17:26  
Sample : 10ug/L VOC STD 01/28/19  
Misc : IS&S 11/8/18

Vial: 7  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 31 14:06 2019

Quant Results File: L0128SUR.RES

Method : M:\LOKI\DATA\190128\L0128SUR.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Jan 29 09:06:22 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190128\0128L09.D  
 Acq On : 28 Jan 19 17:55  
 Sample : 20ug/L VOC STD 01/28/19  
 Misc : IS&S 11/8/18

Vial: 8  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 31 14:06 2019

Quant Results File: L0128SUR.RES

Quant Method : M:\LOKI\DATA\190128\L0128SUR.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	412032	25.0000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	296000	25.0000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.54	152	129368	25.0000	ppb	0.00
System Monitoring Compounds						
2) Dibromofluoromethane(S)	5.65	111	400321	49.4153	ppb	0.00
Spiked Amount	25.000		Recovery	=	197.660%	
3) 1,2-DCA-D4(S)	6.07	65	465272	49.3630	ppb	0.00
Spiked Amount	25.000		Recovery	=	197.452%	
5) Toluene-D8(S)	8.37	98	1462858	49.3803	ppb	0.00
Spiked Amount	25.000		Recovery	=	197.520%	
6) 4-Bromofluorobenzene(S)	11.27	95	417458	47.0347	ppb	0.00
Spiked Amount	25.000		Recovery	=	188.140%	

Target Compounds Qvalue

Quantitation Report

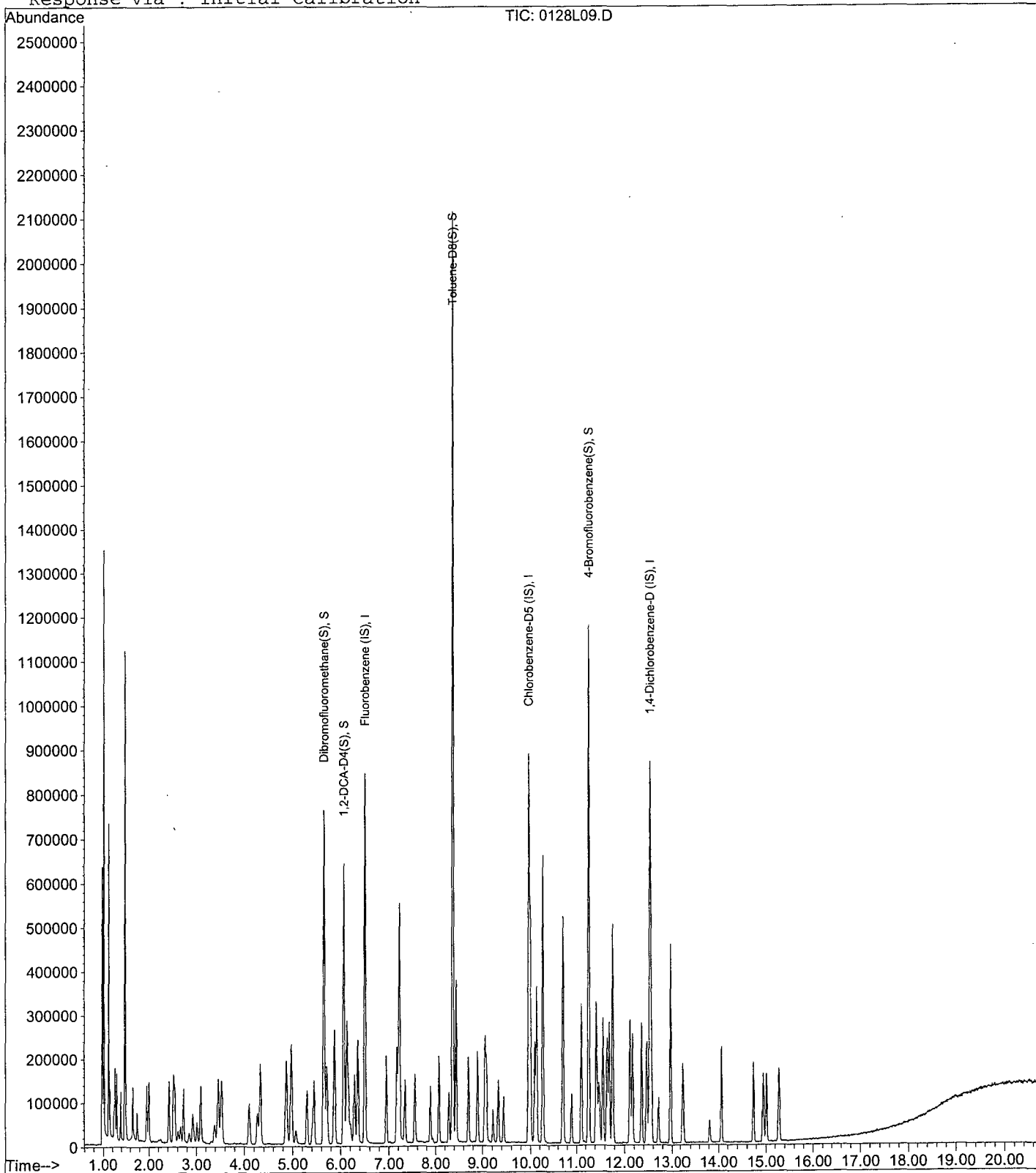
Data File : M:\LOKI\DATA\190128\0128L09.D  
Acq On : 28 Jan 19 17:55  
Sample : 20ug/L VOC STD 01/28/19  
Misc : IS&S 11/8/18

Vial: 8  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 31 14:06 2019

Quant Results File: L0128SUR.RES

Method : M:\LOKI\DATA\190128\L0128SUR.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Jan 29 09:06:22 2019  
Response via : Initial Calibration





Data File : M:\LOKI\DATA\190128\0128L10.D  
 Acq On : 28 Jan 19 18:23  
 Sample : 40ug/L VOC STD 01/28/19  
 Misc : IS&S 11/8/18

Vial: 9  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 31 14:06 2019

Quant Results File: L0128SUR.RES

Quant Method : M:\LOKI\DATA\190128\L0128SUR.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	423040	25.0000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	328192	25.0000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.54	152	146240	25.0000	ppb	0.00
System Monitoring Compounds						
2) Dibromofluoromethane(S)	5.65	111	410242	49.3222	ppb	0.00
Spiked Amount	25.000		Recovery	=	197.288%	
3) 1,2-DCA-D4(S)	6.07	65	463142	47.8584	ppb	0.00
Spiked Amount	25.000		Recovery	=	191.432%	
5) Toluene-D8(S)	8.37	98	1501546	45.7145	ppb	0.00
Spiked Amount	25.000		Recovery	=	182.856%	
6) 4-Bromofluorobenzene(S)	11.27	95	491105	49.9049	ppb	0.00
Spiked Amount	25.000		Recovery	=	199.620%	

Target Compounds Qvalue

Quantitation Report

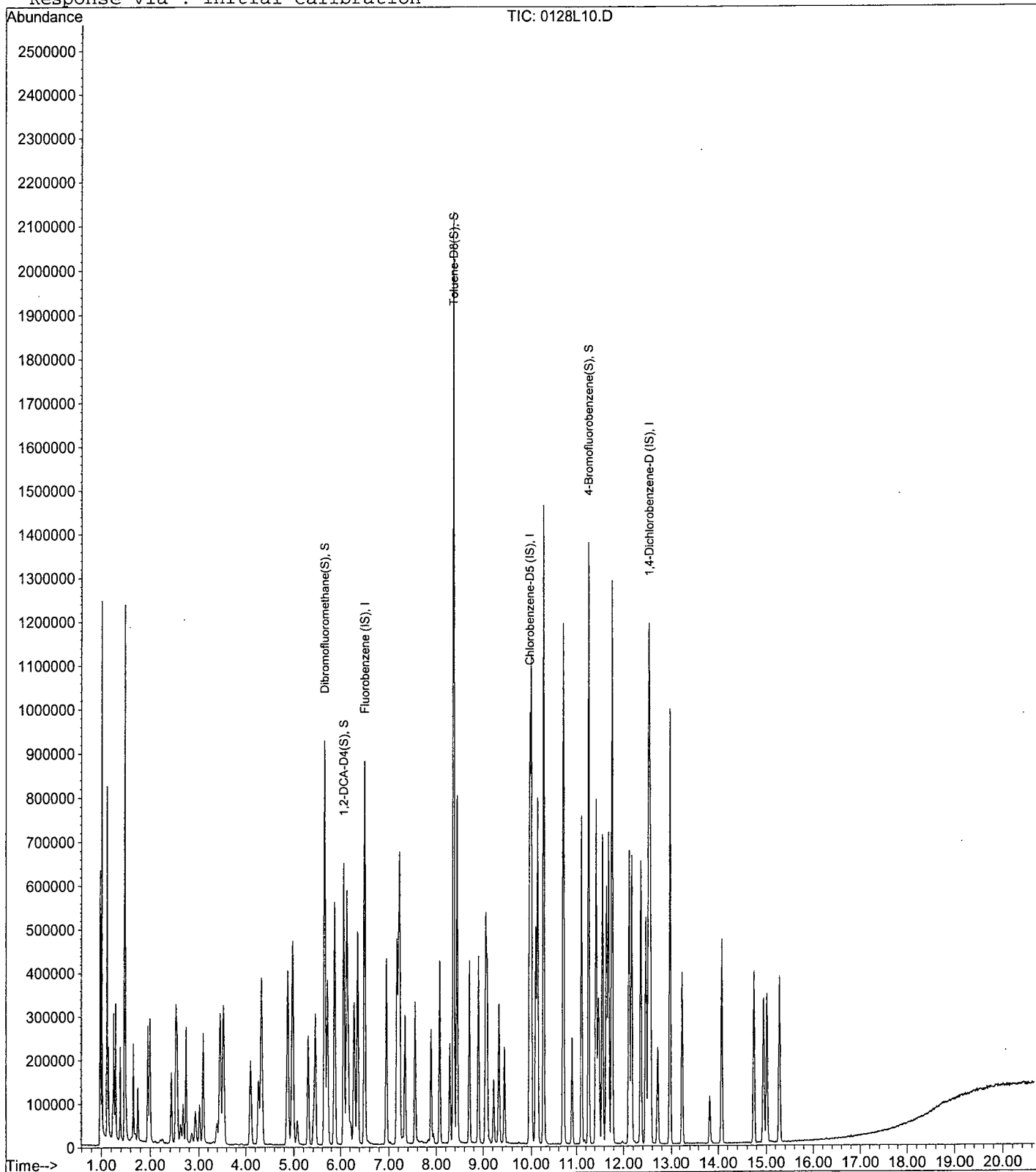
Data File : M:\LOKI\DATA\190128\0128L10.D  
Acq On : 28 Jan 19 18:23  
Sample : 40ug/L VOC STD 01/28/19  
Misc : IS&S 11/8/18

Vial: 9  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 31 14:06 2019

Quant Results File: L0128SUR.RES

Method : M:\LOKI\DATA\190128\L0128SUR.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Jan 29 09:06:22 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190128\0128L11.D Vial: 10  
 Acq On : 28 Jan 19 18:52 Operator: PM, DG, SV, CMM, KV  
 Sample : 50ug/L VOC STD 01/28/19 Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Jan 31 14:06 2019 Quant Results File: L0128SUR.RES

Quant Method : M:\LOKI\DATA\190128\L0128SUR.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	427264	25.0000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	334016	25.0000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.54	152	171456	25.0000	ppb	0.00
System Monitoring Compounds						
2) Dibromofluoromethane(S)	5.65	111	795174	94.6564	ppb	0.00
Spiked Amount	25.000			Recovery	= 378.624%	
3) 1,2-DCA-D4(S)	6.07	65	910540	93.1597	ppb	0.00
Spiked Amount	25.000			Recovery	= 372.640%	
5) Toluene-D8(S)	8.37	98	3014125	90.1648	ppb	0.00
Spiked Amount	25.000			Recovery	= 360.660%	
6) 4-Bromofluorobenzene(S)	11.27	95	1013641	101.2078	ppb	0.00
Spiked Amount	25.000			Recovery	= 404.832%	

Target Compounds Qvalue

Quantitation Report

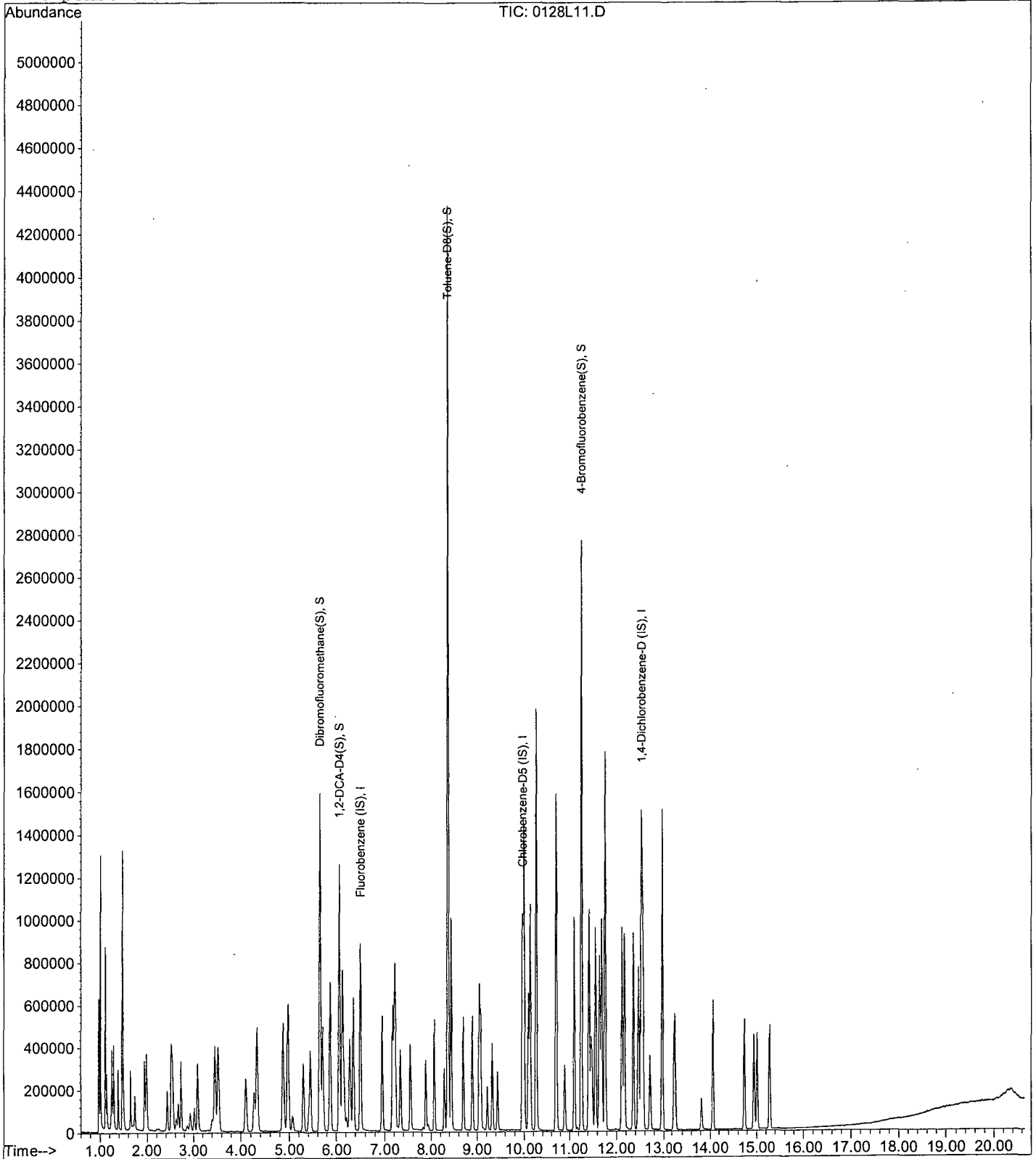
Data File : M:\LOKI\DATA\190128\0128L11.D  
Acq On : 28 Jan 19 18:52  
Sample : 50ug/L VOC STD 01/28/19  
Misc : IS&S 11/8/18

Vial: 10  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 31 14:06 2019

Quant Results File: L0128SUR.RES

Method : M:\LOKI\DATA\190128\L0128SUR.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Jan 29 09:06:22 2019  
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : M:\LOKI\DATA\190128\0128L12.D  
 Acq On : 28 Jan 19 19:21  
 Sample : 100ug/L VOC STD 01/28/19  
 Misc : IS&S 11/8/18

Vial: 11  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 31 14:06 2019

Quant Results File: L0128SUR.RES

Quant Method : M:\LOKI\DATA\190128\L0128SUR.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	399808	25.0000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	335744	25.0000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.53	152	174784	25.0000	ppb	0.00
System Monitoring Compounds						
2) Dibromofluoromethane(S)	5.65	111	756147	96.1920	ppb	0.00
Spiked Amount	25.000		Recovery	=	384.768%	
3) 1,2-DCA-D4(S)	6.07	65	850540	92.9969	ppb	0.00
Spiked Amount	25.000		Recovery	=	371.988%	
5) Toluene-D8(S)	8.37	98	2863025	85.2040	ppb	0.00
Spiked Amount	25.000		Recovery	=	340.816%	
6) 4-Bromofluorobenzene(S)	11.26	95	1045481	103.8496	ppb	0.00
Spiked Amount	25.000		Recovery	=	415.400%	

Target Compounds

Qvalue

Quantitation Report

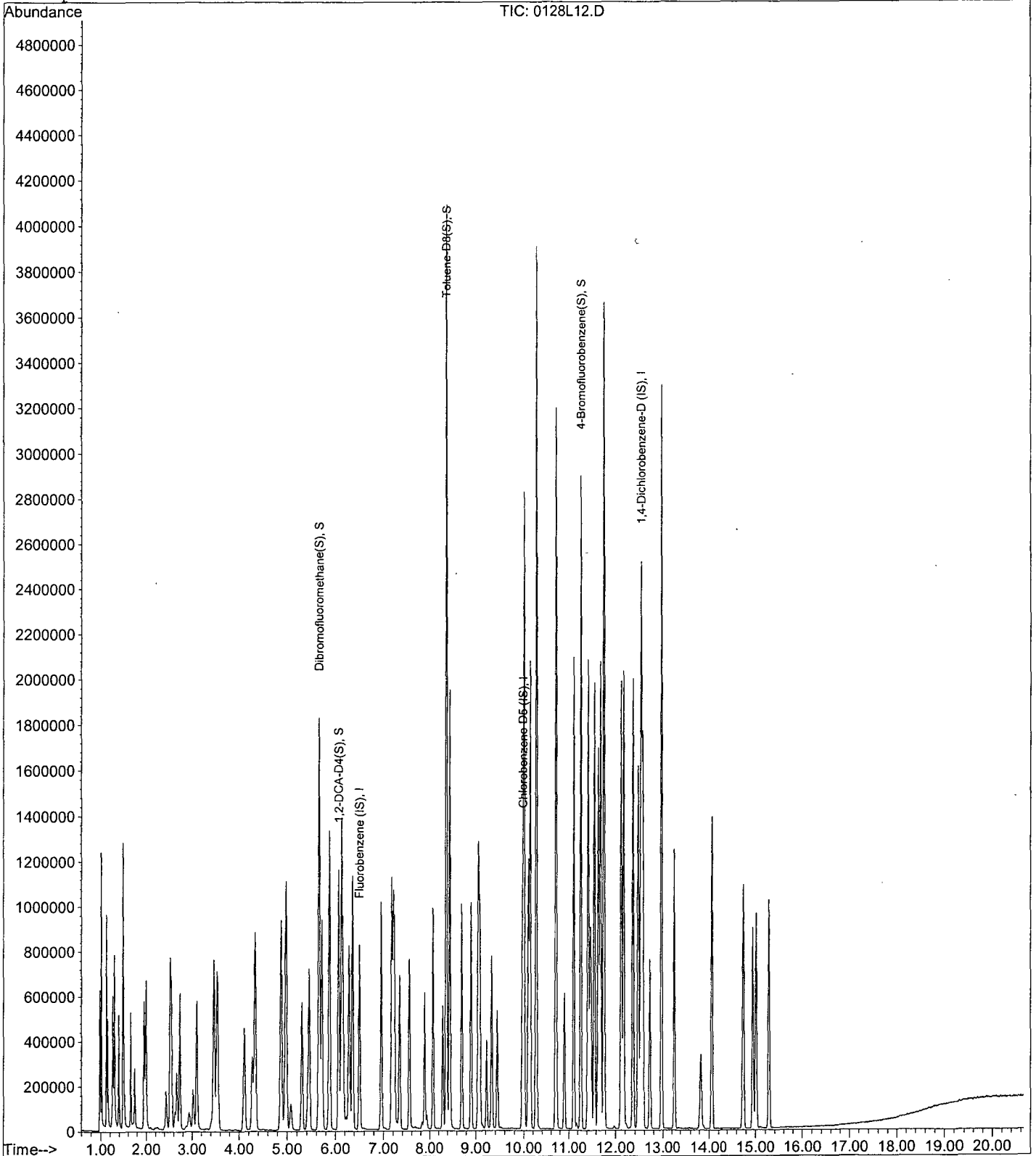
Data File : M:\LOKI\DATA\190128\0128L12.D  
Acq On : 28 Jan 19 19:21  
Sample : 100ug/L VOC STD 01/28/19  
Misc : IS&S 11/8/18

Vial: 11  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 31 14:06 2019

Quant Results File: L0128SUR.RES

Method : M:\LOKI\DATA\190128\L0128SUR.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Jan 29 09:06:22 2019  
Response via : Initial Calibration



VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 7

Continuing Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: \_\_\_\_\_

SDG No: \_\_\_\_\_  
Date Analyzed: 01/28/19  
Instrument: Loki  
Initial Cal. Date: 01/28/19  
Data File: 0128L18.D

		Compound	MEAN	CCRF	%D		%Drift
1	I	Fluorobenzene (IS)	ISTD			I	
2	TMHB	Gasoline C6-C10	3.937	1.434	64	TMHBL	4.3
3	I	Chlorobenzene-D5 (IS)	ISTD			I	
4	I	1,4-Dichlorobenzene-D (IS)	ISTD			I	
5							
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40							

Average

64.0

VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 7

Continuing Calibration

Lab Name: APPL, Inc.

SDG No: \_\_\_\_\_

Case No: \_\_\_\_\_

Date Analyzed: 01/28/19

Matrix: \_\_\_\_\_

Instrument: Loki

Initial Cal. Date: 01/28/19

Data File: 0128L18.D

		Compound	MEAN	CCRF	%D	%Drift
1	I	Fluorobenzene (IS)	ISTD			I
2	S	Dibromofluoromethane(S)	0.4915	0.4937	0.43	S
3	S	1,2-DCA-D4(S)	0.5719	0.5603	2.0	S
4	I	Chlorobenzene-D5 (IS)	ISTD			I
5	S	Toluene-D8(S)	2.502	2.338	6.6	S
6	S	4-Bromofluorobenzene(S)	0.7496	0.7556	0.80	S
7	I	1,4-Dichlorobenzene-D (IS)	ISTD			I
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40		Average			2.5	

Average

2.5



Data File : M:\LOKI\DATA\190128\0128L18.D Vial: 17  
 Acq On : 28 Jan 19 22:12 Operator: PM,DG,SV,CMM,KV  
 Sample : 190128A CCV 300ug/L Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Jan 30 12:47 2019 Quant Results File: LGAS0122.RES

Quant Method : M:\LOKI\DATA\190128\LGAS0122.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Thu Jan 24 09:25:37 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	814324	25.0000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.97	TIC	884948	25.0000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.53	TIC	684088	25.0000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Gasoline C6-C10	8.37	TIC	14015766m	287.0673	ppb	100

Quantitation Report (Not Reviewed)

Data File : M:\LOKI\DATA\190128\0128L18.D  
 Acq On : 28 Jan 19 22:12  
 Sample : 190128A CCV 300ug/L  
 Misc : IS&S 11/8/18

Vial: 17  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 31 14:06 2019

Quant Results File: L0128SUR.RES

Quant Method : M:\LOKI\DATA\190128\L0128SUR.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	395392	25.0000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	302208	25.0000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.53	152	119408	25.0000	ppb	0.00
System Monitoring Compounds						
2) Dibromofluoromethane(S)	5.65	111	195193	25.1085	ppb	0.00
Spiked Amount	25.000		Recovery	=	100.432%	
3) 1,2-DCA-D4(S)	6.07	65	221546	24.4941	ppb	0.00
Spiked Amount	25.000		Recovery	=	97.976%	
5) Toluene-D8(S)	8.37	98	706522	23.3595	ppb	0.00
Spiked Amount	25.000		Recovery	=	93.436%	
6) 4-Bromofluorobenzene(S)	11.26	95	228351	25.1996	ppb	0.00
Spiked Amount	25.000		Recovery	=	100.800%	

Target Compounds

Qvalue

Quantitation Report

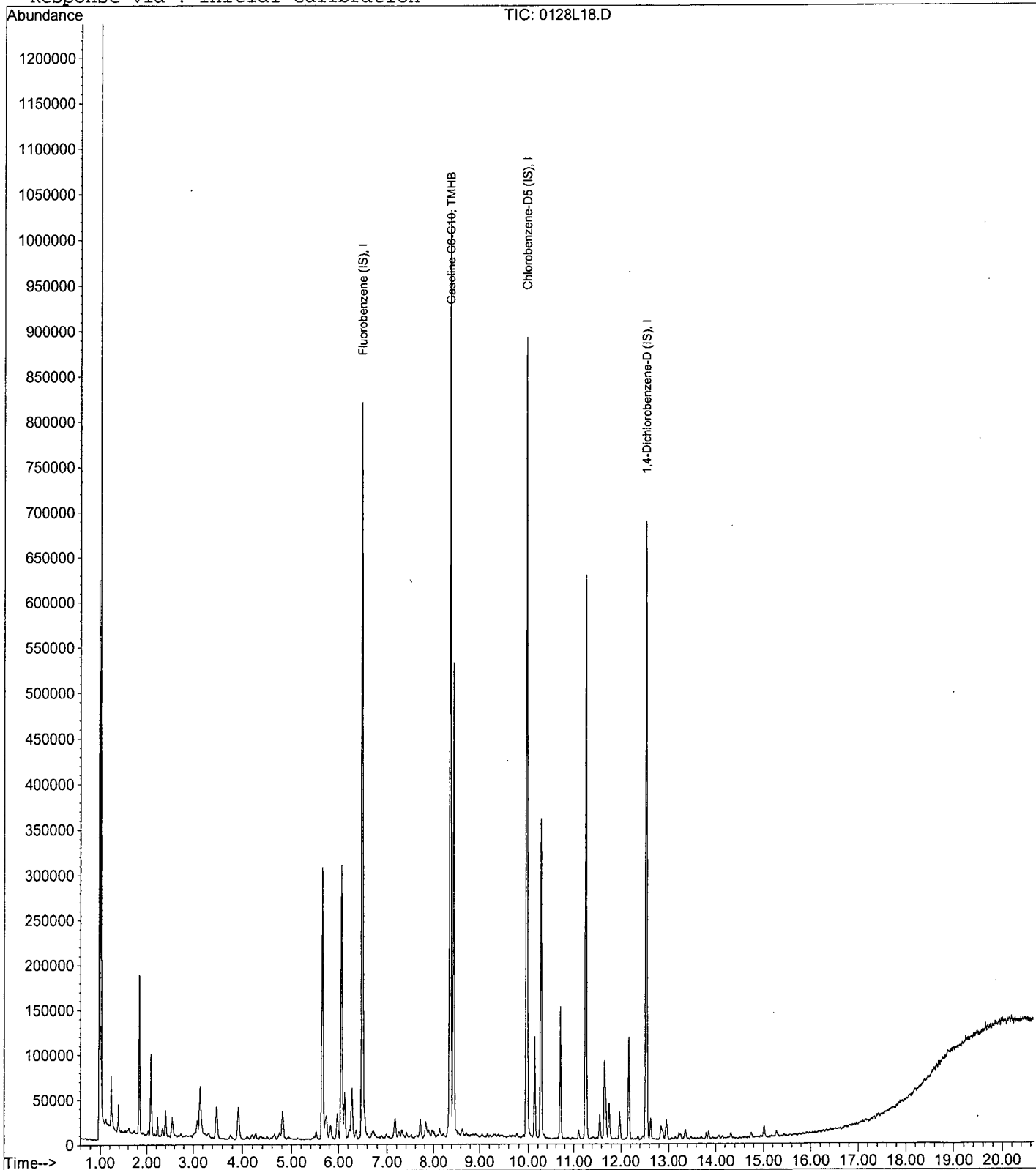
Data File : M:\LOKI\DATA\190128\0128L18.D  
Acq On : 28 Jan 19 22:12  
Sample : 190128A CCV 300ug/L  
Misc : IS&S 11/8/18

Vial: 17  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 30 12:47 2019

Quant Results File: LGAS0122.RES

Method : M:\LOKI\DATA\190128\LGAS0122.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Thu Jan 24 09:25:37 2019  
Response via : Initial Calibration



VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 7

Ending Continuing Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: \_\_\_\_\_

SDG No: \_\_\_\_\_  
Date Analyzed: 01/29/19  
Instrument: Loki  
Initial Cal. Date: 01/28/19  
Data File: 0128L39.D

		Compound	MEAN	CCRF	%D		%Drift
1	I	Fluorobenzene (IS)	ISTD			I	
2	TMHB	Gasoline C6-C10	3.937	1.412	64	TMHBL	8.3
3	I	Chlorobenzene-D5 (IS)	ISTD			I	
4	I	1,4-Dichlorobenzene-D (IS)	ISTD			I	
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40							

Average

64.0

VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 7

Ending Continuing Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: \_\_\_\_\_

SDG No: \_\_\_\_\_  
Date Analyzed: 01/29/19  
Instrument: Loki  
Initial Cal. Date: 01/28/19  
Data File: 0128L39.D

		Compound	MEAN	CCRF	%D	%Drift
1	I	Fluorobenzene (IS)	ISTD			I
2	S	Dibromofluoromethane(S)	0.4915	0.4993	1.6	S
3	S	1,2-DCA-D4(S)	0.5719	0.5593	2.2	S
4	I	Chlorobenzene-D5 (IS)	ISTD			I
5	S	Toluene-D8(S)	2.502	2.229	11	S
6	S	4-Bromofluorobenzene(S)	0.7496	0.7925	5.7	S
7	I	1,4-Dichlorobenzene-D (IS)	ISTD			I
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40		Average			5.1	

Data File : M:\LOKI\DATA\190128\0128L39.D  
 Acq On : 29 Jan 19 8:12  
 Sample : Ending CCV 300ug/L 01/28/19  
 Misc : IS&S 11/8/18

Vial: 38  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 30 12:53 2019

Quant Results File: LGAS0122.RES

Quant Method : M:\LOKI\DATA\190128\LGAS0122.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Thu Jan 24 09:25:37 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	772414	25.0000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.97	TIC	883208	25.0000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.54	TIC	804122	25.0000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Gasoline C6-C10	8.37	TIC	13087227m	274.9923	ppb	100

Data File : M:\LOKI\DATA\190128\0128L39.D  
 Acq On : 29 Jan 19 8:12  
 Sample : Ending CCV 300ug/L 01/28/19  
 Misc : IS&S 11/8/18

Vial: 38  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 31 14:06 2019

Quant Results File: L0128SUR.RES

Quant Method : M:\LOKI\DATA\190128\L0128SUR.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	376256	25.0000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	305344	25.0000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.54	152	138624	25.0000	ppb	0.00
System Monitoring Compounds						
2) Dibromofluoromethane(S)	5.65	111	187871	25.3957	ppb	0.00
Spiked Amount	25.000		Recovery	=	101.584%	
3) 1,2-DCA-D4 (S)	6.07	65	210422	24.4474	ppb	0.00
Spiked Amount	25.000		Recovery	=	97.788%	
5) Toluene-D8 (S)	8.37	98	680645	22.2728	ppb	0.00
Spiked Amount	25.000		Recovery	=	89.092%	
6) 4-Bromofluorobenzene(S)	11.27	95	241993	26.4308	ppb	0.00
Spiked Amount	25.000		Recovery	=	105.724%	

Target Compounds

Qvalue

Quantitation Report

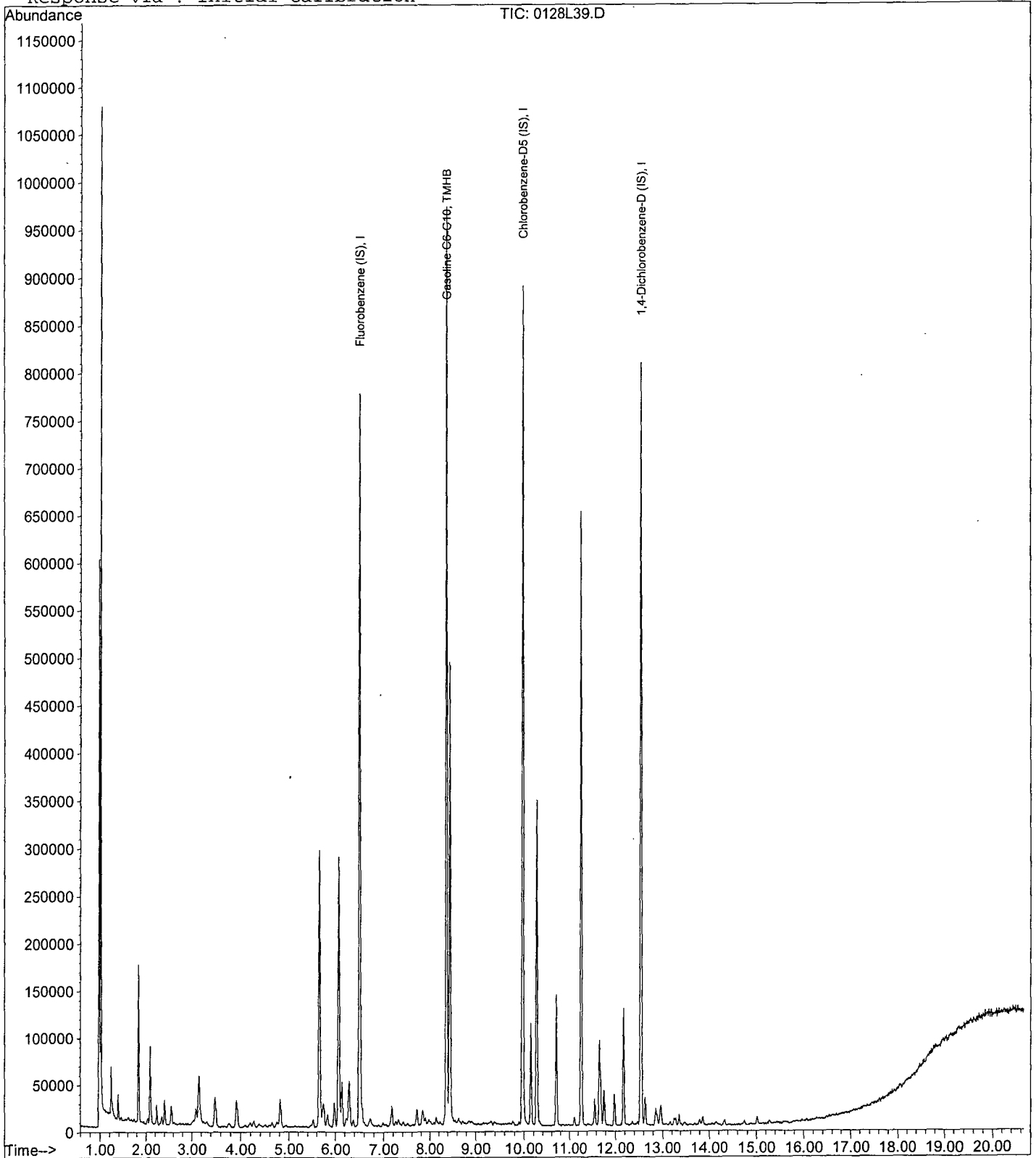
Data File : M:\LOKI\DATA\190128\0128L39.D  
Acq On : 29 Jan 19 8:12  
Sample : Ending CCV 300ug/L 01/28/19  
Misc : IS&S 11/8/18

Vial: 38  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 30 12:53 2019

Quant Results File: LGAS0122.RES

Method : M:\LOKI\DATA\190128\LGAS0122.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Thu Jan 24 09:25:37 2019  
Response via : Initial Calibration





VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 7

Continuing Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: \_\_\_\_\_

SDG No: \_\_\_\_\_  
Date Analyzed: 01/30/19  
Instrument: Loki  
Initial Cal. Date: 01/22/19  
Data File: 0130L09.D

	Compound	MEAN	CCRF	%D	%Drift
1	I Fluorobenzene (IS)	ISTD			I
2	TMHB Gasoline C6-C10	3.937	1.440	63	TMHBL 3.3
3	I Chlorobenzene-D5 (IS)	ISTD			I
4	I 1,4-Dichlorobenzene-D (IS)	ISTD			I
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36					
37					
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39					
40	Average			63.0	

VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 7

Continuing Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: \_\_\_\_\_

SDG No: \_\_\_\_\_  
Date Analyzed: 01/30/19  
Instrument: Loki  
Initial Cal. Date: 01/28/19  
Data File: 0130L09.D

	Compound	MEAN	CCRF	%D	%Drift
1	I Fluorobenzene (IS)	ISTD			I
2	S Dibromofluoromethane(S)	0.4915	0.5025	2.2	S
3	S 1,2-DCA-D4(S)	0.5719	0.5577	2.5	S
4	I Chlorobenzene-D5 (IS)	ISTD			I
5	S Toluene-D8(S)	2.502	2.235	11	S
6	S 4-Bromofluorobenzene(S)	0.7496	0.8443	13	S
7	I 1,4-Dichlorobenzene-D (IS)	ISTD			I
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39					
40	Average			7.2	

Quantitation Report (QT Reviewed)

Data File : M:\LOKI\DATA\190128\0130L09.D Vial: 8  
 Acq On : 30 Jan 19 12:03 Operator: PM, DG, SV, CMM, KV  
 Sample : 190130A CCV 300ug/L Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Jan 30 12:54 2019 Quant Results File: LGAS0122.RES

Quant Method : M:\LOKI\DATA\190128\LGAS0122.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Thu Jan 24 09:25:37 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	713342	25.0000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.97	TIC	837453	25.0000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.54	TIC	850129	25.0000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Gasoline C6-C10	8.37	TIC	12326057m	290.1181	ppb	100

Quantitation Report (Not Reviewed)

Data File : M:\LOKI\DATA\190128\0130L09.D  
 Acq On : 30 Jan 19 12:03  
 Sample : 190130A CCV 300ug/L  
 Misc : IS&S 11/8/18

Vial: 8  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 31 13:15 2019

Quant Results File: L0128SUR.RES

Quant Method : M:\LOKI\DATA\190128\L0128SUR.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	349632	25.0000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	294784	25.0000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.54	152	148736	25.0000	ppb	0.00
System Monitoring Compounds						
2) Dibromofluoromethane(S)	5.65	111	175685	25.5569	ppb	0.00
Spiked Amount	25.000					
					Recovery = 102.228%	
3) 1,2-DCA-D4(S)	6.07	65	194978	24.3781	ppb	0.00
Spiked Amount	25.000					
					Recovery = 97.512%	
5) Toluene-D8(S)	8.37	98	658719	22.3275	ppb	0.00
Spiked Amount	25.000					
					Recovery = 89.308%	
6) 4-Bromofluorobenzene(S)	11.26	95	248885	28.1574	ppb	0.00
Spiked Amount	25.000					
					Recovery = 112.628%	

Target Compounds Qvalue

Quantitation Report

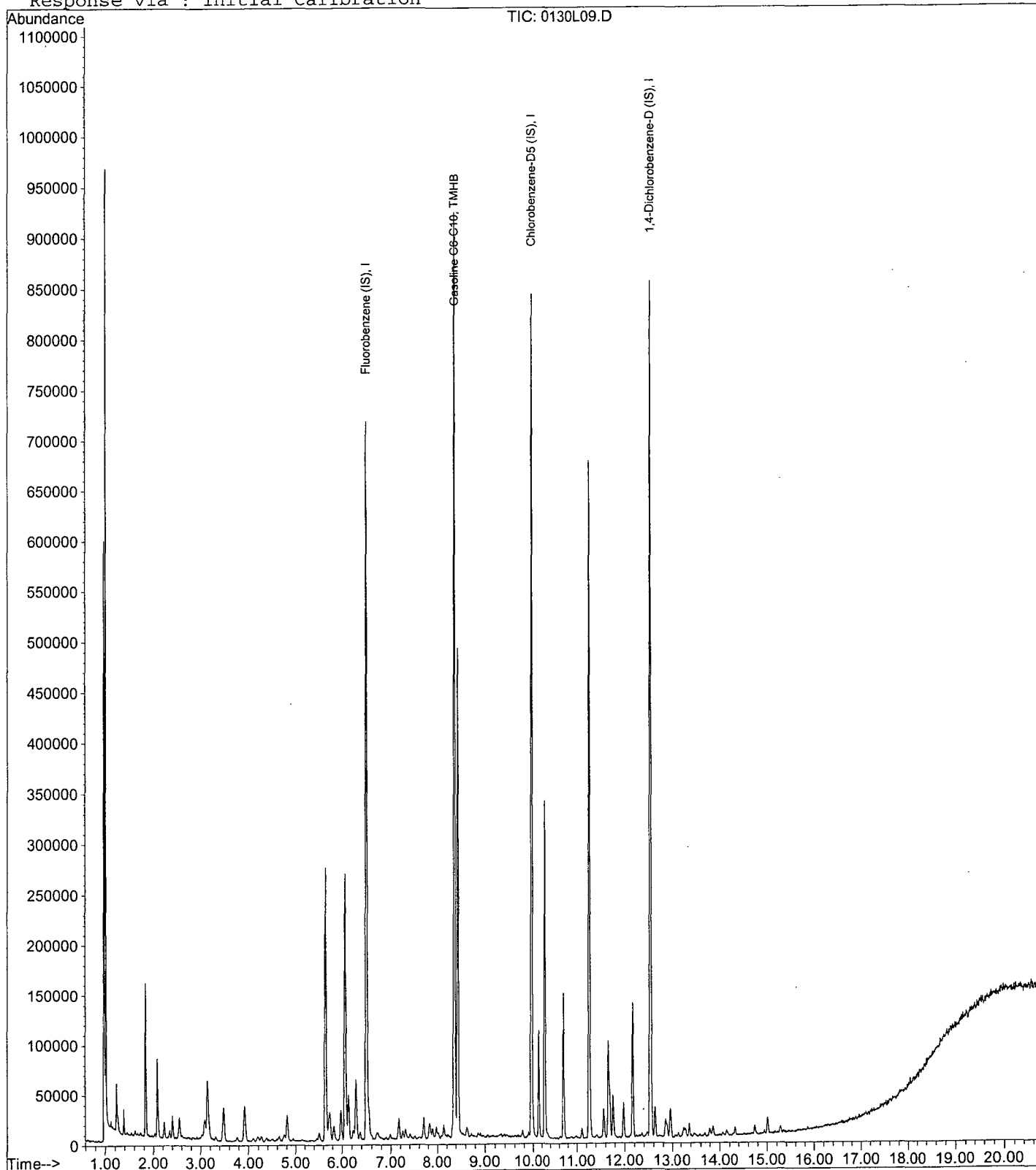
Data File : M:\LOKI\DATA\190128\0130L09.D  
Acq On : 30 Jan 19 12:03  
Sample : 190130A CCV 300ug/L  
Misc : IS&S 11/8/18

Vial: 8  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 30 12:54 2019

Quant Results File: LGAS0122.RES

Method : M:\LOKI\DATA\190128\LGAS0122.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Thu Jan 24 09:25:37 2019  
Response via : Initial Calibration



VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 7

Ending Continuing Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: \_\_\_\_\_

SDG No: \_\_\_\_\_  
Date Analyzed: 01/30/19  
Instrument: Loki  
Initial Cal. Date: 01/28/19  
Data File: 0130L29.D

	Compound	MEAN	CCRF	%D	%Drift
1	Fluorobenzene (IS)	ISTD			
2	TMHB Gasoline C6-C10	3.937	1.446	63	TMHBL 2.2
3	Chlorobenzene-D5 (IS)	ISTD			
4	1,4-Dichlorobenzene-D (IS)	ISTD			
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39					
40	Average			63.0	

VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 7

Ending Continuing Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: \_\_\_\_\_

SDG No: \_\_\_\_\_  
Date Analyzed: 01/30/19  
Instrument: Loki  
Initial Cal. Date: 01/28/19  
Data File: 0130L29.D

		Compound	MEAN	CCRF	%D	%Drift
1	I	Fluorobenzene (IS)	ISTD			I
2	S	Dibromofluoromethane(S)	0.4915	0.4870	0.93	S
3	S	1,2-DCA-D4(S)	0.5719	0.5481	4.2	S
4	I	Chlorobenzene-D5 (IS)	ISTD			I
5	S	Toluene-D8(S)	2.502	2.206	12	S
6	S	4-Bromofluorobenzene(S)	0.7496	0.8116	8.3	S
7	I	1,4-Dichlorobenzene-D (IS)	ISTD			I
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						
33						
34						
35						
36						
37						
38						
39						
40		Average			6.4	

Data File : M:\LOKI\DATA\190128\0130L29.D  
 Acq On : 30 Jan 19 21:36  
 Sample : Ending CCV 300ug/L 01/30/19  
 Misc : IS&S 11/8/18

Vial: 28  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 31 13:17 2019

Quant Results File: LGAS0122.RES

Quant Method : M:\LOKI\DATA\190128\LGAS0122.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Thu Jan 24 09:25:37 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	656132	25.0000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.97	TIC	789847	25.0000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.53	TIC	817233	25.0000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Gasoline C6-C10	8.37	TIC	11386493m	293.4787	ppb	100



Data File : M:\LOKI\DATA\190128\0130L29.D  
 Acq On : 30 Jan 19 21:36  
 Sample : Ending CCV 300ug/L 01/30/19  
 Misc : IS&S 11/8/18

Vial: 28  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 31 8:57 2019

Quant Results File: L0128SUR.RES

Quant Method : M:\LOKI\DATA\190128\L0128SUR.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	327680	25.0000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	282304	25.0000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.53	152	148224	25.0000	ppb	0.00

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Dibromofluoromethane(S)	5.65	111	159567	24.7672	ppb	0.00
Spiked Amount	25.000					
					Recovery =	99.068%
3) 1,2-DCA-D4(S)	6.07	65	179602	23.9600	ppb	0.00
Spiked Amount	25.000				Recovery =	95.840%
5) Toluene-D8(S)	8.37	98	622890	22.0464	ppb	0.00
Spiked Amount	25.000				Recovery =	88.184%
6) 4-Bromofluorobenzene(S)	11.26	95	229127	27.0680	ppb	0.00
Spiked Amount	25.000				Recovery =	108.272%

Target Compounds Qvalue

(#) = qualifier out of range (m) = manual integration

Quantitation Report

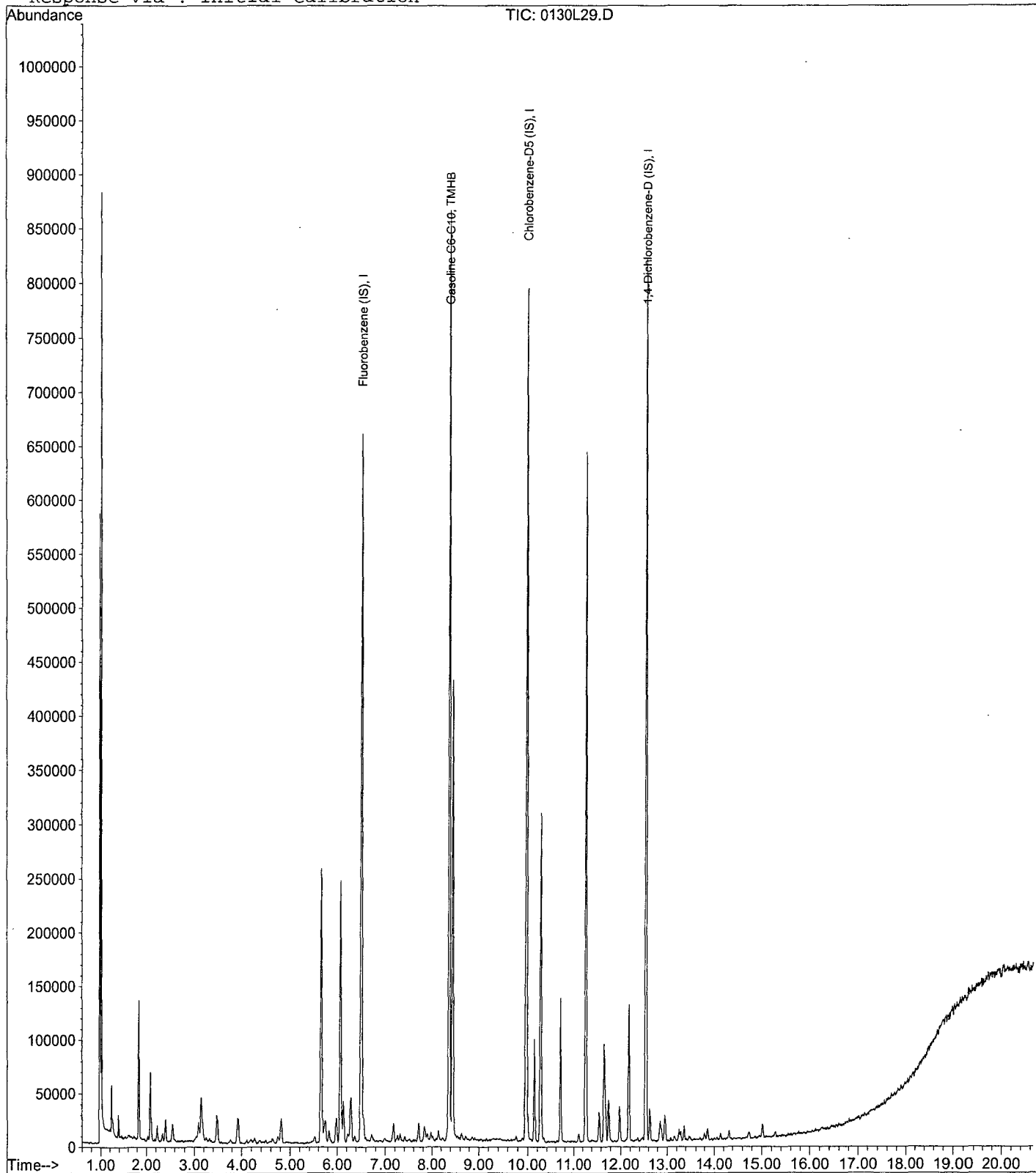
Data File : M:\LOKI\DATA\190128\0130L29.D  
Acq On : 30 Jan 19 21:36  
Sample : Ending CCV 300ug/L 01/30/19  
Misc : IS&S 11/8/18

Vial: 28  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 31 13:17 2019

Quant Results File: LGAS0122.RES

Method : M:\LOKI\DATA\190128\LGAS0122.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Thu Jan 24 09:25:37 2019  
Response via : Initial Calibration



**ORGANICS**  
**Raw Data**

Data File : M:\LOKI\DATA\190128\0128L34.D  
 Acq On : 29 Jan 19 5:49  
 Sample : AZ85642W01  
 Misc : IS&S 11/8/18

Vial: 33  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 30 12:52 2019

Quant Results File: LGAS0122.RES

Quant Method : M:\LOKI\DATA\190128\LGAS0122.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Thu Jan 24 09:25:37 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	781182	25.0000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.97	TIC	880497	25.0000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.54	TIC	756533	25.0000	ppb	0.00

System Monitoring Compounds

Target Compounds Qvalue

Data File : M:\LOKI\DATA\190128\0128L34.D  
 Acq On : 29 Jan 19 5:49  
 Sample : AZ85642W01  
 Misc : IS&S 11/8/18

Vial: 33  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 31 14:06 2019

Quant Results File: L0128SUR.RES

Quant Method : M:\LOKI\DATA\190128\L0128SUR.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	377280	25.0000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	300928	25.0000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.54	152	131392	25.0000	ppb	0.00

System Monitoring Compounds

2) Dibromofluoromethane(S)	5.65	111	196682	26.5146	ppb	0.00
Spiked Amount	25.000					
					Recovery = 106.060%	
3) 1,2-DCA-D4(S)	6.07	65	218537	25.3213	ppb	0.00
Spiked Amount	25.000					
					Recovery = 101.284%	
5) Toluene-D8(S)	8.37	98	702466	23.3241	ppb	0.00
Spiked Amount	25.000					
					Recovery = 93.296%	
6) 4-Bromofluorobenzene(S)	11.26	95	239800	26.5756	ppb	0.00
Spiked Amount	25.000					
					Recovery = 106.304%	

Target Compounds

Qvalue

(#) = qualifier out of range (m) = manual integration

Quantitation Report

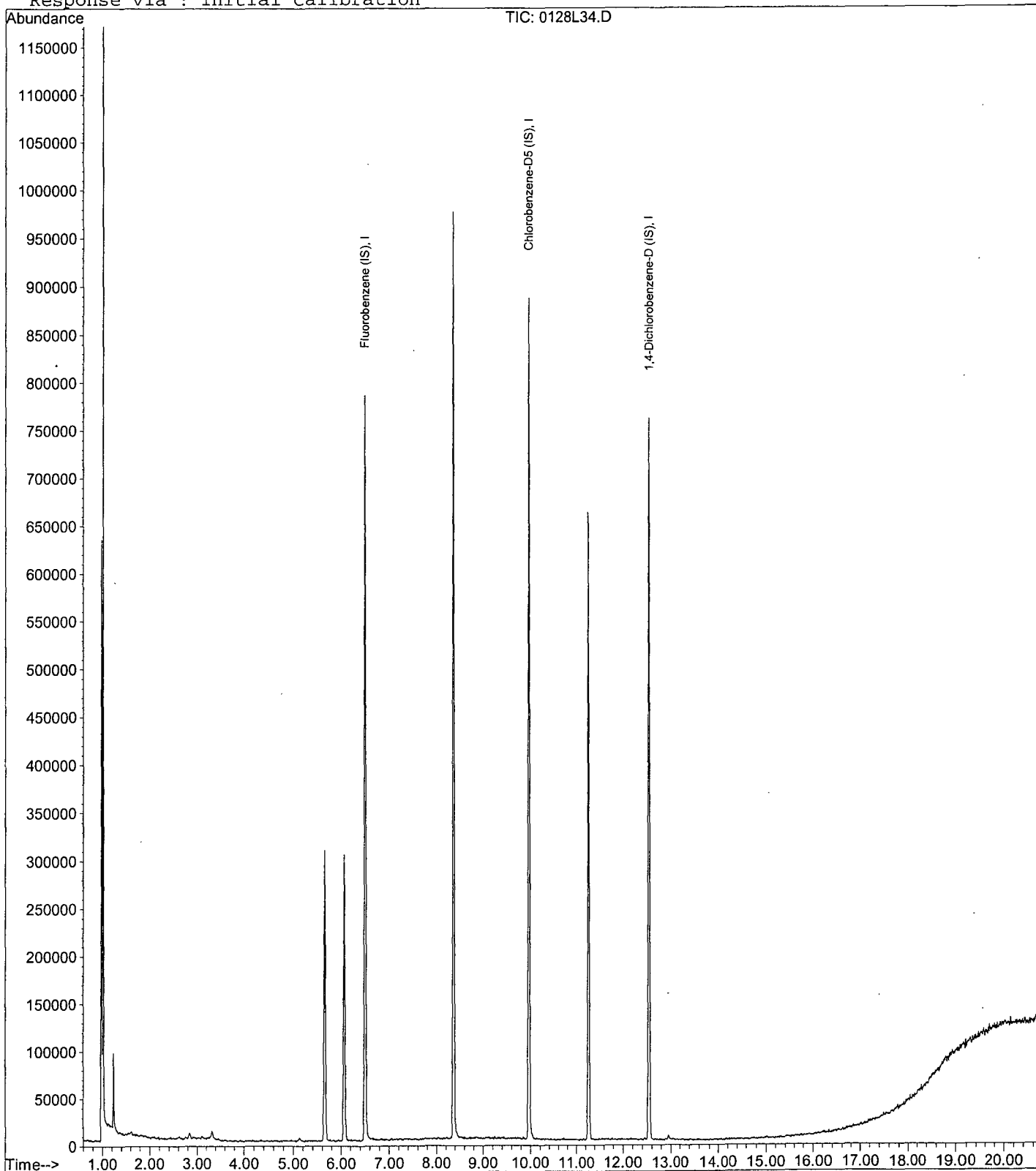
Data File : M:\LOKI\DATA\190128\0128L34.D  
Acq On : 29 Jan 19 5:49  
Sample : AZ85642W01  
Misc : IS&S 11/8/18

Vial: 33  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 30 12:52 2019

Quant Results File: LGAS0122.RES

Method : M:\LOKI\DATA\190128\LGAS0122.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Thu Jan 24 09:25:37 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190128\0130L21.D  
 Acq On : 30 Jan 19 17:47  
 Sample : AZ85643W01  
 Misc : IS&S 11/8/18

Vial: 20  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 31 9:01 2019

Quant Results File: LGAS0122.RES

Quant Method : M:\LOKI\DATA\190128\LGAS0122.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Thu Jan 24 09:25:37 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	657078	25.0000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.97	TIC	779440	25.0000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.53	TIC	775843	25.0000	ppb	0.00

System Monitoring Compounds

Target Compounds Qvalue

Data File : M:\LOKI\DATA\190128\0130L21.D  
 Acq On : 30 Jan 19 17:47  
 Sample : AZ85643W01  
 Misc : IS&S 11/8/18

Vial: 20  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 31 8:57 2019

Quant Results File: L0128SUR.RES

Quant Method : M:\LOKI\DATA\190128\L0128SUR.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	325504	25.0000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	276480	25.0000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.54	152	136128	25.0000	ppb	0.00

System Monitoring Compounds

2) Dibromofluoromethane(S)	5.65	111	164511	25.7053	ppb	0.00
Spiked Amount				25.000		
					Recovery = 102.820%	
3) 1,2-DCA-D4(S)	6.07	65	186728	25.0772	ppb	0.00
Spiked Amount				25.000		
					Recovery = 100.308%	
5) Toluene-D8(S)	8.37	98	619641	22.3934	ppb	0.00
Spiked Amount				25.000		
					Recovery = 89.572%	
6) 4-Bromofluorobenzene(S)	11.26	95	227072	27.3903	ppb	0.00
Spiked Amount				25.000		
					Recovery = 109.560%	

Target Compounds

Qvalue

(#) = qualifier out of range (m) = manual integration



Quantitation Report

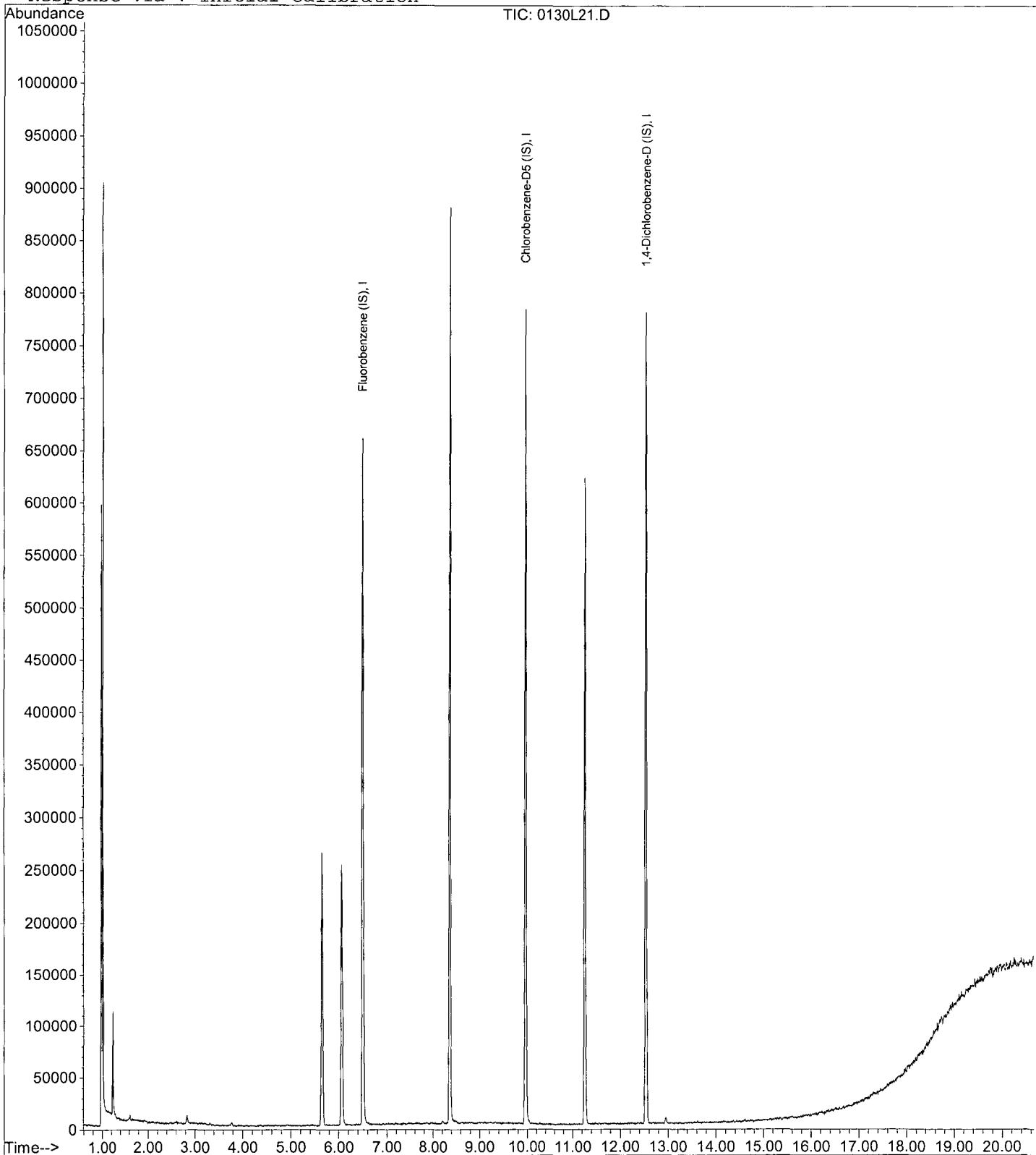
Data File : M:\LOKI\DATA\190128\0130L21.D  
Acq On : 30 Jan 19 17:47  
Sample : AZ85643W01  
Misc : IS&S 11/8/18

Vial: 20  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 31 9:01 2019

Quant Results File: LGAS0122.RES

Method : M:\LOKI\DATA\190128\LGAS0122.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Thu Jan 24 09:25:37 2019  
Response via : Initial Calibration



Quantitation Report

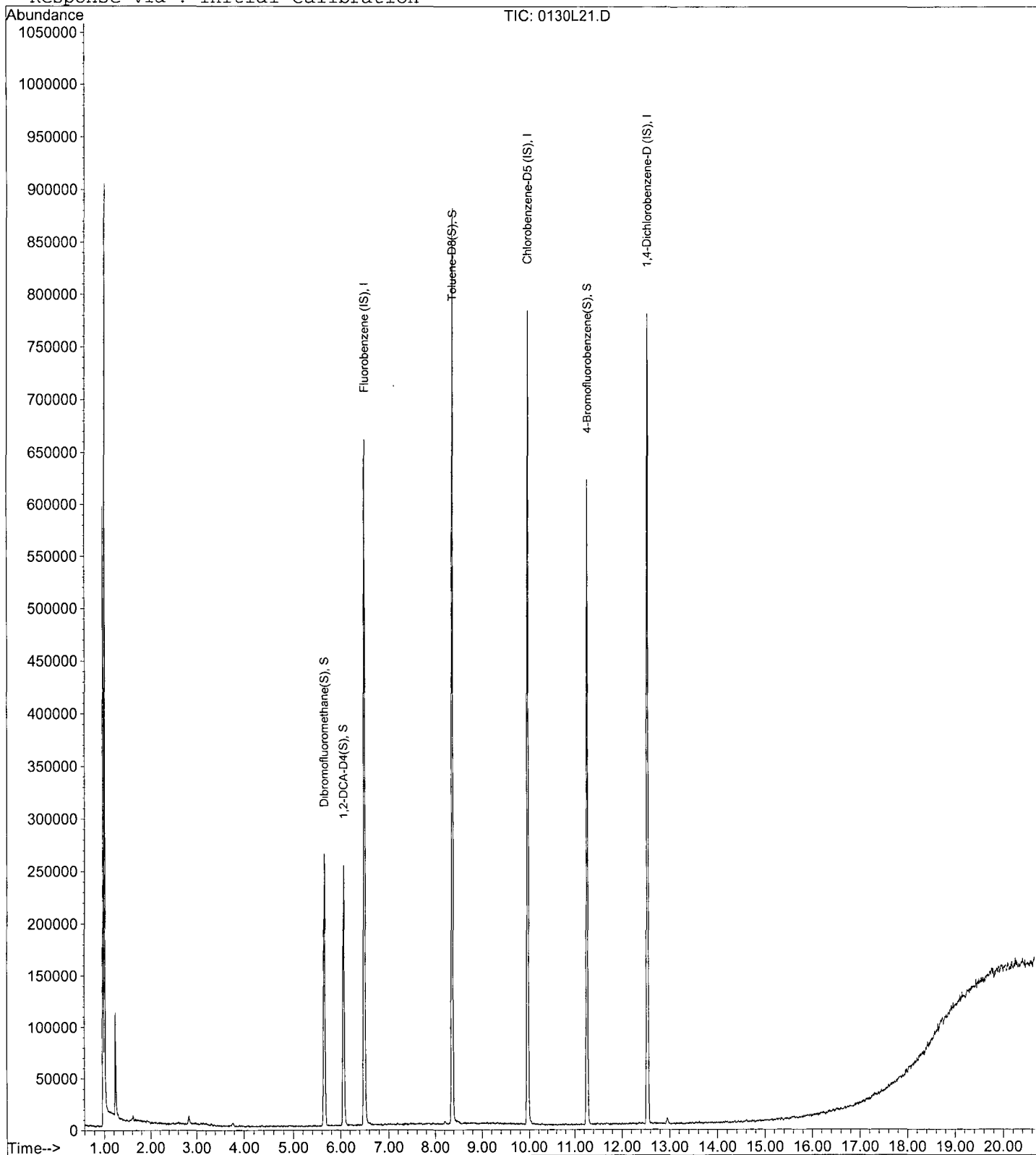
Data File : M:\LOKI\DATA\190128\0130L21.D  
Acq On : 30 Jan 19 17:47  
Sample : AZ85643W01  
Misc : IS&S 11/8/18

Vial: 20  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 31 8:57 2019

Quant Results File: L0128SUR.RES

Method : M:\LOKI\DATA\190128\L0128SUR.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Jan 29 09:06:22 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190128\0128L35.D Vial: 34  
 Acq On : 29 Jan 19 6:18 Operator: PM, DG, SV, CMM, KV  
 Sample : AZ85644W01 Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Jan 30 12:53 2019 Quant Results File: LGAS0122.RES

Quant Method : M:\LOKI\DATA\190128\LGAS0122.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Thu Jan 24 09:25:37 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	770077	25.0000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.97	TIC	856576	25.0000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.54	TIC	738248	25.0000	ppb	0.00

System Monitoring Compounds

Target Compounds Qvalue

Data File : M:\LOKI\DATA\190128\0128L35.D  
 Acq On : 29 Jan 19 6:18  
 Sample : AZ85644W01  
 Misc : IS&S 11/8/18

Vial: 34  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 31 14:06 2019

Quant Results File: L0128SUR.RES

Quant Method : M:\LOKI\DATA\190128\L0128SUR.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	376832	25.0000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	294656	25.0000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.54	152	127824	25.0000	ppb	0.00

System Monitoring Compounds

2) Dibromofluoromethane(S)	5.65	111	188196	25.4008	ppb	0.00
Spiked Amount				25.000		
				Recovery =	101.604%	
3) 1,2-DCA-D4(S)	6.07	65	216893	25.1607	ppb	0.00
Spiked Amount				25.000		
				Recovery =	100.644%	
5) Toluene-D8(S)	8.37	98	693172	23.5055	ppb	0.00
Spiked Amount				25.000		
				Recovery =	94.020%	
6) 4-Bromofluorobenzene(S)	11.27	95	238533	26.9979	ppb	0.00
Spiked Amount				25.000		
				Recovery =	107.992%	

Target Compounds

Qvalue

Quantitation Report

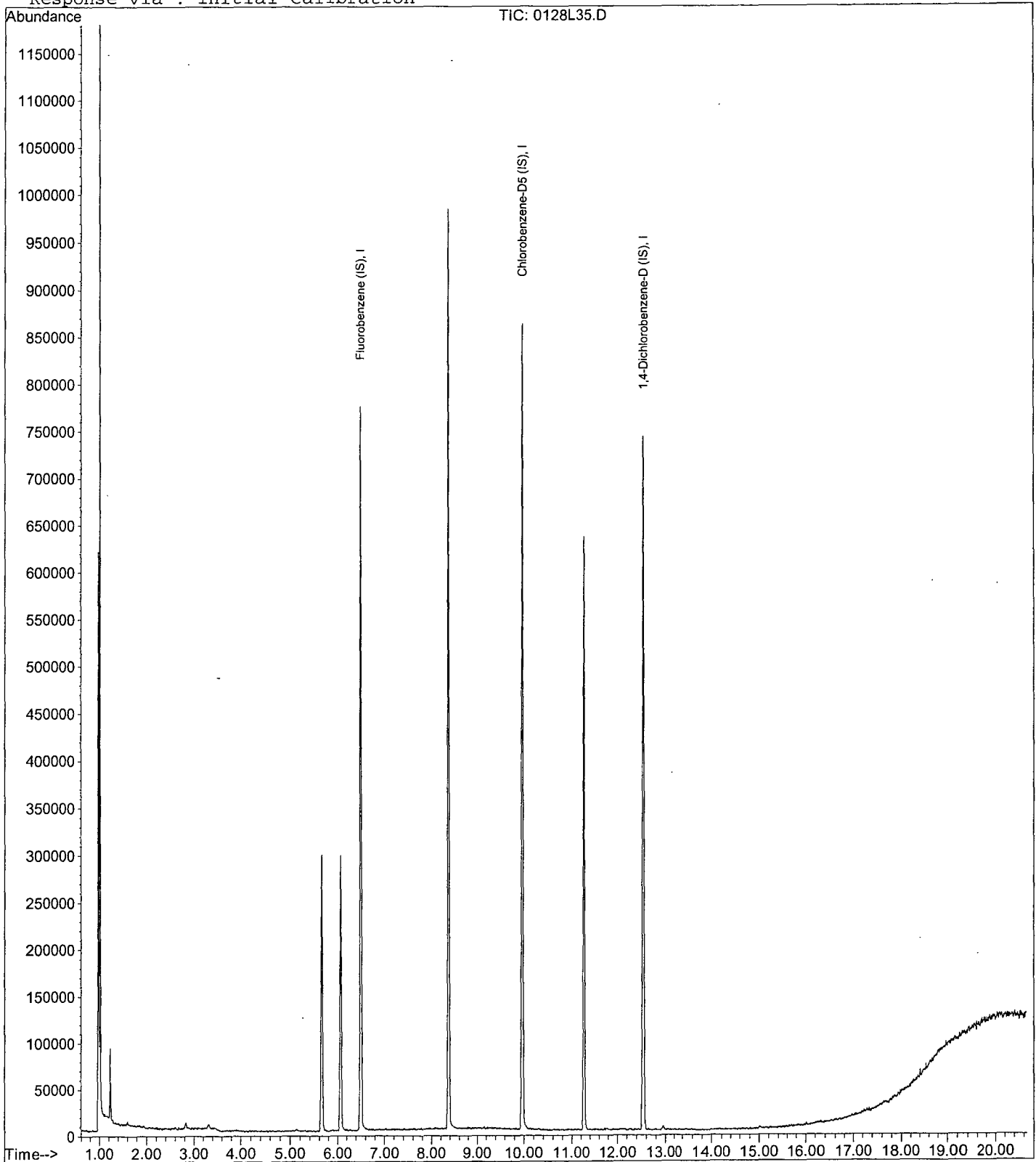
Data File : M:\LOKI\DATA\190128\0128L35.D  
Acq On : 29 Jan 19 6:18  
Sample : AZ85644W01  
Misc : IS&S 11/8/18

Vial: 34  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 30 12:53 2019

Quant Results File: LGAS0122.RES

Method : M:\LOKI\DATA\190128\LGAS0122.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Thu Jan 24 09:25:37 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190128\0128L23.D  
 Acq On : 29 Jan 19 00:35  
 Sample : AZ85645W01  
 Misc : IS&S 11/8/18

Vial: 22  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 30 12:49 2019

Quant Results File: LGAS0122.RES

Quant Method : M:\LOKI\DATA\190128\LGAS0122.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Thu Jan 24 09:25:37 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	883350	25.0000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.97	TIC	915168	25.0000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.54	TIC	683987	25.0000	ppb	0.00

System Monitoring Compounds

Target Compounds Qvalue

Quantitation Report (Not Reviewed)

Data File : M:\LOKI\DATA\190128\0128L23.D  
 Acq On : 29 Jan 19 00:35  
 Sample : AZ85645W01  
 Misc : IS&S 11/8/18

Vial: 22  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 31 14:06 2019

Quant Results File: L0128SUR.RES

Quant Method : M:\LOKI\DATA\190128\L0128SUR.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	426944	25.0000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	313088	25.0000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.54	152	118448	25.0000	ppb	0.00
System Monitoring Compounds						
2) Dibromofluoromethane(S)	5.65	111	198430	23.6385	ppb	0.00
Spiked Amount	25.000		Recovery	=	94.556%	
3) 1,2-DCA-D4(S)	6.07	65	227960	23.3406	ppb	0.00
Spiked Amount	25.000		Recovery	=	93.364%	
5) Toluene-D8(S)	8.37	98	726807	23.1951	ppb	0.00
Spiked Amount	25.000		Recovery	=	92.780%	
6) 4-Bromofluorobenzene(S)	11.26	95	232647	24.7815	ppb	0.00
Spiked Amount	25.000		Recovery	=	99.128%	

Target Compounds

Qvalue

Quantitation Report

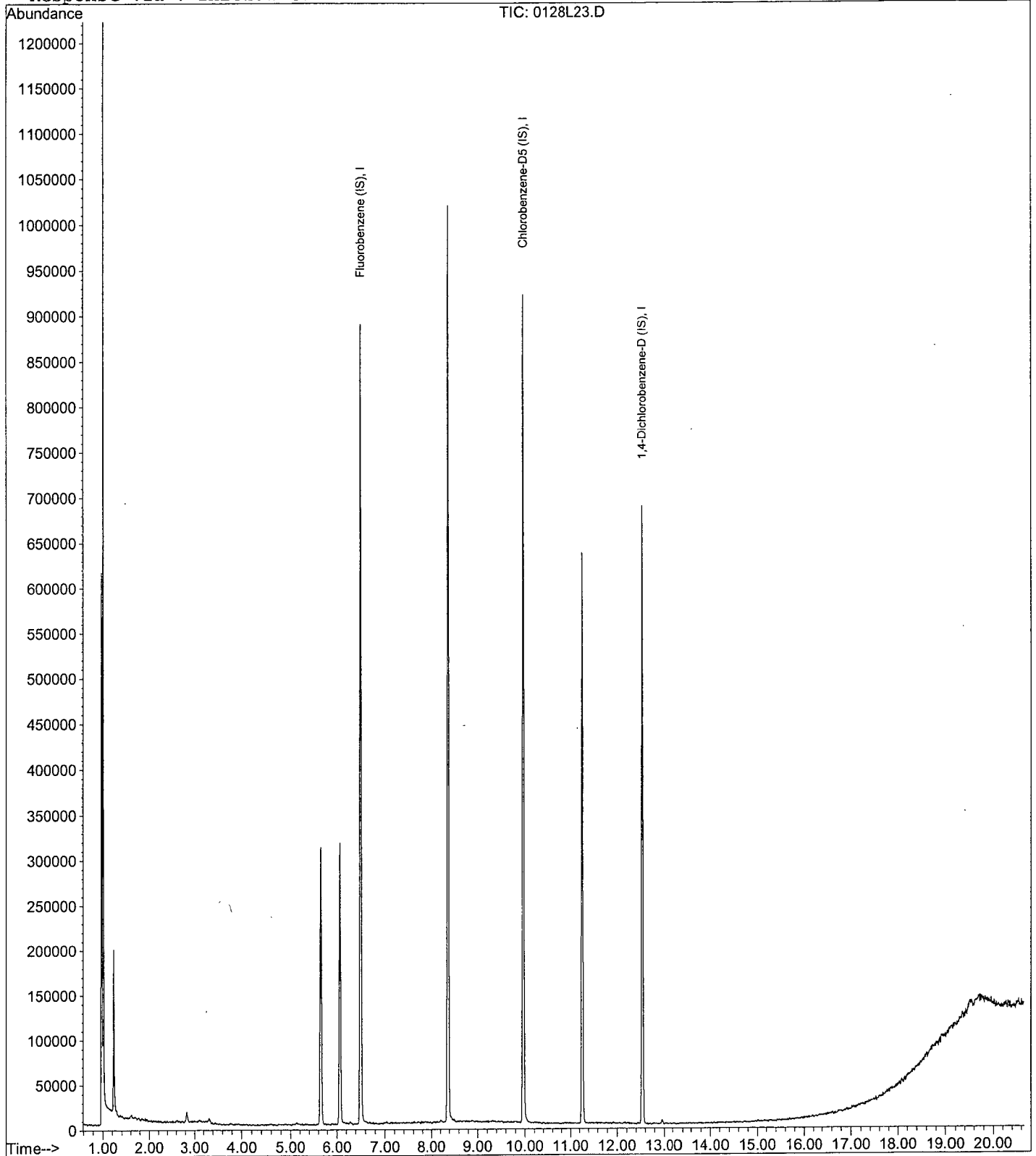
Data File : M:\LOKI\DATA\190128\0128L23.D  
Acq On : 29 Jan 19 00:35  
Sample : AZ85645W01  
Misc : IS&S 11/8/18

Vial: 22  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 30 12:49 2019

Quant Results File: LGAS0122.RES

Method : M:\LOKI\DATA\190128\LGAS0122.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Thu Jan 24 09:25:37 2019  
Response via : Initial Calibration





Data File : M:\LOKI\DATA\190128\0128L36.D  
 Acq On : 29 Jan 19 6:46  
 Sample : AZ85646W01  
 Misc : IS&S 11/8/18

Vial: 35  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 30 12:53 2019

Quant Results File: LGAS0122.RES

Quant Method : M:\LOKI\DATA\190128\LGAS0122.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Thu Jan 24 09:25:37 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	792366	25.0000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.97	TIC	888928	25.0000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.53	TIC	743635	25.0000	ppb	0.00

System Monitoring Compounds

Target Compounds Qvalue

Data File : M:\LOKI\DATA\190128\0128L36.D  
 Acq On : 29 Jan 19 6:46  
 Sample : AZ85646W01  
 Misc : IS&S 11/8/18

Vial: 35  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 31 14:06 2019

Quant Results File: L0128SUR.RES

Quant Method : M:\LOKI\DATA\190128\L0128SUR.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	385536	25.0000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	307968	25.0000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.53	152	126504	25.0000	ppb	0.00

System Monitoring Compounds

2) Dibromofluoromethane(S)	5.65	111	188347	24.8472	ppb	0.00
Spiked Amount	25.000		Recovery	=	99.388%	
3) 1,2-DCA-D4(S)	6.07	65	211633	23.9963	ppb	0.00
Spiked Amount	25.000		Recovery	=	95.984%	
5) Toluene-D8(S)	8.37	98	678653	22.0184	ppb	0.00
Spiked Amount	25.000		Recovery	=	88.072%	
6) 4-Bromofluorobenzene(S)	11.26	95	235664	25.5202	ppb	0.00
Spiked Amount	25.000		Recovery	=	102.080%	

Target Compounds

Qvalue

Quantitation Report

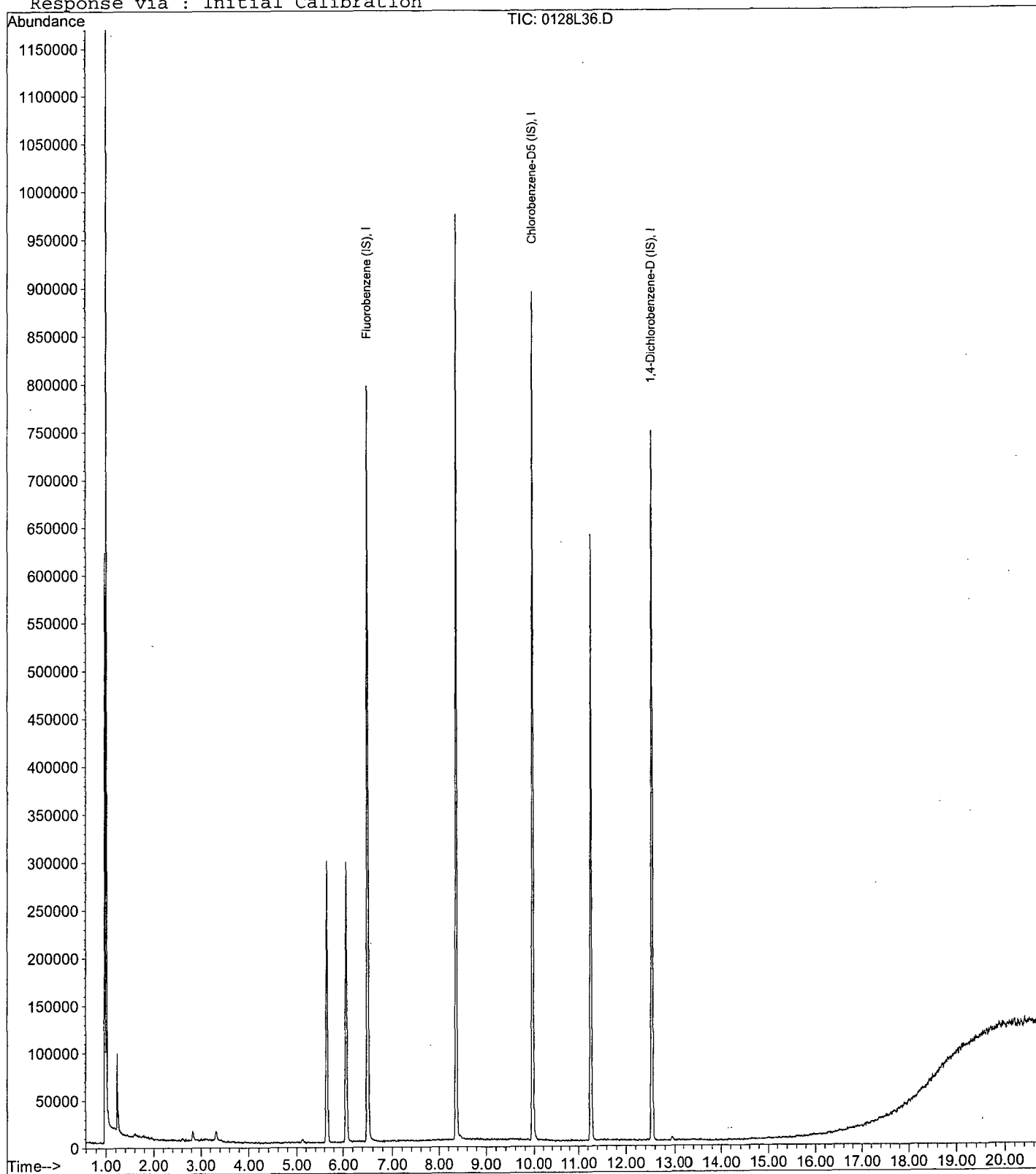
Data File : M:\LOKI\DATA\190128\0128L36.D  
Acq On : 29 Jan 19 6:46  
Sample : AZ85646W01  
Misc : IS&S 11/8/18

Vial: 35  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 30 12:53 2019

Quant Results File: LGAS0122.RES

Method : M:\LOKI\DATA\190128\LGAS0122.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Thu Jan 24 09:25:37 2019  
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : M:\LOKI\DATA\190128\0128L24.D  
 Acq On : 29 Jan 19 1:04  
 Sample : AZ85652W01  
 Misc : IS&S 11/8/18

Vial: 23  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 30 12:50 2019

Quant Results File: LGAS0122.RES

Quant Method : M:\LOKI\DATA\190128\LGAS0122.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Thu Jan 24 09:25:37 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	786900	25.0000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.97	TIC	854381	25.0000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.54	TIC	673731	25.0000	ppb	0.00

System Monitoring Compounds

Target Compounds Qvalue

Data File : M:\LOKI\DATA\190128\0128L24.D  
 Acq On : 29 Jan 19 1:04  
 Sample : AZ85652W01  
 Misc : IS&S 11/8/18

Vial: 23  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 31 14:06 2019

Quant Results File: L0128SUR.RES

Quant Method : M:\LOKI\DATA\190128\L0128SUR.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	387584	25.0000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	291904	25.0000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.54	152	119232	25.0000	ppb	0.00
System Monitoring Compounds						
2) Dibromofluoromethane(S)	5.65	111	193697	25.4180	ppb	0.00
Spiked Amount	25.000		Recovery	=	101.672%	
3) 1,2-DCA-D4(S)	6.07	65	220428	24.8614	ppb	0.00
Spiked Amount	25.000		Recovery	=	99.444%	
5) Toluene-D8(S)	8.37	98	698122	23.8965	ppb	0.00
Spiked Amount	25.000		Recovery	=	95.588%	
6) 4-Bromofluorobenzene(S)	11.26	95	222480	25.4184	ppb	0.00
Spiked Amount	25.000		Recovery	=	101.672%	

Target Compounds

Qvalue.

Quantitation Report

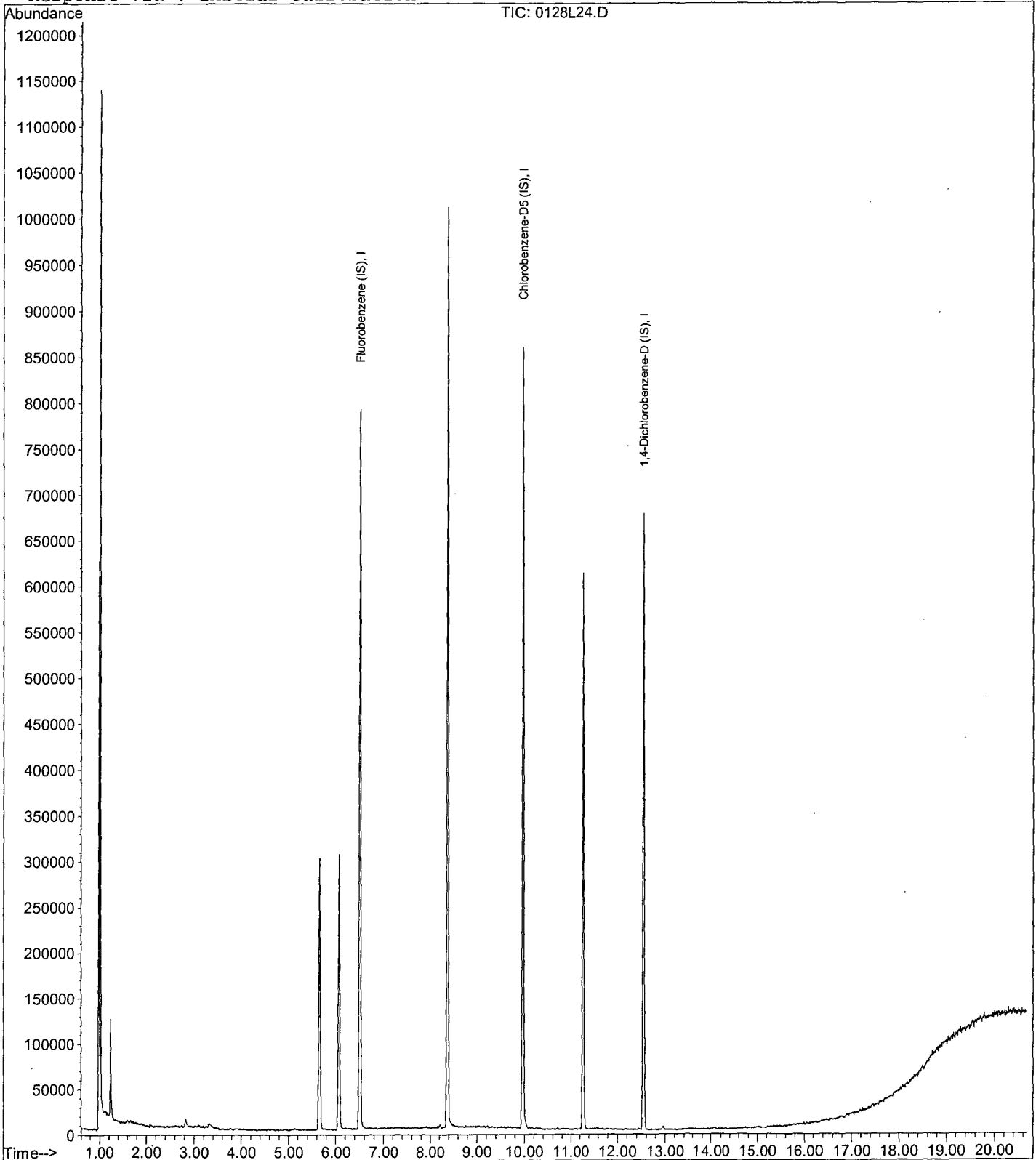
Data File : M:\LOKI\DATA\190128\0128L24.D  
Acq On : 29 Jan 19 1:04  
Sample : AZ85652W01  
Misc : IS&S 11/8/18

Vial: 23  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 30 12:50 2019

Quant Results File: LGAS0122.RES

Method : M:\LOKI\DATA\190128\LGAS0122.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Thu Jan 24 09:25:37 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190128\0128L37.D  
 Acq On : 29 Jan 19 7:15  
 Sample : AZ85653W01  
 Misc : IS&S 11/8/18

Vial: 36  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 30 12:53 2019

Quant Results File: LGAS0122.RES

Quant Method : M:\LOKI\DATA\190128\LGAS0122.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Thu Jan 24 09:25:37 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	748457	25.0000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.97	TIC	870014	25.0000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.53	TIC	752632	25.0000	ppb	0.00

System Monitoring Compounds

Target Compounds Qvalue

Data File : M:\LOKI\DATA\190128\0128L37.D  
 Acq On : 29 Jan 19 7:15  
 Sample : AZ85653W01  
 Misc : IS&S 11/8/18

Vial: 36  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 31 14:06 2019

Quant Results File: L0128SUR.RES

Quant Method : M:\LOKI\DATA\190128\L0128SUR.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	363200	25.0000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	297856	25.0000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.53	152	128072	25.0000	ppb	0.00
<b>System Monitoring Compounds</b>						
2) Dibromofluoromethane(S)	5.65	111	188199	26.3545	ppb	0.00
Spiked Amount				25.000		Recovery = 105.420%
3) 1,2-DCA-D4(S)	6.07	65	210782	25.3696	ppb	0.00
Spiked Amount				25.000		Recovery = 101.480%
5) Toluene-D8(S)	8.37	98	678048	22.7456	ppb	0.00
Spiked Amount				25.000		Recovery = 90.984%
6) 4-Bromofluorobenzene(S)	11.27	95	233007	26.0891	ppb	0.00
Spiked Amount				25.000		Recovery = 104.356%

Target Compounds

Qvalue



Quantitation Report

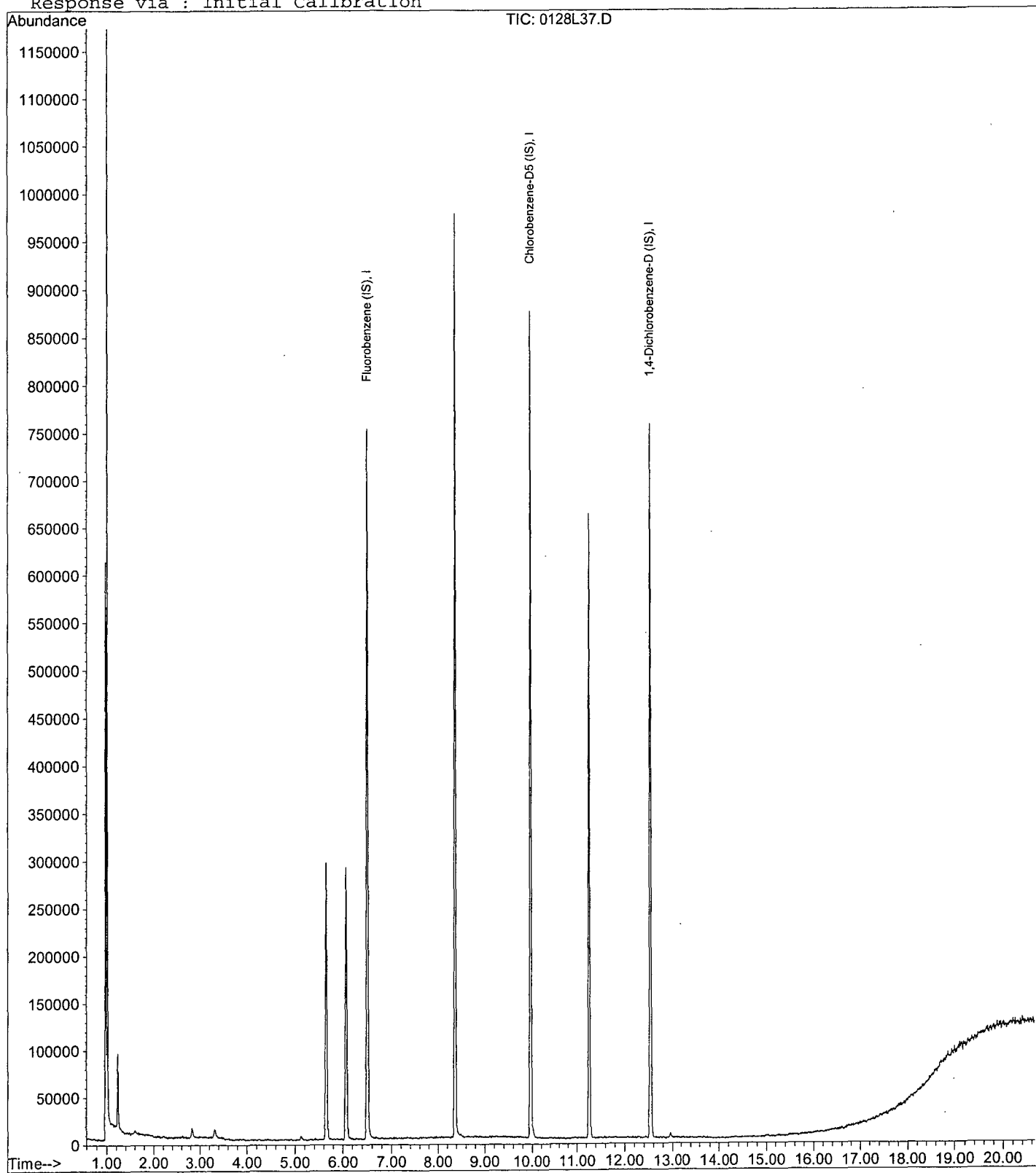
Data File : M:\LOKI\DATA\190128\0128L37.D  
Acq On : 29 Jan 19 7:15  
Sample : AZ85653W01  
Misc : IS&S 11/8/18

Vial: 36  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 30 12:53 2019

Quant Results File: LGAS0122.RES

Method : M:\LOKI\DATA\190128\LGAS0122.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Thu Jan 24 09:25:37 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190128\0128L22.D Vial: 21  
Acq On : 29 Jan 19 00:06 Operator: PM,DG,SV,CMM,KV  
Sample : 190128A blk Inst : Loki  
Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Jan 30 12:49 2019 Quant Results File: LGAS0122.RES

Quant Method : M:\LOKI\DATA\190128\LGAS0122.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Thu Jan 24 09:25:37 2019  
Response via : Initial Calibration  
DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	788659	25.0000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.97	TIC	858533	25.0000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.54	TIC	653653	25.0000	ppb	0.00

System Monitoring Compounds

Target Compounds Qvalue

Quantitation Report (Not Reviewed)

Data File : M:\LOKI\DATA\190128\0128L22.D  
 Acq On : 29 Jan 19 00:06  
 Sample : 190128A blk  
 Misc : IS&S 11/8/18

Vial: 21  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 31 14:06 2019

Quant Results File: L0128SUR.RES

Quant Method : M:\LOKI\DATA\190128\L0128SUR.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	381568	25.0000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	292096	25.0000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.53	152	111128	25.0000	ppb	0.00
<b>System Monitoring Compounds</b>						
2) Dibromofluoromethane(S)	5.65	111	188308	25.1004	ppb	0.00
Spiked Amount						Recovery = 100.400%
3) 1,2-DCA-D4(S)	6.07	65	215707	24.7125	ppb	0.00
Spiked Amount						Recovery = 98.852%
5) Toluene-D8(S)	8.37	98	687717	23.5249	ppb	0.00
Spiked Amount						Recovery = 94.100%
6) 4-Bromofluorobenzene(S)	11.27	95	216438	24.7118	ppb	0.00
Spiked Amount						Recovery = 98.848%
Target Compounds						Qvalue

Quantitation Report

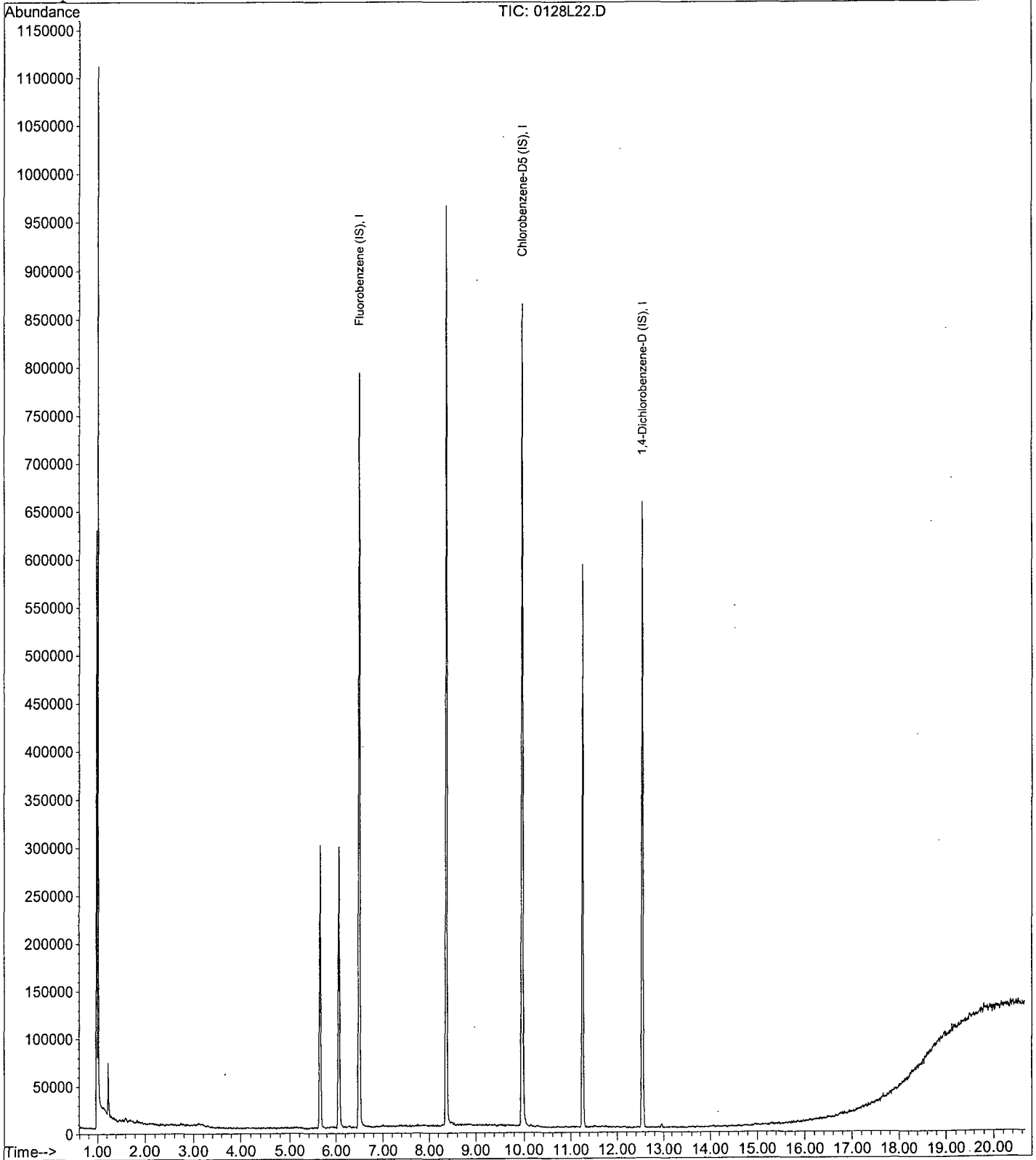
Data File : M:\LOKI\DATA\190128\0128L22.D  
Acq On : 29 Jan 19 00:06  
Sample : 190128A blk  
Misc : IS&S 11/8/18

Vial: 21  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 30 12:49 2019

Quant Results File: LGAS0122.RES

Method : M:\LOKI\DATA\190128\LGAS0122.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Thu Jan 24 09:25:37 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190128\0130L15.D  
 Acq On : 30 Jan 19 14:55  
 Sample : 190130A Blk  
 Misc : IS&S 11/8/18

Vial: 14  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 14 10:03 2019

Quant Results File: LGAS0122.RES

Quant Method : M:\LOKI\DATA\190128\LGAS0122.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Thu Jan 24 09:25:37 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	692907	25.000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.97	TIC	820857	25.000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.53	TIC	805885	25.000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Gasoline C6-C10	8.37	TIC	5418320m	-135.690	ppb	100

Data File : M:\LOKI\DATA\190128\0130L15.D  
 Acq On : 30 Jan 19 14:55  
 Sample : 190130A Blk  
 Misc : IS&S 11/8/18

Vial: 14  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 14 10:04 2019

Quant Results File: L0128SUR.RES

Quant Method : M:\LOKI\DATA\190128\L0128SUR.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	343168	25.000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	294208	25.000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.53	152	140288	25.000	ppb	0.00

System Monitoring Compounds

2) Dibromofluoromethane(S)	5.65	111	174180	25.815	ppb	0.00
Spiked Amount				25.000		
				Recovery = 103.260%		
3) 1,2-DCA-D4(S)	6.07	65	193196	24.610	ppb	0.00
Spiked Amount				25.000		
				Recovery = 98.440%		
5) Toluene-D8(S)	8.37	98	652790	22.170	ppb	0.00
Spiked Amount				25.000		
				Recovery = 88.680%		
6) 4-Bromofluorobenzene(S)	11.26	95	232325	26.335	ppb	0.00
Spiked Amount				25.000		
				Recovery = 105.340%		

Target Compounds

Qvalue

Quantitation Report

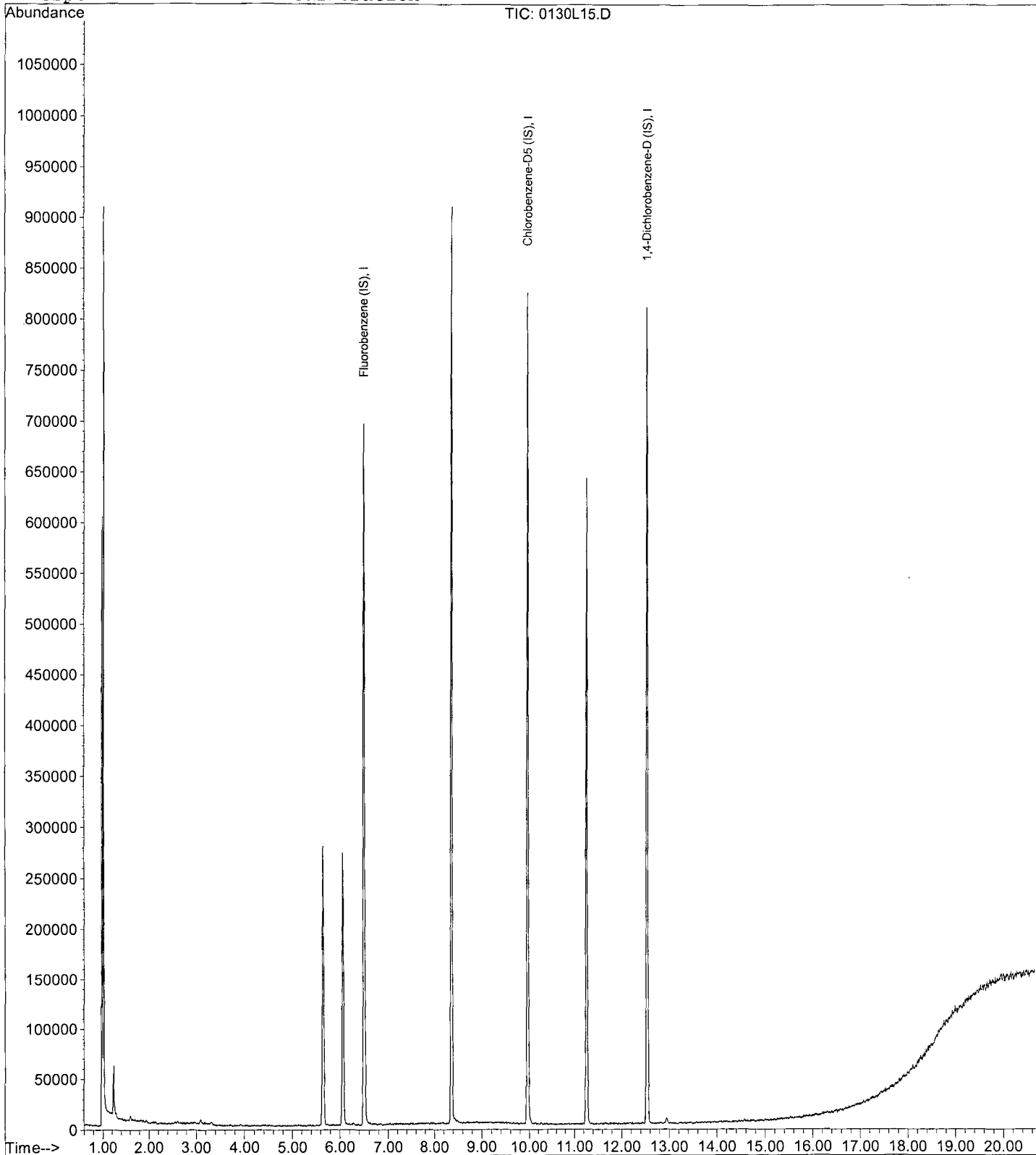
Data File : M:\LOKI\DATA\190128\0130L15.D  
Acq On : 30 Jan 19 14:55  
Sample : 190130A Blk  
Misc : IS&S 11/8/18

Vial: 14  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 14 10:03 2019

Quant Results File: LGAS0122.RES

Method : M:\LOKI\DATA\190128\LGAS0122.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Thu Jan 24 09:25:37 2019  
Response via : Initial Calibration



Quantitation Report

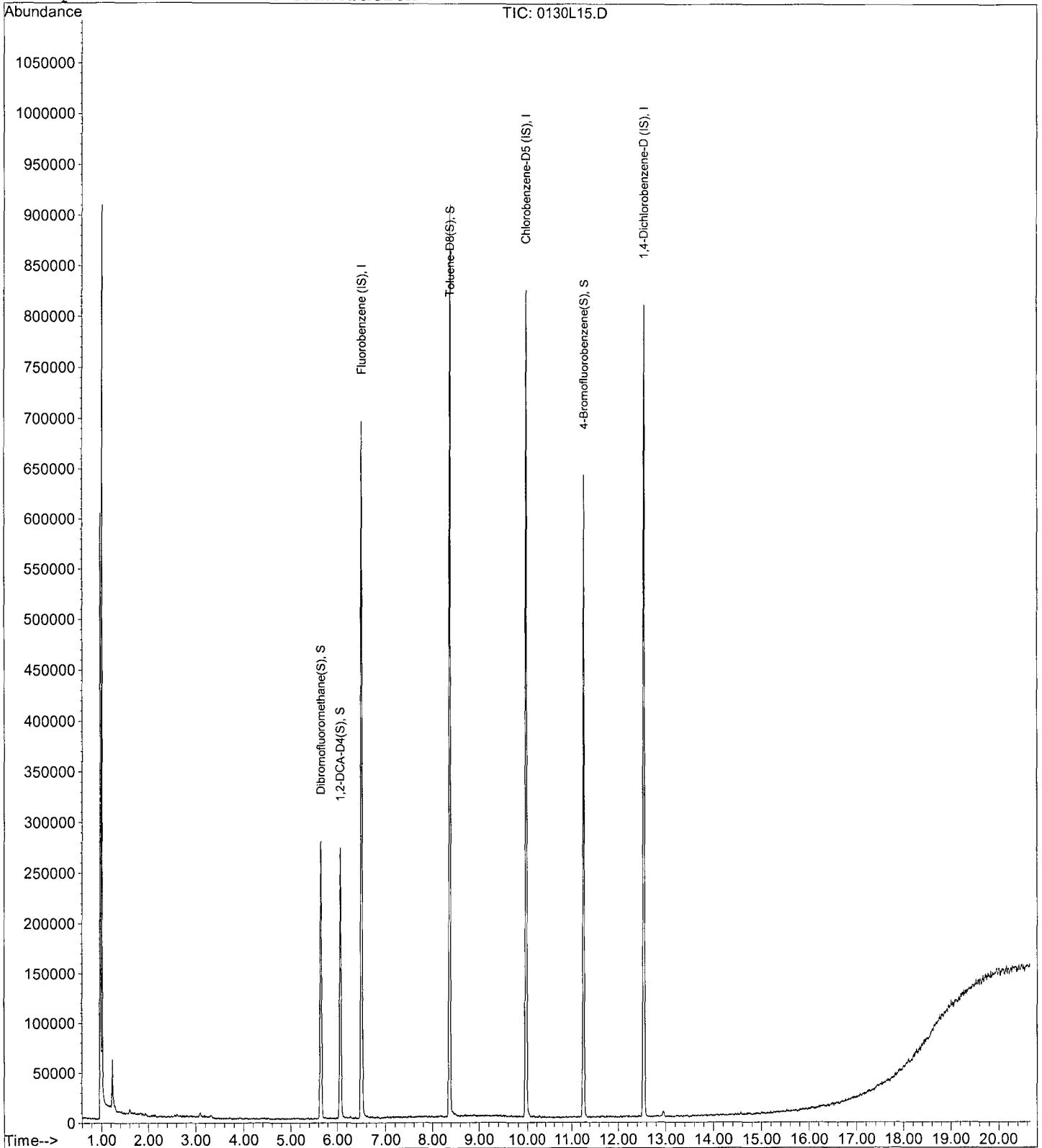
Data File : M:\LOKI\DATA\190128\0130L15.D  
Acq On : 30 Jan 19 14:55  
Sample : 190130A Blk  
Misc : IS&S 11/8/18

Vial: 14  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 14 10:04 2019

Quant Results File: L0128SUR.RES

Method : M:\LOKI\DATA\190128\L0128SUR.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Jan 29 09:06:22 2019  
Response via : Initial Calibration





Quantitation Report (QT Reviewed)

Data File : M:\LOKI\DATA\190128\0128L19.D  
 Acq On : 28 Jan 19 22:41  
 Sample : 190128A LCS 300ug/L  
 Misc : IS&S 11/8/18

Vial: 18  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 30 12:56 2019

Quant Results File: LGAS0122.RES

Quant Method : M:\LOKI\DATA\190128\LGAS0122.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Thu Jan 24 09:25:37 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	926371	25.0000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.97	TIC	993135	25.0000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.53	TIC	782044	25.0000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Gasoline C6-C10	8.37	TIC	15416503m	261.4228	ppb	100

Quantitation Report (Not Reviewed)

Data File : M:\LOKI\DATA\190128\0128L19.D  
 Acq On : 28 Jan 19 22:41  
 Sample : 190128A LCS 300ug/L  
 Misc : IS&S 11/8/18

Vial: 18  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 31 14:06 2019

Quant Results File: L0128SUR.RES

Quant Method : M:\LOKI\DATA\190128\L0128SUR.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	451712	25.0000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	335936	25.0000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.54	152	137344	25.0000	ppb	0.00
System Monitoring Compounds						
2) Dibromofluoromethane(S)	5.65	111	197243	22.2087	ppb	0.00
Spiked Amount	25.000		Recovery	=	88.836%	
3) 1,2-DCA-D4(S)	6.07	65	227111	21.9787	ppb	0.00
Spiked Amount	25.000		Recovery	=	87.916%	
5) Toluene-D8(S)	8.37	98	736629	21.9096	ppb	0.00
Spiked Amount	25.000		Recovery	=	87.640%	
6) 4-Bromofluorobenzene(S)	11.26	95	228334	22.6679	ppb	0.00
Spiked Amount	25.000		Recovery	=	90.672%	

Target Compounds Qvalue

Quantitation Report

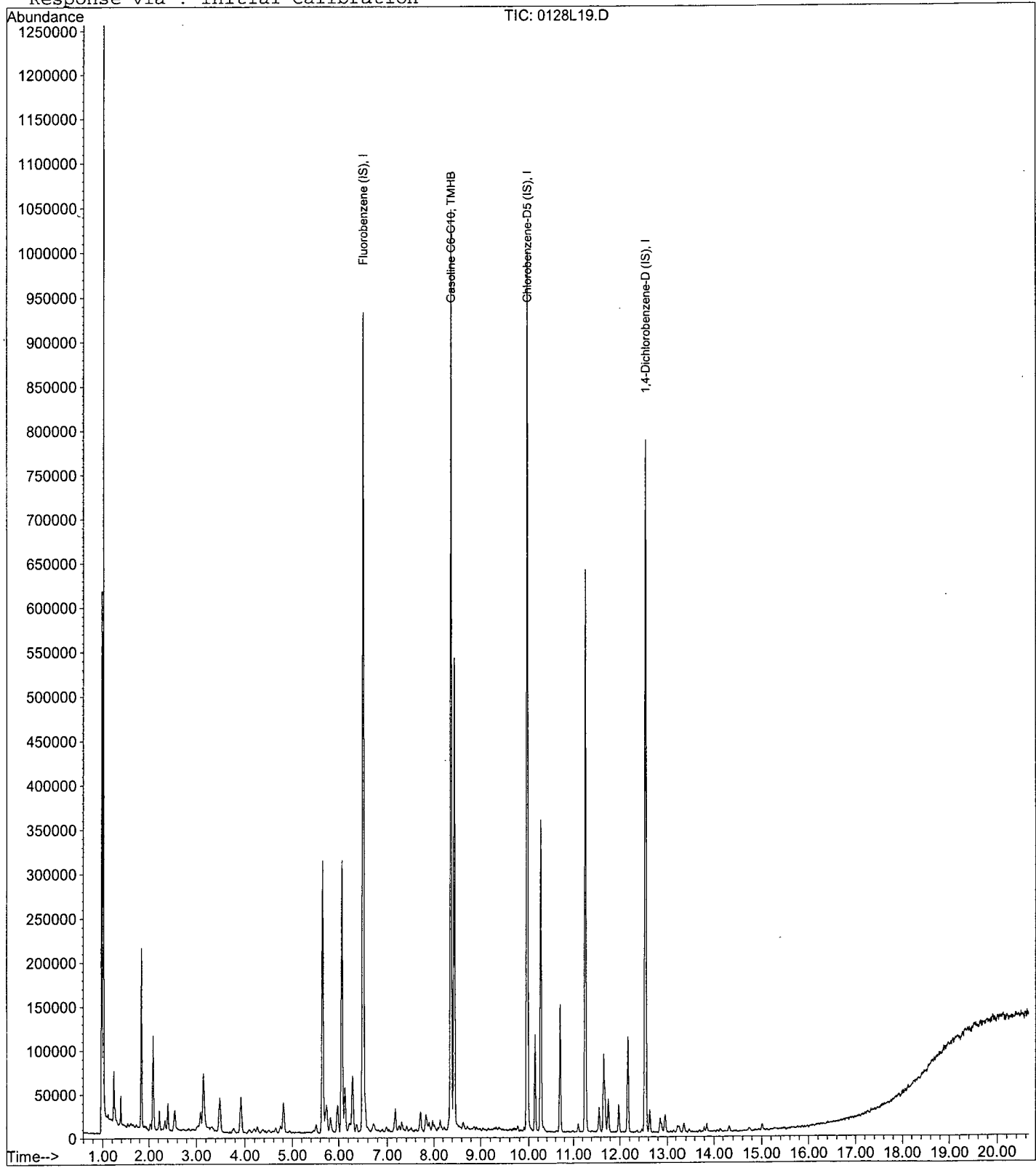
Data File : M:\LOKI\DATA\190128\0128L19.D  
Acq On : 28 Jan 19 22:41  
Sample : 190128A LCS 300ug/L  
Misc : IS&S 11/8/18

Vial: 18  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 30 12:56 2019

Quant Results File: LGAS0122.RES

Method : M:\LOKI\DATA\190128\LGAS0122.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Thu Jan 24 09:25:37 2019  
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : M:\LOKI\DATA\190128\0128L20.D Vial: 19  
 Acq On : 28 Jan 19 23:09 Operator: PM,DG,SV,CMM,KV  
 Sample : 190128A LCSD 300ug/L Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Jan 30 12:48 2019 Quant Results File: LGAS0122.RES

Quant Method : M:\LOKI\DATA\190128\LGAS0122.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Thu Jan 24 09:25:37 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	815384	25.0000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.97	TIC	882471	25.0000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.54	TIC	708638	25.0000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Gasoline C6-C10	8.37	TIC	14110409m	291.2849	ppb	100

Quantitation Report (Not Reviewed)

Data File : M:\LOKI\DATA\190128\0128L20.D Vial: 19  
 Acq On : 28 Jan 19 23:09 Operator: PM,DG,SV,CMM,KV  
 Sample : 190128A LCSD 300ug/L Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Jan 31 14:06 2019 Quant Results File: L0128SUR.RES

Quant Method : M:\LOKI\DATA\190128\L0128SUR.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	394816	25.0000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	302400	25.0000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.54	152	127248	25.0000	ppb	0.00
System Monitoring Compounds						
2) Dibromofluoromethane(S)	5.65	111	193879	24.9758	ppb	0.00
Spiked Amount	25.000		Recovery	=	99.904%	
3) 1,2-DCA-D4(S)	6.07	65	222518	24.6374	ppb	0.00
Spiked Amount	25.000		Recovery	=	98.548%	
5) Toluene-D8(S)	8.37	98	708702	23.4167	ppb	0.00
Spiked Amount	25.000		Recovery	=	93.668%	
6) 4-Bromofluorobenzene(S)	11.26	95	227380	25.0765	ppb	0.00
Spiked Amount	25.000		Recovery	=	100.308%	

Target Compounds Qvalue

Quantitation Report

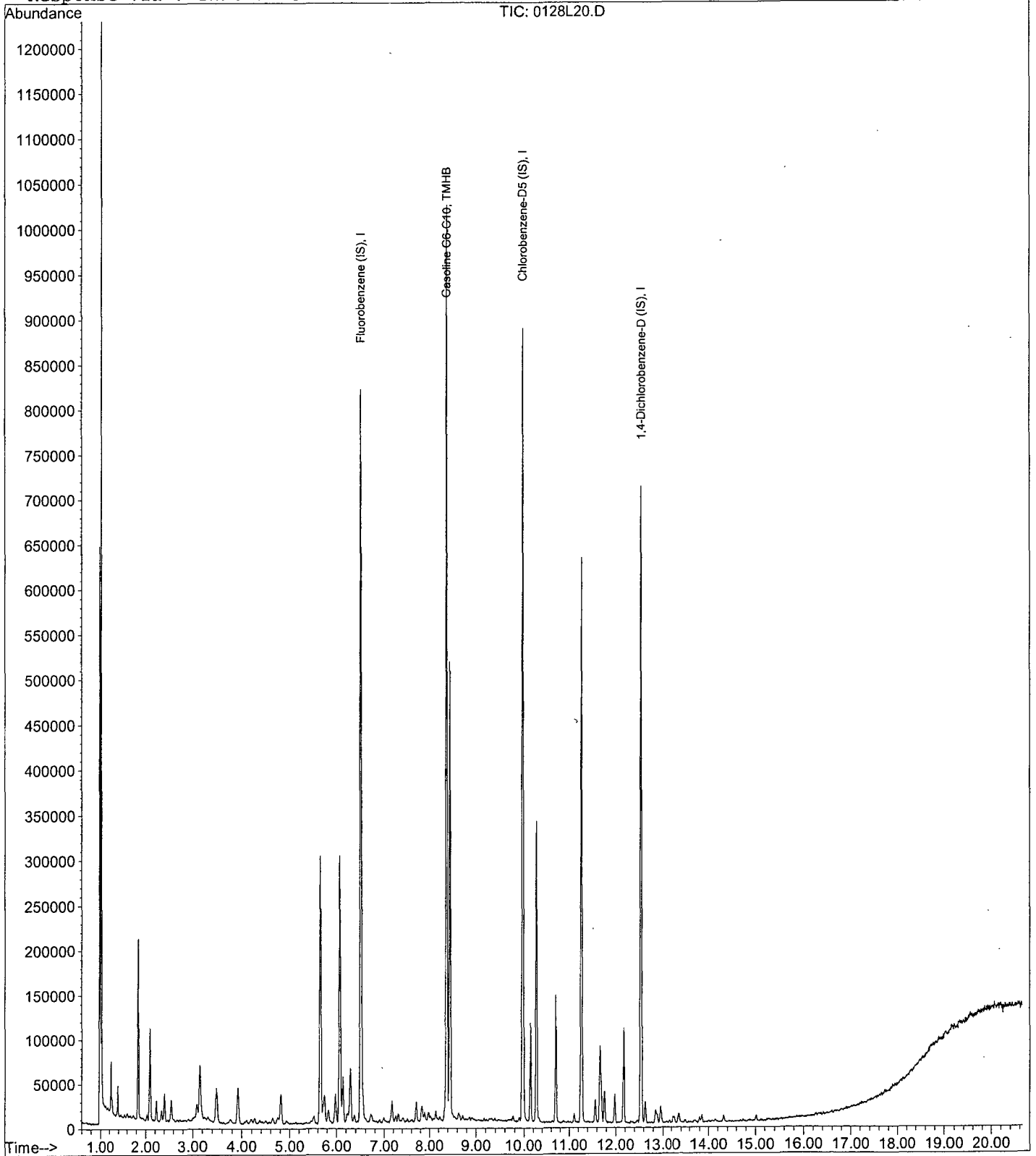
Data File : M:\LOKI\DATA\190128\0128L20.D  
Acq On : 28 Jan 19 23:09  
Sample : 190128A LCSD 300ug/L  
Misc : IS&S 11/8/18

Vial: 19  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 30 12:48 2019

Quant Results File: LGAS0122.RES

Method : M:\LOKI\DATA\190128\LGAS0122.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Thu Jan 24 09:25:37 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190128\0130L10.D  
 Acq On : 30 Jan 19 12:32  
 Sample : 190130A LCS 300ug/L  
 Misc : IS&S 11/8/18

Vial: 9  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 4 9:42 2019

Quant Results File: LGAS0122.RES

Quant Method : M:\LOKI\DATA\190128\LGAS0122.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Thu Jan 24 09:25:37 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	681255	25.0000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.97	TIC	784954	25.0000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.54	TIC	807221	25.0000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Gasoline C6-C10	8.37	TIC	12153647m	315.3604	ppb	100

Data File : M:\LOKI\DATA\190128\0130L10.D  
 Acq On : 30 Jan 19 12:32  
 Sample : 190130A LCS 300ug/L  
 Misc : IS&S 11/8/18

Vial: 9  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 4 9:31 2019

Quant Results File: L0128SUR.RES

Quant Method : M:\LOKI\DATA\190128\L0128SUR.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	333888	25.0000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	278272	25.0000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.54	152	147072	25.0000	ppb	0.00

System Monitoring Compounds

2) Dibromofluoromethane(S)	5.65	111	173837	26.4805	ppb	0.00
Spiked Amount				25.000		
					Recovery = 105.920%	
3) 1,2-DCA-D4(S)	6.07	65	196466	25.7224	ppb	0.00
Spiked Amount				25.000		
					Recovery = 102.888%	
5) Toluene-D8(S)	8.37	98	645502	23.1777	ppb	0.00
Spiked Amount				25.000		
					Recovery = 92.712%	
6) 4-Bromofluorobenzene(S)	11.27	95	238555	28.5901	ppb	0.00
Spiked Amount				25.000		
					Recovery = 114.360%	

Target Compounds

Qvalue

(#) = qualifier out of range (m) = manual integration



Quantitation Report

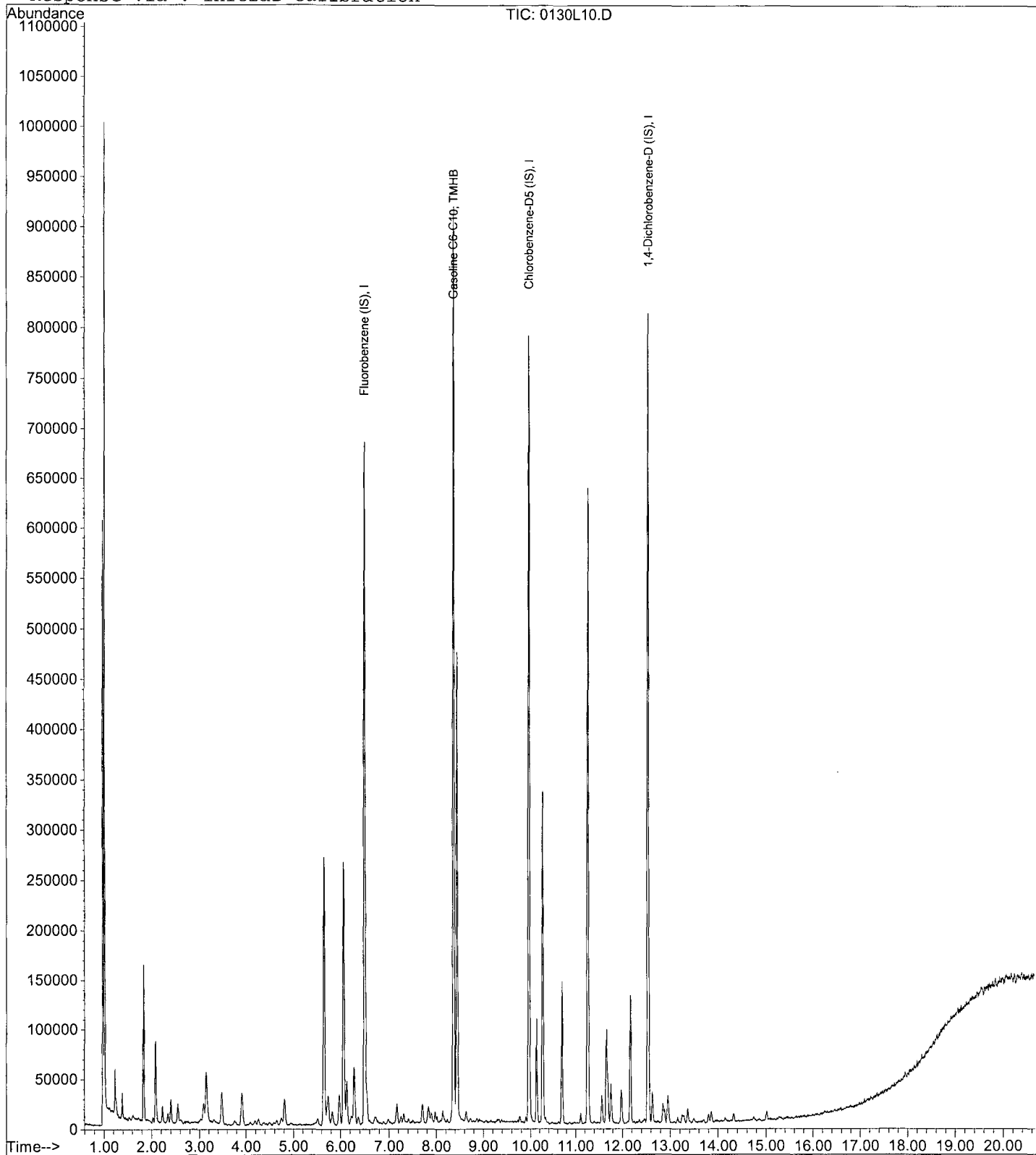
Data File : M:\LOKI\DATA\190128\0130L10.D  
Acq On : 30 Jan 19 12:32  
Sample : 190130A LCS 300ug/L  
Misc : IS&S 11/8/18

Vial: 9  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 4 9:42 2019

Quant Results File: LGAS0122.RES

Method : M:\LOKI\DATA\190128\LGAS0122.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Thu Jan 24 09:25:37 2019  
Response via : Initial Calibration



Quantitation Report

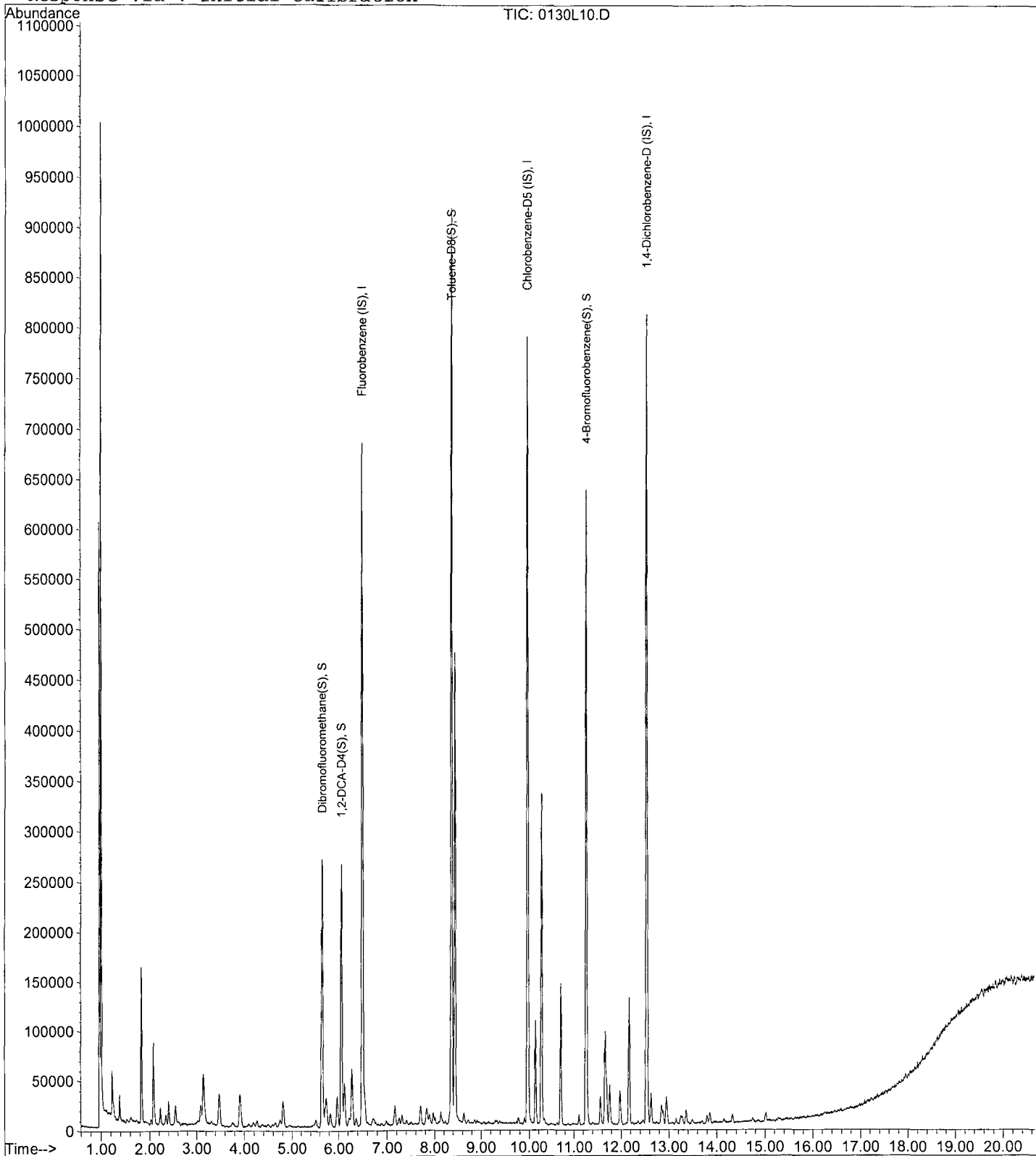
Data File : M:\LOKI\DATA\190128\0130L10.D  
Acq On : 30 Jan 19 12:32  
Sample : 190130A LCS 300ug/L  
Misc : IS&S 11/8/18

Vial: 9  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 4 9:31 2019

Quant Results File: L0128SUR.RES

Method : M:\LOKI\DATA\190128\L0128SUR.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Jan 29 09:06:22 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190128\0130L11.D Vial: 10  
 Acq On : 30 Jan 19 13:00 Operator: PM,DG,SV,CMM,KV  
 Sample : 190130A LCSD 300ug/L Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Feb 4 9:43 2019 Quant Results File: LGAS0122.RES

Quant Method : M:\LOKI\DATA\190128\LGAS0122.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Thu Jan 24 09:25:37 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	687332	25.0000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.97	TIC	815782	25.0000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.54	TIC	825641	25.0000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Gasoline C6-C10	8.37	TIC	12075852m	303.1656	ppb	100

Data File : M:\LOKI\DATA\190128\0130L11.D Vial: 10  
 Acq On : 30 Jan 19 13:00 Operator: PM, DG, SV, CMM, KV  
 Sample : 190130A LCSD 300ug/L Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Feb 4 9:31 2019 Quant Results File: L0128SUR.RES

Quant Method : M:\LOKI\DATA\190128\L0128SUR.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	335424	25.0000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	287872	25.0000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.54	152	147520	25.0000	ppb	0.00

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Dibromofluoromethane(S)	5.65	111	172282	26.1234	ppb	0.00
Spiked Amount				25.000		
					Recovery =	104.492%
3) 1,2-DCA-D4(S)	6.07	65	190052	24.7687	ppb	0.00
Spiked Amount				25.000		
					Recovery =	99.076%
5) Toluene-D8(S)	8.37	98	632717	21.9611	ppb	0.00
Spiked Amount				25.000		
					Recovery =	87.844%
6) 4-Bromofluorobenzene(S)	11.26	95	235208	27.2489	ppb	0.00
Spiked Amount				25.000		
					Recovery =	108.996%

Target Compounds Qvalue

Quantitation Report

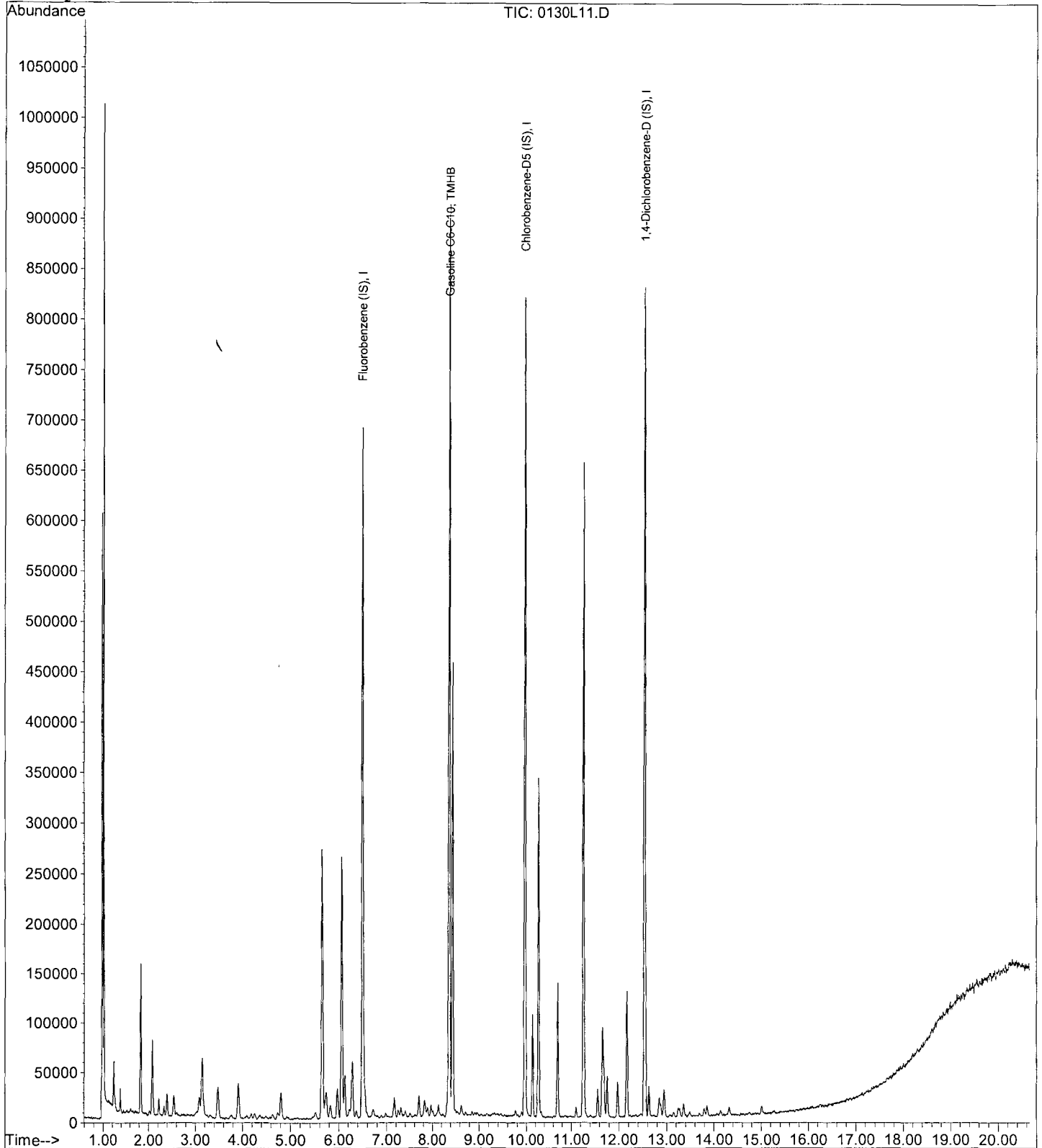
Data File : M:\LOKI\DATA\190128\0130L11.D  
Acq On : 30 Jan 19 13:00  
Sample : 190130A LCSD 300ug/L  
Misc : IS&S 11/8/18

Vial: 10  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 4 9:43 2019

Quant Results File: LGAS0122.RES

Method : M:\LOKI\DATA\190128\LGAS0122.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Thu Jan 24 09:25:37 2019  
Response via : Initial Calibration



Quantitation Report

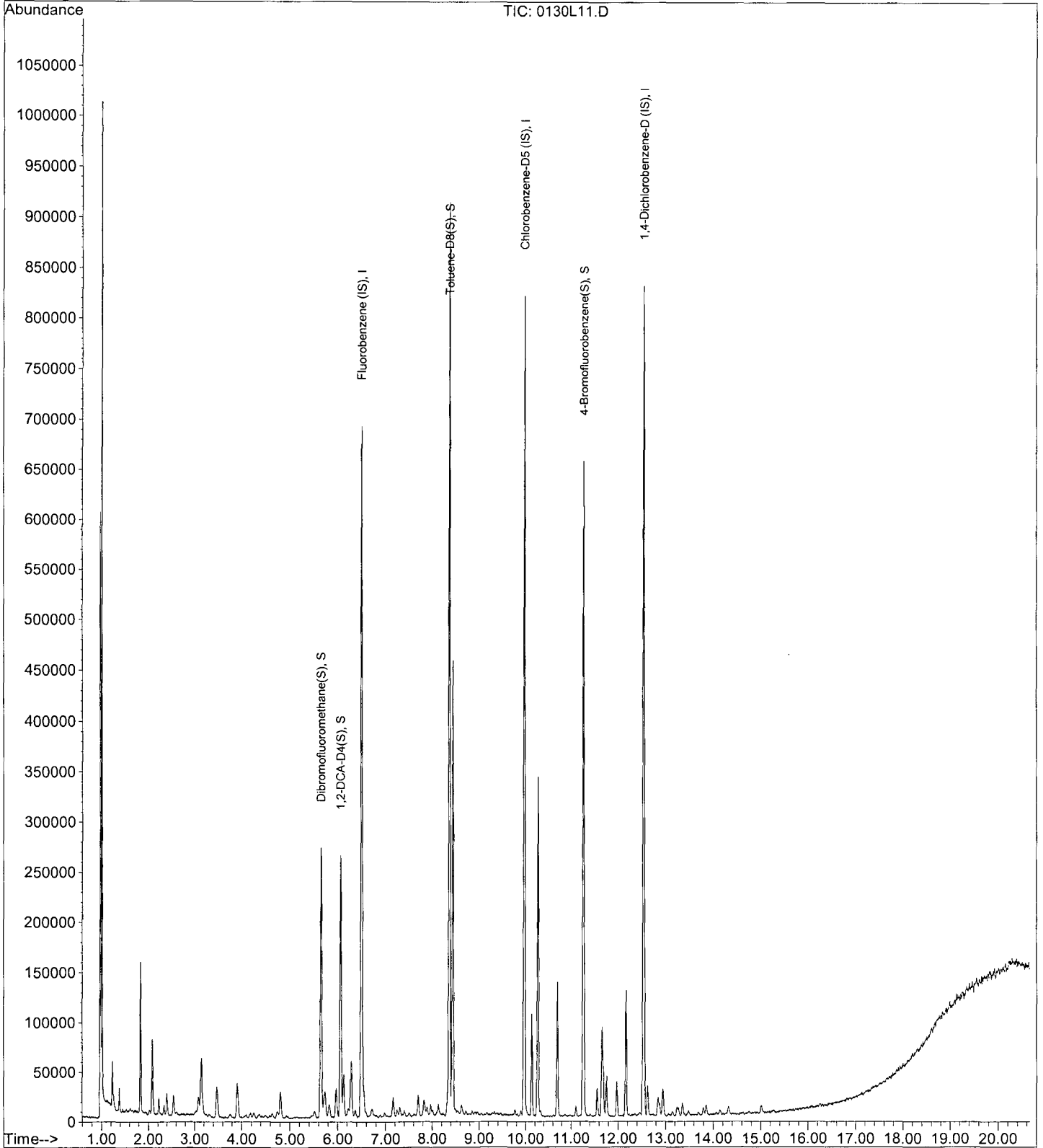
Data File : M:\LOKI\DATA\190128\0130L11.D  
Acq On : 30 Jan 19 13:00  
Sample : 190130A LCSD 300ug/L  
Misc : IS&S 11/8/18

Vial: 10  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 4 9:31 2019

Quant Results File: L0128SUR.RES

Method : M:\LOKI\DATA\190128\L0128SUR.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Jan 29 09:06:22 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190128\0130L26.D Vial: 25  
 Acq On : 30 Jan 19 20:10 Operator: PM,DG,SV,CMM,KV  
 Sample : AZ85643W06 MS 300ug/L Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Jan 31 9:02 2019 Quant Results File: LGAS0122.RES

Quant Method : M:\LOKI\DATA\190128\LGAS0122.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Thu Jan 24 09:25:37 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	644673	25.0000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.97	TIC	766651	25.0000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.54	TIC	794355	25.0000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Gasoline C6-C10	8.37	TIC	11357099m	305.3113	ppb	100

Data File : M:\LOKI\DATA\190128\0130L26.D  
 Acq On : 30 Jan 19 20:10  
 Sample : AZ85643W06 MS 300ug/L  
 Misc : IS&S 11/8/18

Vial: 25  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 31 8:57 2019

Quant Results File: L0128SUR.RES

Quant Method : M:\LOKI\DATA\190128\L0128SUR.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	315456	25.0000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	269120	25.0000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.54	152	143680	25.0000	ppb	0.00

System Monitoring Compounds

2) Dibromofluoromethane(S)	5.65	111	159239	25.6741	ppb	0.00
Spiked Amount	25.000					
					Recovery = 102.696%	
3) 1,2-DCA-D4(S)	6.07	65	181666	25.1745	ppb	0.00
Spiked Amount	25.000					
					Recovery = 100.696%	
5) Toluene-D8(S)	8.37	98	612626	22.7453	ppb	0.00
Spiked Amount	25.000					
					Recovery = 90.980%	
6) 4-Bromofluorobenzene(S)	11.26	95	224373	27.8049	ppb	0.00
Spiked Amount	25.000					
					Recovery = 111.220%	

Target Compounds

Qvalue

(#) = qualifier out of range (m) = manual integration



Quantitation Report

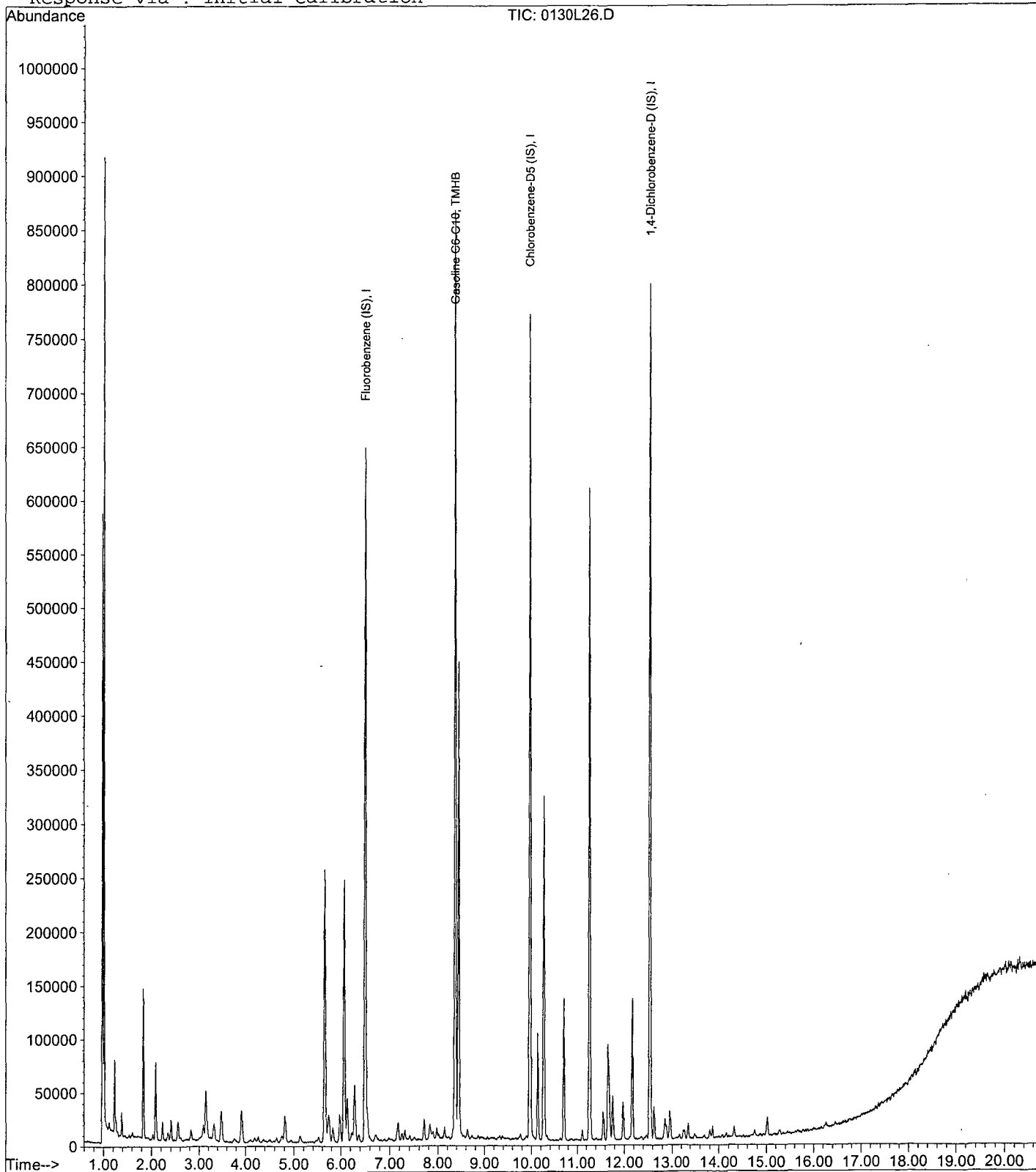
Data File : M:\LOKI\DATA\190128\0130L26.D  
Acq On : 30 Jan 19 20:10  
Sample : AZ85643W06 MS 300ug/L  
Misc : IS&S 11/8/18

Vial: 25  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 31 9:02 2019

Quant Results File: LGAS0122.RES

Method : M:\LOKI\DATA\190128\LGAS0122.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Thu Jan 24 09:25:37 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190128\0130L27.D  
 Acq On : 30 Jan 19 20:39  
 Sample : AZ85643W08 MSD 300ug/L  
 Misc : IS&S 11/8/18

Vial: 26  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 31 9:03 2019

Quant Results File: LGAS0122.RES

Quant Method : M:\LOKI\DATA\190128\LGAS0122.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Thu Jan 24 09:25:37 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	671644	25.0000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.97	TIC	798356	25.0000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.54	TIC	806634	25.0000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Gasoline C6-C10	8.37	TIC	11656529m	293.5350	ppb	100

Data File : M:\LOKI\DATA\190128\0130L27.D  
 Acq On : 30 Jan 19 20:39  
 Sample : AZ85643W08 MSD 300ug/L  
 Misc : IS&S 11/8/18

Vial: 26  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Jan 31 8:57 2019

Quant Results File: L0128SUR.RES

Quant Method : M:\LOKI\DATA\190128\L0128SUR.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Jan 29 09:06:22 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	331392	25.0000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	284096	25.0000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.54	152	146688	25.0000	ppb	0.00
System Monitoring Compounds						
2) Dibromofluoromethane(S)	5.65	111	167722	25.7414	ppb	0.00
Spiked Amount	25.000					
					Recovery = 102.964%	
3) 1,2-DCA-D4(S)	6.07	65	188808	24.9060	ppb	0.00
Spiked Amount	25.000					
					Recovery = 99.624%	
5) Toluene-D8(S)	8.37	98	640214	22.5166	ppb	0.00
Spiked Amount	25.000					
					Recovery = 90.068%	
6) 4-Bromofluorobenzene(S)	11.26	95	235966	27.7001	ppb	0.00
Spiked Amount	25.000					
					Recovery = 110.800%	

Target Compounds

Qvalue

(#) = qualifier out of range (m) = manual integration

Quantitation Report

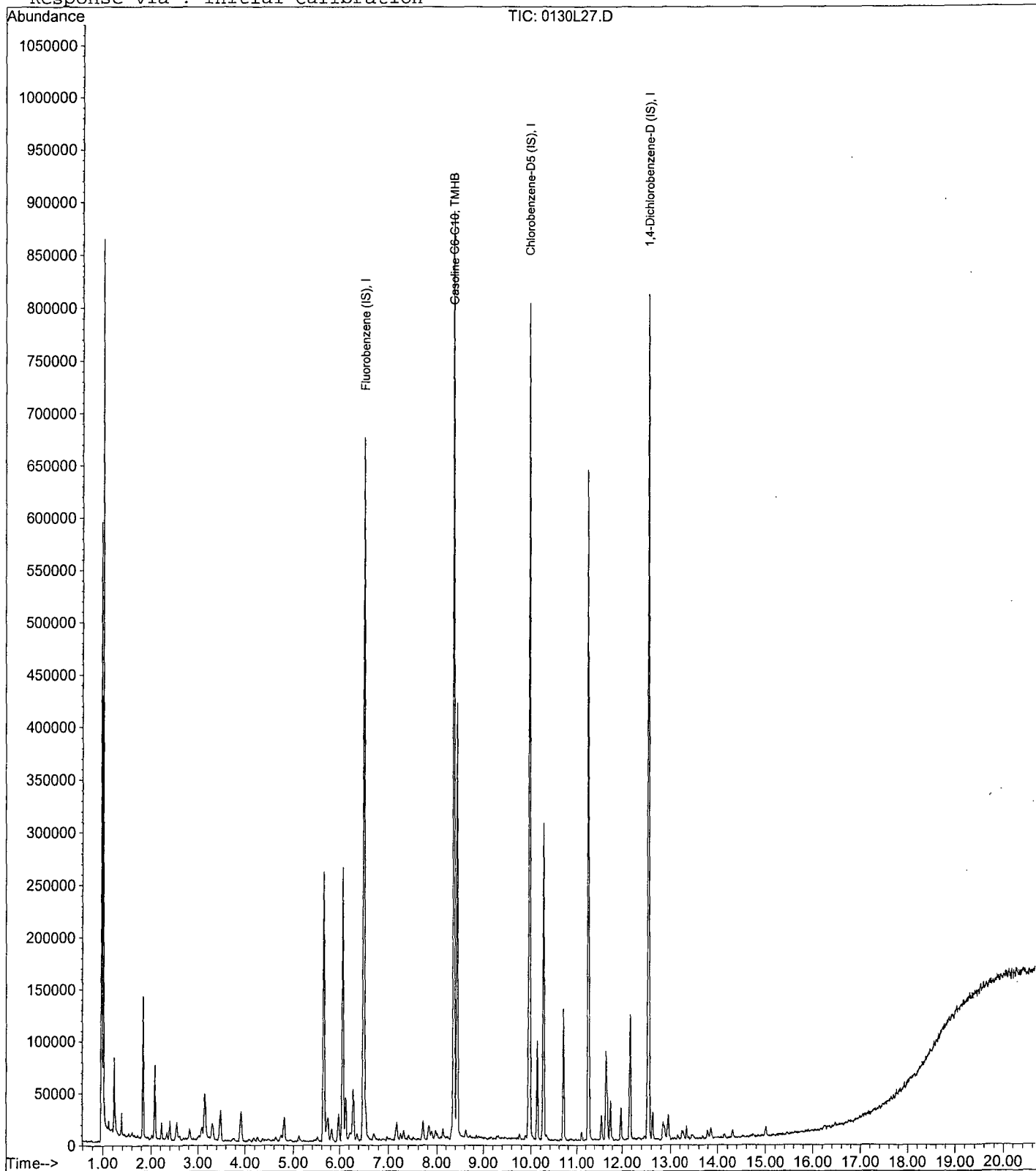
Data File : M:\LOKI\DATA\190128\0130L27.D  
Acq On : 30 Jan 19 20:39  
Sample : AZ85643W08 MSD 300ug/L  
Misc : IS&S 11/8/18

Vial: 26  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Jan 31 9:03 2019

Quant Results File: LGAS0122.RES

Method : M:\LOKI\DATA\190128\LGAS0122.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Thu Jan 24 09:25:37 2019  
Response via : Initial Calibration



### Loki Gas Standard Prep

Gas Primary Working Standard										
Prepared: 01/14/19						Prepared By (Initials): <u>CMM</u>				
Expires: 11/01/19										
Methanol Lot No. 9077-02										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
50,000ug/mL Gas STD	Restek	30205	50,000	A0132443-39861	11/01/19	12/31/24	80uL	2mL	Methanol	2,000
Gas Second Source (SS) Working Standard										
Prepared: 01/14/19						Prepared By (Initials): <u>CMM</u>				
Expires: 01/14/20										
Methanol Lot No. 946										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
Gasoline (5,000ppm)	O2SI	020246-06	5,000	G34-326538-39193	01/14/20	10/31/20	800uL	2mL	Methanol	2,000
Loki Gas Calibration Curve										
Prepared: 01/22/19						Prepared By (Initials): <u>CMM</u>				
Expires: 03/23/19										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA Gasses Standards	Phenova	20ug/L	2,000	Prepared 01/14/19	11/01/19	N/A	1uL	100mL	P&T Water	20
VOA Gasses Standards	Phenova	50ug/L	2,000	Prepared 01/14/19	11/01/19	N/A	2.5uL	100mL	P&T Water	50
VOA Gasses Standards	Phenova	100ug/L	2,000	Prepared 01/14/19	11/01/19	N/A	5uL	100mL	P&T Water	100
VOA Gasses Standards	Phenova	300ug/L	2,000	Prepared 01/14/19	11/01/19	N/A	15uL	100mL	P&T Water	300
VOA Gasses Standards	Phenova	600ug/L	2,000	Prepared 01/14/19	11/01/19	N/A	30uL	100mL	P&T Water	600
VOA Gasses Standards	Phenova	800ug/L	2,000	Prepared 01/14/19	11/01/19	N/A	40uL	100mL	P&T Water	800
VOA Gasses Standards	Phenova	1,000ug/L	2,000	Prepared 01/14/19	11/01/19	N/A	50uL	100mL	P&T Water	1,000
Loki Gas Second Source										
Prepared: 01/22/19						Prepared By (Initials): <u>CMM</u>				
Expires: 03/23/19										

## Loki 8260 Standard Prep

Loki 8260 Water Calibration Curve										
<b>0.3ug/L</b>						Prepared By (Initials): <u>PC</u>				
Prepared: 01/28/19										
Expires: 02/27/19										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 9	O2SI	0.3ug/L	5	Prepared 01/28/19	02/01/19	N/A	3uL	50mL	P&T Water	0.3
VOA STD. 10	O2SI		5	Prepared 01/28/19	03/29/19	N/A	3uL			0.3
VOA STD. 12	O2SI		5	Prepared 01/28/19	03/29/19	N/A	3uL			0.3
VOA STD. TBA	Various		250	Prepared 01/28/19	02/01/19	N/A	2uL			10
<b>0.5ug/L</b>										
Prepared: 01/28/19										
Expires: 02/27/19										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 9	O2SI	0.5ug/L	5	Prepared 01/28/19	02/01/19	N/A	5uL	50mL	P&T Water	0.5
VOA STD. 10	O2SI		5	Prepared 01/28/19	03/29/19	N/A	5uL			0.5
VOA STD. 12	O2SI		5	Prepared 01/28/19	03/29/19	N/A	5uL			0.5
VOA STD. TBA	Various		250	Prepared 01/28/19	02/01/19	N/A	5uL			25
<b>1.0ug/L</b>										
Prepared: 01/28/19										
Expires: 02/27/19										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 9	O2SI	1.0ug/L	5	Prepared 01/28/19	02/01/19	N/A	10uL	50mL	P&T Water	1
VOA STD. 10	O2SI		5	Prepared 01/28/19	03/29/19	N/A	10uL			1
VOA STD. 12	O2SI		5	Prepared 01/28/19	03/29/19	N/A	10uL			1
VOA STD. TBA	Various		250	Prepared 01/28/19	02/01/19	N/A	10uL			50
<b>2.0ug/L</b>										
Prepared: 01/28/19										
Expires: 02/27/19										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 9	O2SI	2.0ug/L	5	Prepared 01/28/19	02/01/19	N/A	20uL	50mL	P&T Water	2
VOA STD. 10	O2SI		5	Prepared 01/28/19	03/29/19	N/A	20uL			2
VOA STD. 12	O2SI		5	Prepared 01/28/19	03/29/19	N/A	20uL			2
VOA STD. TBA	Various		250	Prepared 01/28/19	02/01/19	N/A	15uL			75
<b>5ug/L</b>										
Prepared: 01/28/19										
Expires: 02/27/19										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 7	Various	5ug/L	50	Prepared 01/28/19	03/29/19	N/A	5uL	50mL	P&T Water	5
VOA STD. 8	Phenova		50	Prepared 01/28/19	02/01/19	N/A	5uL			5
VOA STD. 1	O2SI		50	Prepared 01/28/19	03/29/19	N/A	5uL			5
VOA STD. 2	O2SI		50	Prepared 01/28/19	03/29/19	N/A	5uL			5
VOA STD. TBA	Various		250	Prepared 01/28/19	02/01/19	N/A	20uL			100
<b>10ug/L</b>										
Prepared: 01/28/19										
Expires: 02/27/19										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 7	Various	10ug/L	50	Prepared 01/28/19	03/29/19	N/A	10uL	50mL	P&T Water	10
VOA STD. 8	Phenova		50	Prepared 01/28/19	02/01/19	N/A	10uL			10
VOA STD. 1	O2SI		50	Prepared 01/28/19	03/29/19	N/A	10uL			10
VOA STD. 2	O2SI		50	Prepared 01/28/19	03/29/19	N/A	10uL			10
VOA STD. TBA	Various		250	Prepared 01/28/19	02/01/19	N/A	25uL			125

20ug/L										
Prepared: 01/28/19										
Expires: 02/27/19										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 7	Various	20ug/L	50	Prepared 01/28/19	03/29/19	N/A	20uL	50mL	P&T Water	20
VOA STD. 8	Phenova		50	Prepared 01/28/19	02/01/19	N/A	20uL			20
VOA STD. 1	O2SI		50	Prepared 01/28/19	03/29/19	N/A	20uL			20
VOA STD. 2	O2SI		50	Prepared 01/28/19	03/29/19	N/A	20uL			20
VOA STD. TBA	Various		250	Prepared 01/28/19	02/01/19	N/A	30uL			150
40ug/L										
Prepared: 01/28/19										
Expires: 02/27/19										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 7	Various	40ug/L	50	Prepared 01/28/19	03/29/19	N/A	40uL	50mL	P&T Water	40
VOA STD. 8	Phenova		50	Prepared 01/28/19	02/01/19	N/A	40uL			40
VOA STD. 1	O2SI		50	Prepared 01/28/19	03/29/19	N/A	40uL			40
VOA STD. 2	O2SI		50	Prepared 01/28/19	03/29/19	N/A	40uL			40
VOA STD. TBA	Various		250	Prepared 01/28/19	02/01/19	N/A	35uL			175
100ug/L										
Prepared: 01/28/19										
Expires: 02/27/19										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 7	Various	100ug/L	50	Prepared 01/28/19	03/29/19	N/A	100uL	50mL	P&T Water	100
VOA STD. 8	Phenova		50	Prepared 01/28/19	02/01/19	N/A	100uL			100
VOA STD. 1	O2SI		50	Prepared 01/28/19	03/29/19	N/A	100uL			100
VOA STD. 2	O2SI		50	Prepared 01/28/19	03/29/19	N/A	100uL			100
VOA STD. TBA	Various		250	Prepared 01/28/19	02/01/19	N/A	40uL			200
Loki 8260 Water Second Source (SS)										
Prepared: 01/28/19										
Expires: 02/27/19										
						Prepared By (Initials): PC				
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 4	Phenova	8260 Water SS	50	Prepared 01/28/19	03/29/19	N/A	10uL	50mL	P&T Water	10
VOA STD. 5	O2SI	8260 Water SS	50	Prepared 01/28/19	03/29/19	N/A	10uL			10
VOA STD. 6	Various	8260 Water SS	50	Prepared 01/28/19	02/13/19	N/A	10uL			10
VOA STD. TBA	Various	8260 Water SS	250	Prepared 01/28/19	02/13/19	N/A	25uL			250
8260 Water Continuing Calibrations (CCV)/ Lab Control Spikes (LCS)										
Prepared: 01/28/19										
Expires: 01/29/19										
						Prepared By (Initials): PC				
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 7	Various	CCV/ LCS	50	Prepared 01/28/19	03/29/19	N/A	10uL	50mL	P&T Water	10
VOA STD. 8	Phenova	CCV/ LCS	50	Prepared 01/28/19	02/01/19	N/A	10uL			10
VOA STD. 1	O2SI	CCV/ LCS	50	Prepared 01/28/19	03/29/19	N/A	10uL			10
VOA STD. 2	O2SI	CCV/ LCS	50	Prepared 01/28/19	03/29/19	N/A	10uL			10
VOA STD. TBA	Various	CCV/ LCS	250	Prepared 01/28/19	02/01/19	N/A	25uL			125
LCS (X4 Ketones)										
Prepared: 01/28/19										
Expires: 01/29/19										
						Prepared By (Initials): PC				
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 7	Various	LCS X4 Ketones	50	Prepared 01/28/19	03/29/19	N/A	10uL	50mL	P&T Water	10
VOA STD. 8	Phenova	LCS X4 Ketones	50	Prepared 01/28/19	02/01/19	N/A	10uL			10
VOA STD. 1	O2SI	LCS X4 Ketones	50	Prepared 01/28/19	03/29/19	N/A	10uL			10
VOA STD. 2	O2SI	LCS X4 Ketones	50	Prepared 01/28/19	03/29/19	N/A	40uL			40
VOA STD. TBA	Various	LCS X4 Ketones	250	Prepared 01/28/19	02/01/19	N/A	25uL			125

Loki 8260 Water Surrogate										
Prepared: 12/13/18						Prepared By (Initials): <u>DG</u>				
Expires: 04/02/19										
Methanol Lot No: 202404-9077										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr.)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
8260 Surrogate Solution	O2SI	120002-01	2.000	275545-36335	07/28/19	04/02/19	375uL	15mL	Methanol	50
Loki 8260 Water Internal Standard										
Prepared: 11/08/18						Prepared By (Initials): <u>DG</u>				
Expires: 10/05/19										
Methanol Lot No: 202404-9077										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr.)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
Internal Standard Solution	O2SI	120004-02	2.000	326533-38441	10/05/19	04/27/21	375uL	15mL	Methanol	50



<b>Gas Primary Working Standard</b>										
Prepared: 01/14/19						Prepared By (Initials): <u>CMM</u>				
Expires: 12/31/24										
Methanol Lot No. 9077-02										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
50,000ug/mL Gas STD	Restek	30205	50,000	A0132443-39861	11/01/19	12/31/24	80uL	2mL	Methanol	2,000
<b>Gas Second Source (SS) Working Standard</b>										
Prepared: 01/14/19						Prepared By (Initials): <u>CMM</u>				
Expires: 10/31/20										
Methanol Lot No. 946										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
Gasoline (5,000ppm)	O2SI	020246-06	5,000	G34-326538-39193	01/14/20	10/31/20	800uL	2mL	Methanol	2,000

### Primary and Secondary Working Standards

Primary Standards										
VOA STD 7										
Prepared: 01/28/19 E										
Expires: 03/29/19										
Prepared By (Initials): PC										
Methanol Lot No. 907702-202404										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
VOA Gasses STD	Phenova	ALO-101206	2,000	CL12966-39990	10/31/23	10/31/23	100uL	4mL	Methanol	50
Hexachloroethane	Absolute	70199	1,000	091818-40038	01/17/20	09/18/23	200uL			50
Benzyl Chloride	O2SI	020228-02	1,000	082218-39817	01/17/20	12/04/19	200uL			50
VOA STD 8										
Prepared: 01/28/19 F										
Expires: 02/01/19										
Prepared By (Initials): PC										
Methanol Lot No. 907702-202404										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
VOA Additions STD	Phenova	ALO-130175	2,000	CL39322-39479	01/17/20	06/30/20	100uL	4mL	Methanol	50
502.2 Cal. Std.	Phenova	ALO-101200	2,000	CL12490-39491	01/17/20	05/31/23	100uL			50
Vinyl Acetate	Phenova	ALO-101228	2,000	CL13125-40120	02/01/19	02/01/19	100uL			50
VOA STD TBA										
Prepared: 01/28/19 G										
Expires: 02/01/19										
Prepared By (Initials): PC										
Methanol Lot No. 907702-202404										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
Custom VOC Mix	Phenova	ALO-130176	2,000	CL12542-39530	01/17/20	05/31/20	500uL	4mL	Methanol	250
Acrolein	Phenova	ALO-130549	10,000	CL13149-40121	02/01/19	02/01/19	100uL			250
VOA STD 1										
Prepared: 01/28/19 H										
Expires: 03/29/19										
Prepared By (Initials): PC										
Methanol Lot No. 907702-202404										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
2-CEVE	O2SI	020145-02	2,000	071018-39809	07/10/21	11/12/19	50	2mL	Methanol	50
VOA STD 2										
Prepared: 01/28/19 I										
Expires: 03/29/19										
Prepared By (Initials): PC										
Methanol Lot No. 907702-202404										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
Ketones Std.	Phenova	ALO-109211	2,000	CL10956-39506	01/17/20	08/30/23	100	4mL	Methanol	50
VOA STD 9										
Prepared: 01/28/19 J										
Expires: 02/01/19										
Prepared By (Initials): PC										
Methanol Lot No. 907702-202404										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
VOA STD. 7		VOA STD. 9	50	Prepared 01/28/19	12/04/19	N/A	200uL	2mL	Methanol	5
VOA STD. 8		VOA STD. 9	50	Prepared 01/28/19	02/01/19	N/A	200uL			5
VOA STD. 10										
Prepared: 01/28/19 K										
Expires: 03/29/19										
Prepared By (Initials): PC										
Methanol Lot No. 907702-202404										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
VOA STD. 1		VOA STD. 10	50	Prepared 01/28/19	01/17/20	N/A	200uL	2mL	Methanol	5
VOA STD. 12										
Prepared: 01/28/19 L										
Expires: 03/29/19										
Prepared By (Initials): PC										
Methanol Lot No. 907702-202404										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
VOA STD. 2		VOA STD. 12	50	Prepared 01/28/19	01/17/20	N/A	200uL	2mL	Methanol	5

Second Source (SS) Standards										
VOA STD. 3										
Prepared: 01/28/19 M										
Expires: 03/29/19										
Methanol Lot No. 907702-202404										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
Ketones Standard	Phenova	ALO-101211	2,000	CL12730-39671	01/17/20	08/31/28	50uL	2mL	Methanol	50
VOA STD. 5										
Prepared: 01/28/19 N										
Expires: 03/29/19										
Methanol Lot No. 907702-202404										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
8260 Gases (SS)	Phenova	ALO-101206	2,000	CL12965-39986	10/31/23	10/31/23	50uL	2mL	Methanol	50
2-CEVE (SS)	Absolute	82408	2,000	112917-402102	11/29/20	07/10/21	50uL			50
VOA STD. 6										
Prepared: 01/28/19 O										
Expires: 02/13/19										
Methanol Lot No. 907702-202404										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
502.2 Calibration STD. (54-compounds)	Phenova	ALO-101200	2,000	CL12489-39970	01/17/20	05/31/23	50uL	2mL	Methanol	50
Vinyl Acetate	Phenova	ALO-101228	2,000	CL13145-40120	01/17/20	02/13/19	50uL			50
Hexachloroethane	Accustan	AS-E0011	1,000	218051281-39858	01/02/20	05/14/28	100uL			50
Benzyl Chloride	Accustan	M-8010-01	200	214101335-04-39960	01/17/20	10/18/20	500uL			50
VOA STD. TBA										
Prepared: 01/28/19 P										
Expires: 02/13/19										
Methanol Lot No. 907702-202404										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
Custom VOA Mix (4-3)	Phenova	ALO-130176	2,000	CL12542-39679	01/17/20	05/31/20	250uL	2mL	Methanol	250
Acrolein	Phenova	ALO-101224	10,000	CL13181-40203	02/13/19	02/13/19	50uL			250
VOA STD. 0										
Prepared: 01/28/19 Q										
Expires: 03/29/19										
Methanol Lot No. 907702-202404										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
VOA Addition STD.	Phenova	ALO-130175	2,000	CL12744-40002	01/17/20	08/30/20	50uL	2mL	Methanol	50
BFB Tune										
Prepared: 01/18/19										
Expires: 12/12/19										
Methanol Lot No. 202404-00945										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
4-Bromofluorobenzene	O2SI	020135-03	2,500	342387-39075	12/12/19	01/19/21	20uL	2mL	Methanol	25

## Injection Log

Directory: M:\LOK\DATA\190121\

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1	2	0122L03.D	1	20ug/L GAS STD 1/21/19	IS&S 11/8/18	22 Jan 19 14:10
2	3	0122L04.D	1	50ug/L GAS STD 1/21/19	IS&S 11/8/18	22 Jan 19 14:39
3	4	0122L05.D	1	100ug/L GAS STD 1/21/19	IS&S 11/8/18	22 Jan 19 15:07
4	5	0122L06.D	1	300ug/L GAS STD 1/21/19	IS&S 11/8/18	22 Jan 19 15:36
5	6	0122L07.D	1	600ug/L GAS STD 1/21/19	IS&S 11/8/18	22 Jan 19 16:04
6	7	0122L08.D	1	800ug/L GAS STD 1/21/19	IS&S 11/8/18	22 Jan 19 16:33
7	8	0122L09.D	1	1000ug/L GAS STD 1/21/19	IS&S 11/8/18	22 Jan 19 17:01
8	11	0122L12.D	1	(SS)300ug/L GAS STD 1/21/19	IS&S 11/8/18	22 Jan 19 18:27
9	2	0128L03.D	1	0.3ug/L VOC STD 01/28/19	IS&S 11/8/18	28 Jan 19 15:03
10	3	0128L04.D	1	0.5ug/L VOC STD 01/28/19	IS&S 11/8/18	28 Jan 19 15:31
11	4	0128L05.D	1	1.0ug/L VOC STD 01/28/19	IS&S 11/8/18	28 Jan 19 16:00
12	5	0128L06.D	1	2.0ug/L VOC STD 01/28/19	IS&S 11/8/18	28 Jan 19 16:29
13	6	0128L07.D	1	5.0ug/L VOC STD 01/28/19	IS&S 11/8/18	28 Jan 19 16:57
14	7	0128L08.D	1	10ug/L VOC STD 01/28/19	IS&S 11/8/18	28 Jan 19 17:26
15	8	0128L09.D	1	20ug/L VOC STD 01/28/19	IS&S 11/8/18	28 Jan 19 17:55
16	9	0128L10.D	1	40ug/L VOC STD 01/28/19	IS&S 11/8/18	28 Jan 19 18:23
17	10	0128L11.D	1	50ug/L VOC STD 01/28/19	IS&S 11/8/18	28 Jan 19 18:52
18	11	0128L12.D	1	100ug/L VOC STD 01/28/19	IS&S 11/8/18	28 Jan 19 19:21
19	17	0128L18.D	1	190128A CCV 300ug/L	IS&S 11/8/18	28 Jan 19 22:12
20	18	0128L19.D	1	190128A LCS 300ug/L	IS&S 11/8/18	28 Jan 19 22:41
21	19	0128L20.D	1	190128A LCSD 300ug/L	IS&S 11/8/18	28 Jan 19 23:09
22	21	0128L22.D	1	190128A blk	IS&S 11/8/18	29 Jan 19 00:06
23	22	0128L23.D	1	AZ85645W01	IS&S 11/8/18	29 Jan 19 00:35
24	23	0128L24.D	1	AZ85652W01	IS&S 11/8/18	29 Jan 19 1:04
25	33	0128L34.D	1	AZ85642W01	IS&S 11/8/18	29 Jan 19 5:49
26	34	0128L35.D	1	AZ85644W01	IS&S 11/8/18	29 Jan 19 6:18
27	35	0128L36.D	1	AZ85646W01	IS&S 11/8/18	29 Jan 19 6:46
28	36	0128L37.D	1	AZ85653W01	IS&S 11/8/18	29 Jan 19 7:15
29	38	0128L39.D	1	Ending CCV 300ug/L 01/28/19	IS&S 11/8/18	29 Jan 19 8:12
30	8	0130L09.D	1	190130A CCV 300ug/L	IS&S 11/8/18	30 Jan 19 12:03
31	9	0130L10.D	1	190130A LCS 300ug/L	IS&S 11/8/18	30 Jan 19 12:32
32	10	0130L11.D	1	190130A LCSD 300ug/L	IS&S 11/8/18	30 Jan 19 13:00
33	14	0130L15.D	1	190130A Blk	IS&S 11/8/18	30 Jan 19 14:55
34	20	0130L21.D	1	AZ85643W01	IS&S 11/8/18	30 Jan 19 17:47
35	25	0130L26.D	1	AZ85643W06 MS 300ug/L	IS&S 11/8/18	30 Jan 19 20:10
36	26	0130L27.D	1	AZ85643W08 MSD 300ug/L	IS&S 11/8/18	30 Jan 19 20:39
37	28	0130L29.D	1	Ending CCV 300ug/L 01/30/19	IS&S 11/8/18	30 Jan 19 21:36

**ORGANICS**  
**Calibration Data**

**Form 6**  
**Initial Calibration**

Lab Name: APPL, Inc.

SDG No: \_\_\_\_\_

Case No: \_\_\_\_\_

Initial Cal. Date: 01/20/19

Matrix: \_\_\_\_\_

Instrument: 7890

Initials: \_\_\_\_\_

19012000.D    19012001.D    19012002.D    19012003.D    19012005.D    19012007.D    19012008.D

		Compound	1	2	3	4	5	6	7				Avg	%RSD	Type	r <sup>2</sup>	Q
1	ATML	Methane	31727	15184	9929	15034	12111	11418	8746				14878	52	ATM	0.994	
2	ATML	Ethane	25078	13064	8590	12630	9815	9659	7285				12303	49	ATM	0.994	
3	ATML	Ethene	22488	11903	7914	11685	9157	8919	6685				11250	47	ATM	0.993	
4																	
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35																	

4.239405

Data File : G:\ROCKY\DATA\190120RS\19012000.D Vial: 1  
 Acq On : 20 Jan 19 11:58 Operator: cmm  
 Sample : RSK Std 1 01/20/19 Inst : 7890  
 Misc : 125uL from RSK Std 3 Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Jan 20 12:35 2019 Quant Results File: RSK0120.RES

Method : G:\ROCKY\DATA\190120RS\RSK0120.M (Chemstation Integrator)  
 Title : RSK 175  
 Last Update : Sun Jan 20 12:34:55 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 0.500 mL  
 Signal Phase : CARBOPACK  
 Signal Info :

Compound	R.T.	Response	Conc Units
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Target Compounds

Target Compounds

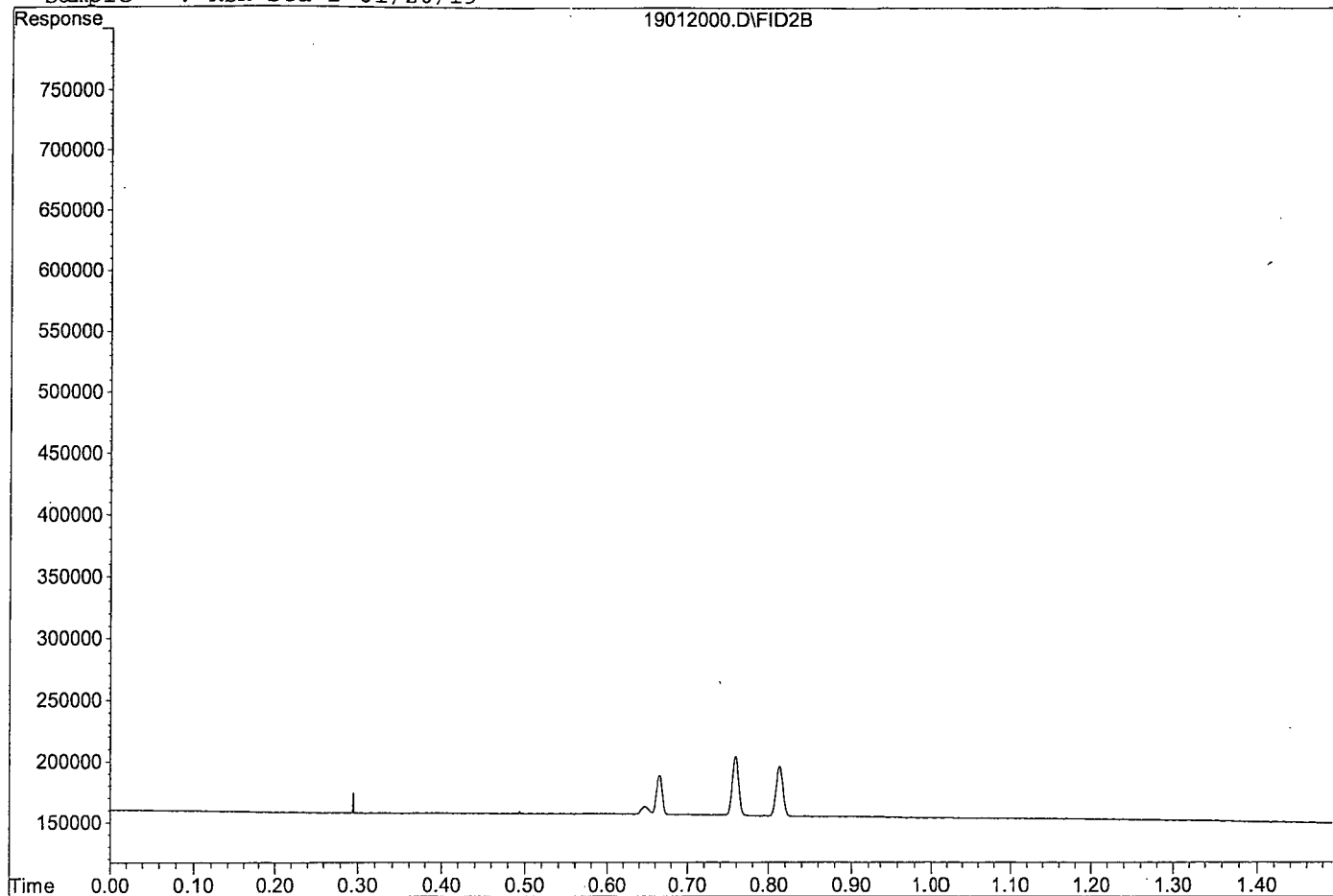
1) ATM Methane	0.67	32996	N.D. ppb
2) ATM Ethane	0.76	49028	N.D. ppb
3) ATM Ethene	0.81	41040	N.D. ppb

Quantitation Report

Data File: G:\ROCKY\DATA\190120RS\19012000.D

Sample : RSK Std 1 01/20/19

19012000.D\FID2B





Data File : G:\ROCKY\DATA\190120RS\19012001.D Vial: 2  
 Acq On : 20 Jan 19 12:02 Operator: cmm  
 Sample : RSK Std 2 01/20/19 Inst : 7890  
 Misc : 250uL from RSK Std 3 Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Jan 20 12:35 2019 Quant Results File: RSK0120.RES

Method : G:\ROCKY\DATA\190120RS\RSK0120.M (Chemstation Integrator)  
 Title : RSK 175  
 Last Update : Sun Jan 20 12:35:30 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 0.500 mL  
 Signal Phase : CARBOPACK  
 Signal Info :

Compound	R.T.	Response	Conc	Units
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Target Compounds

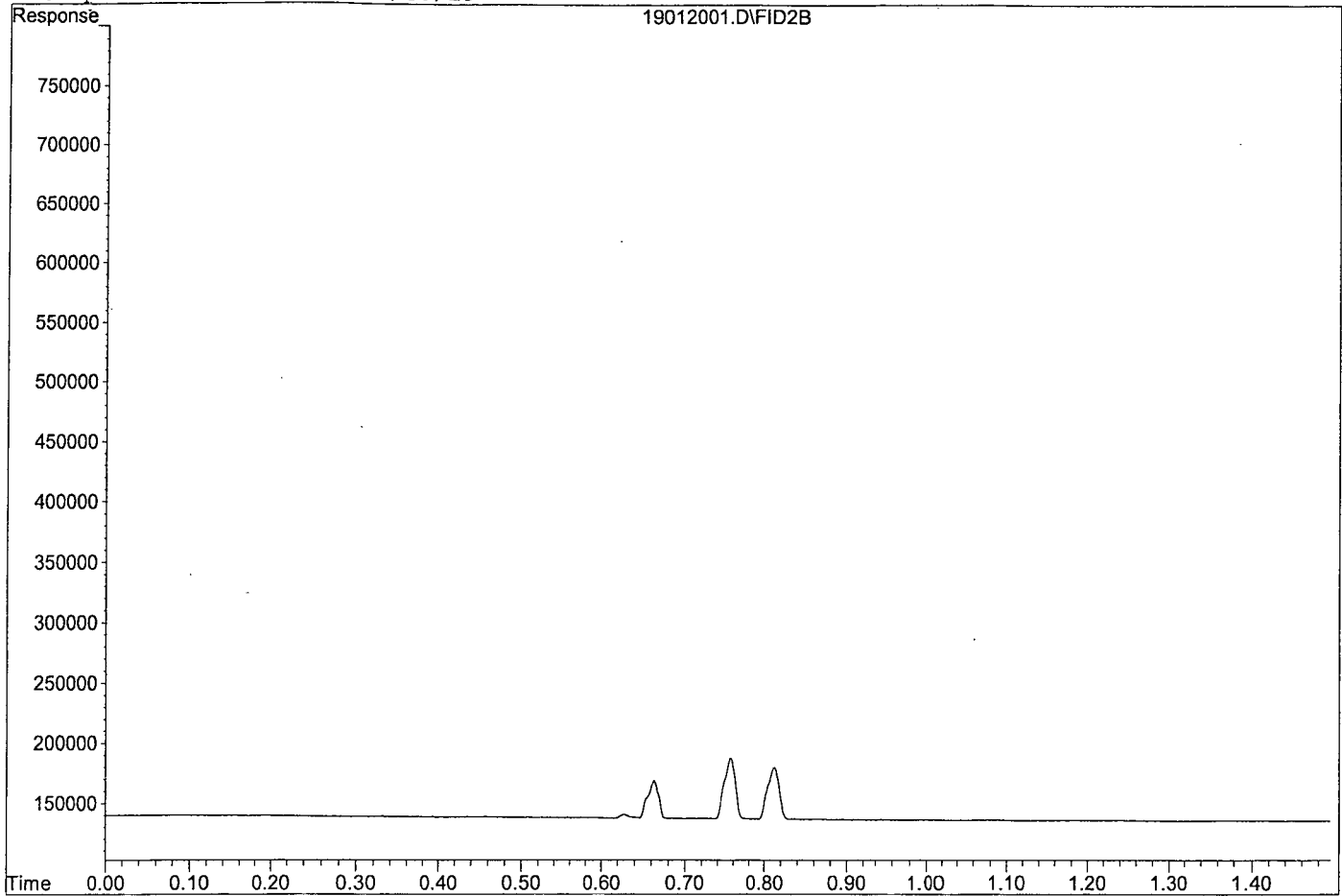
Target Compounds

1) ATM Methane	0.66	31584	N.D.	ppb
2) ATM Ethane	0.76	51016	N.D.	ppb
3) ATM Ethene	0.81	43446	N.D.	ppb

Quantitation Report

Data File: G:\ROCKY\DATA\190120RS\19012001.D

Sample : RSK Std 2 01/20/19



Data File : G:\ROCKY\DATA\190120RS\19012002.D Vial: 3  
 Acq On : 20 Jan 19 12:04 Operator: cmm  
 Sample : RSK Std 3 01/20/19 Inst : 7890  
 Misc : Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Jan 20 12:36 2019 Quant Results File: RSK0120.RES

Method : G:\ROCKY\DATA\190120RS\RSK0120.M (Chemstation Integrator)  
 Title : RSK 175  
 Last Update : Sun Jan 20 12:36:01 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 0.500 mL  
 Signal Phase : CARBOPACK  
 Signal Info :

Compound	R.T.	Response	Conc	Units
----------	------	----------	------	-------

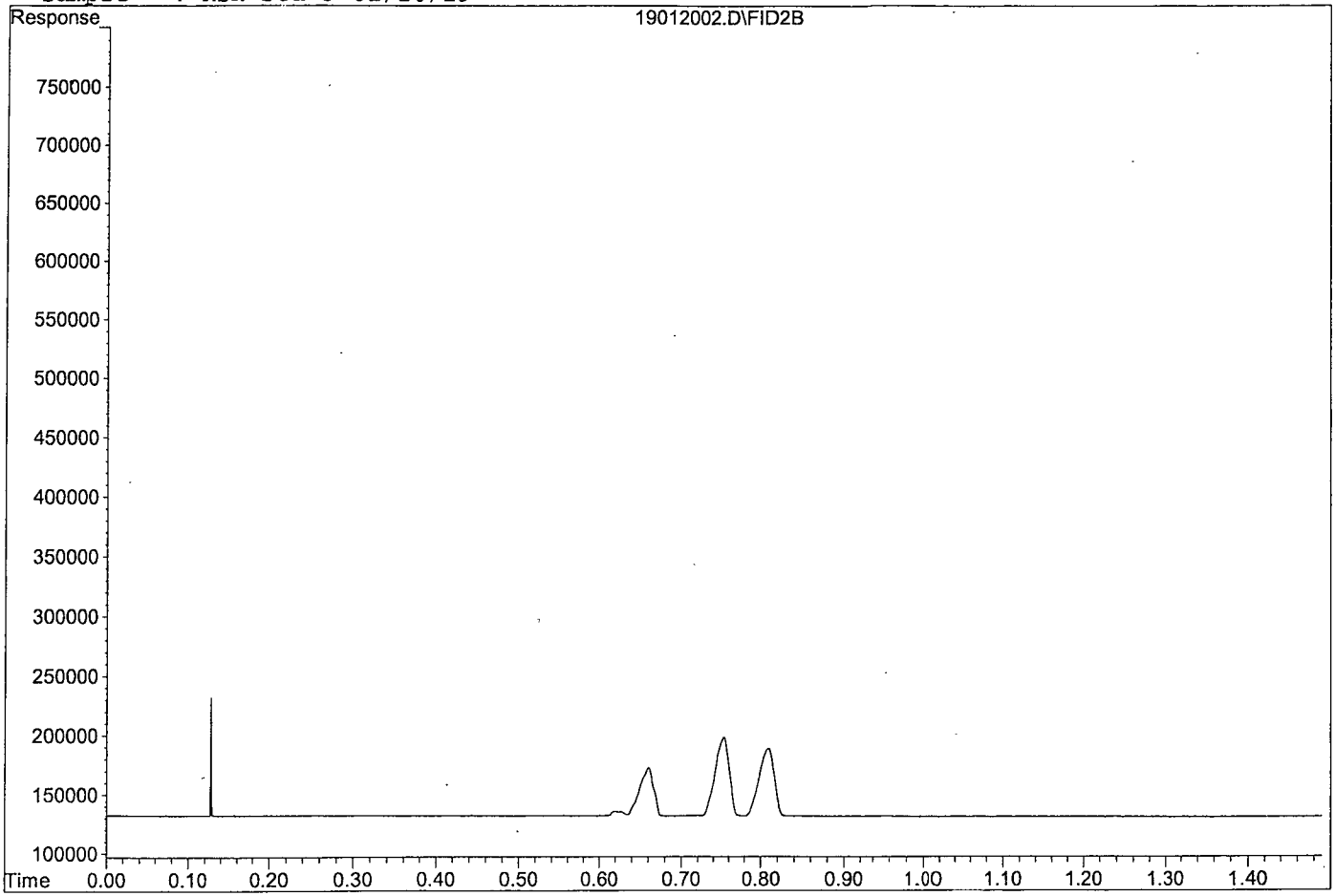
Target Compounds

Target Compounds	R.T.	Response	Conc	Units
1) ATM Methane	0.66	41402	N.D.	ppb
2) ATM Ethane	0.75	66998	N.D.	ppb
3) ATM Ethene	0.81	57770	N.D.	ppb

Quantitation Report

Data File: G:\ROCKY\DATA\190120RS\19012002.D

Sample : RSK Std 3 01/20/19



Data File : G:\ROCKY\DATA\190120RS\19012003.D Vial: 4  
 Acq On : 20 Jan 19 12:07 Operator: cmm  
 Sample : RSK Std 4 01/20/19 Inst : 7890  
 Misc : Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Jan 20 12:36 2019 Quant Results File: RSK0120.RES

Method : G:\ROCKY\DATA\190120RS\RSK0120.M (Chemstation Integrator)  
 Title : RSK 175  
 Last Update : Sun Jan 20 12:36:29 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 0.500 mL  
 Signal Phase : CARBOPACK  
 Signal Info :

Compound	R.T.	Response	Conc Units
-----			
Target Compounds			
1) ATM Methane	0.66	156731	17.650 ppb
2) ATM Ethane	0.75	246852	33.403 ppb
3) ATM Ethene	0.81	213014	30.693 ppb

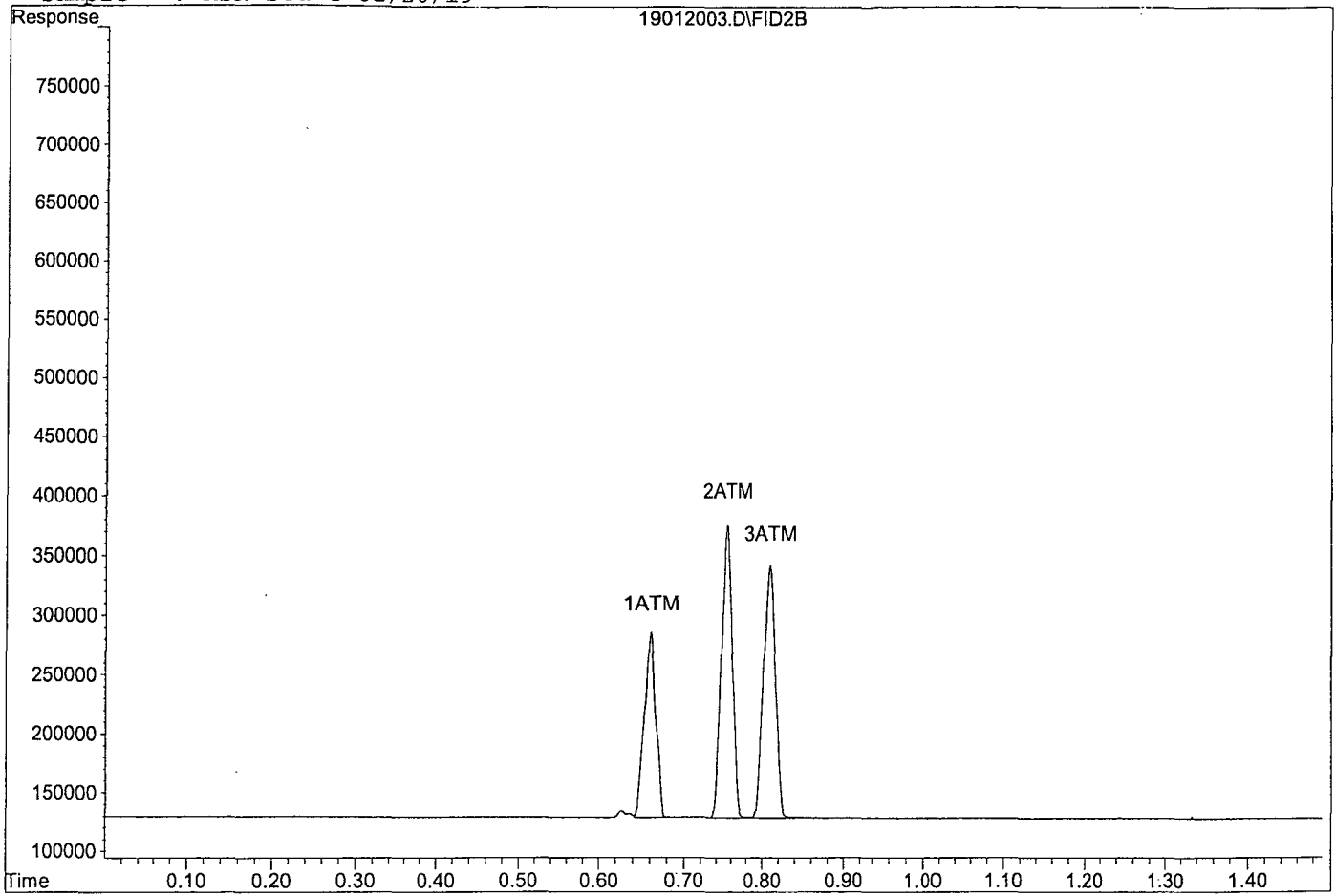
Target Compounds

Quantitation Report

Data File: G:\ROCKY\DATA\190120RS\19012003.D

Sample : RSK Std 4 01/20/19

19012003.D\FID2B



Data File : G:\ROCKY\DATA\190120RS\19012005.D Vial: 6  
 Acq On : 20 Jan 19 12:12 Operator: cmm  
 Sample : RSK Std 5 01/20/19 Inst : 7890  
 Misc : Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Jan 20 12:37 2019 Quant Results File: RSK0120.RES

Method : G:\ROCKY\DATA\190120RS\RSK0120.M (Chemstation Integrator)  
 Title : RSK 175  
 Last Update : Sun Jan 20 12:36:58 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 0.500 mL  
 Signal Phase : CARBOPACK  
 Signal Info :

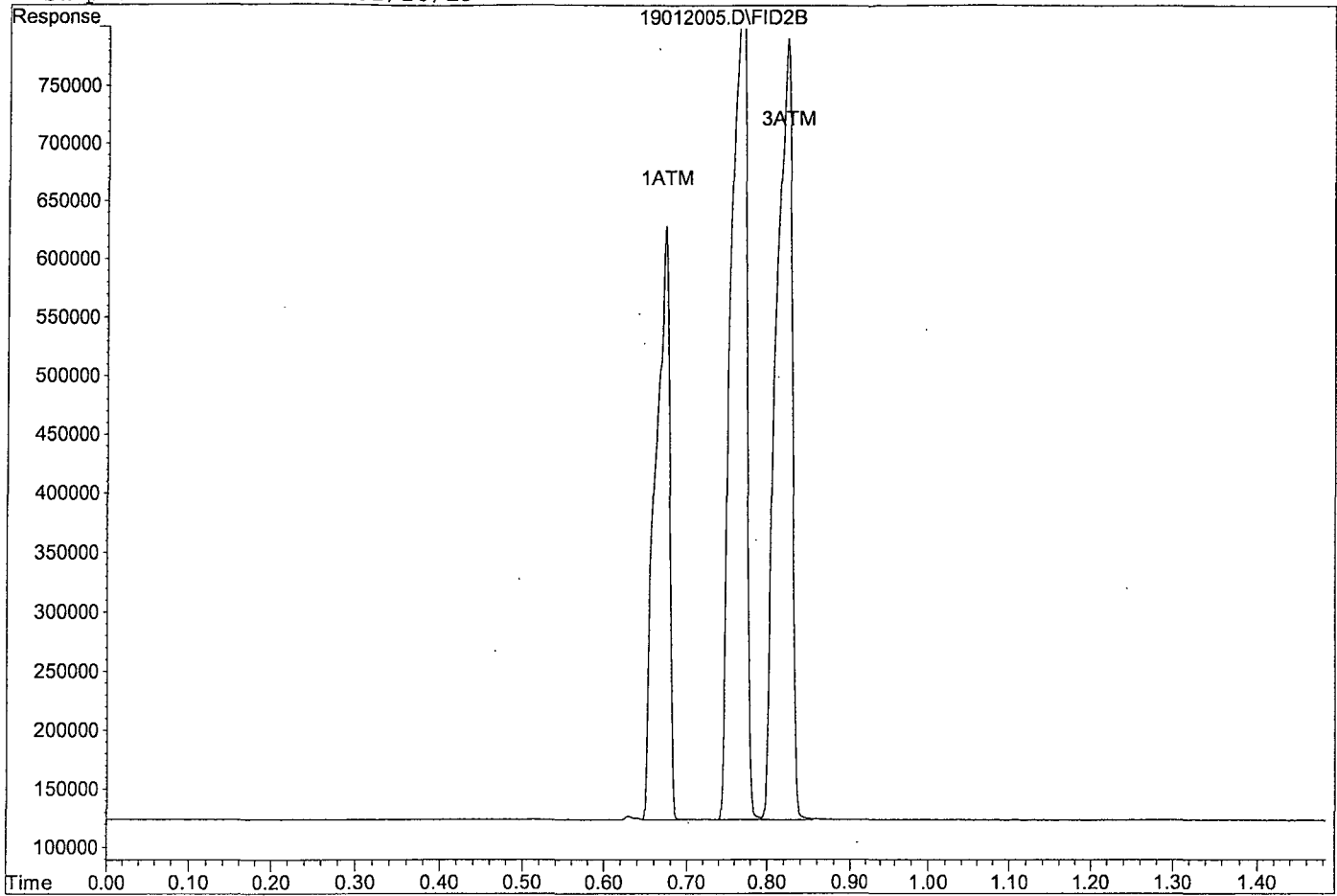
Compound	R.T.	Response	Conc Units
-----			
Target Compounds			
1) ATM Methane	0.67	505025	97.832 ppb
2) ATM Ethane	0.77	767300	177.156 ppb
3) ATM Ethene	0.82	667740	167.580 ppb

Target Compounds

Quantitation Report

Data File: G:\ROCKY\DATA\190120RS\19012005.D

Sample : RSK Std 5 01/20/19





Data File : G:\ROCKY\DATA\190120RS\19012007.D Vial: 8  
 Acq On : 20 Jan 19 12:17 Operator: cmm  
 Sample : RSK Std 6 01/20/19 Inst : 7890  
 Misc : Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Jan 20 12:37 2019 Quant Results File: RSK0120.RES

Method : G:\ROCKY\DATA\190120RS\RSK0120.M (Chemstation Integrator)  
 Title : RSK 175  
 Last Update : Sun Jan 20 12:37:36 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 0.500 mL  
 Signal Phase : CARBOPACK  
 Signal Info :

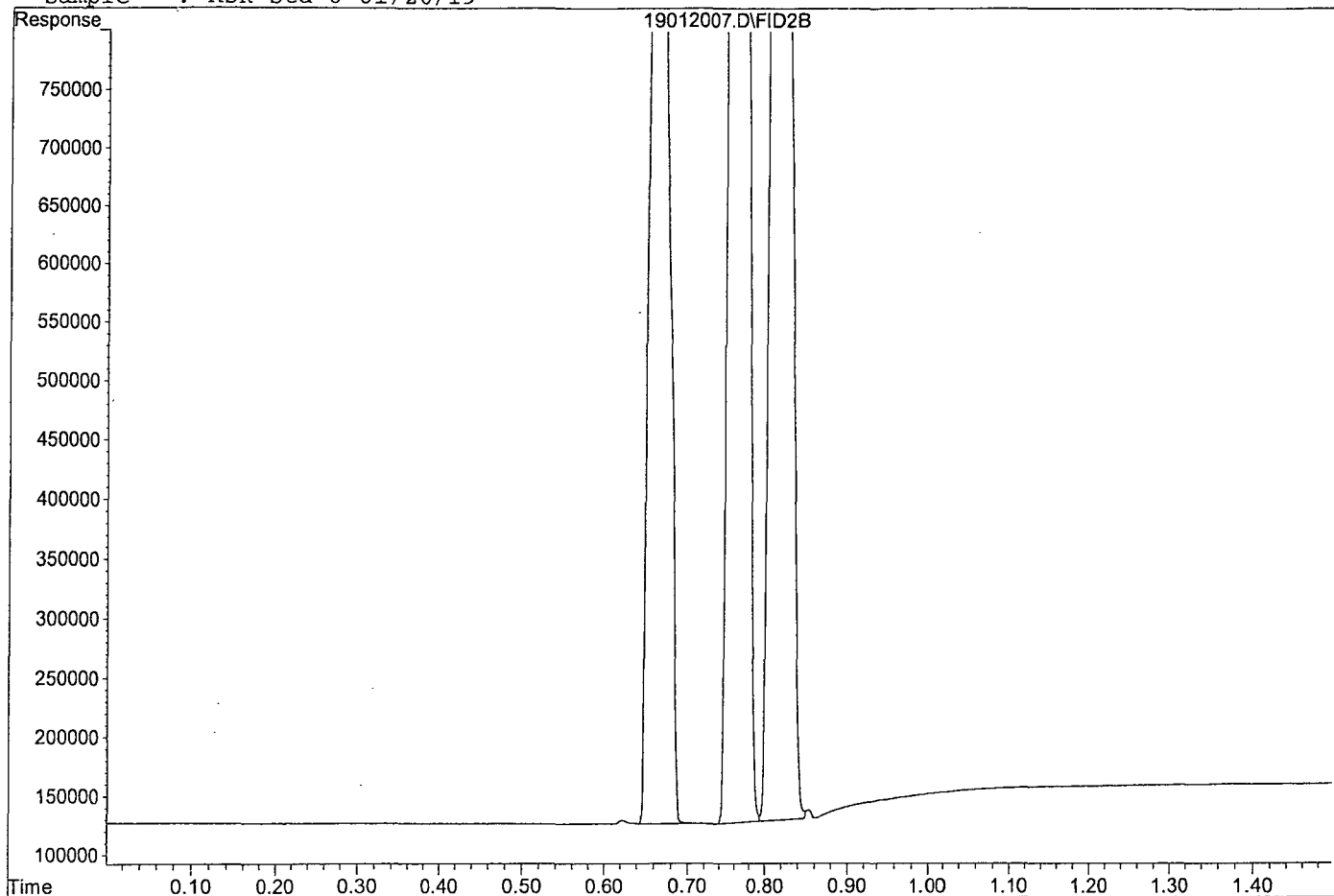
Compound	R.T.	Response	Conc Units
-----			
Target Compounds			
1) ATM Methane	0.67	1190356	255.605 ppb
2) ATM Ethane	0.77	1887834	486.657 ppb
3) ATM Ethene	0.82	1625935	456.029 ppb

Target Compounds

Quantitation Report

Data File: G:\ROCKY\DATA\190120RS\19012007.D

Sample : RSK Std 6 01/20/19



Data File : G:\ROCKY\DATA\190120RS\19012008.D Vial: 9  
 Acq On : 20 Jan 19 12:20 Operator: cmm  
 Sample : RSK Std 7 01/20/19 Inst : 7890  
 Misc : Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Jan 20 12:38 2019 Quant Results File: RSK0120.RES

Method : G:\ROCKY\DATA\190120RS\RSK0120.M (Chemstation Integrator)  
 Title : RSK 175  
 Last Update : Sun Jan 20 12:38:08 2019  
 Response via : Multiple Level Calibration

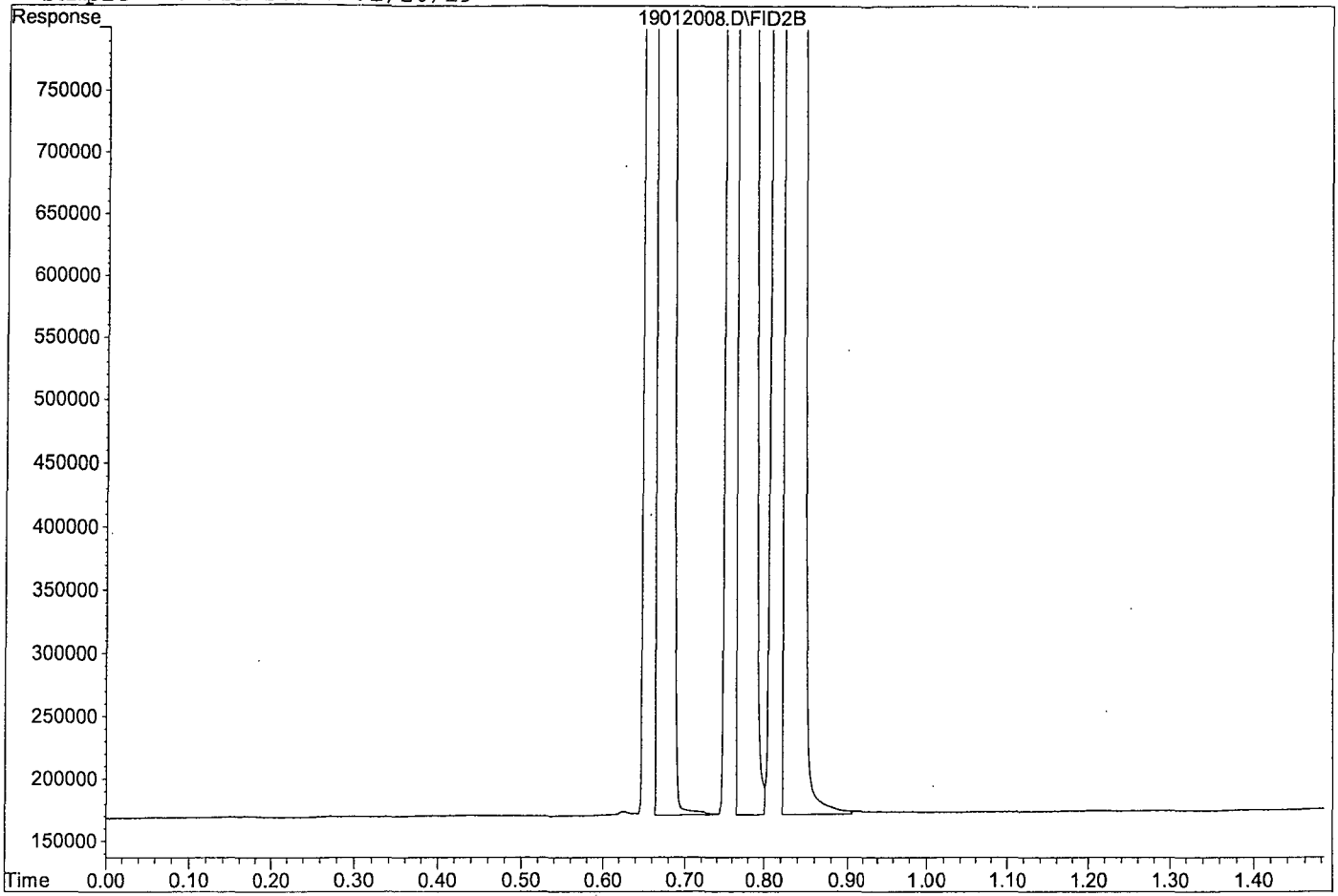
Volume Inj. : 0.500 mL  
 Signal Phase : CARBOPACK  
 Signal Info :

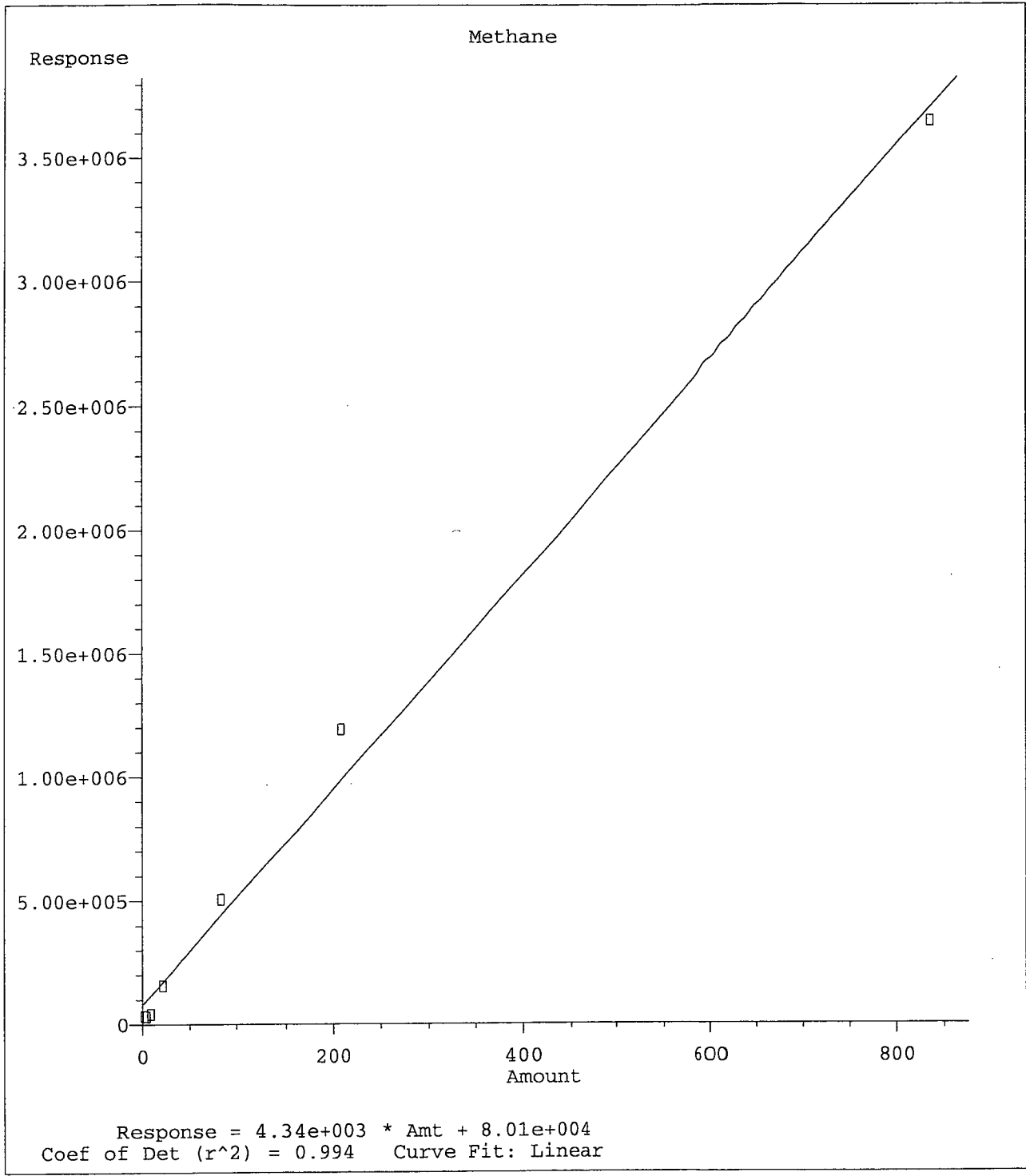
Compound	R.T.	Response	Conc Units
-----			
Target Compounds			
1) ATM Methane	0.67	3646926	821.142 ppb
2) ATM Ethane	0.77	5694692	1538.144 ppb
3) ATM Ethene	0.83	4874710	1434.020 ppb

Target Compounds

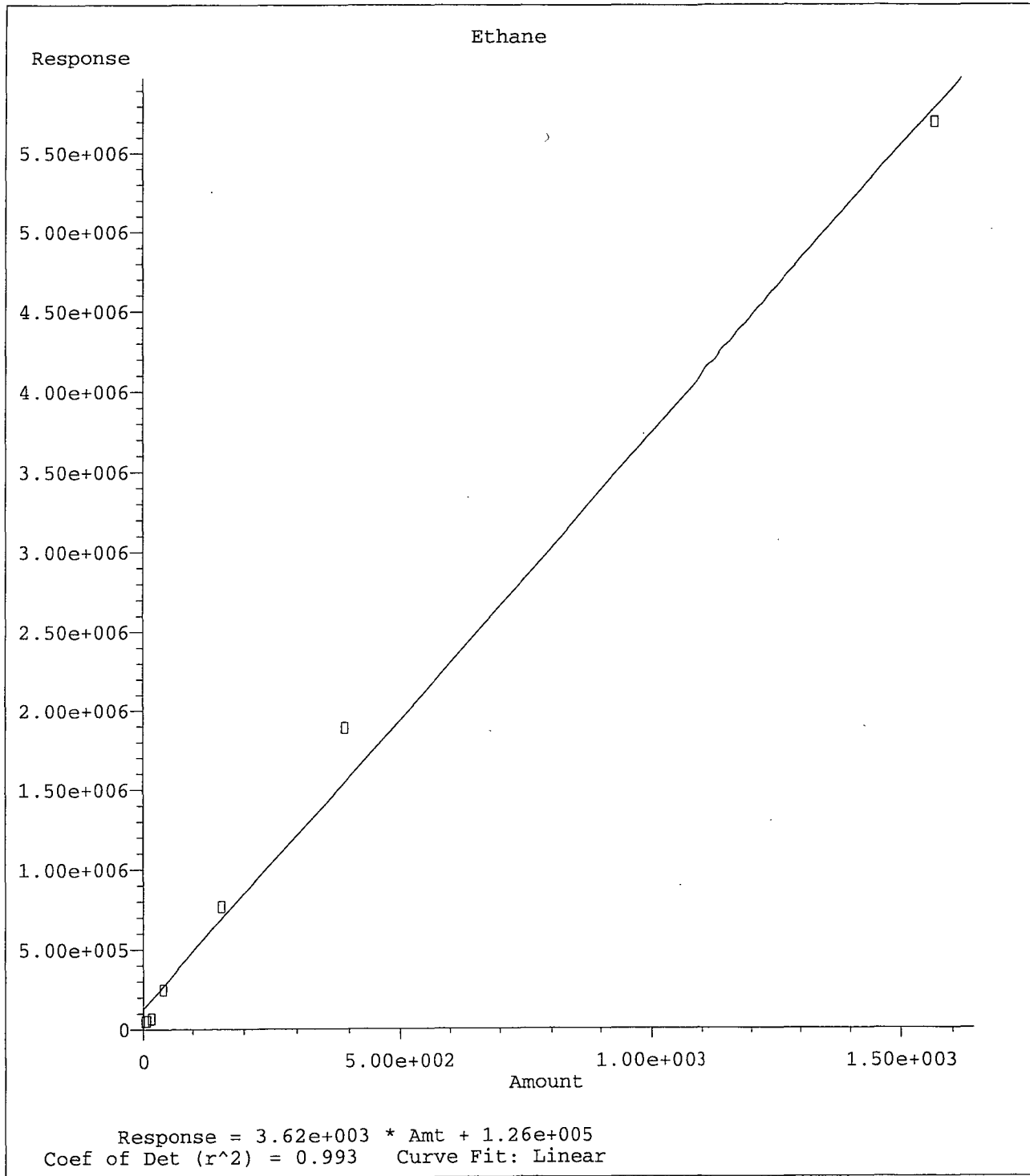
Quantitation Report

Data File: G:\ROCKY\DATA\190120RS\19012008.D  
Sample : RSK Std 7 01/20/19

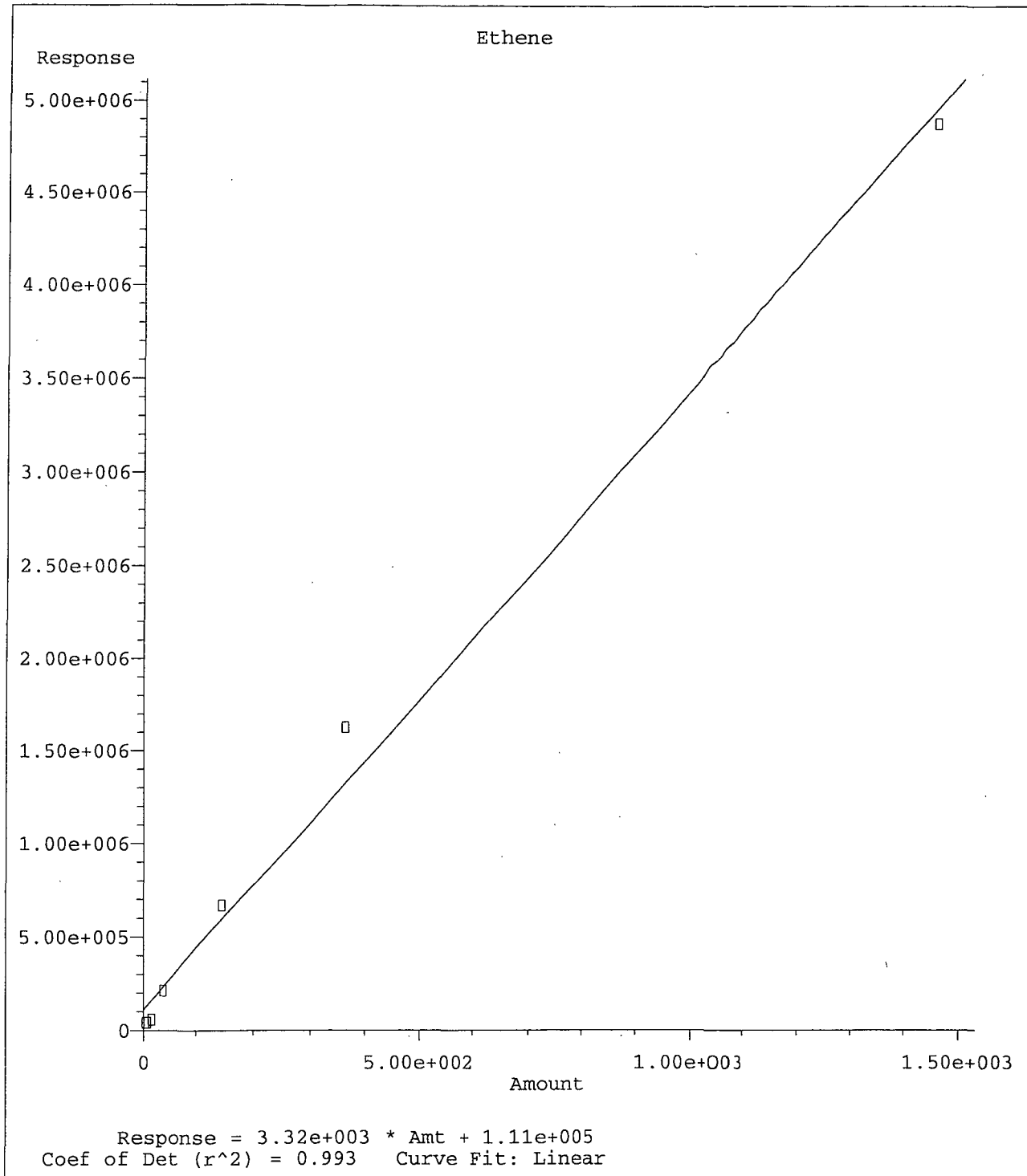




Method Name: G:\ROCKY\DATA\190120RS\RSK0120.M  
Calibration Table Last Updated: Sun Jan 20 12:32:56 2019



Method Name: G:\ROCKY\DATA\190120RS\RSK0120.M  
Calibration Table Last Updated: Sun Jan 20 12:32:56 2019



Method Name: G:\ROCKY\DATA\190120RS\RSK0120.M  
Calibration Table Last Updated: Sun Jan 20 12:33:08 2019

RSK 175  
RSK 175

Form 7

### Second Source Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: \_\_\_\_\_

SDG No: \_\_\_\_\_  
Date Analyzed: 01/20/19  
Instrument: 7890  
Initial Cal. Date: 01/20/19  
Data File: 19012010.D

		Compound	MEAN	CCRF	%D		%Drift
1	ATML	Methane	14878	10667	28	ATML	0.69
2	ATML	Ethane	12303	9330	24	ATML	6.6
3	ATML	Ethene	11250	8592	24	ATML	6.4
4							
5							
6							
7							
8							
9							
10							
11							
12							
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32							
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34							
35							
36							
37							
38							
39							
40							

Average

25.3



Data File : G:\ROCKY\DATA\190120RS\19012010.D Vial: 11  
 Acq On : 20 Jan 19 12:39 Operator: cmm  
 Sample : SS RSK Std 5 01/20/19 Inst : 7890  
 Misc : Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Jan 20 12:42 2019 Quant Results File: RSK0120.RES

Method : G:\ROCKY\DATA\190120RS\RSK0120.M (Chemstation Integrator)  
 Title : RSK 175  
 Last Update : Sun Jan 20 12:42:01 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 0.500 mL  
 Signal Phase : CARBOPACK  
 Signal Info :

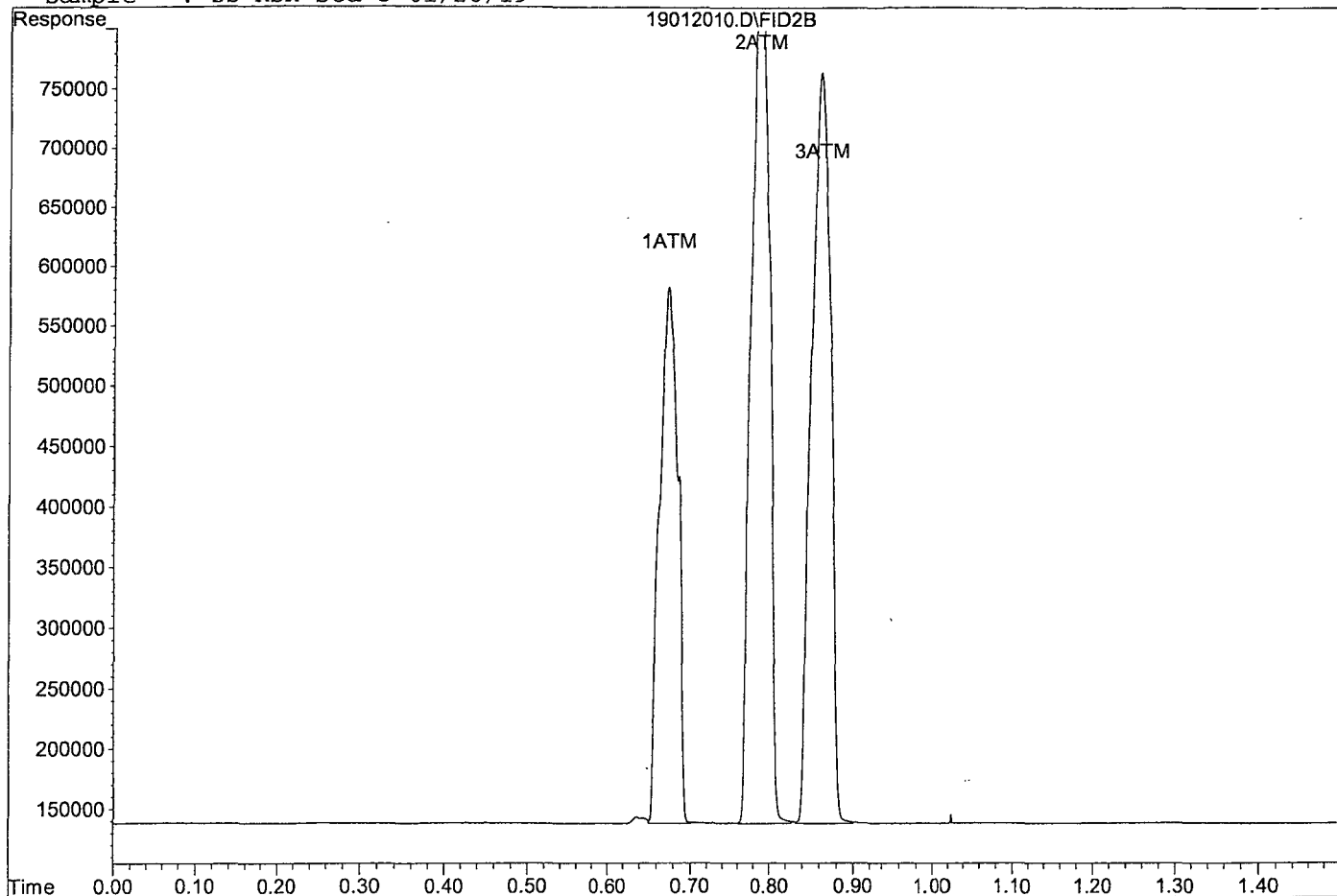
Compound	R.T.	Response	Conc Units
-----			
Target Compounds			
1) ATM Methane	0.67	444826	83.973 ppb
2) ATM Ethane	0.79	729370	166.679 ppb
3) ATM Ethene	0.86	626499	155.165 ppb

Target Compounds

Quantitation Report

Data File: G:\ROCKY\DATA\190120RS\19012010.D

Sample : SS RSK Std 5 01/20/19



RSK 175

RSK 175

Form 7

### Continuing Calibration

Lab Name: APPL, Inc.

SDG No: \_\_\_\_\_

Case No: \_\_\_\_\_

Date Analyzed: 01/28/19

Matrix: \_\_\_\_\_

Instrument: 7890

Initial Cal. Date: 01/20/19

Data File: 19012823.D

	Compound	MEAN	CCRF	%D	%Drift	
1	ATML Methane	14878	11142	25	ATML	6.2
2	ATML Ethane	12303	9105	26	ATML	3.5
3	ATML Ethene	11250	8159	27	ATML	0.12
4						
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39						
40						

Average

26.0

Data File : G:\ROCKY\DATA\190120RS\19012823.D Vial: 24  
 Acq On : 28 Jan 19 11:27 Operator: cmm  
 Sample : 190128B LCS/CCV RSK Std 5 Inst : 7890  
 Misc : Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Jan 28 11:29 2019 Quant Results File: RSK0120.RES

Method : G:\ROCKY\DATA\190120RS\RSK0120.M (Chemstation Integrator)  
 Title : RSK 175  
 Last Update : Mon Jan 28 11:29:46 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 0.500 mL  
 Signal Phase : CARBOPACK  
 Signal Info :

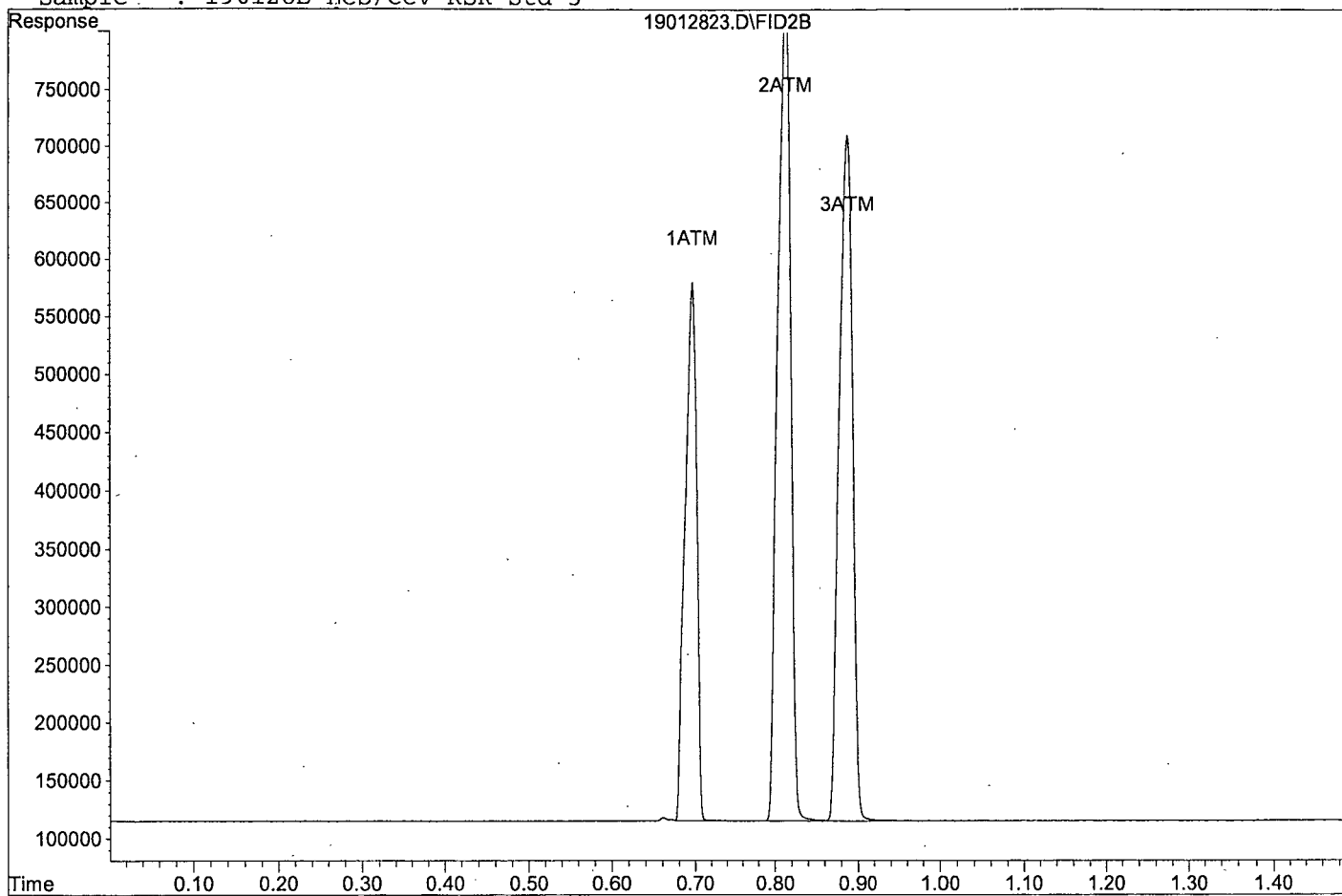
Compound	R.T.	Response	Conc Units
-----			
Target Compounds			
1) ATM Methane	0.70	464623	88.531 ppb
2) ATM Ethane	0.81	711782	161.821 ppb
3) ATM Ethene	0.89	594958	145.671 ppb

Target Compounds

Quantitation Report

Data File: G:\ROCKY\DATA\190120RS\19012823.D

Sample : 190128B I,CS/CCV RSK Std 5



RSK 175  
RSK 175

Form 7  
Ending Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: \_\_\_\_\_

SDG No: \_\_\_\_\_  
Date Analyzed: 01/28/19  
Instrument: 7890  
Initial Cal. Date: 01/20/19  
Data File: 19012832.D

	Compound	MEAN	CCRF	%D	%Drift
1	ATML Methane	14878	11389	23	ATML 9.0
2	ATML Ethane	12303	9607	22	ATML 10
3	ATML Ethene	11250	8462	25	ATML 4.4
4					
5					
6					
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10					
11					
12					
13					
14					
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36					
37					
38					
39					
40					

Average

23.3

Data File : G:\ROCKY\DATA\190120RS\19012832.D Vial: 33  
 Acq On : 28 Jan 19 11:49 Operator: cmm  
 Sample : Ending CCV RSK Std 5 01/28/19 Inst : 7890  
 Misc : Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Jan 28 11:52 2019 Quant Results File: RSK0120.RES

Method : G:\ROCKY\DATA\190120RS\RSK0120.M (Chemstation Integrator)  
 Title : RSK 175  
 Last Update : Mon Jan 28 11:51:55 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 0.500 mL  
 Signal Phase : CARBOPACK  
 Signal Info :

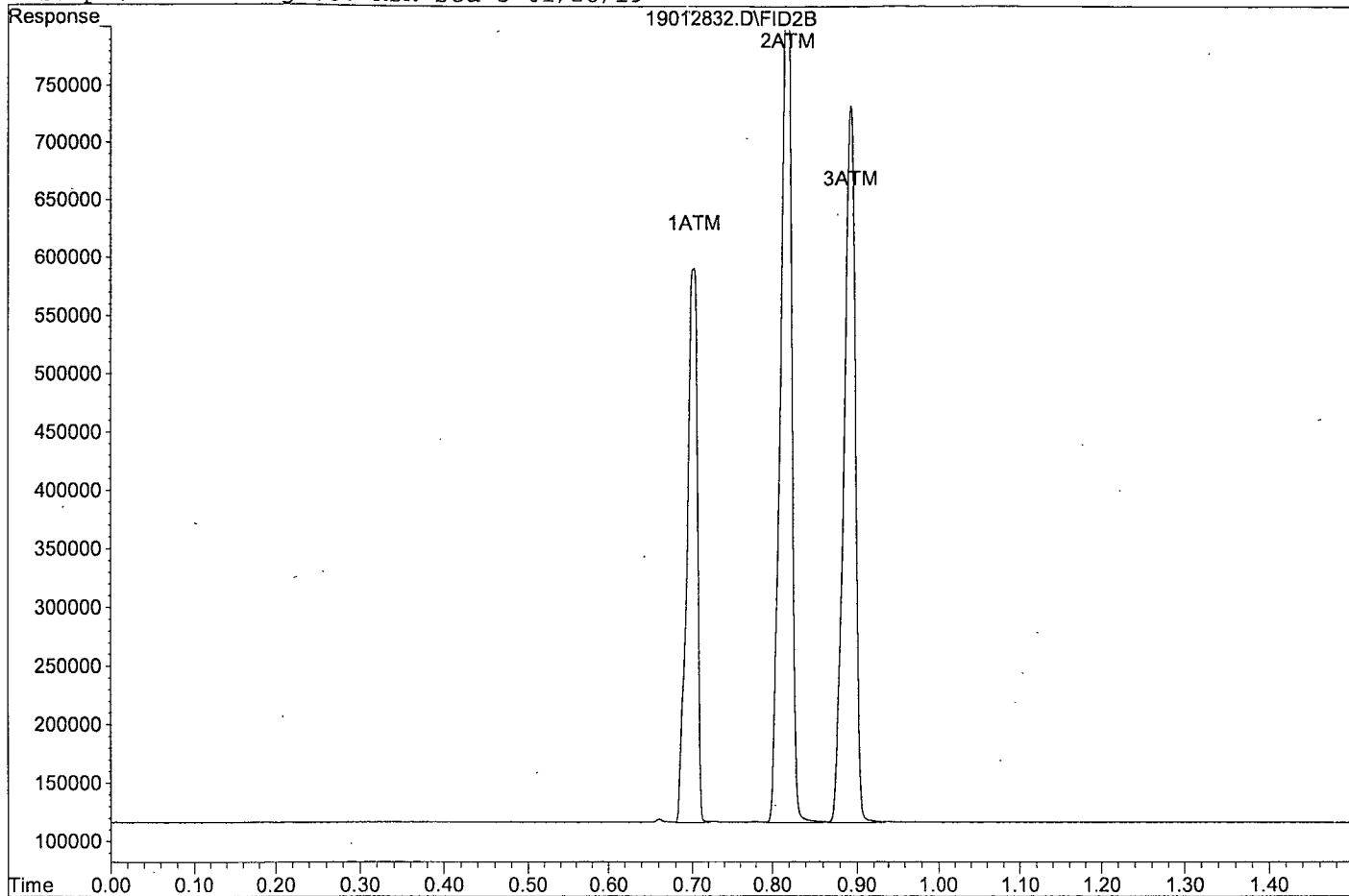
Compound	R.T.	Response	Conc Units
-----			
Target Compounds			
1) ATM Methane	0.70	474919	90.901 ppb
2) ATM Ethane	0.82	751015	172.657 ppb
3) ATM Ethene	0.89	617077	152.329 ppb

Target Compounds

Quantitation Report

Data File: G:\ROCKY\DATA\190120RS\19012832.D

Sample : Ending CCV RSK Std 5 01/28/19





**ORGANICS**  
**Raw Data**

Data File : G:\ROCKY\DATA\190120RS\19012826.D Vial: 27  
 Acq On : 28 Jan 19 11:36 Operator: cmm  
 Sample : AZ85642W04 Inst : 7890  
 Misc : Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Jan 28 11:39 2019 Quant Results File: RSK0120.RES

Method : G:\ROCKY\DATA\190120RS\RSK0120.M (Chemstation Integrator)  
 Title : RSK 175  
 Last Update : Mon Jan 28 11:32:24 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 0.500 mL  
 Signal Phase : CARBOPACK  
 Signal Info :

Compound	R.T.	Response	Conc	Units
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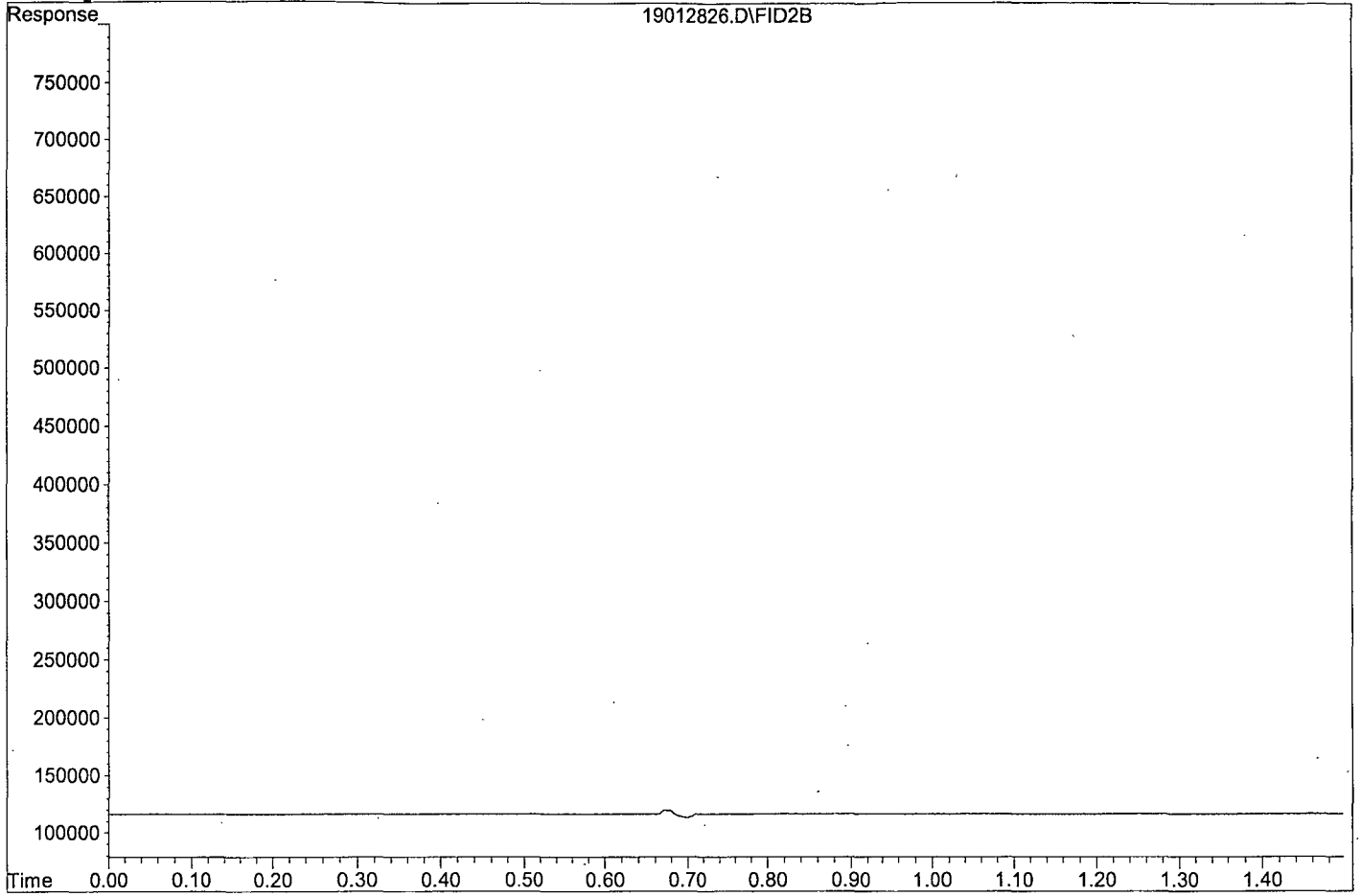
Target Compounds

Target Compounds	R.T.	Response	Conc	Units
1) ATM Methane	0.00	0	N.D.	ppb d
2) ATM Ethane	0.00	0	N.D.	ppb d
3) ATM Ethene	0.00	0	N.D.	ppb d

Quantitation Report

Data File: G:\ROCKY\DATA\190120RS\19012826.D

Sample : AZ85642W04



Data File : G:\ROCKY\DATA\190120RS\19012827.D Vial: 28  
 Acq On : 28 Jan 19 11:38 Operator: cmm  
 Sample : AZ85643W05 Inst : 7890  
 Misc : Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Jan 28 11:41 2019 Quant Results File: RSK0120.RES

Method : G:\ROCKY\DATA\190120RS\RSK0120.M (Chemstation Integrator)  
 Title : RSK 175  
 Last Update : Mon Jan 28 11:32:24 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 0.500 mL  
 Signal Phase : CARBOPACK  
 Signal Info :

Compound	R.T.	Response	Conc	Units
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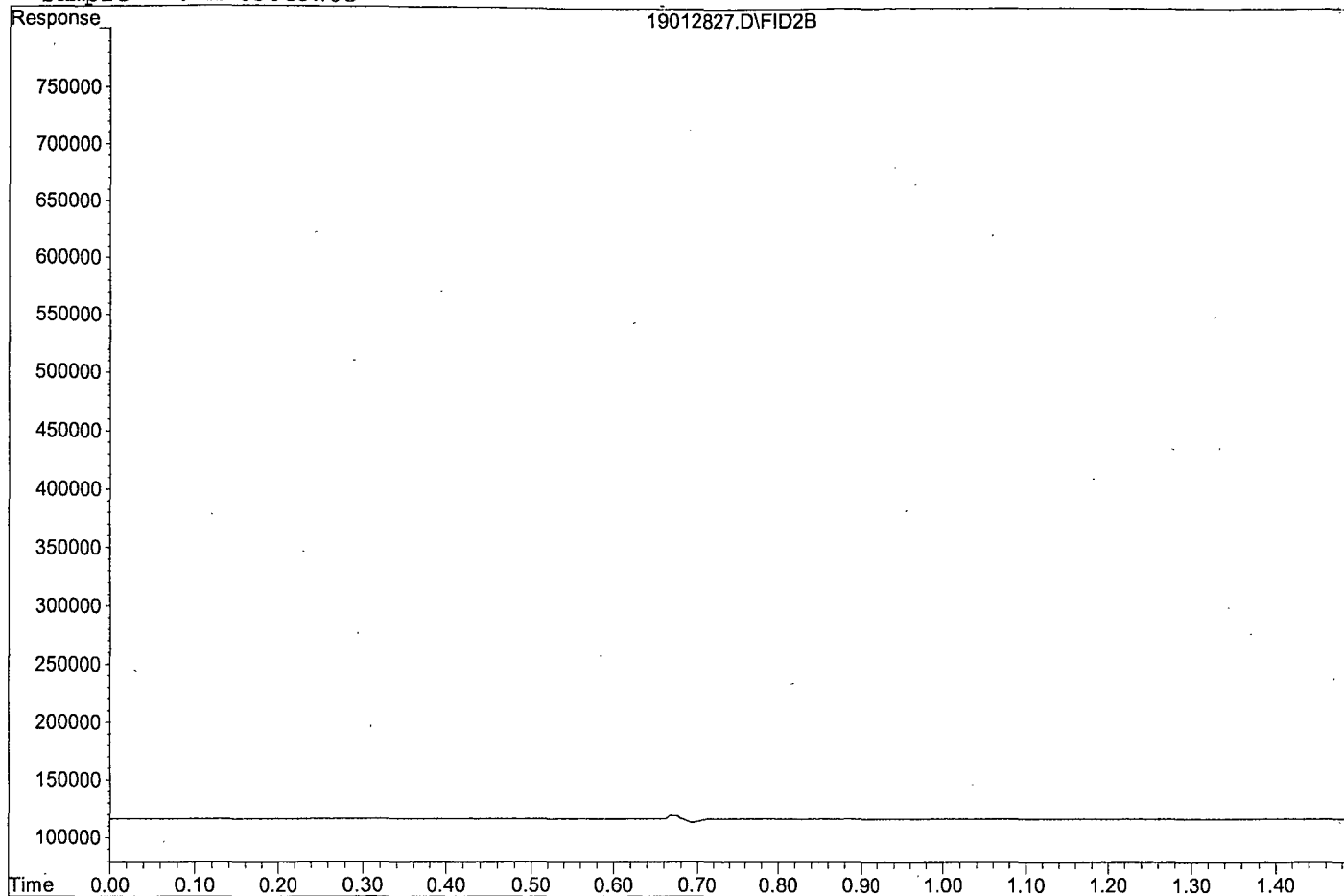
Target Compounds

Target Compounds	R.T.	Response	Conc	Units
1) ATM Methane	0.00	0	N.D.	ppb d
2) ATM Ethane	0.00	0	N.D.	ppb d
3) ATM Ethene	0.00	0	N.D.	ppb d

Quantitation Report

Data File: G:\ROCKY\DATA\190120RS\19012827.D

Sample : AZ85643W05



Data File : G:\ROCKY\DATA\190120RS\19012828.D Vial: 29  
 Acq On : 28 Jan 19 11:40 Operator: cmm  
 Sample : AZ85645W04 Inst : 7890  
 Misc : Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Jan 28 11:43 2019 Quant Results File: RSK0120.RES

Method : G:\ROCKY\DATA\190120RS\RSK0120.M (Chemstation Integrator)  
 Title : RSK 175  
 Last Update : Mon Jan 28 11:32:24 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 0.500 mL  
 Signal Phase : CARBOPACK  
 Signal Info :

Compound	R.T.	Response	Conc	Units
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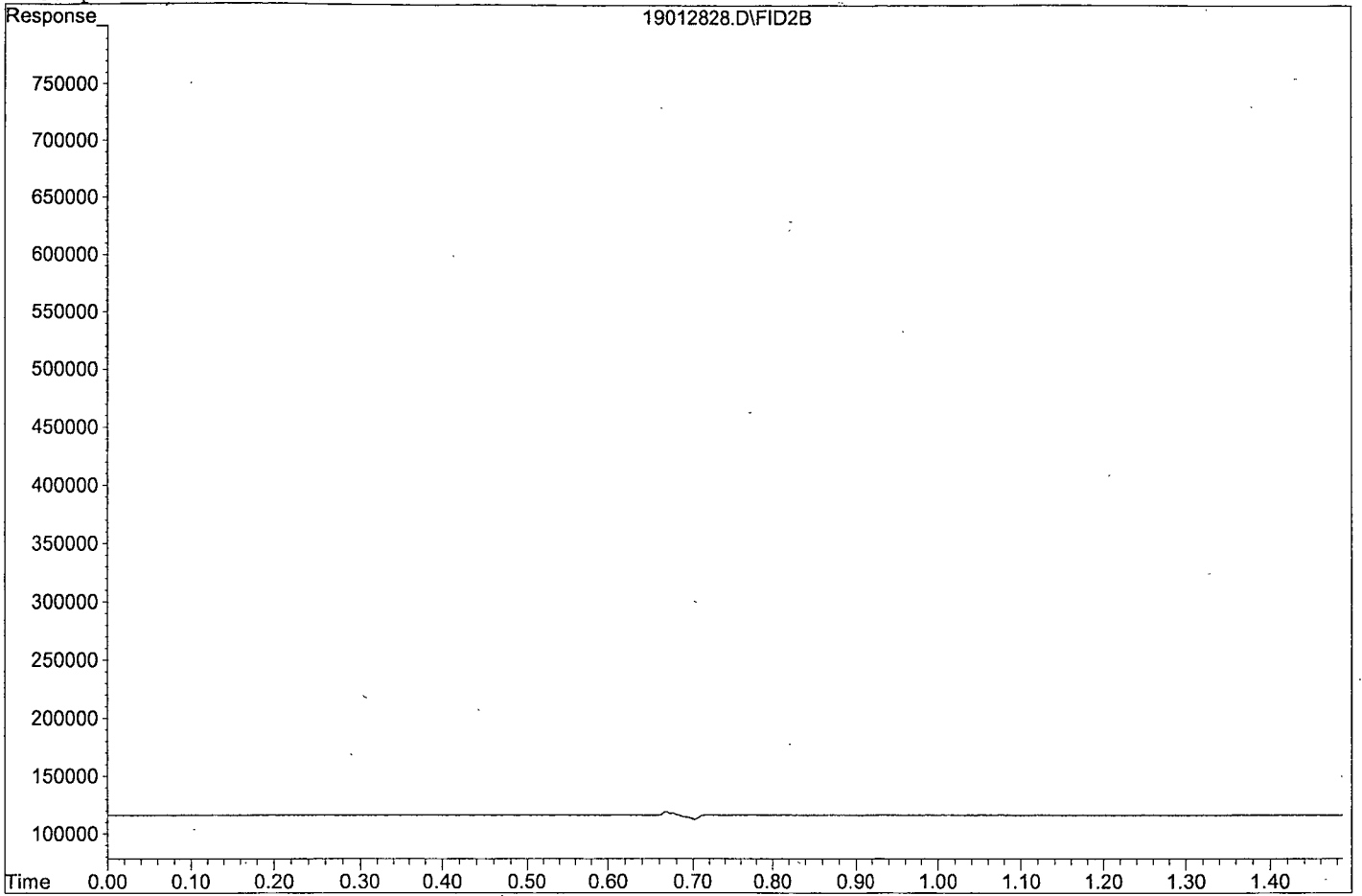
Target Compounds

Target Compounds	R.T.	Response	Conc	Units
1) ATM Methane	0.00	0	N.D.	ppb d
2) ATM Ethane	0.00	0	N.D.	ppb d
3) ATM Ethene	0.00	0	N.D.	ppb d

Quantitation Report

Data File: G:\ROCKY\DATA\190120RS\19012828.D

Sample : AZ85645W04



Data File : G:\ROCKY\DATA\190120RS\19012829.D Vial: 30  
 Acq On : 28 Jan 19 11:43 Operator: cmm  
 Sample : AZ85646W04 Inst : 7890  
 Misc : Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Jan 28 11:46 2019 Quant Results File: RSK0120.RES

Method : G:\ROCKY\DATA\190120RS\RSK0120.M (Chemstation Integrator)  
 Title : RSK 175  
 Last Update : Mon Jan 28 11:32:24 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 0.500 mL  
 Signal Phase : CARBOPACK  
 Signal Info :

Compound	R.T.	Response	Conc	Units
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Target Compounds

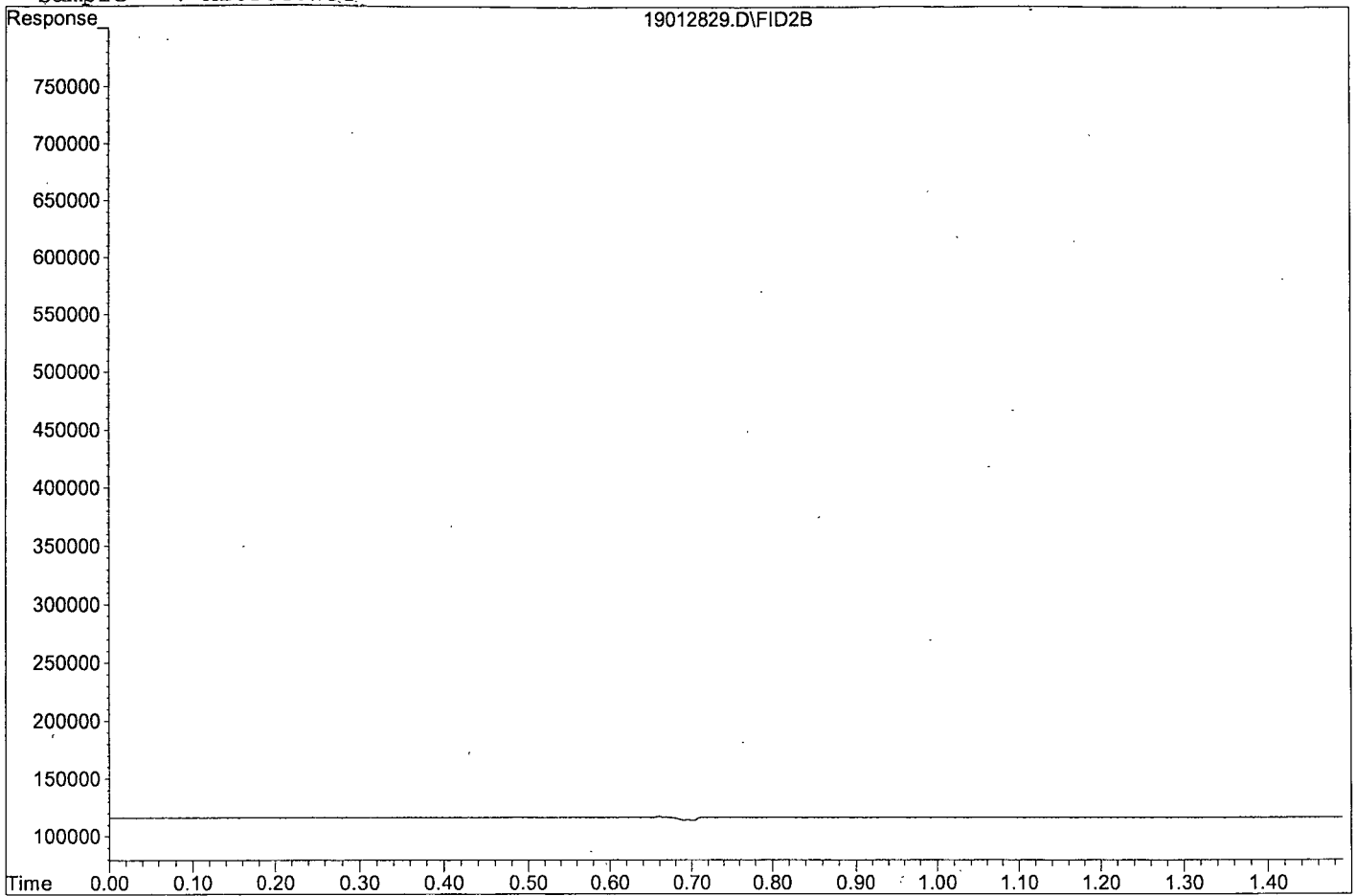
Target Compounds	R.T.	Response	Conc	Units
1) ATM Methane	0.00	0	N.D.	ppb d
2) ATM Ethane	0.00	0	N.D.	ppb d
3) ATM Ethene	0.00	0	N.D.	ppb d



Quantitation Report

Data File: G:\ROCKY\DATA\190120RS\19012829.D

Sample : AZ85646W04



Data File : G:\ROCKY\DATA\190120RS\19012830.D Vial: 31  
 Acq On : 28 Jan 19 11:45 Operator: cmm  
 Sample : AZ85652W04 Inst : 7890  
 Misc : Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Jan 28 11:48 2019 Quant Results File: RSK0120.RES

Method : G:\ROCKY\DATA\190120RS\RSK0120.M (Chemstation Integrator)  
 Title : RSK 175  
 Last Update : Mon Jan 28 11:32:24 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 0.500 mL  
 Signal Phase : CARBOPACK  
 Signal Info :

Compound	R.T.	Response	Conc	Units
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Target Compounds

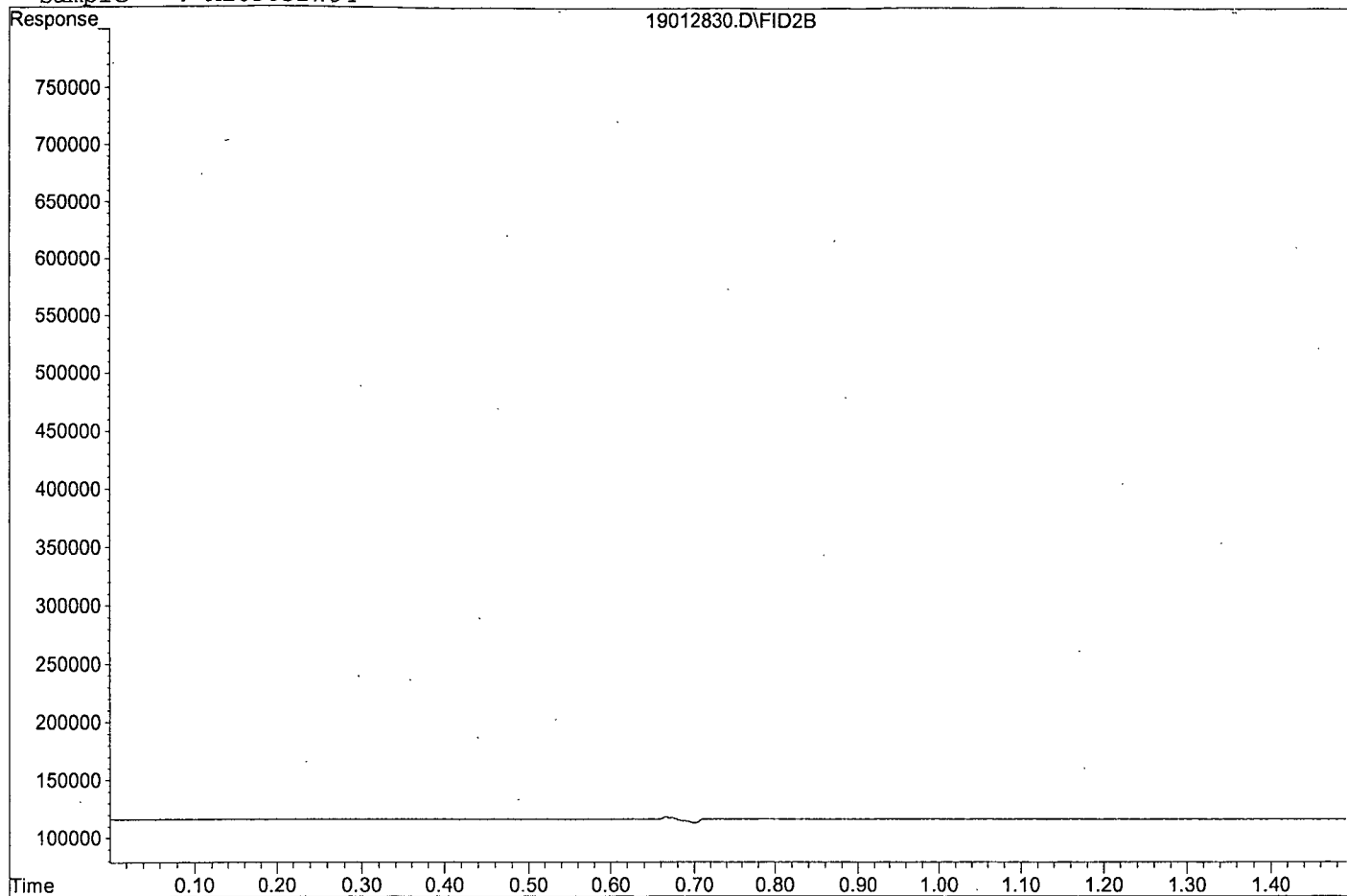
Target Compounds	R.T.	Response	Conc	Units
1) ATM Methane	0.00	0	N.D.	ppb d
2) ATM Ethane	0.00	0	N.D.	ppb d
3) ATM Ethene	0.00	0	N.D.	ppb d

Quantitation Report

Data File: G:\ROCKY\DATA\190120RS\19012830.D

Sample : AZ85652W04

19012830.D\FID2B



Data File : G:\ROCKY\DATA\190120RS\19012831.D Vial: 32  
 Acq On : 28 Jan 19 11:47 Operator: cmm  
 Sample : AZ85653W04 Inst : 7890  
 Misc : Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Jan 28 11:50 2019 Quant Results File: RSK0120.RES

Method : G:\ROCKY\DATA\190120RS\RSK0120.M (Chemstation Integrator)  
 Title : RSK 175  
 Last Update : Mon Jan 28 11:32:24 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 0.500 mL  
 Signal Phase : CARBOPACK  
 Signal Info :

Compound	R.T.	Response	Conc	Units
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Target Compounds

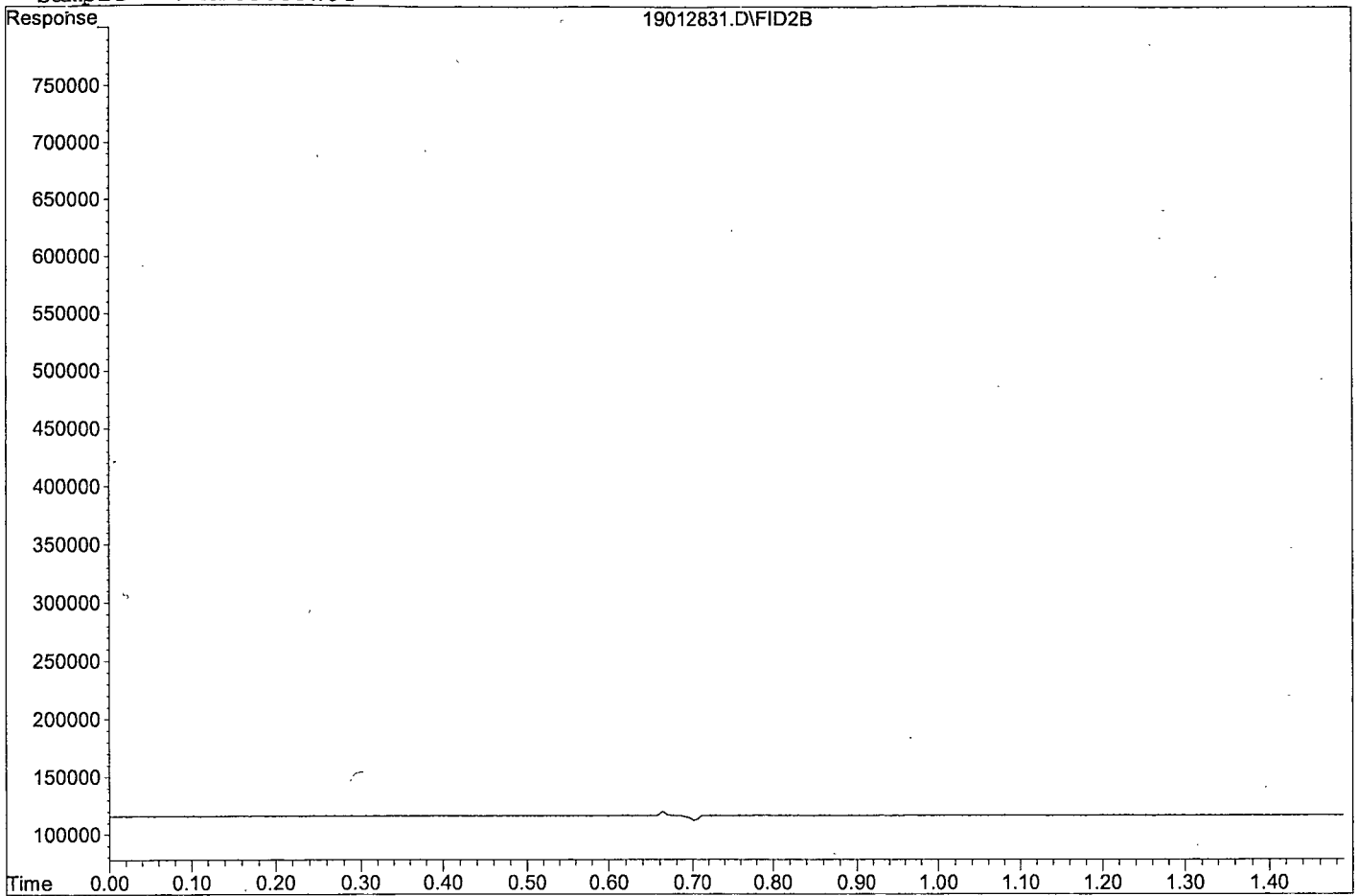
Target Compounds

1) ATM Methane	0.00	0	N.D.	ppb d
2) ATM Ethane	0.00	0	N.D.	ppb d
3) ATM Ethene	0.00	0	N.D.	ppb d

Quantitation Report

Data File: G:\ROCKY\DATA\190120RS\19012831.D

Sample : AZ85653W04



Data File : G:\ROCKY\DATA\190120RS\19012825.D Vial: 26  
 Acq On : 28 Jan 19 11:33 Operator: cmm  
 Sample : 190128B Blk Inst : 7890  
 Misc : Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Jan 28 11:39 2019 Quant Results File: RSK0120.RES

Method : G:\ROCKY\DATA\190120RS\RSK0120.M (Chemstation Integrator)  
 Title : RSK 175  
 Last Update : Mon Jan 28 11:32:24 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 0.500 mL  
 Signal Phase : CARBOPACK  
 Signal Info :

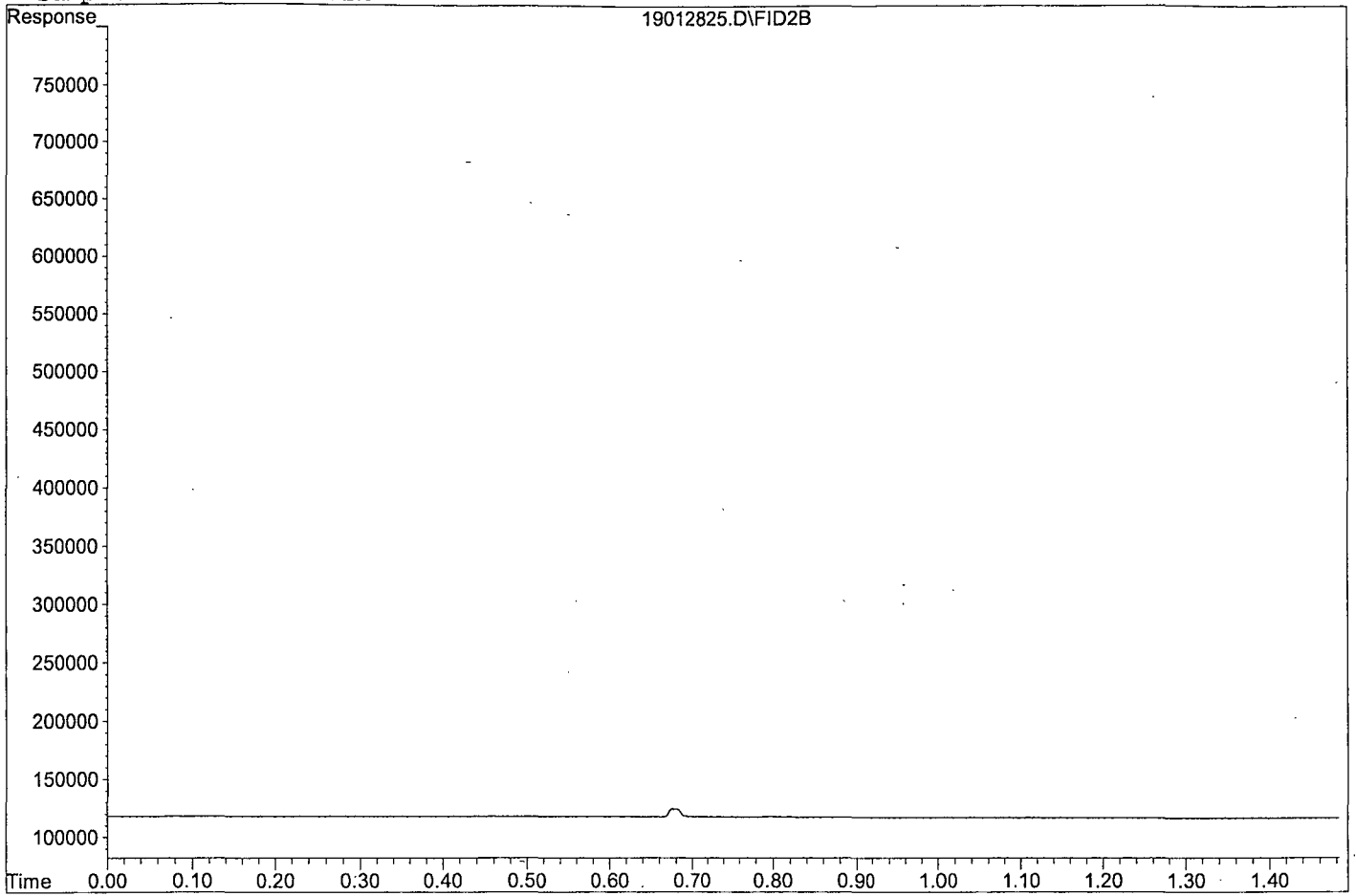
Compound	R.T.	Response	Conc	Units
----------	------	----------	------	-------

Target Compounds

Target Compounds	R.T.	Response	Conc	Units
1) ATM Methane	0.00	0	N.D.	ppb d
2) ATM Ethane	0.00	0	N.D.	ppb d
3) ATM Ethene	0.00	0	N.D.	ppb d

Quantitation Report

Data File: G:\ROCKY\DATA\190120RS\19012825.D  
Sample : 190128B Blk



Data File : G:\ROCKY\DATA\190120RS\19012823.D Vial: 24  
 Acq On : 28 Jan 19 11:27 Operator: cmm  
 Sample : 190128B LCS/CCV RSK Std 5 Inst : 7890  
 Misc : Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Jan 28 11:29 2019 Quant Results File: RSK0120.RES

Method : G:\ROCKY\DATA\190120RS\RSK0120.M (Chemstation Integrator)  
 Title : RSK 175  
 Last Update : Mon Jan 28 11:29:46 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 0.500 mL  
 Signal Phase : CARBOPACK  
 Signal Info :

Compound	R.T.	Response	Conc Units
-----			
Target Compounds			
1) ATM Methane	0.70	464623	88.531 ppb
2) ATM Ethane	0.81	711782	161.821 ppb
3) ATM Ethene	0.89	594958	145.671 ppb

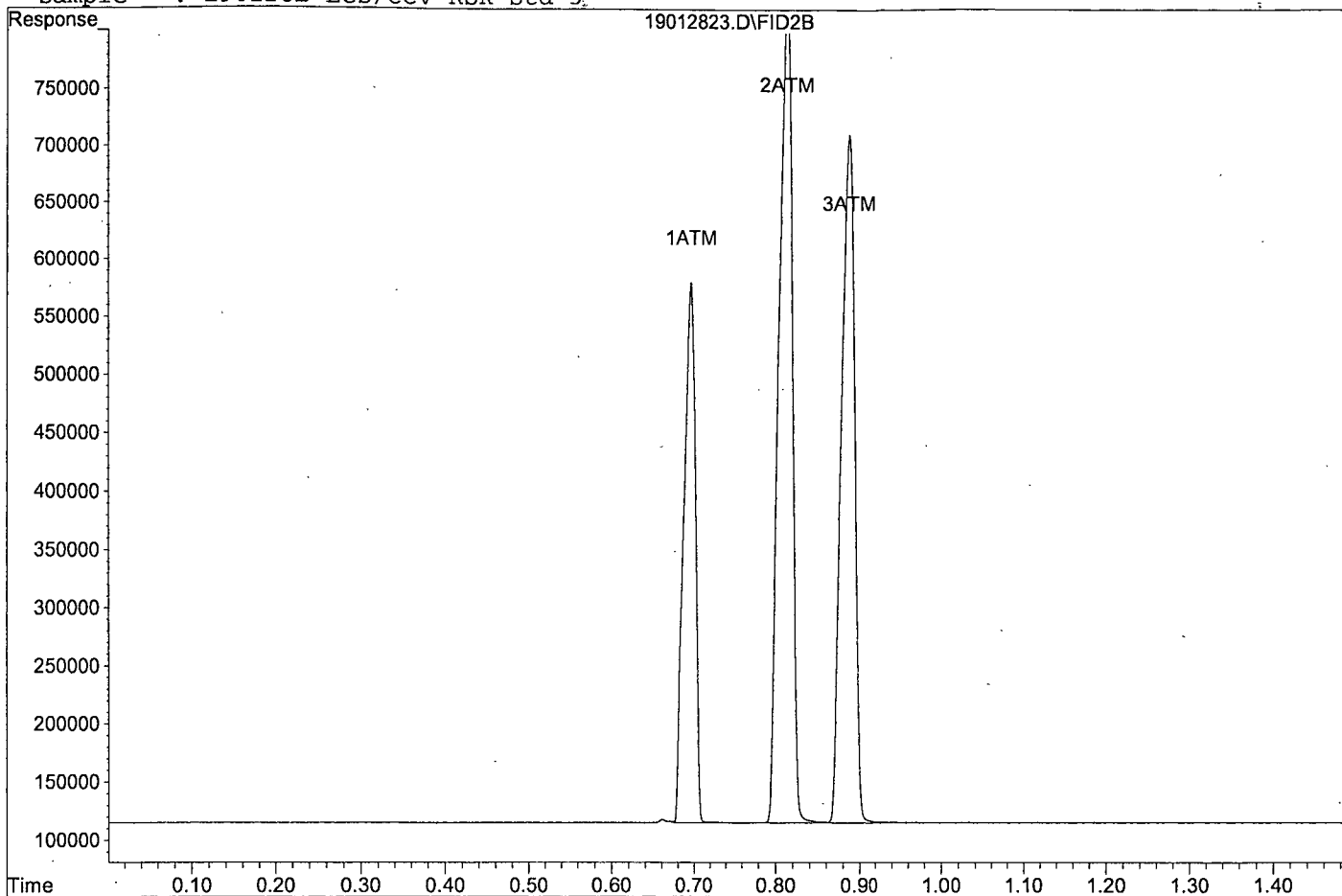
Target Compounds



Quantitation Report

Data File: G:\ROCKY\DATA\190120RS\19012823.D

Sample : 190128B LCS/CCV RSK Std 5



Data File : G:\ROCKY\DATA\190120RS\19012824.D Vial: 25  
 Acq On : 28 Jan 19 11:30 Operator: cmm  
 Sample : 190128B LCSD RSK Std 5 Inst : 7890  
 Misc : Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Jan 28 11:32 2019 Quant Results File: RSK0120.RES

Method : G:\ROCKY\DATA\190120RS\RSK0120.M (Chemstation Integrator)  
 Title : RSK 175  
 Last Update : Mon Jan 28 11:32:24 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 0.500 mL  
 Signal Phase : CARBOPACK  
 Signal Info :

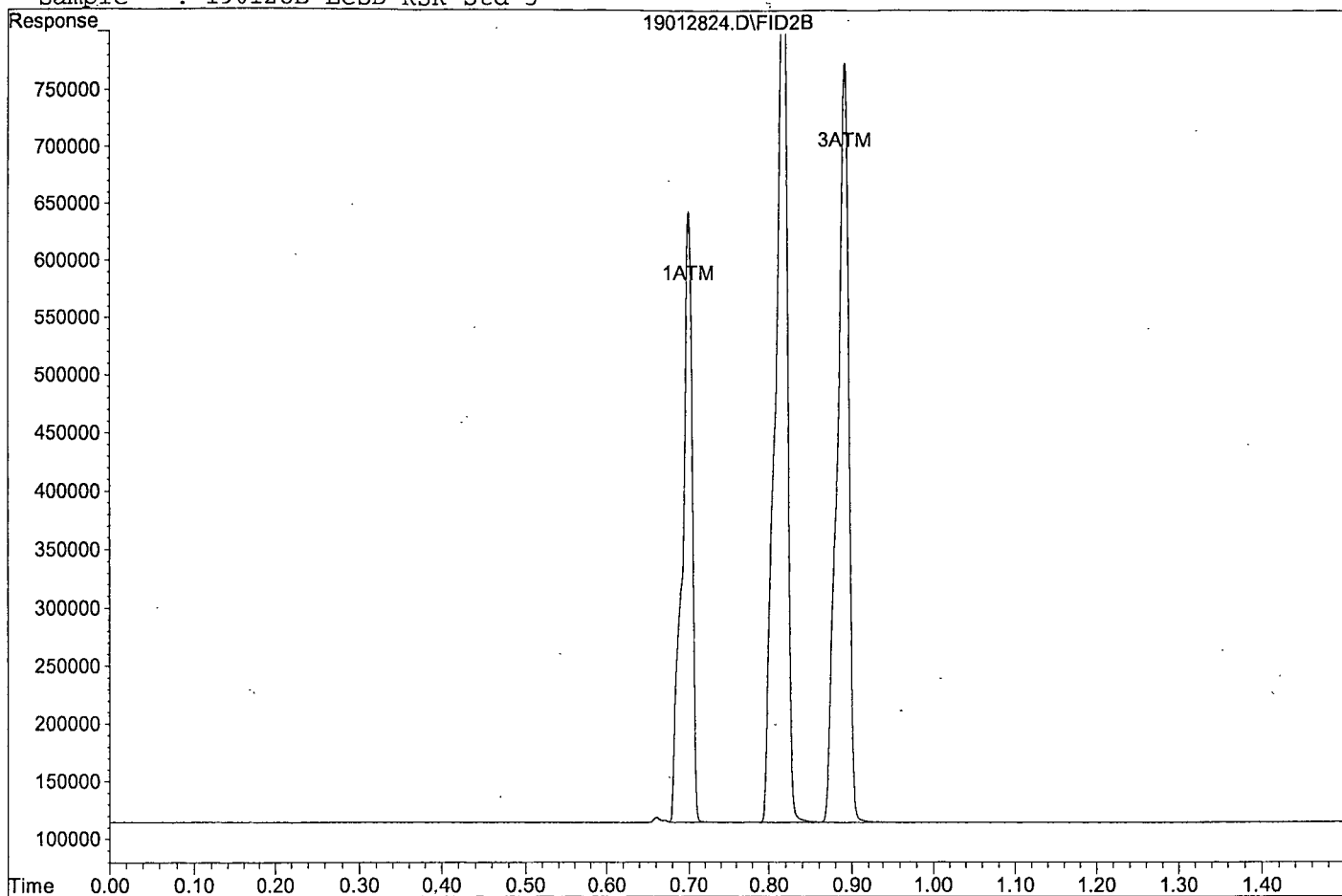
Compound	R.T.	Response	Conc Units
-----			
Target Compounds			
1) ATM Methane	0.70	528756	103.295 ppb
2) ATM Ethane	0.82	803594	187.180 ppb
3) ATM Ethene	0.89	659964	165.239 ppb

Target Compounds

Quantitation Report

Data File: G:\ROCKY\DATA\190120RS\19012824.D

Sample : 190128B LCSD RSK Std 5



**Primary Source Stock Standard 10,000ppmV**

Manufacturer Exp Date 6-19-18

RSK Gas Mix (Scott Specialty Gas) Cat.# 0104E40028`4, Lot # 170PLU5SPC06L-35410

1% Gas Concentration Moles = 10,000ppmV Methane, Ethane, Ethene

**RSK Calibration Curve (prepared in 1.0 L Tedlar Bags at room temp)**

Expires 02/24/18

CMM 01/23/18

Analyte	Conc Std 1 (1/2 = LOD) (ug/L)	Conc Std 2 (LOQ Chk) (ug/L)	Conc Std 3 (ug/L)	Conc Std 4 (ug/L)	Conc Std 5 (ug/L)	Conc Std 6 (ug/L)	Conc Std 7 (ug/L)
Methane (MW 16.04)	2.08	4.16	8.34	20.85	83.40	208.5	834.0
Ethane (MW 30.07)	3.91	7.81	15.6	39.09	156.35	390.9	1563.5
Ethene (MW 28.05)	3.65	7.30	14.6	36.46	145.84	364.6	1458.4
Stock Source	RSK Tank Lot #170PLU5SPC0 6L-35410	RSK Tank Lot #170PLU5SPC0 6L-35410	RSK Tank Lot #170PLU5SPC0 6L-35410	RSK Tank Lot #170PLU5SPC0 6L-35410	RSK Tank Lot #170PLU5SPC 06L-35410	RSK Tank Lot #170PLU5SPC0 6L-35410	RSK Tank Lot #170PLU5SPC0 6L-35410
Stock Conc (ppmv)	10,000 ppmV	10,000 ppmV	10,000 ppmV	10,000 ppmV	10,000 ppmV	10,000 ppmV	10,000 ppmV
Stock Aliquot (mL)	0.010	0.020	0.040	0.100	0.400	1.00	4.00
Final Volume P&T Water	32 mL	32 mL	32 mL	32 mL	32 mL	32 mL	32 mL

**Second Source Stock Standard 10,000ppmV**

Manufacturer Exp date 7-8-2017 (lot exp extension to 1/8/18)\*

RSK Gas Mix (Scott Specialty Gas) Cat.# 23452, Lot # 164PLU4SPC05L-34436

1% Gas Concentration Moles = 10,000ppmV Methane, Ethane, Ethene

\*(verified with acceptable second source exp 6/19/18. OK per APPL QAU - sd)

**Second Source**

Expires 02/23/18

CMM 01/23/18

2.0mL of SS from tank into 980 mL Nitrogen

final conc: 13.3ug/L Methane, 25.0 ug/L Ethane, and 23.3 ug/L Ethene

**CCV/LCS/LCSD**

CMM 01/23/18

Spike 0.400mL of 10,000ppmV into 32mL DI water, with 8mL Nitrogen headspace

final conc: 83.40ug/L Methane, 156.35ug/L Ethane, and 145.84ug/L Ethene

**AZ66793 MS/MSD**

CMM 01/23/18

Spike 0.400mL of 10,000ppmV into 32mL DI water, with 8mL Nitrogen headspace

final conc: 83.40ug/L Methane, 156.35ug/L Ethane, and 145.84ug/L Ethene

## Injection Log

Directory: G:\ROCKY\DATA\190120RS\

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1	1	19012000.D	1	RSK Std 1 01/20/19	125uL from RSK Std 3	20 Jan 19 11:58
2	2	19012001.D	1	RSK Std 2 01/20/19	250uL from RSK Std 3	20 Jan 19 12:02
3	3	19012002.D	1	RSK Std 3 01/20/19		20 Jan 19 12:04
4	4	19012003.D	1	RSK Std 4 01/20/19		20 Jan 19 12:07
5	6	19012005.D	1	RSK Std 5 01/20/19		20 Jan 19 12:12
6	8	19012007.D	1	RSK Std 6 01/20/19		20 Jan 19 12:17
7	9	19012008.D	1	RSK Std 7 01/20/19		20 Jan 19 12:20
8	11	19012010.D	1	SS RSK Std 5 01/20/19		20 Jan 19 12:39
9	24	19012823.D	1	190128B LCS/CCV RSK Std 5		28 Jan 19 11:27
10	25	19012824.D	1	190128B LCSD RSK Std 5		28 Jan 19 11:30
11	26	19012825.D	1	190128B Blk		28 Jan 19 11:33
12	27	19012826.D	1	AZ85642W04		28 Jan 19 11:36
13	28	19012827.D	1	AZ85643W05		28 Jan 19 11:38
14	29	19012828.D	1	AZ85645W04		28 Jan 19 11:40
15	30	19012829.D	1	AZ85646W04		28 Jan 19 11:43
16	31	19012830.D	1	AZ85652W04		28 Jan 19 11:45
17	32	19012831.D	1	AZ85653W04		28 Jan 19 11:47
18	33	19012832.D	1	Ending CCV RSK Std 5 01/28/19		28 Jan 19 11:49

**INORGANIC ANALYSIS  
Calibration Data**

**APPL, INC.**

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: A.P.P.L. INC. Contract: AECOM

ARF No: 87956 SDG: 87956

Initial Calibration Source: CPI

Continuing Calibration Source: Environmental Express

Analysis Date: 06/15/18

Analyte	Calibration Verification									M
	True ICV	Found 12:31	%R(1)	True CCV1	Found 9:21	%R(1)	True CCV1	Found 9:31	%R(1)	
Ferrous Iron	3	3.15693	105	4	3.92681	98.2	4	3.93681	98.4	

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: A.P.P.L. INC. Contract: AECOM

ARF No: 87956 SDG: 87956

Initial Calibration Source: CPI

Continuing Calibration Source: Environmental Express

Analysis Date: 01/25/19

Analyte	Calibration Verification									M
	True CCV1	Found 10:37	%R(1)	True CCV1	Found 10:39	%R(1)	True CCV1	Found 15:18	%R(1)	
Ferrous Iron	4	3.92681	98.2	4	3.91681	97.9	4	3.99680	99.9	



INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: A.P.P.L. INC. Contract: AECOM

ARF No: 87956 SDG: 87956

Initial Calibration Source: CPI

Continuing Calibration Source: Environmental Express

Analysis Date: 01/25/19

Analyte	Calibration Verification									M
	True CCVI	Found 15:22	%R(1)	True	Found	%R(1)	True	Found	%R(1)	
Ferrous Iron	4	4.00680	100							

A.P.P.L. INC.

3

BLANKS

Lab Name: A.P.P.L. INC.

Contract: AECOM

ARF No.: 87956

SDG: 87956

Preparation Blank Matrix (soil/water): water

Preparation Blank Concentration Units (ug/L or mg/kg): mg/L

Analyte	Calibration Blanks										M
	ICB	C	CCB	C	CCB	C	CCB	C	CCB	C	
	06/15/18 12:32		01/25/19 09:21		01/25/19 09:32		01/25/19 10:38		01/25/19 10:40		
Ferrous Iron	1.000	U	1.000	U	1.000	U	1.000	U	1.0000	U	

A.P.P.L. INC.

3

BLANKS

Lab Name: A.P.P.L. INC.

Contract: AECOM

ARF No.: 87956

SDG: 87956

Preparation Blank Matrix (soil/water): water

Preparation Blank Concentration Units (ug/L or mg/kg): mg/L

Analyte	Calibration Blanks										M
	CCB 01/25/19 15:19	C	CCB 01/25/19 15:23	C		C		C		C	
Ferrous Iron	1.000	U	1.000	U							

A.P.P.L. INC.

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: A.P.P.L. INC. Contract: \_\_\_\_\_

ARF No: \_\_\_\_\_ SDG: \_\_\_\_\_

Initial Calibration Source: CPI

Continuing Calibration Source: Environmental Express

Analysis Date: 01/24/19

Analyte	Calibration Verification									M
	True ICV	Found 13:12	%R(1)	True ICV	Found 13:20	%R(1)	True	Found	%R(1)	
bromide	12.5	12.8349	103	12.5	12.8652	103				
chloride	25	24.9773	99.9	25	25.0366	100				
fluoride	5	5.0197	100	5	4.9943	99.9				
Nitrate(NO3)	22.1	21.9822	99.5	22.1	22.0247	99.7				
Nitrate(NO3)-N	5	4.9637	99.3	5	4.9733	99.5				
Nitrite(NO2)	9.98	10.2443	103	9.98	10.2551	103				
Nitrite(NO2)-N	3.04	3.1189	103	3.04	3.1222	103				
phosphate	30.7	28.2065	91.9	30.7	28.7373	93.6				
phosphate-p	10	9.2043	92.0	10	9.3775	93.8				
sulfate	25	24.8282	99.3	25	24.8792	99.5				

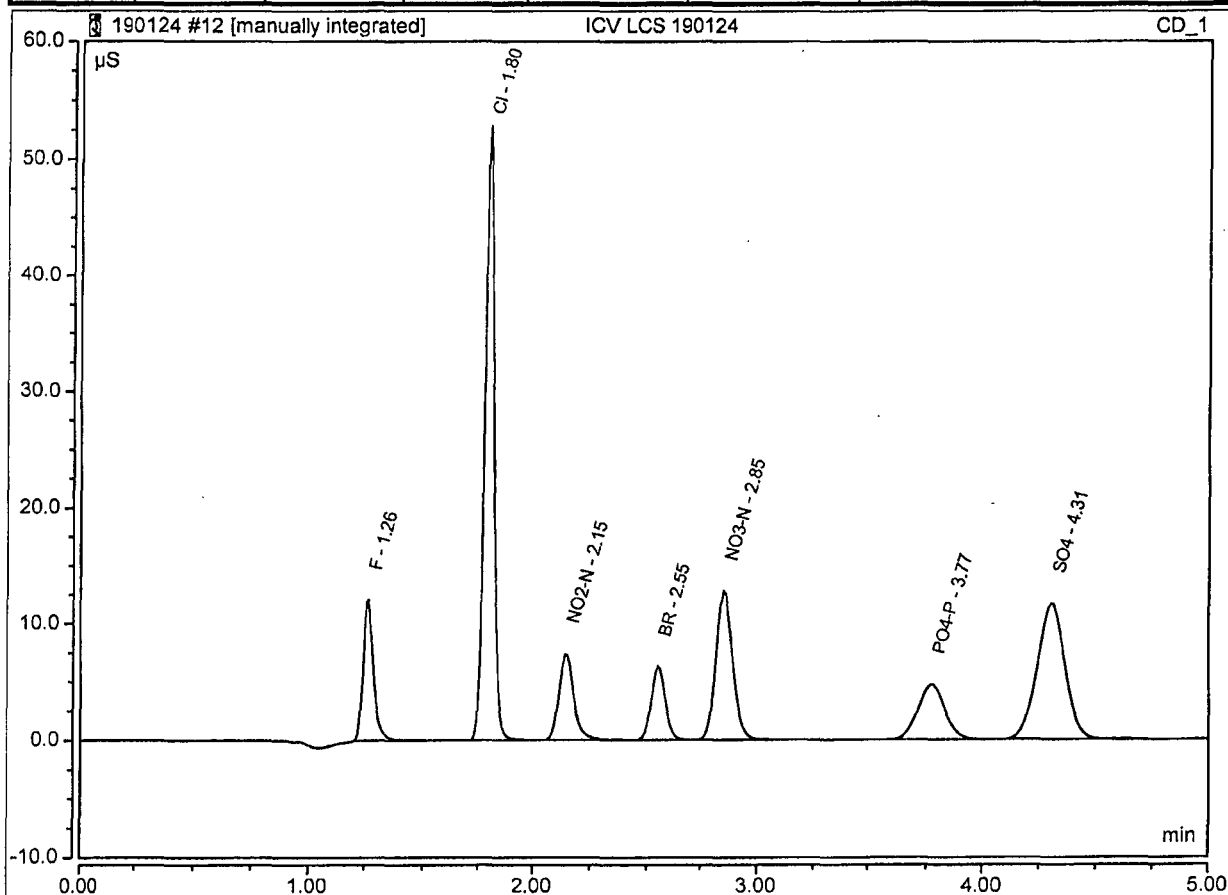
(1) Control Limits: 90-110

ILM02.0

### Peak Integration Report

Sample Name:	ICV LCS 190124	Inj. Vol.:	25.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 13:12	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.26	F	BMB*	0.626	12.036	5.0197
2	1.80	Cl	BMB	2.660	52.786	24.9773
3	2.15	NO2-N	BMB	0.552	7.368	3.1189
4	2.55	BR	BMB	0.467	6.249	12.8349
5	2.85	NO3-N	BMB	1.088	12.728	4.9637
6	3.77	PO4-P	BMB	0.642	4.687	9.2043
7	4.31	SO4	BMB	1.650	11.613	24.8282



F mi1 HH 190128 MM

Algorith Check:

y = Peak Area

x = mg/L S04

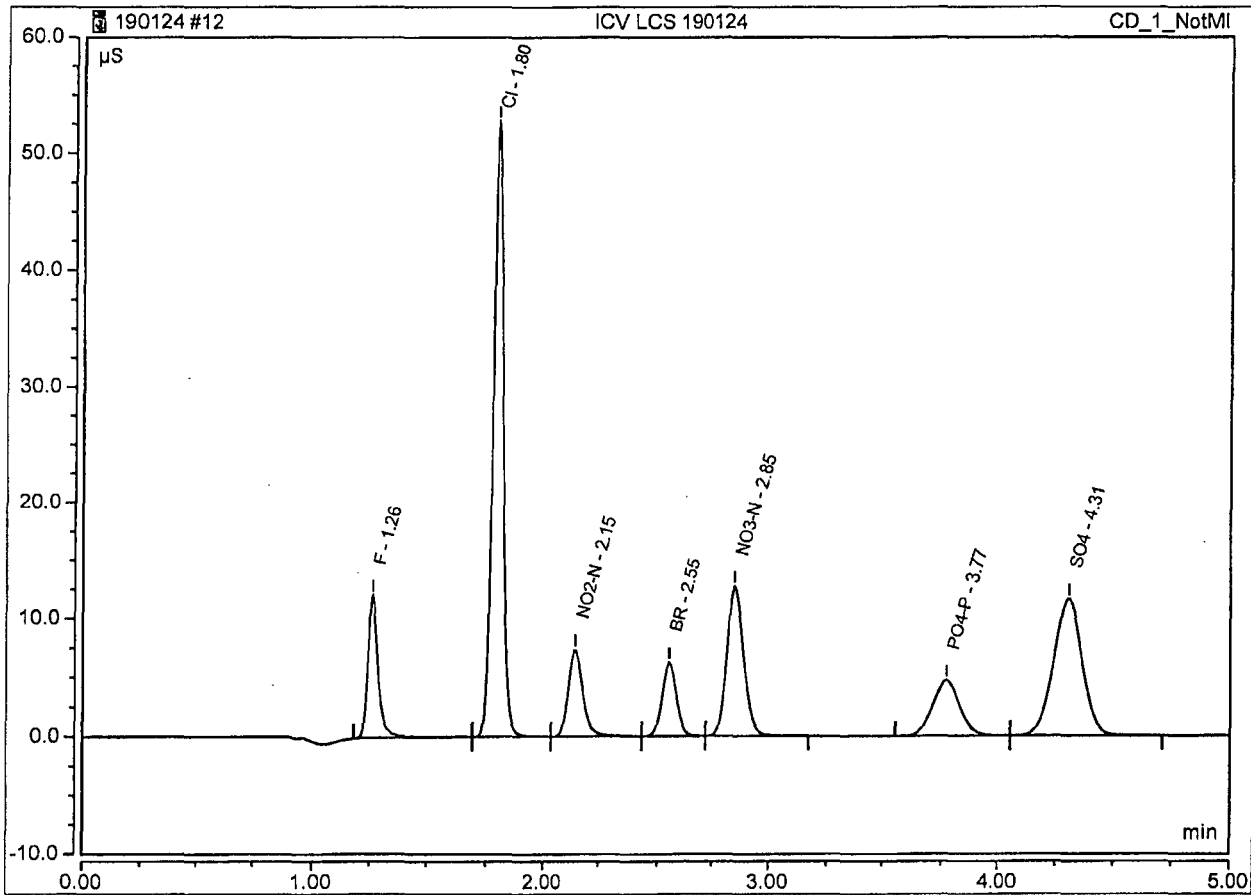
$$y = 0.0664 \quad x + \quad 0.0000$$

$$y = 1.6497 \quad \text{therefor } x = 24.85 \text{ HH 190129}$$

### Not Manipulated Peak Integration Report

Sample Name:	ICV LCS 190124	Inj. Vol.:	25.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 13:12	Run Time:	5.00

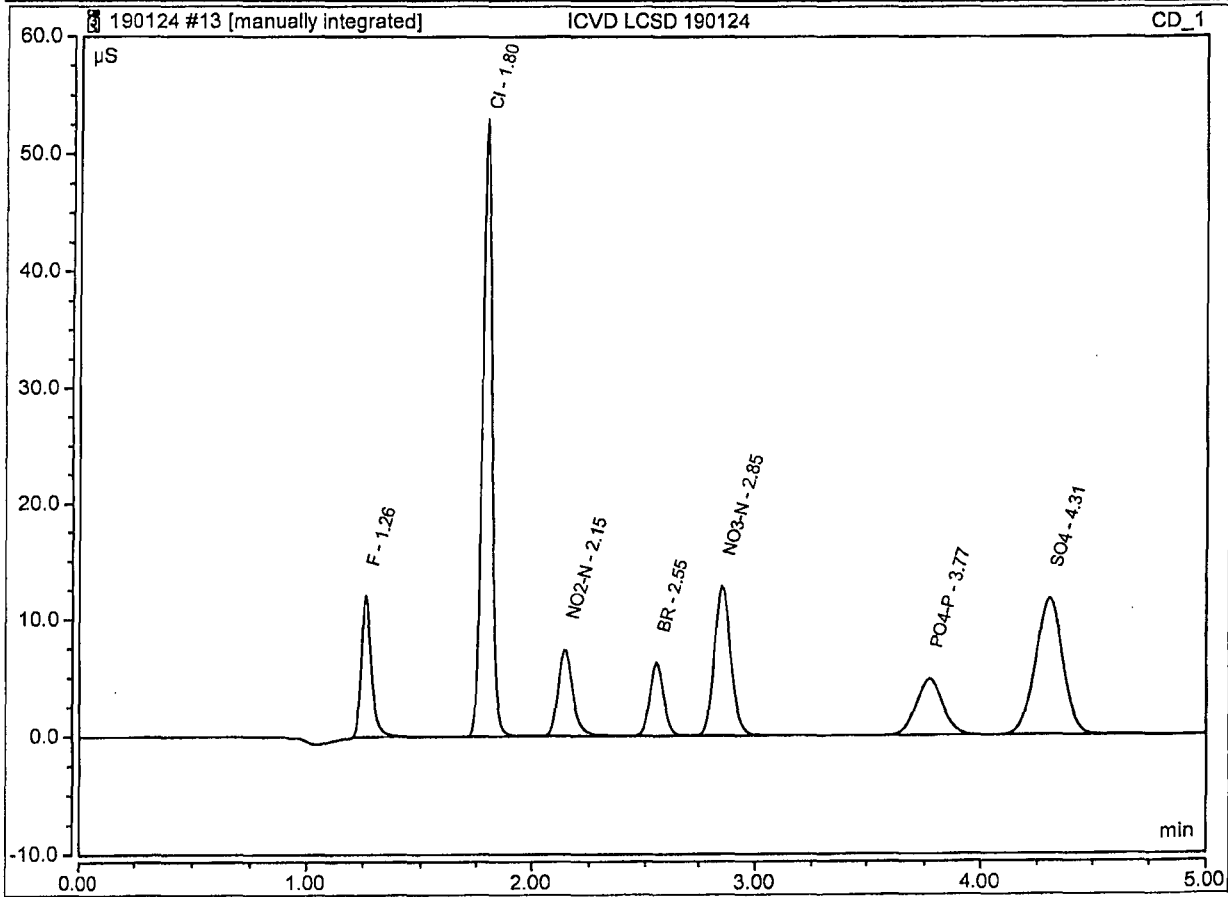
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height $\mu\text{S}$	Area $\mu\text{S}\cdot\text{min}$
1	1.26	F	BMB*	0.653	12.130	4.9830
2	1.80	Cl	BMB	2.660	52.786	24.9773
3	2.15	NO <sub>2</sub> -N	BMB	0.552	7.368	3.1189
4	2.55	BR	BMB	0.467	6.249	12.8349
5	2.85	NO <sub>3</sub> -N	BMB	1.088	12.728	4.9637
6	3.77	PO <sub>4</sub> -P	BMB	0.642	4.687	9.2043
7	4.31	SO <sub>4</sub>	BMB	1.650	11.613	24.8282



Peak Integration Report

Sample Name:	ICVD LCSD 190124	Inj. Vol.:	25.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 13:20	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.26	F	BMB*	0.623	12.051	4.9943
2	1.80	Cl	BMB	2.666	52.924	25.0366
3	2.15	NO2-N	BMB	0.552	7.375	3.1222
4	2.55	BR	BMB	0.468	6.262	12.8652
5	2.85	NO3-N	BMB	1.090	12.755	4.9733
6	3.77	PO4-P	BMB	0.654	4.778	9.3775
7	4.31	SO4	BMB	1.653	11.628	24.8792

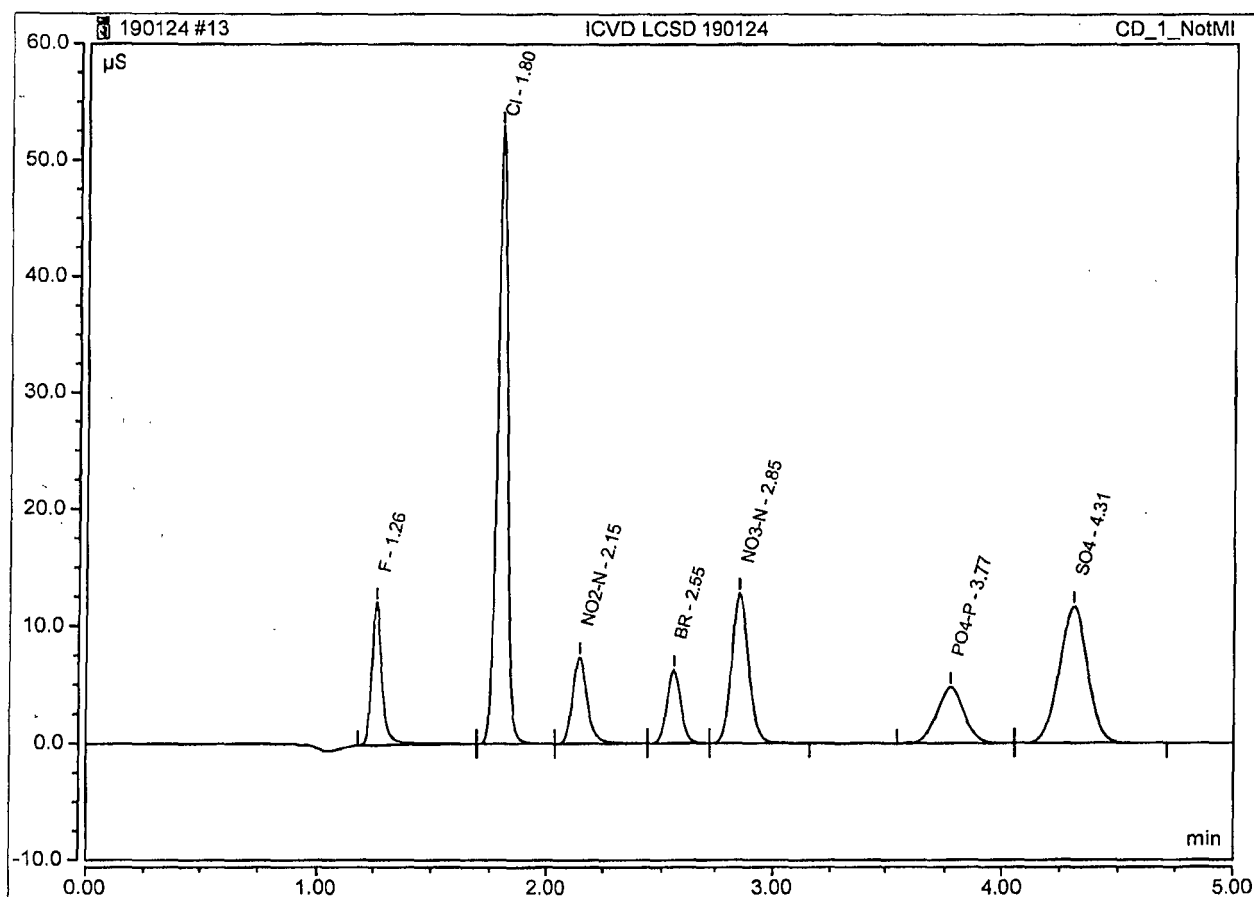


F mi1 HH 190128 MM

### Not Manipulated Peak Integration Report

Sample Name:	ICVD LCSD 190124	Inj. Vol.:	25.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 13:20	Run Time:	5.00

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height $\mu\text{S}$	Area $\mu\text{S}\cdot\text{min}$
1	1.26	F	BMB*	0.653	12.160	4.9894
2	1.80	Cl	BMB	2.666	52.924	25.0366
3	2.15	NO <sub>2</sub> -N	BMB	0.552	7.375	3.1222
4	2.55	BR	BMB	0.468	6.262	12.8652
5	2.85	NO <sub>3</sub> -N	BMB	1.090	12.755	4.9733
6	3.77	PO <sub>4</sub> -P	BMB	0.654	4.778	9.3775
7	4.31	SO <sub>4</sub>	BMB	1.653	11.628	24.8792





A.P.P.L. INC.

3

BLANKS

Lab Name: A.P.P.L. INC.

Contract: \_\_\_\_\_

ARF No.: \_\_\_\_\_

SDG: \_\_\_\_\_

Preparation Blank Matrix (soil/water): water

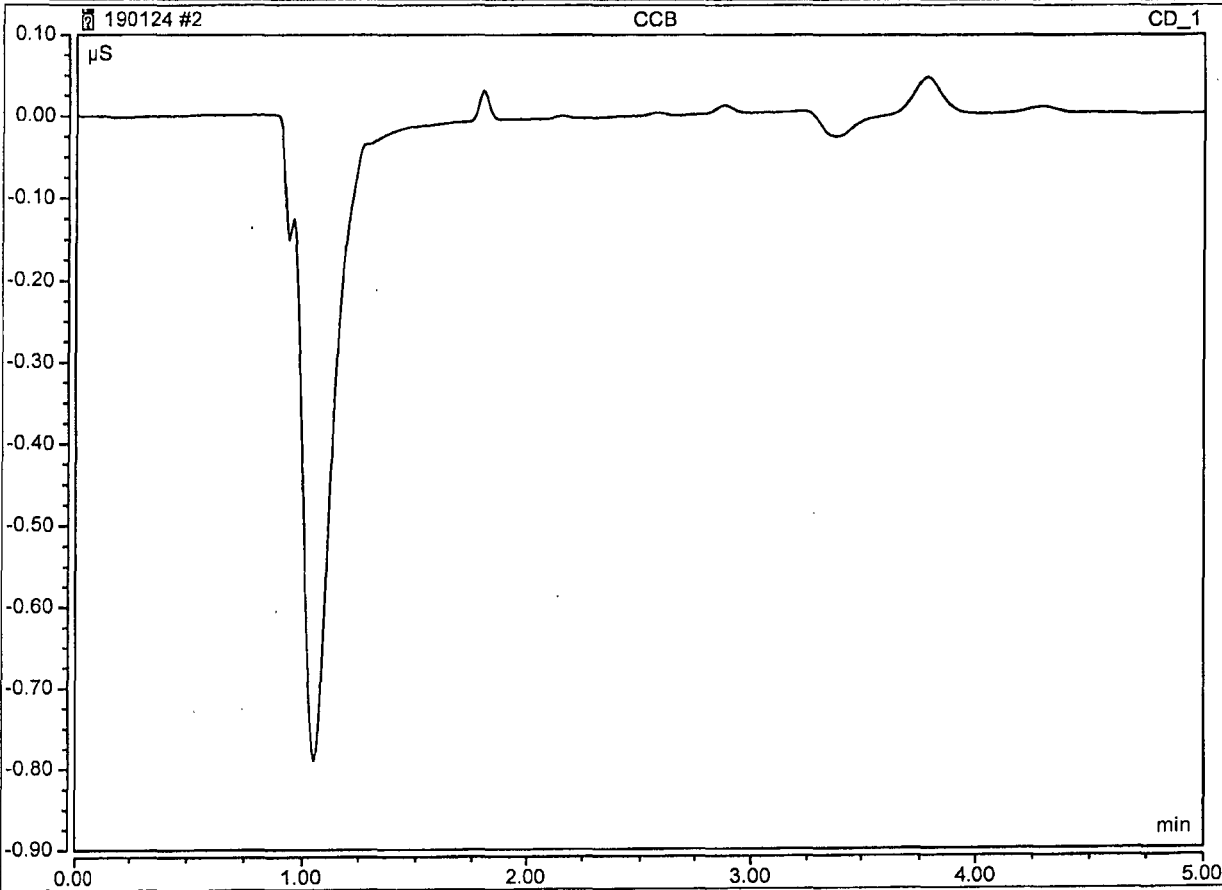
Preparation Blank Concentration Units (ug/L or mg/kg): mg/L

Analyte	Calibration Blanks										M
	CCB 01/24/19 11:58	C	CCB 01/24/19 13:05	C		C		C		C	
bromide	.500	U	.500	U							
chloride	1.000	U	1.000	U							
fluoride	.100	U	.100	U							
Nitrate(NO3)	.500	U	.500	U							
Nitrate(NO3)-N	.200	U	.200	U							
Nitrite(NO2)	.300	U	.300	U							
Nitrite(NO2)-N	.100	U	.100	U							
phosphate	.600	U	.316	J							
phosphate-p	.200	U	.103	J							
sulfate	1.000	U	1.000	U							

### Peak Integration Report

Sample Name:	CCB	Inj. Vol.:	25.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Anion APM 190109	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 11:58	Run Time:	5.00

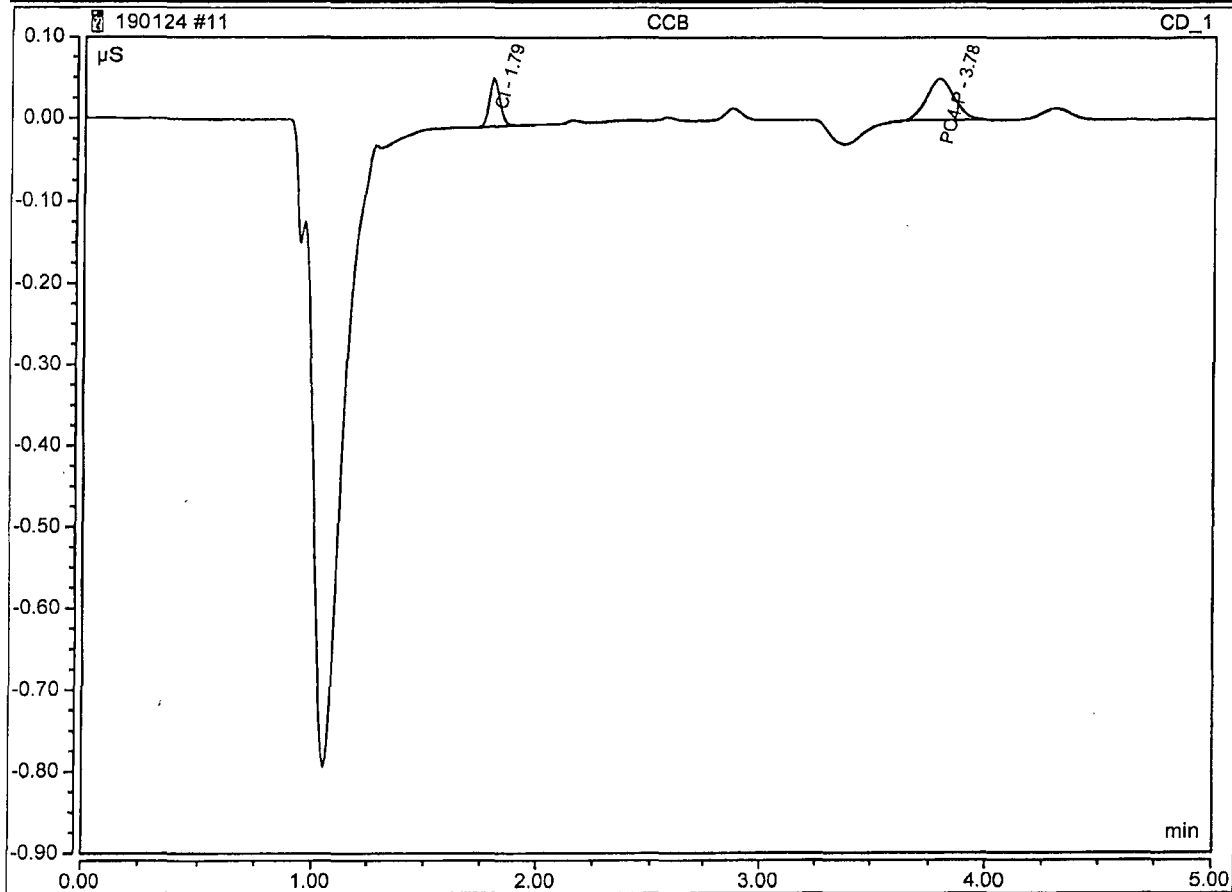
No.	Time (min)	Peak Name	Peak Type	Area ( $\mu\text{S}\cdot\text{min}$ )	Height ( $\mu\text{S}$ )	Amount (mg/L)
-----	------------	-----------	-----------	---------------------------------------	--------------------------	---------------



### Peak Integration Report

Sample Name:	CCB	Inj. Vol.:	25.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 13:05	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area ( $\mu\text{S}\cdot\text{min}$ )	Height ( $\mu\text{S}$ )	Amount (mg/L)
1	1.79	Cl	BMB	0.003	0.059	0.0294
2	3.78	PO4-P	BMB	0.007	0.051	0.1030



A.P.P.L. INC.

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: A.P.P.L. INC. Contract: AECOM

ARF No: 87956 SDG: 87956

Initial Calibration Source: CPI

Continuing Calibration Source: Environmental Express

Analysis Date: 01/25/19

Analyte	Calibration Verification									M
	True CCV1	Found 15:35	%R(1)	True CCV1	Found 15:57	%R(1)	True CCV1	Found 18:31	%R(1)	
chloride	25	25.0799	100	25	25.0344	100	25	25.1012	100	
Nitrate(NO3)	22.1	22.1376	100	22.1	22.1403	100	22.1	22.1137	100	
sulfate	25	25.1217	100	25	25.1179	100	25	25.0799	100	

(1) Control Limits: 90-110

ILM02.0

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: A.P.P.L. INC. Contract: AECOM

ARF No: 87956 SDG: 87956

Initial Calibration Source: CPI

Continuing Calibration Source: Environmental Express

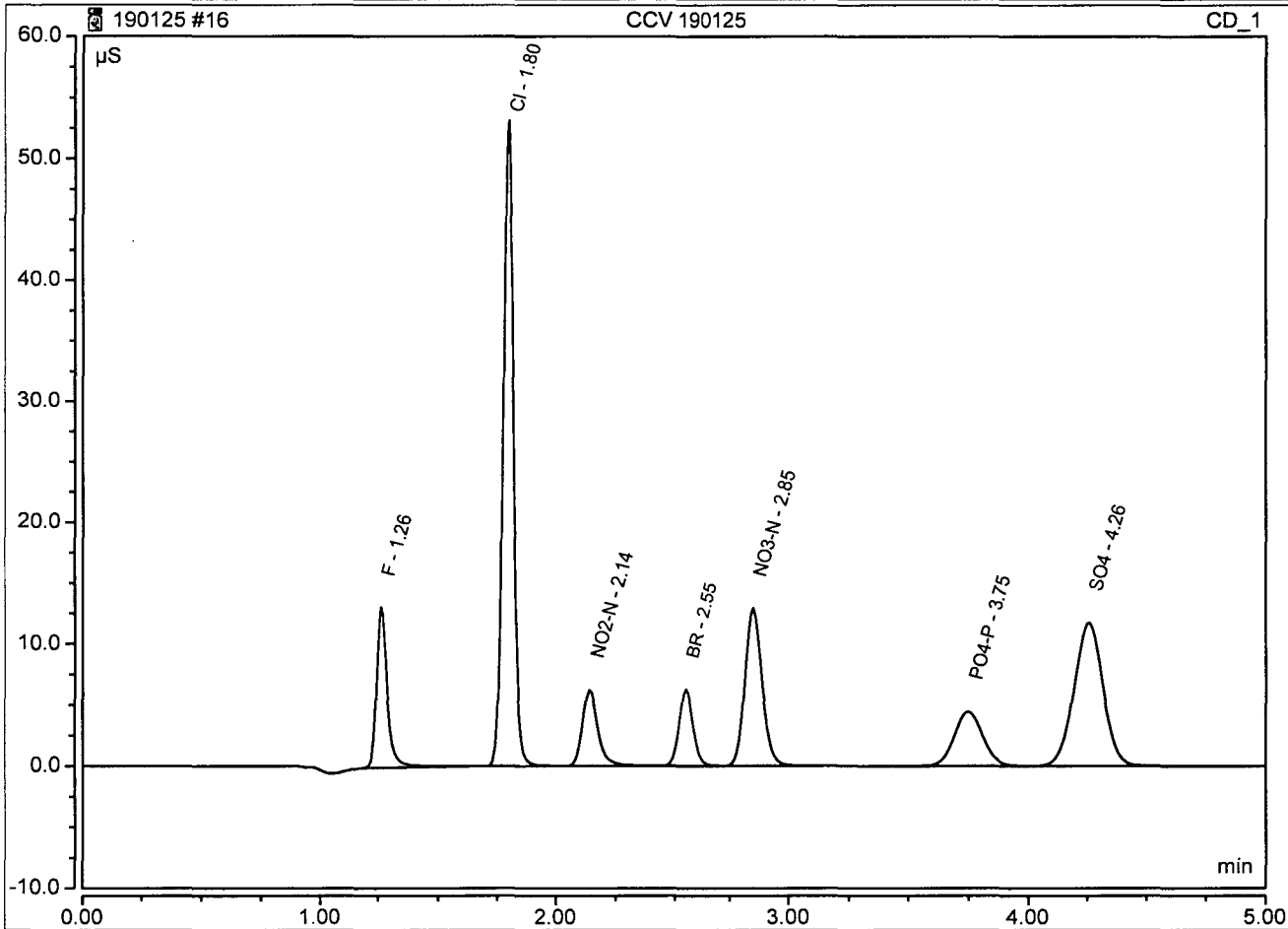
Analysis Date: 01/25/19

Analyte	Calibration Verification									M
	True CCV1	Found 19:59	%R(1)	True CCV1	Found 20:29	%R(1)	True	Found	%R(1)	
chloride	25	25.2264	101	25	25.1293	101				
Nitrate(NO3)	22.1	22.1549	100	22.1	22.1917	100				
sulfate	25	25.2009	101	25	25.1479	101				

### Peak Integration Report

Sample Name:	CCV 190125	Inj. Vol.:	25.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	25-Jan-2019 / 15:35	Run Time:	5.00

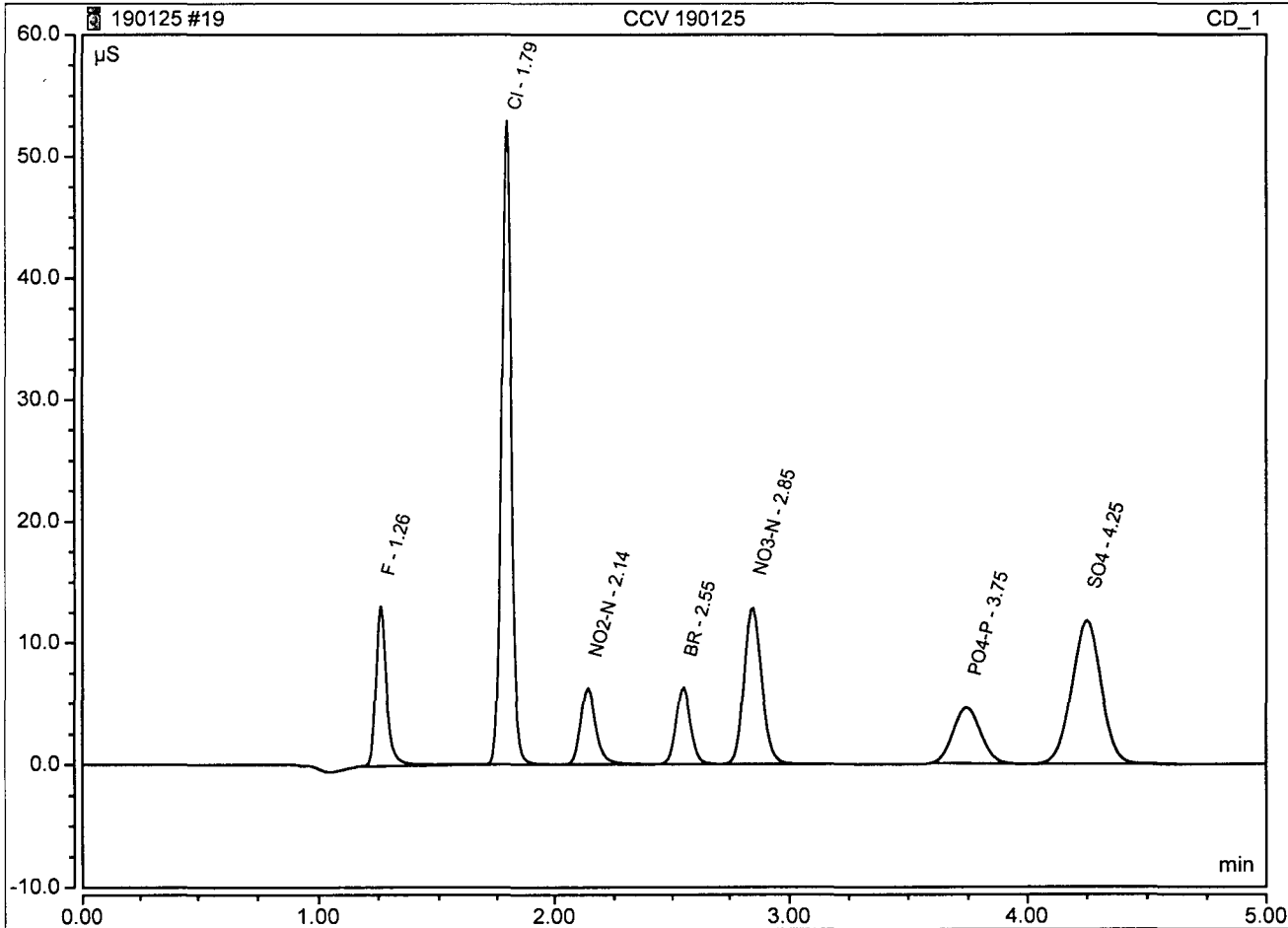
No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.26	F	BMB	0.694	13.118	5.5589
2	1.80	Cl	BMB	2.671	53.075	25.0799
3	2.14	NO2-N	BMB	0.464	6.218	2.6256
4	2.55	BR	BMB	0.465	6.236	12.7708
5	2.85	NO3-N	BMB	1.096	12.900	4.9988
6	3.75	PO4-P	BMB	0.613	4.453	8.7876
7	4.26	SO4	BMB	1.669	11.750	25.1217



**Peak Integration Report**

Sample Name:	CCV 190125	Inj. Vol.:	25.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	25-Jan-2019 / 15:57	Run Time:	5.00

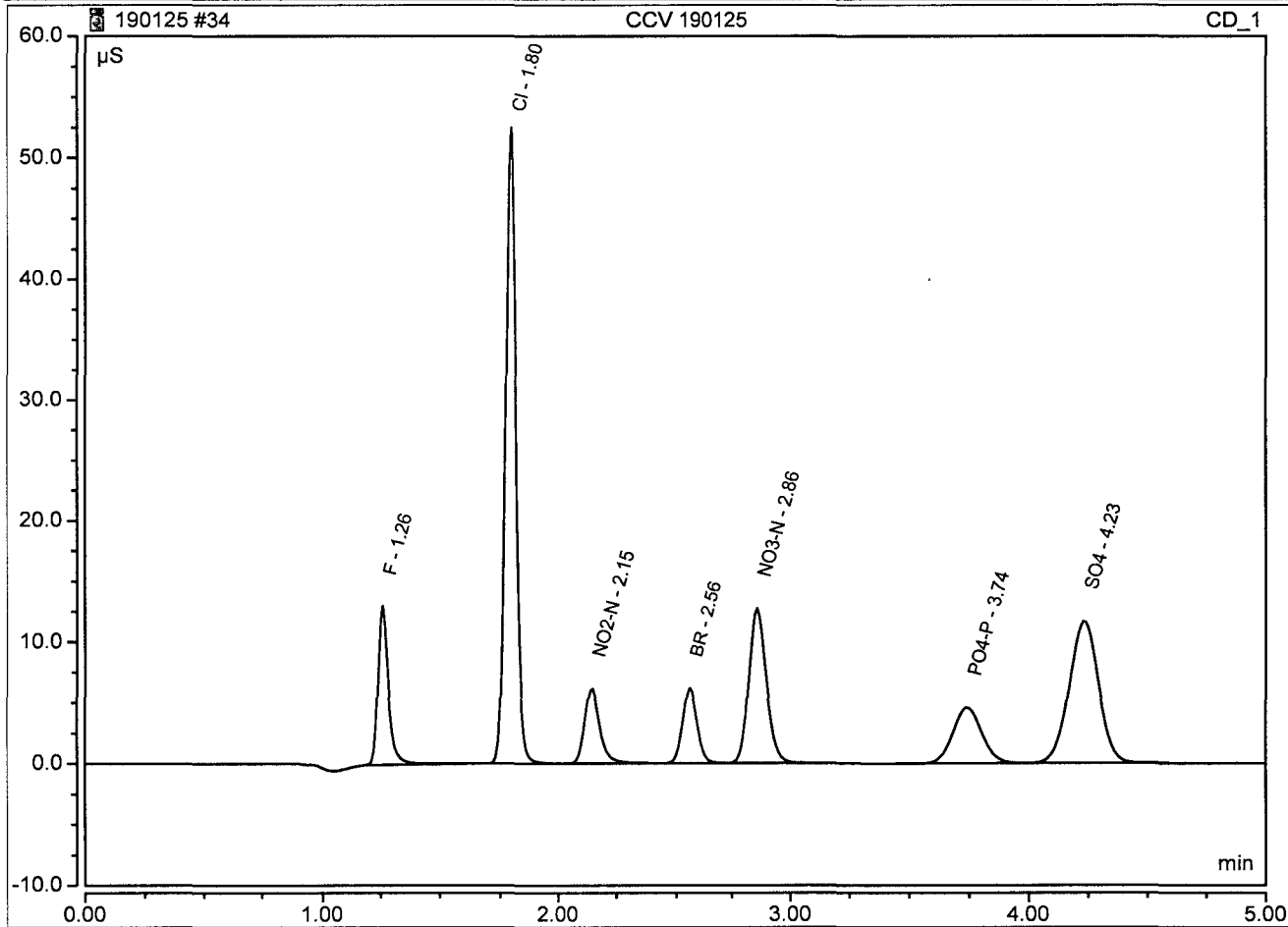
No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.26	F	BMB	0.691	13.071	5.5419
2	1.79	Cl	BMB	2.666	52.888	25.0344
3	2.14	NO2-N	BMB	0.464	6.205	2.6211
4	2.55	BR	BMB	0.465	6.226	12.7758
5	2.85	NO3-N	BMB	1.096	12.884	4.9994
6	3.75	PO4-P	BMB	0.613	4.553	8.7958
7	4.25	SO4	BMB	1.669	11.762	25.1179



**Peak Integration Report**

Sample Name:	CCV 190125	Inj. Vol.:	25.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	25-Jan-2019 / 18:31	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.26	F	BMB	0.694	13.045	5.5586
2	1.80	Cl	BMB	2.673	52.460	25.1012
3	2.15	NO2-N	BMB	0.464	6.138	2.6242
4	2.56	BR	BMB	0.464	6.130	12.7530
5	2.86	NO3-N	BMB	1.095	12.689	4.9934
6	3.74	PO4-P	BMB	0.638	4.584	9.1554
7	4.23	SO4	BMB	1.666	11.655	25.0799

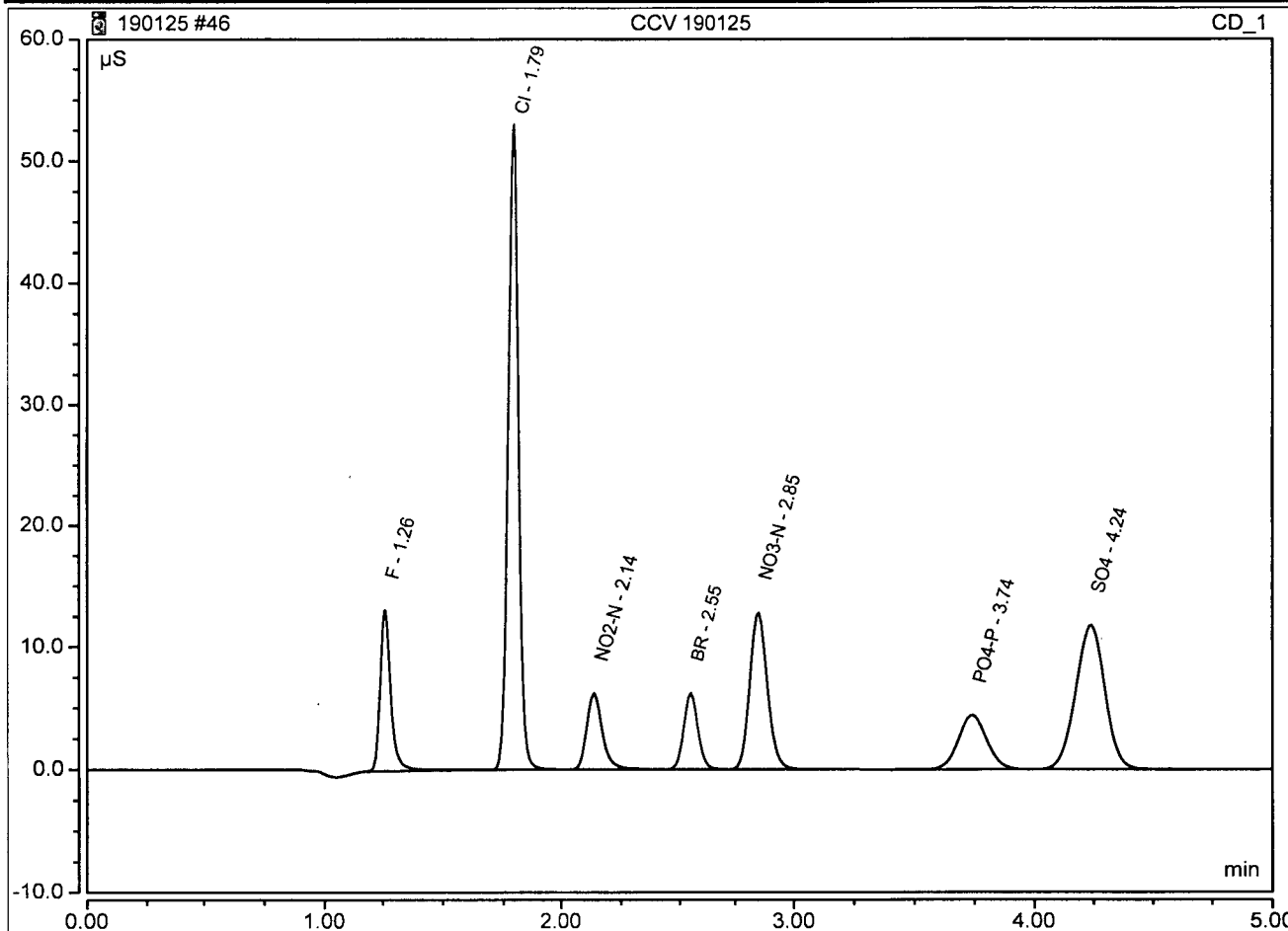




### Peak Integration Report

Sample Name:	CCV 190125	Inj. Vol.:	25.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	25-Jan-2019 / 19:59	Run Time:	5.00

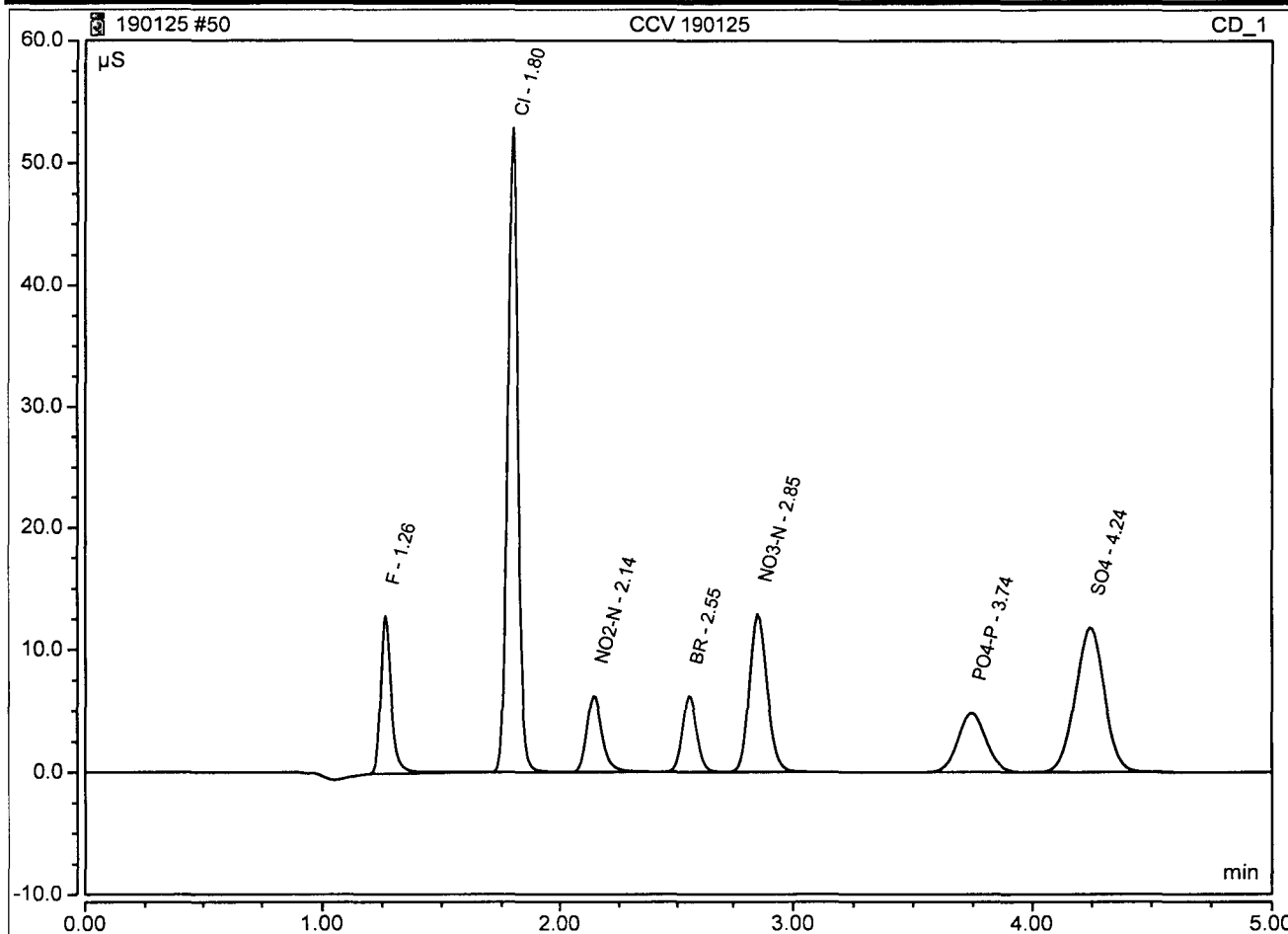
No.	Time (min)	Peak Name	Peak Type	Area (μS*min)	Height (μS)	Amount (mg/L)
1	1.26	F	BMB	0.696	13.141	5.5784
2	1.79	Cl	BMB	2.686	52.966	25.2264
3	2.14	NO2-N	BMB	0.465	6.197	2.6286
4	2.55	BR	BMB	0.465	6.197	12.7765
5	2.85	NO3-N	BMB	1.097	12.837	5.0027
6	3.74	PO4-P	BMB	0.609	4.397	8.7326
7	4.24	SO4	BMB	1.674	11.775	25.2009



### Peak Integration Report

Sample Name:	CCV 190125	Inj. Vol.:	25.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	25-Jan-2019 / 20:29	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area ( $\mu\text{S}\cdot\text{min}$ )	Height ( $\mu\text{S}$ )	Amount (mg/L)
1	1.26	F	BMB	0.680	12.832	5.4482
2	1.80	Cl	BMB	2.676	52.816	25.1293
3	2.14	NO <sub>2</sub> -N	BMB	0.466	6.205	2.6346
4	2.55	BR	BMB	0.466	6.204	12.7975
5	2.85	NO <sub>3</sub> -N	BMB	1.099	12.844	5.0110
6	3.74	PO <sub>4</sub> -P	BMB	0.668	4.838	9.5777
7	4.24	SO <sub>4</sub>	BMB	1.671	11.778	25.1479



A.P.P.L. INC.

3

BLANKS

Lab Name: A.P.P.L. INC.

Contract: AECOM

ARF No.: 87956

SDG: 87956

Preparation Blank Matrix (soil/water): water

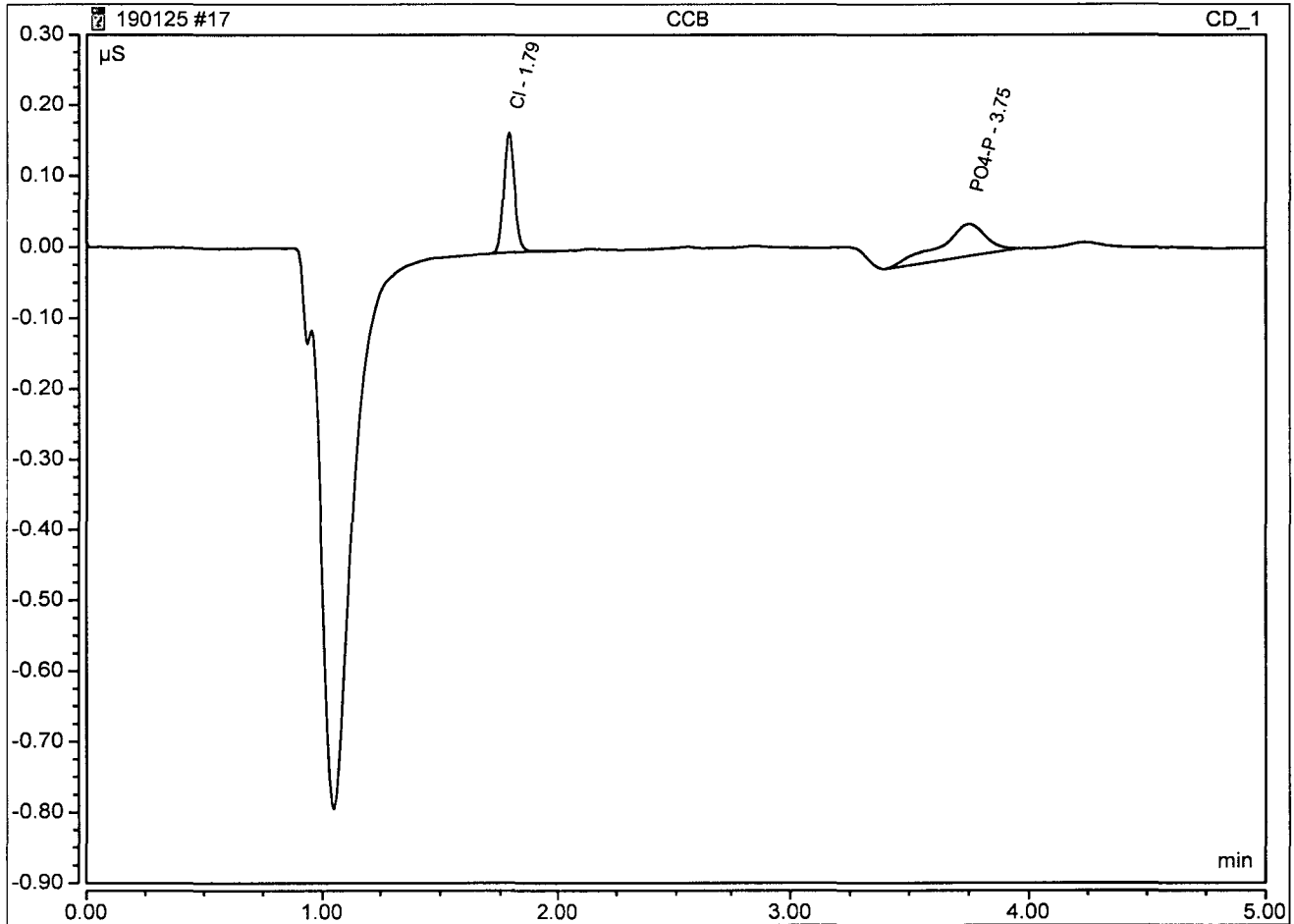
Preparation Blank Concentration Units (ug/L or mg/kg): mg/L

Analyte	Calibration Blanks										M
	CCB 01/25/19 15:42	C	CCB 01/25/19 16:04	C	CCB 01/25/19 18:38	C	CCB 01/25/19 20:07	C	CCB 01/25/19 20:36	C	
chloride	.085	J	1.000	U	.110	J	.147	J	.1070	J	
Nitrate(NO3)	.500	U	.500	U	.500	U	.500	U	.5000	U	
sulfate	1.000	U	1.000	U	1.000	U	1.000	U	1.0000	U	

### Peak Integration Report

Sample Name:	CCB	Inj. Vol.:	25.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	25-Jan-2019 / 15:42	Run Time:	5.00

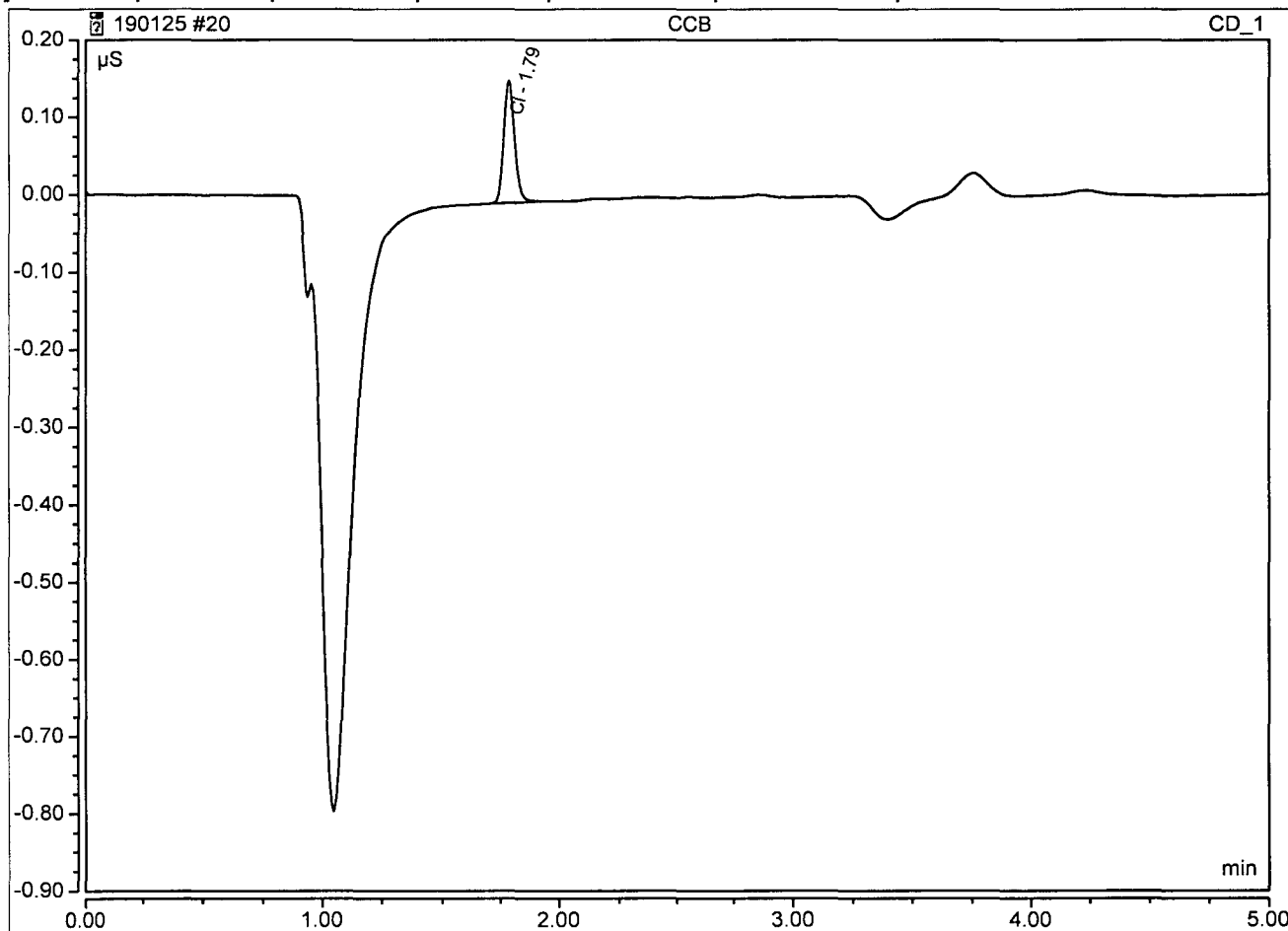
No.	Time (min)	Peak Name	Peak Type	Area ( $\mu\text{S}\cdot\text{min}$ )	Height ( $\mu\text{S}$ )	Amount (mg/L)
1	1.79	Cl	BMB	0.009	0.168	0.0845
2	3.75	PO4-P	BMB	0.010	0.045	0.1457



### Peak Integration Report

Sample Name:	CCB	Inj. Vol.:	25.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	25-Jan-2019 / 16:04	Run Time:	5.00

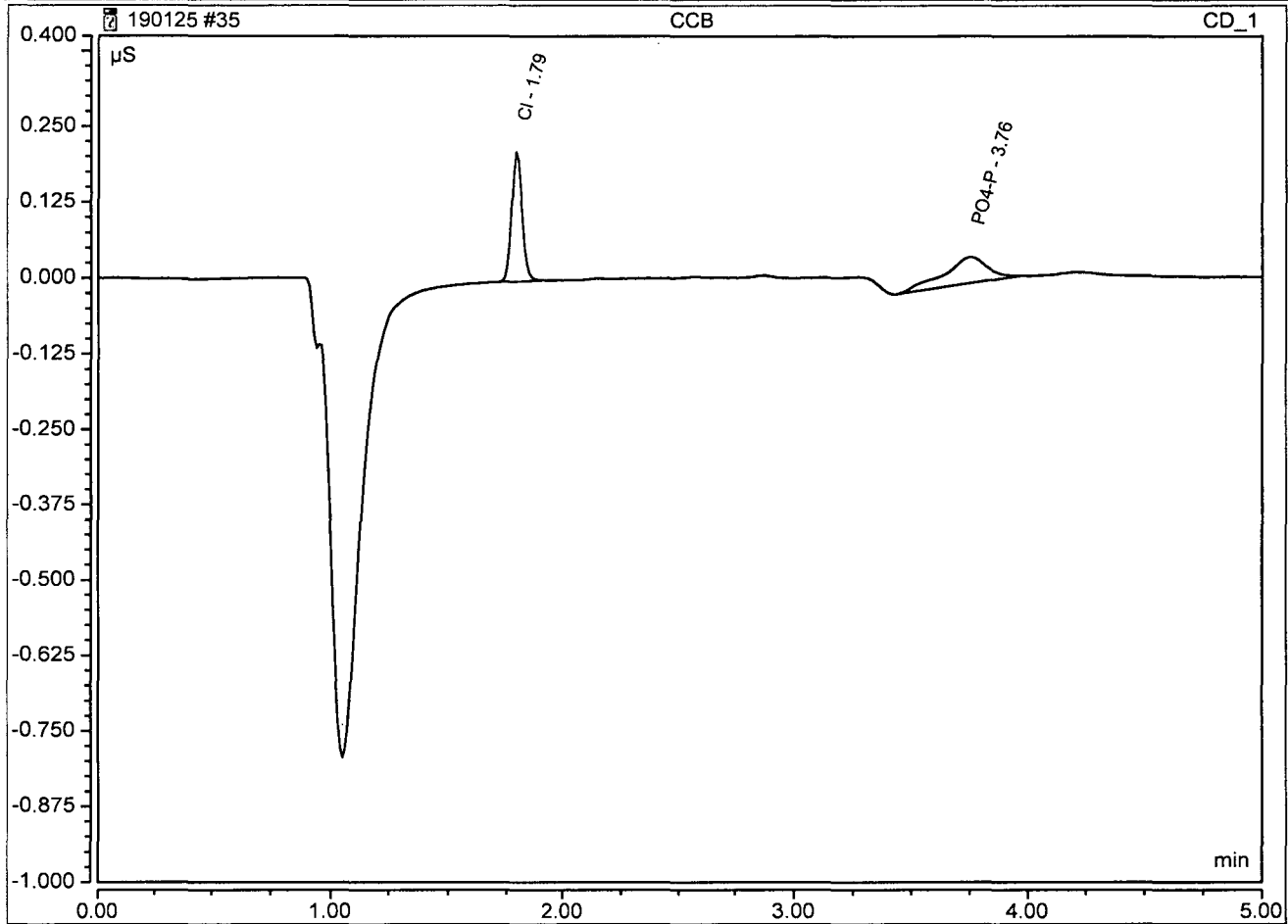
No.	Time (min)	Peak Name	Peak Type	Area ( $\mu\text{S}\cdot\text{min}$ )	Height ( $\mu\text{S}$ )	Amount (mg/L)
1	1.79	Cl	BMB	0.008	0.157	0.0797



### Peak Integration Report

Sample Name:	CCB	Inj. Vol.:	25.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	25-Jan-2019 / 18:38	Run Time:	5.00

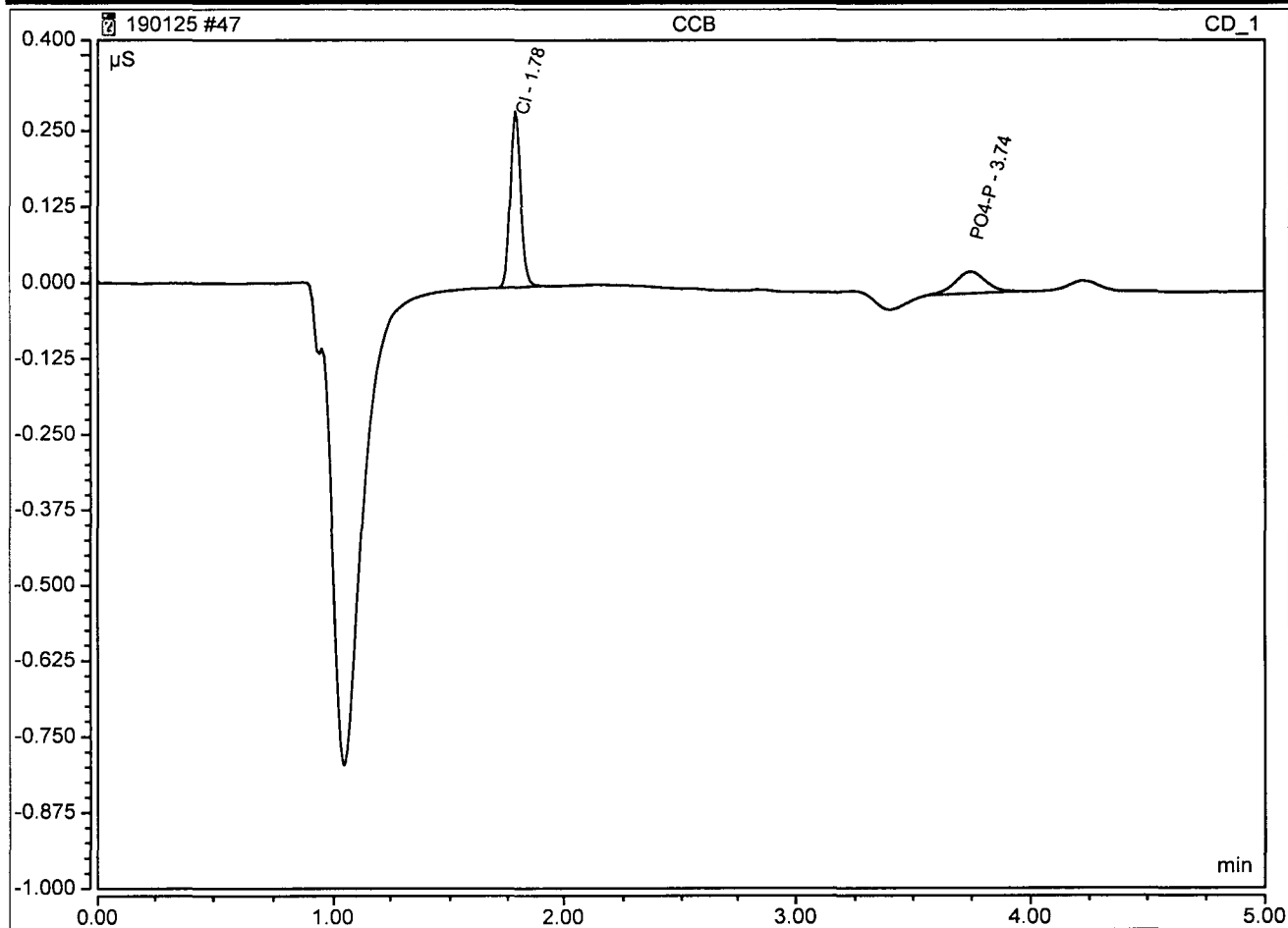
No.	Time (min)	Peak Name	Peak Type	Area ( $\mu\text{S}\cdot\text{min}$ )	Height ( $\mu\text{S}$ )	Amount (mg/L)
1	1.79	Cl	BMB	0.012	0.214	0.1096
2	3.76	PO4-P	BMB	0.010	0.043	0.1366



### Peak Integration Report

Sample Name:	CCB	Inj. Vol.:	25.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	25-Jan-2019 / 20:07	Run Time:	5.00

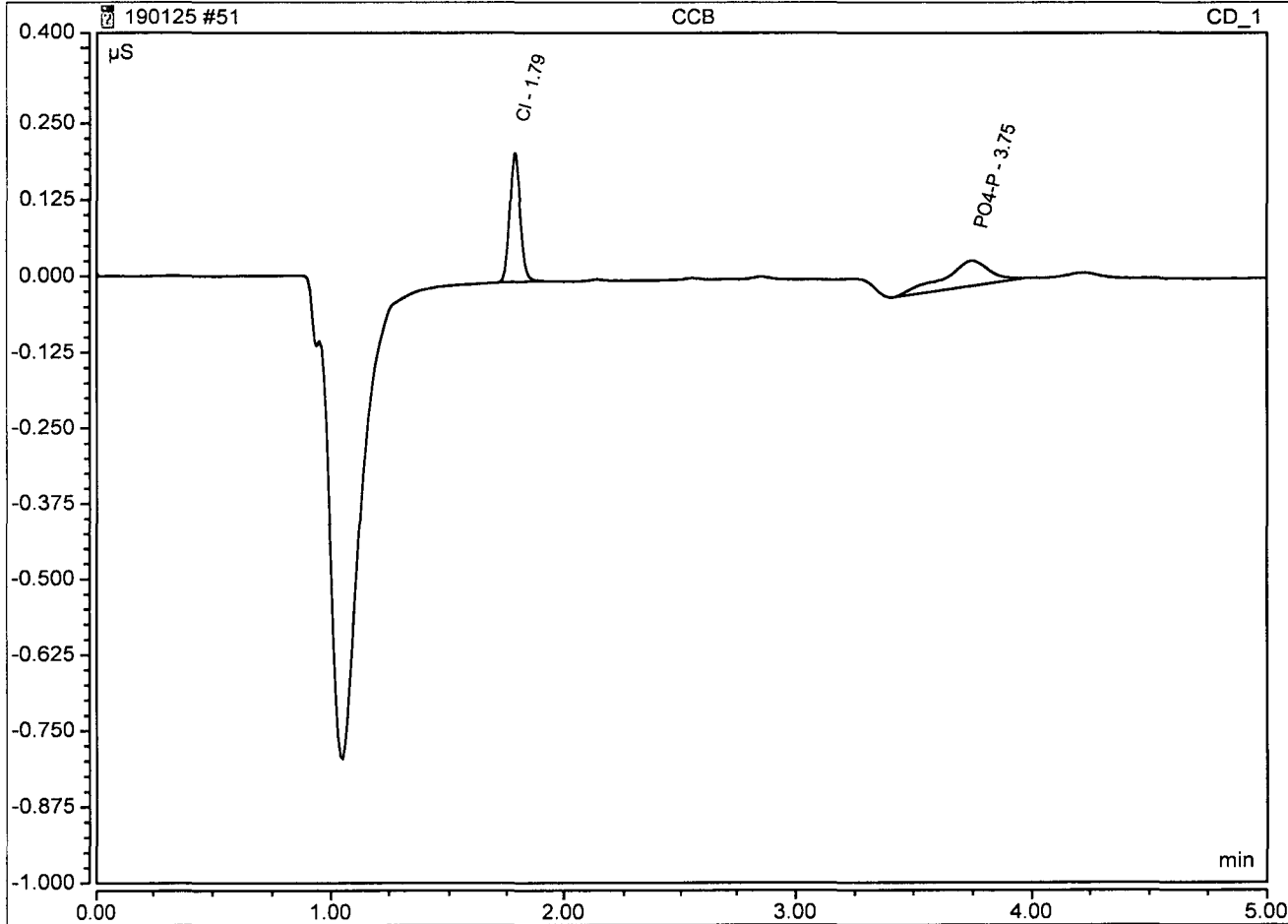
No.	Time (min)	Peak Name	Peak Type	Area ( $\mu\text{S}\cdot\text{min}$ )	Height ( $\mu\text{S}$ )	Amount (mg/L)
1	1.78	Cl	BMB	0.016	0.289	0.1466
2	3.74	PO4-P	BMB	0.005	0.036	0.0776



### Peak Integration Report

Sample Name:	CCB	Inj. Vol.:	25.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	25-Jan-2019 / 20:36	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area ( $\mu\text{S}\cdot\text{min}$ )	Height ( $\mu\text{S}$ )	Amount (mg/L)
1	1.79	Cl	BMB	0.011	0.211	0.1071
2	3.75	PO4-P	BMB	0.009	0.041	0.1339





INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: A.P.P.L. INC. Contract: AECOM

ARF No: 87956 SDG: 87956

Initial Calibration Source: CPI

Continuing Calibration Source: Environmental Express

Analysis Date: 01/28/19

Analyte	Calibration Verification									M
	True CCV1	Found 9:55	%R(1)	True CCV1	Found 11:58	%R(1)	True CCV1	Found 16:31	%R(1)	
chloride	25	24.9271	99.7	25	25.0031	100	25	25.1408	101	
sulfate	25	25.0084	100	25	25.0883	100	25	25.2339	101	

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: A.P.P.L. INC. Contract: AECOM

ARF No: 87956 SDG: 87956

Initial Calibration Source: CPI

Continuing Calibration Source: Environmental Express

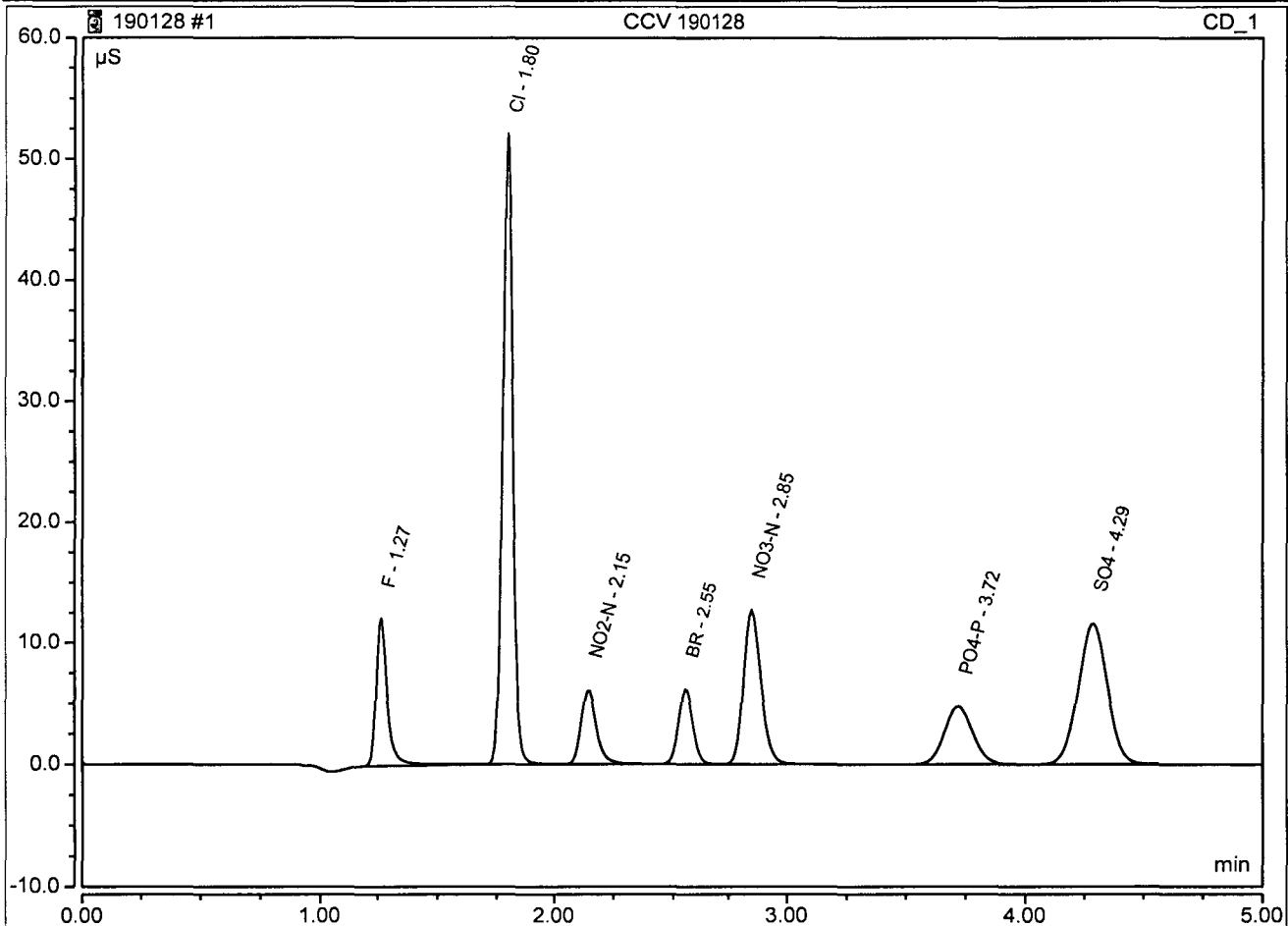
Analysis Date: 01/28/19

Analyte	Calibration Verification									M
	True CCV1	Found 17:01	%R(1)	True	Found	%R(1)	True	Found	%R(1)	
chloride	25	25.1536	101							
sulfate	25	25.2371	101							

### Peak Integration Report

Sample Name:	CCV 190128	Inj. Vol.:	25.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	28-Jan-2019 / 09:55	Run Time:	5.00

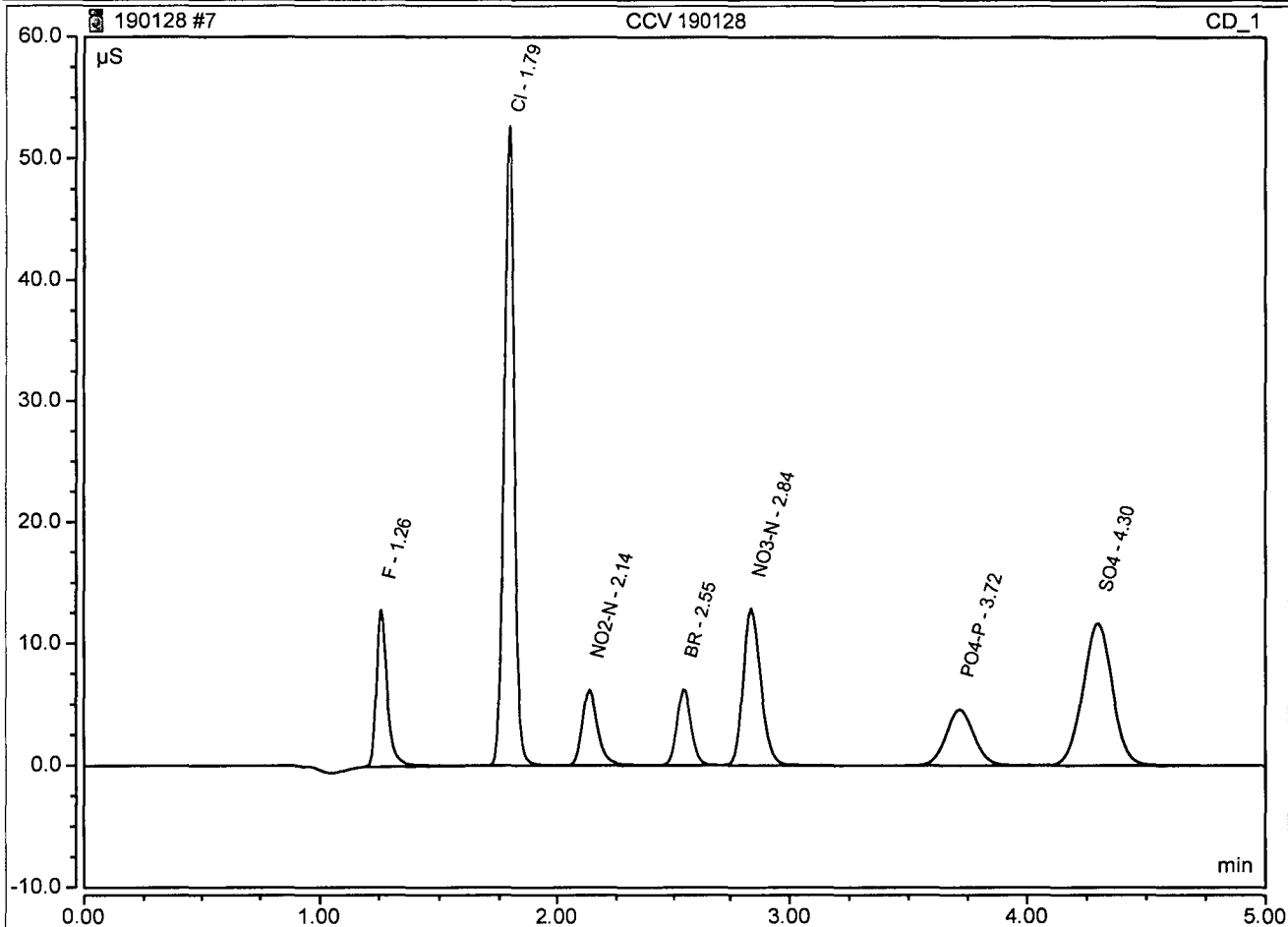
No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.27	F	BMB	0.674	12.112	5.4036
2	1.80	Cl	BMB	2.654	52.046	24.9271
3	2.15	NO2-N	BMB	0.460	6.081	2.5985
4	2.55	BR	BMB	0.463	6.153	12.7223
5	2.85	NO3-N	BMB	1.094	12.679	4.9899
6	3.72	PO4-P	BMB	0.648	4.732	9.2976
7	4.29	SO4	BMB	1.662	11.599	25.0084



**Peak Integration Report**

Sample Name:	CCV 190128	Inj. Vol.:	25.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	28-Jan-2019 / 11:58	Run Time:	5.00

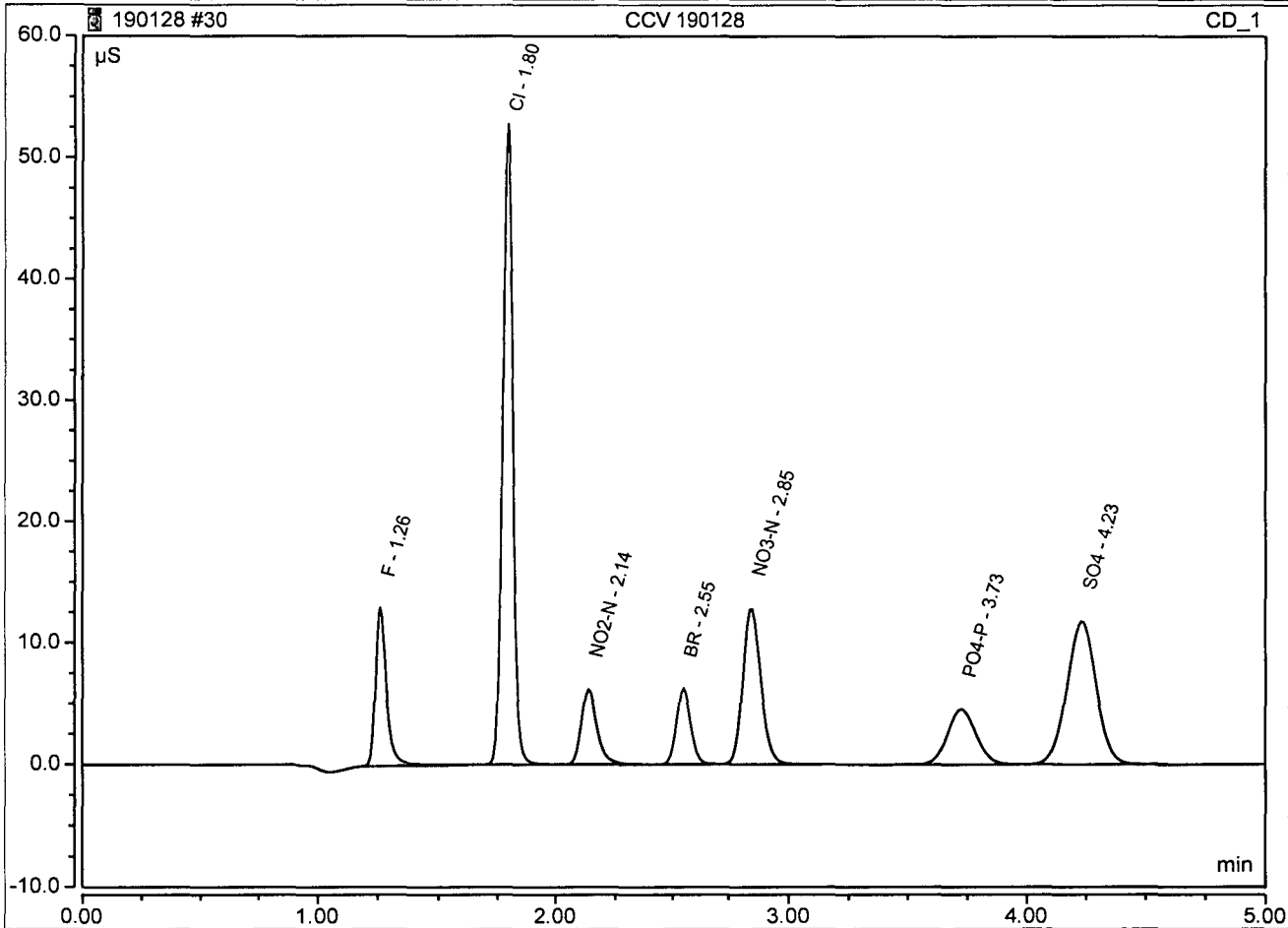
No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.26	F	BMB	0.692	12.839	5.5497
2	1.79	Cl	BMB	2.662	52.652	25.0031
3	2.14	NO2-N	BMB	0.462	6.162	2.6129
4	2.55	BR	BMB	0.465	6.231	12.7697
5	2.84	NO3-N	BMB	1.099	12.830	5.0119
6	3.72	PO4-P	BMB	0.626	4.598	8.9852
7	4.30	SO4	BMB	1.667	11.651	25.0883



### Peak Integration Report

Sample Name:	CCV 190128	Inj. Vol.:	25.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	28-Jan-2019 / 16:31	Run Time:	5.00

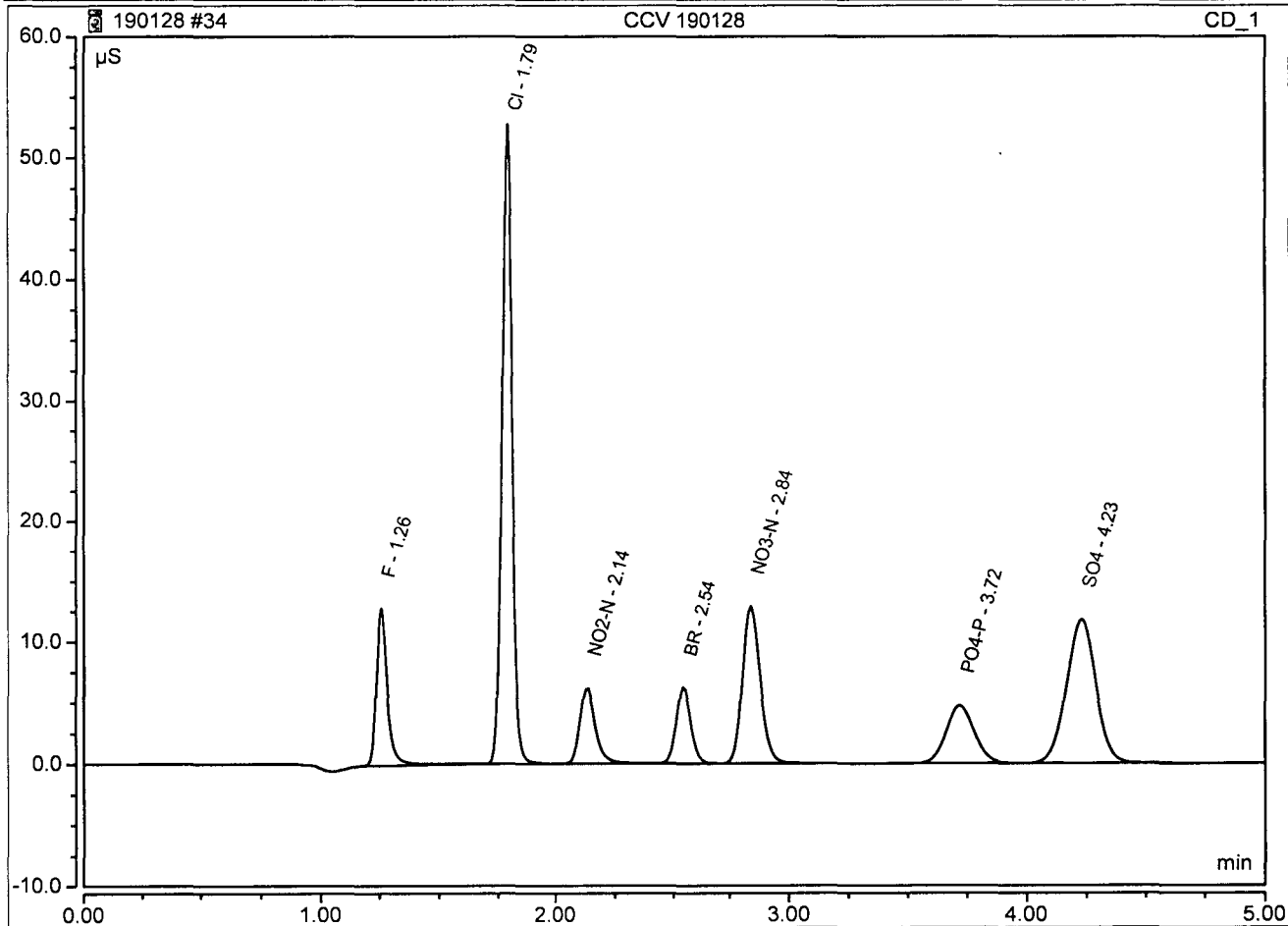
No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.26	F	BMB	0.695	12.979	5.5733
2	1.80	Cl	BMB	2.677	52.741	25.1408
3	2.14	NO2-N	BMB	0.465	6.169	2.6285
4	2.55	BR	BMB	0.466	6.208	12.8176
5	2.85	NO3-N	BMB	1.101	12.860	5.0215
6	3.73	PO4-P	BMB	0.627	4.534	8.9966
7	4.23	SO4	BMB	1.677	11.769	25.2339



### Peak Integration Report

Sample Name:	CCV 190128	Inj. Vol.:	25.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	28-Jan-2019 / 17:01	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.26	F	BMB	0.688	12.860	5.5160
2	1.79	Cl	BMB	2.678	52.726	25.1536
3	2.14	NO2-N	BMB	0.465	6.168	2.6281
4	2.54	BR	BMB	0.466	6.207	12.8122
5	2.84	NO3-N	BMB	1.101	12.865	5.0219
6	3.72	PO4-P	BMB	0.652	4.730	9.3592
7	4.23	SO4	BMB	1.677	11.785	25.2371



A.P.P.L. INC.

3

BLANKS

Lab Name: A.P.P.L. INC.

Contract: AECOM

ARF No.: 87956

SDG: 87956

Preparation Blank Matrix (soil/water): water

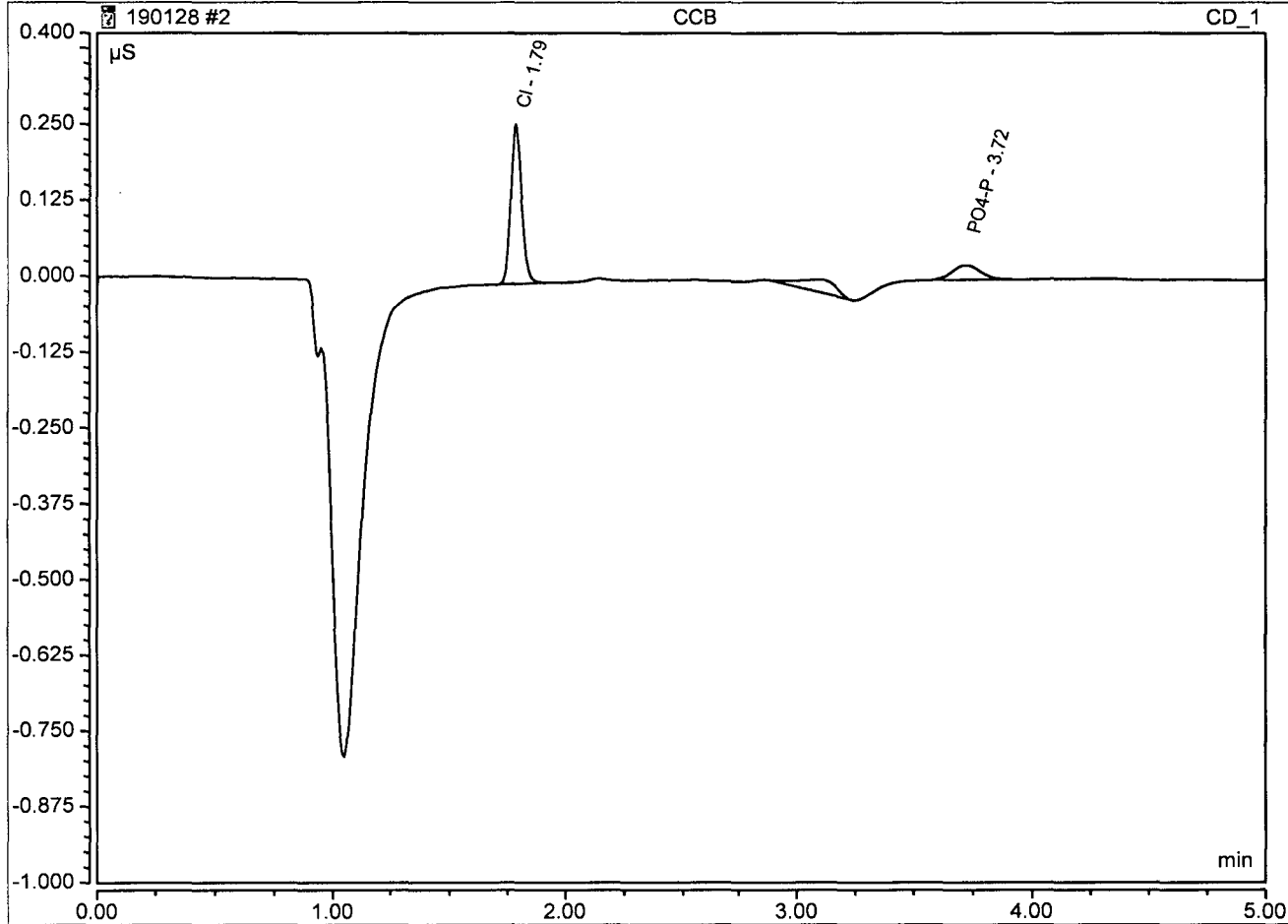
Preparation Blank Concentration Units (ug/L or mg/kg): mg/L

Analyte	Calibration Blanks										M
	CCB 01/28/19 10:02	C	CCB 01/28/19 12:06	C	CCB 01/28/19 16:39	C	CCB 01/28/19 17:08	C		C	
chloride	.134	J	.134	J	.140	J	.150	J			
sulfate	1.000	U	1.000	U	1.000	U	1.000	U			

### Peak Integration Report

Sample Name:	CCB	Inj. Vol.:	25.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	28-Jan-2019 / 10:02	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area ( $\mu\text{S}\cdot\text{min}$ )	Height ( $\mu\text{S}$ )	Amount (mg/L)
1	1.79	Cl	BMB	0.014	0.262	0.1339
3	3.72	PO4-P	BMB	0.003	0.024	0.0465

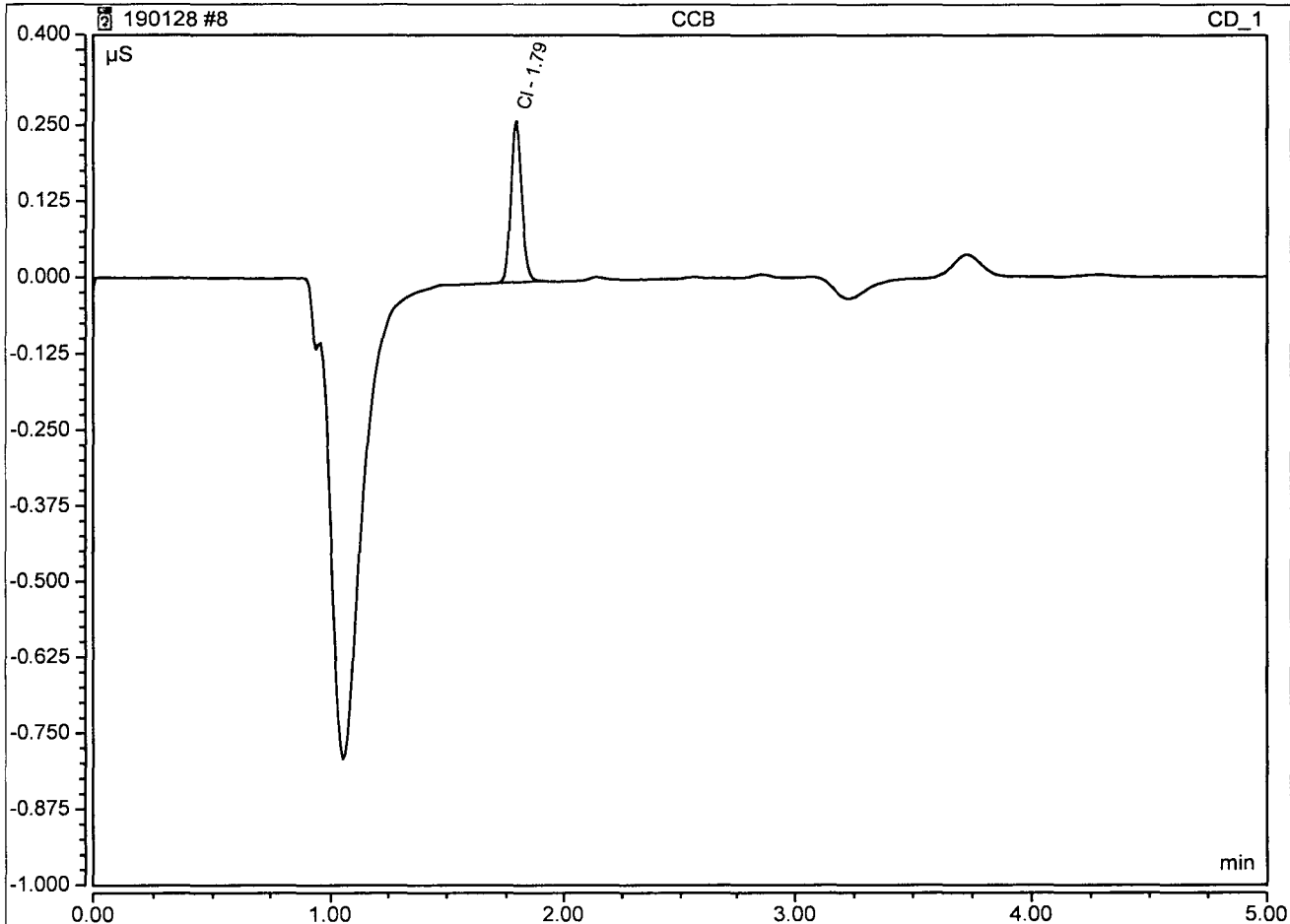




### Peak Integration Report

Sample Name:	CCB	Inj. Vol.:	25.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	28-Jan-2019 / 12:06	Run Time:	5.00

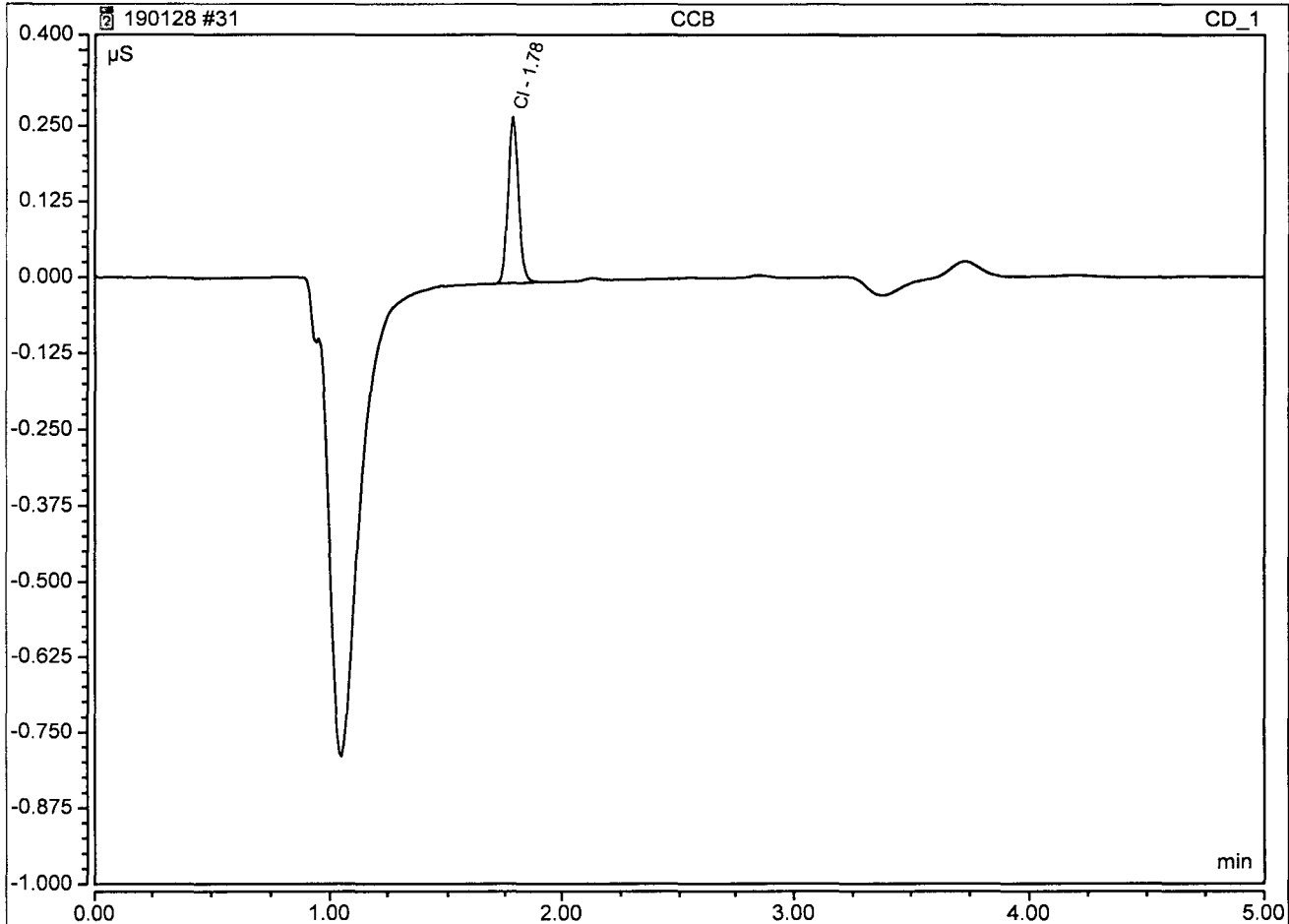
No.	Time (min)	Peak Name	Peak Type	Area ( $\mu\text{S}\cdot\text{min}$ )	Height ( $\mu\text{S}$ )	Amount (mg/L)
1	1.79	Cl	BMB	0.014	0.265	0.1339



### Peak Integration Report

Sample Name:	CCB	Inj. Vol.:	25.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	28-Jan-2019 / 16:39	Run Time:	5.00

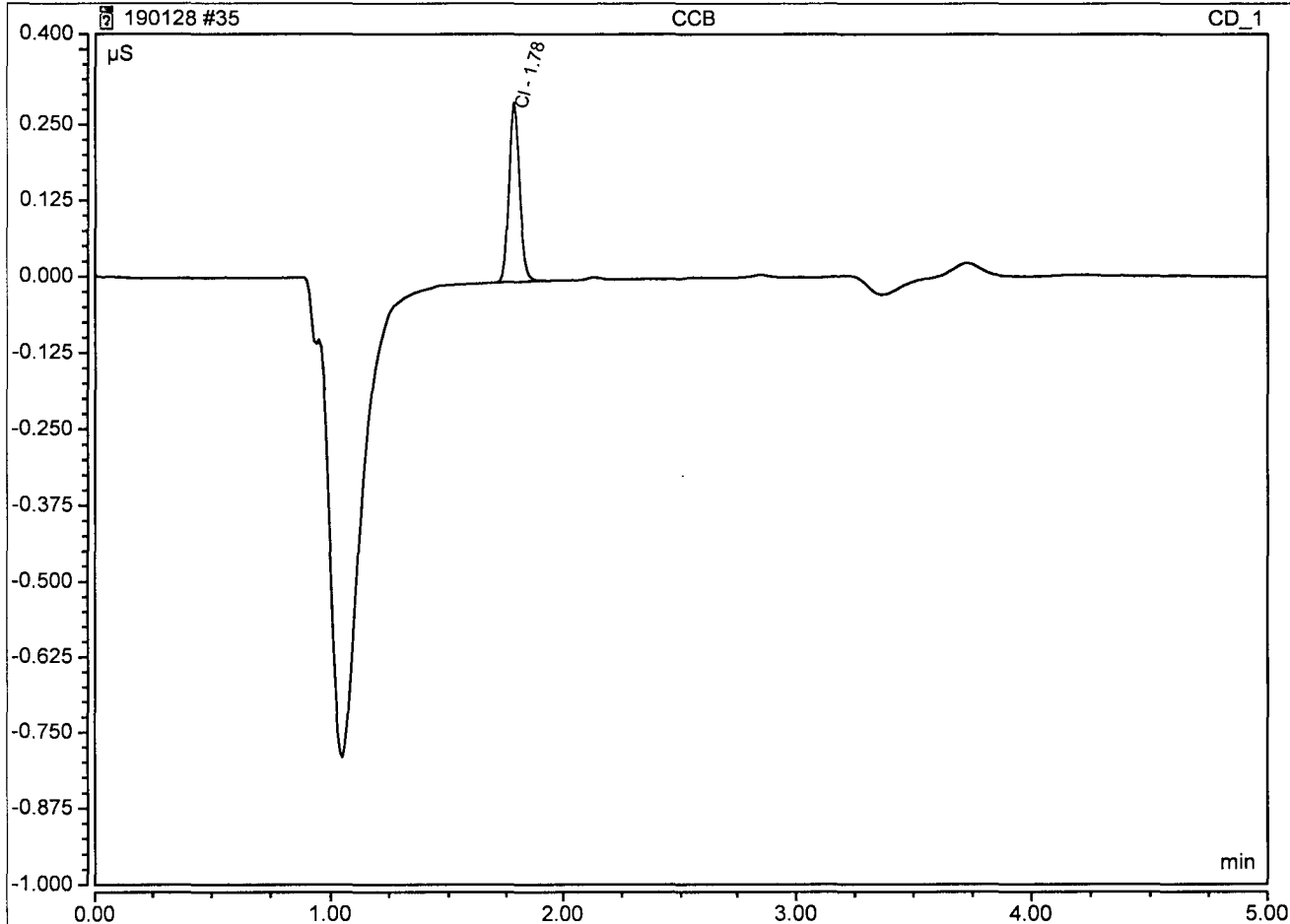
No.	Time (min)	Peak Name	Peak Type	Area ( $\mu\text{S}\cdot\text{min}$ )	Height ( $\mu\text{S}$ )	Amount (mg/L)
1	1.78	Cl	BMB	0.015	0.274	0.1395



### Peak Integration Report

Sample Name:	CCB	Inj. Vol.:	25.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	28-Jan-2019 / 17:08	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area ( $\mu\text{S}\cdot\text{min}$ )	Height ( $\mu\text{S}$ )	Amount (mg/L)
1	1.78	Cl	BMB	0.016	0.294	0.1500



A.P.P.L. INC.  
2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: A.P.P.L. INC. Contract: AECOM

ARF No: 87956 SDG: 87956

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: O2si

Analysis Date: 01/28/19

Analyte	Calibration Verification									M
	True CCV1	Found 16:33	%R(1)	True ICV	Found 16:37	%R(1)	True CCV1	Found 16:59	%R(1)	
TOXN	3	3.0152	101	3	3.0099	100	3	3.0892	103	

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: A.P.P.L. INC. Contract: AECOM

ARF No: 87956 SDG: 87956

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: O2si

Analysis Date: 01/28/19

Analyte	Calibration Verification									M
	True CCV1	Found 17:19	%R(1)	True CCV1	Found 17:22	%R(1)	True	Found	%R(1)	
TOXN	3	3.0464	102	3	2.9233	97.4				

A.P.P.L. INC.

3

BLANKS

Lab Name: A.P.P.L. INC.

Contract: AECOM

ARF No.: 87956

SDG: 87956

Preparation Blank Matrix (soil/water): water

Preparation Blank Concentration Units (ug/L or mg/kg): mg/L

Analyte	Calibration Blanks										M
	CCB 01/28/19 16:35	C	ICB 01/28/19 16:40	C	CCB 01/28/19 17:02	C	CCB 01/28/19 17:20	C	CCB 01/28/19 17:23	C	
TOXN	.100	U	.100	U	.100	U	.100	U	.1000	U	

**APPL Inc**  
**2A**  
**Initial and Continuing Calibration Verification**

**Lab Name:** APPL Inc  
**ARF No:**  
**ICAL Source:**  
**CCV Source:**  
**Analysis Date:** 02/11/19

**Contract:**  
**SDG:**

Analyte	Calibration Verification									M
	True ICV	Found 20:02	%R (1)	True CCV	Found	%R (2)	True CCV	Found	%R (3)	
TOC	2.50	2.696	107.8							

APPL Inc  
3  
Blanks

Lab Name: APPL Inc  
 ARF No:  
 Prep Blank Matrix: water  
 Prep BlankUnits: mg/L

Contract:  
 SDG:

	Calibration Blanks												M	
Analyte	ICB 2/11/19 19:31	C												
TOC	0.16	J												



**APPL Inc  
2A  
Initial and Continuing Calibration Verification**

**Lab Name:** APPL Inc  
**ARF No:** 87956  
**ICAL Source:**  
**CCV Source:**  
**Analysis Date:** 02/13/19

**Contract:** AECOM  
**SDG:** 87956

Analyte	Calibration Verification									M
	True CCV	Found 08:48	%R (1)	True CCV	Found 21:23	%R (2)	True CCV	Found 03:55	%R (3)	
TOC	2.50	2.658	106.3	2.50	2.704	108.2	2.50	2.555	102.2	

APPL Inc  
3  
Blanks

Lab Name: APPL Inc  
 ARF No: 87956  
 Prep Blank Matrix: water  
 Prep BlankUnits: mg/L

Contract: AECOM  
 SDG: 87956

	Calibration Blanks											M
	CCB 2/13/19 09:23		CCB 2/13/19 21:58		CCB 2/14/19 04:31							
Analyte	C	C	C									
TOC	0.31	J	0.28	J	0.93	U						

**APPL Inc**  
**2A**  
**Initial and Continuing Calibration Verification**

**Lab Name:** APPL Inc  
**ARF No:** 87956  
**ICAL Source:**  
**CCV Source:**  
**Analysis Date:** 02/20/19

**Contract:** AECOM  
**SDG:** 87956

Analyte	Calibration Verification									M
	True ICV	Found 20:32	%R (1)	True CCV	Found 05:48	%R (2)	True CCV		%R (3)	
TOC	2.50	2.609	104.4	2.50	2.654	106.2				

**APPL Inc**  
**3**  
**Blanks**

**Lab Name:** APPL Inc  
**ARF No:** 87956  
**Prep Blank Matrix:** water  
**Prep BlankUnits:** mg/L

**Contract:** AECOM  
**SDG:** 87956

	Calibration Blanks											M
	ICB 2/20/19 19:58	C	CCB 2/21/19 06:23	C								
Analyte												
TOC	0.93	U	0.93	U								

**Calibration Batch Report**

<i>Sequence:</i>	190124	<i>Injection Volume:</i>	25.00
<i>Instrument Method:</i>	Anions IM	<i>Operator:</i>	chemist_wetlab
<i>Inj. Date / Time:</i>	24-Jan-2019 / 12:57	<i>Run Time:</i>	5

Calibration Summary							
Peak Name	Eval.Type	Cal.Type	Points	Offset (C0)	Slope (C1)	Curve (C2)	Coeff.Det. %
F	Area	Lin, WithOffset, 1/A	8.000	-0.006	0.126	0.000	99.6784
Cl	Area	Lin	8.000	0.000	0.106	0.000	99.5874
NO2-N	Area	Lin	8.000	0.000	0.177	0.000	99.9482
BR	Area	Lin	8.000	0.000	0.036	0.000	99.8938
NO3-N	Area	Lin	8.000	0.000	0.219	0.000	99.7197
PO4-P	Area	Lin	8.000	0.000	0.070	0.000	99.1895
SO4	Area	Lin	8.000	0.000	0.066	0.000	99.7785

Injection Name	Ret.Time	Area	Height	Amount
	min	µS*min	µS	mg/L
	CD 1	CD 1	CD 1	CD 1
	F	F	F	F
i cal 1	1.258	0.0078	0.177	0.110
i cal 2	1.263	0.0331	0.551	0.311
i cal 3	1.263	0.0600	1.273	0.525
i cal 4	1.260	0.1319	2.702	1.096
i cal 5	1.258	0.2788	5.622	2.263
i cal 6	1.267	0.7668	14.736	6.141
i cal 7	1.270	1.1062	20.788	8.837
i cal 8	1.272	1.6227	29.189	12.941

Injection Name	Ret. Time min	Area μS*min	Height μS	Amount mg/L
	CD 1	CD 1	CD 1	CD 1
	Cl	Cl	Cl	Cl
i cal 1	1.790	0.0388	0.720	0.364
i cal 2	1.790	0.1261	2.353	1.184
i cal 3	1.795	0.1988	3.728	1.867
i cal 4	1.792	0.4159	7.930	3.906
i cal 5	1.792	0.8761	17.063	8.228
i cal 6	1.798	2.4846	49.285	23.333
i cal 7	1.803	3.6782	72.562	34.542
i cal 8	1.807	5.4995	106.635	51.646

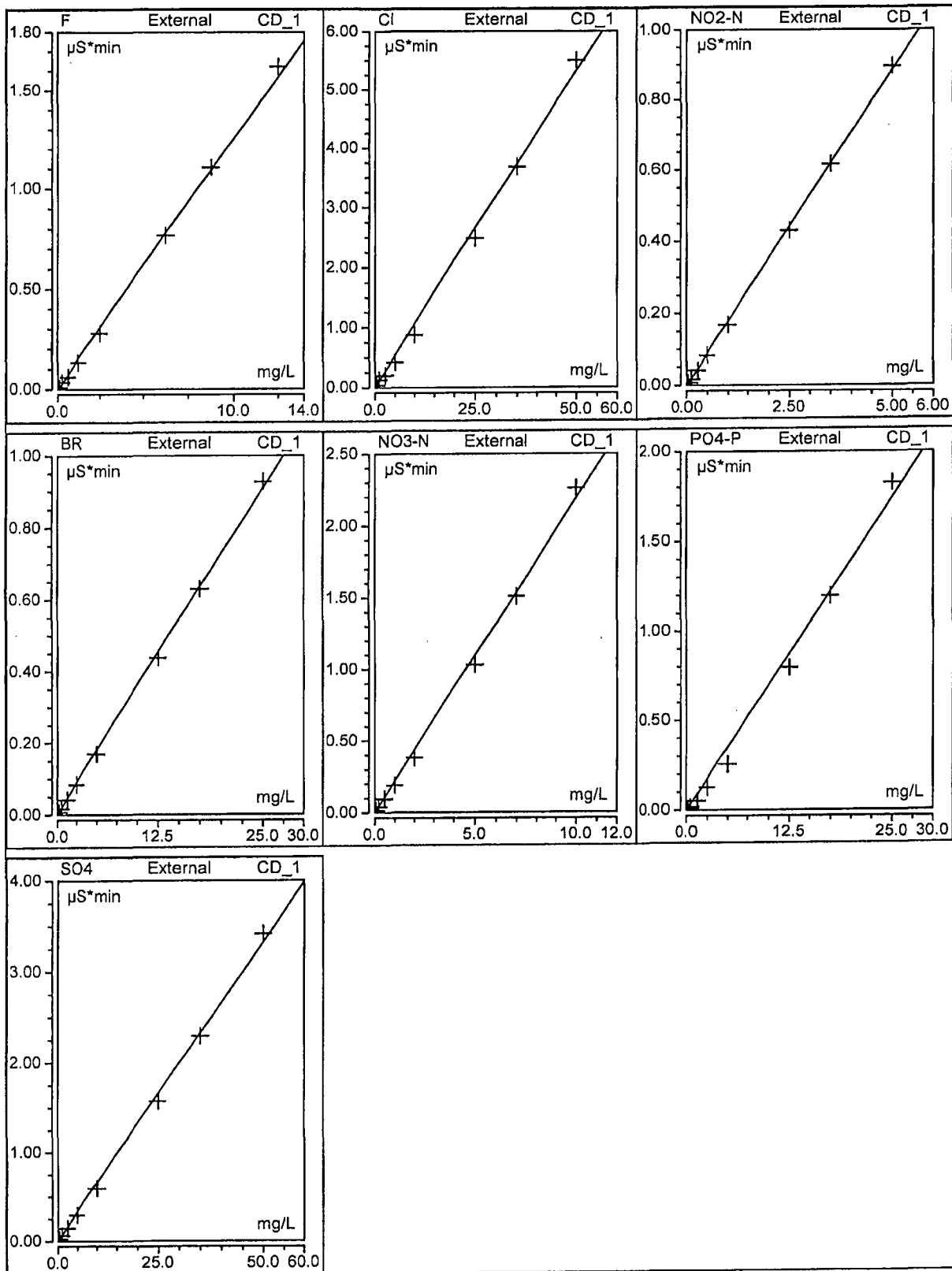
Injection Name	Ret. Time min	Area μS*min	Height μS	Amount mg/L
	CD 1	CD 1	CD 1	CD 1
	NO2-N	NO2-N	NO2-N	NO2-N
i cal 1	2.143	0.0068	0.093	0.038
i cal 2	2.143	0.0168	0.228	0.095
i cal 3	2.148	0.0409	0.554	0.231
i cal 4	2.143	0.0830	1.119	0.469
i cal 5	2.143	0.1677	2.261	0.948
i cal 6	2.147	0.4302	5.768	2.433
i cal 7	2.150	0.6156	8.211	3.481
i cal 8	2.152	0.8951	11.797	5.061

Injection Name	Ret. Time min	Area μS*min	Height μS	Amount mg/L
	CD 1	CD 1	CD 1	CD 1
	BR	BR	BR	BR
i cal 1	2.558	0.0071	0.093	0.195
i cal 2	2.558	0.0171	0.224	0.470
i cal 3	2.562	0.0416	0.544	1.144
i cal 4	2.557	0.0838	1.099	2.304
i cal 5	2.555	0.1691	2.232	4.648
i cal 6	2.557	0.4375	5.850	12.024
i cal 7	2.557	0.6299	8.490	17.311
i cal 8	2.553	0.9266	12.598	25.466

Injection Name	Ret. Time min	Area μS*min	Height μS	Amount mg/L
	CD 1	CD 1	CD 1	CD 1
	NO3-N	NO3-N	NO3-N	NO3-N
i cal 1	2.867	0.0162	0.183	0.074
i cal 2	2.867	0.0392	0.446	0.179
i cal 3	2.868	0.0936	1.062	0.427
i cal 4	2.863	0.1896	2.162	0.865
i cal 5	2.858	0.3821	4.442	1.743
i cal 6	2.857	1.0311	12.086	4.704
i cal 7	2.855	1.5088	17.791	6.883
i cal 8	2.850	2.2578	26.658	10.299

Injection Name	Ret.Time min	Area μS*min	Height μS	Amount mg/L
	CD 1	CD 1	CD 1	CD 1
	PO4-P	PO4-P	PO4-P	PO4-P
i cal 1	3.775	0.0077	0.055	0.111
i cal 2	3.773	0.0176	0.121	0.252
i cal 3	3.778	0.0508	0.355	0.729
i cal 4	3.773	0.1246	0.850	1.788
i cal 5	3.772	0.2545	1.894	3.651
i cal 6	3.772	0.7954	5.814	11.410
i cal 7	3.772	1.1958	8.858	17.153
i cal 8	3.770	1.8237	13.683	26.161

Injection Name	Ret.Time min	Area μS*min	Height μS	Amount mg/L
	CD 1	CD 1	CD 1	CD 1
	SO4	SO4	SO4	SO4
i cal 1	4.282	0.0258	0.174	0.388
i cal 2	4.283	0.0616	0.417	0.927
i cal 3	4.288	0.1444	0.976	2.174
i cal 4	4.288	0.2937	1.996	4.421
i cal 5	4.290	0.5930	4.065	8.925
i cal 6	4.300	1.5710	10.997	23.643
i cal 7	4.308	2.2902	16.201	34.468
i cal 8	4.315	3.4113	24.358	51.341

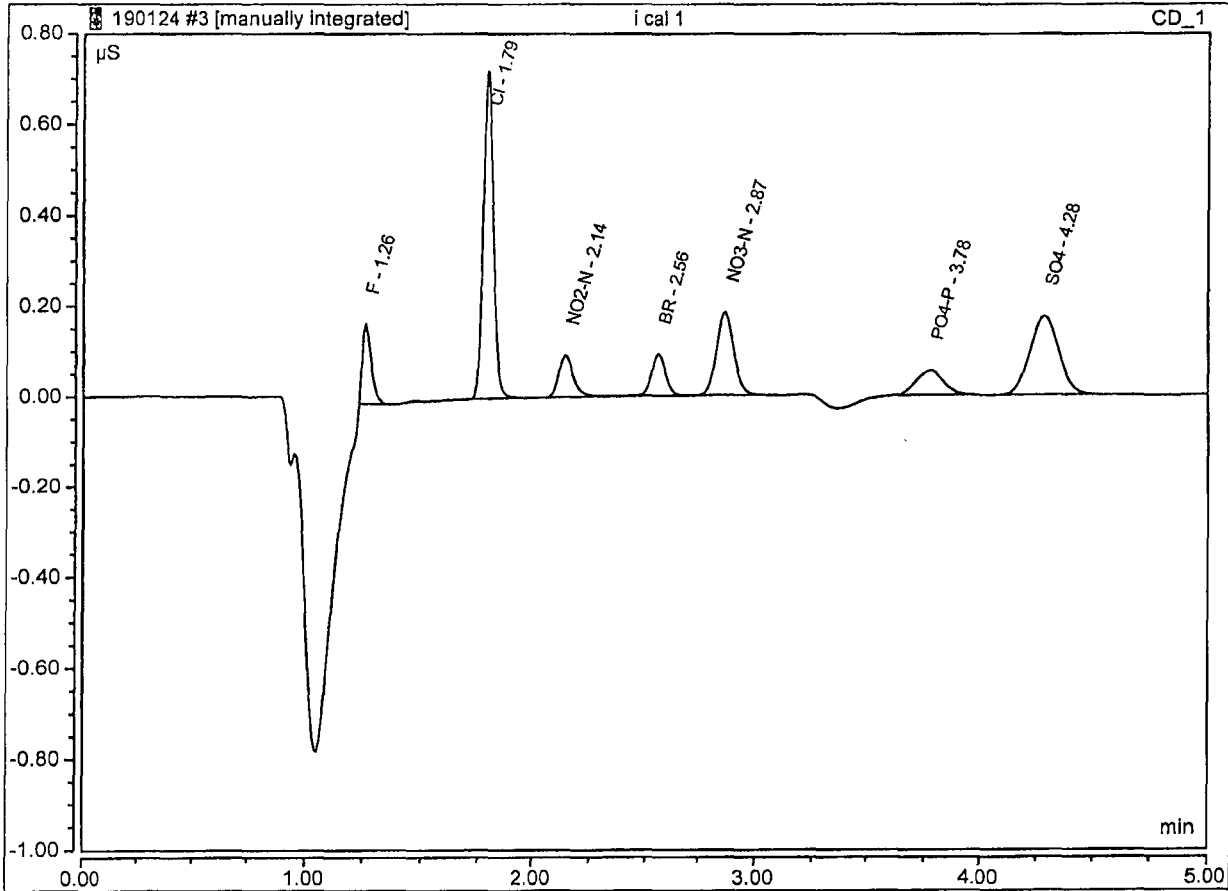




**Peak Integration Report**

Sample Name:	i cal 1	Inj. Vol.:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 12:06	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.26	F	BMB*	0.008	0.177	0.1105
2	1.79	Cl	BMB	0.039	0.720	0.3640
3	2.14	NO2-N	BMB	0.007	0.093	0.0383
4	2.56	BR	BMB	0.007	0.093	0.1945
5	2.87	NO3-N	BMB	0.016	0.183	0.0739
6	3.78	PO4-P	BMB	0.008	0.055	0.1109
7	4.28	SO4	BMB	0.026	0.174	0.3876

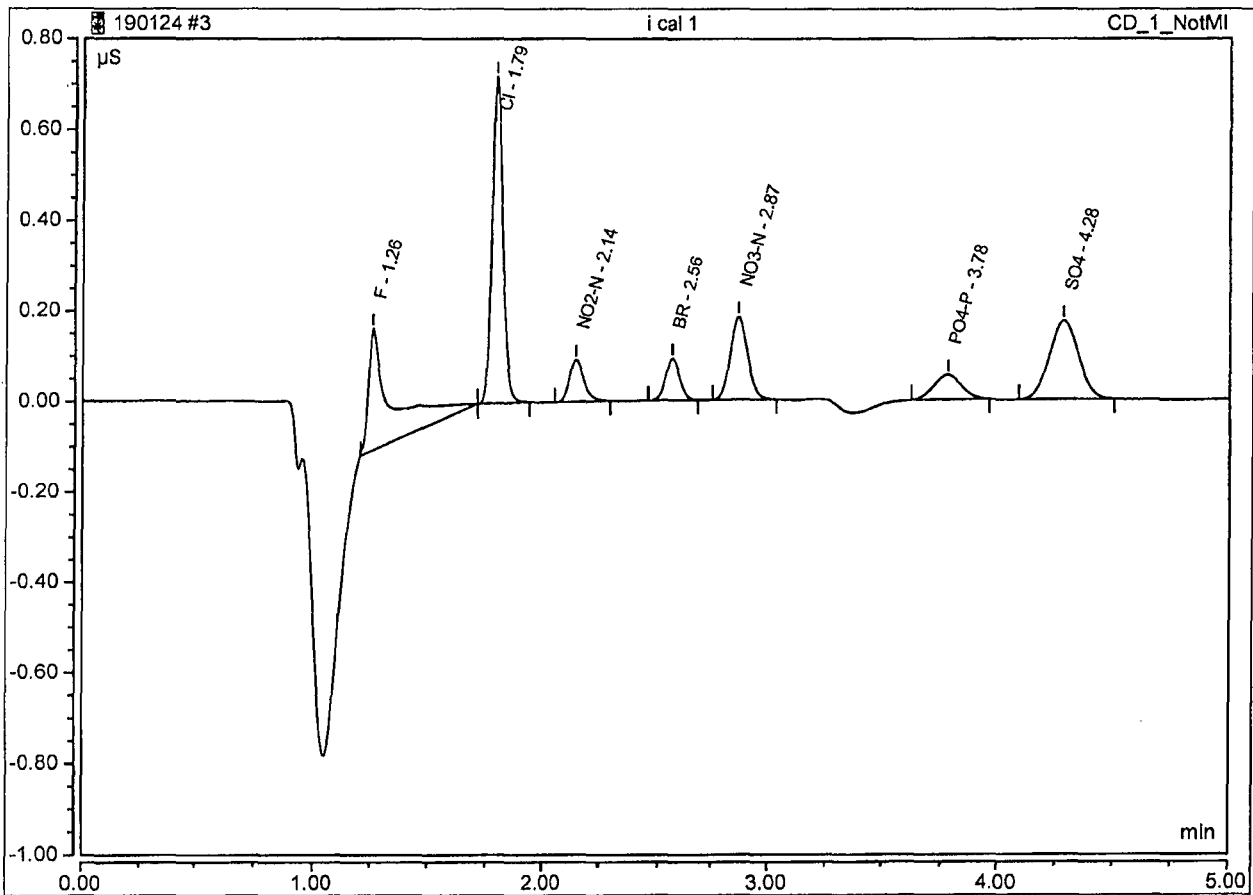


F mi1 HH 190128 MM

### Not Manipulated Peak Integration Report

Sample Name:	i cal 1	Inj. Vol.:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 12:06	Run Time:	5.00

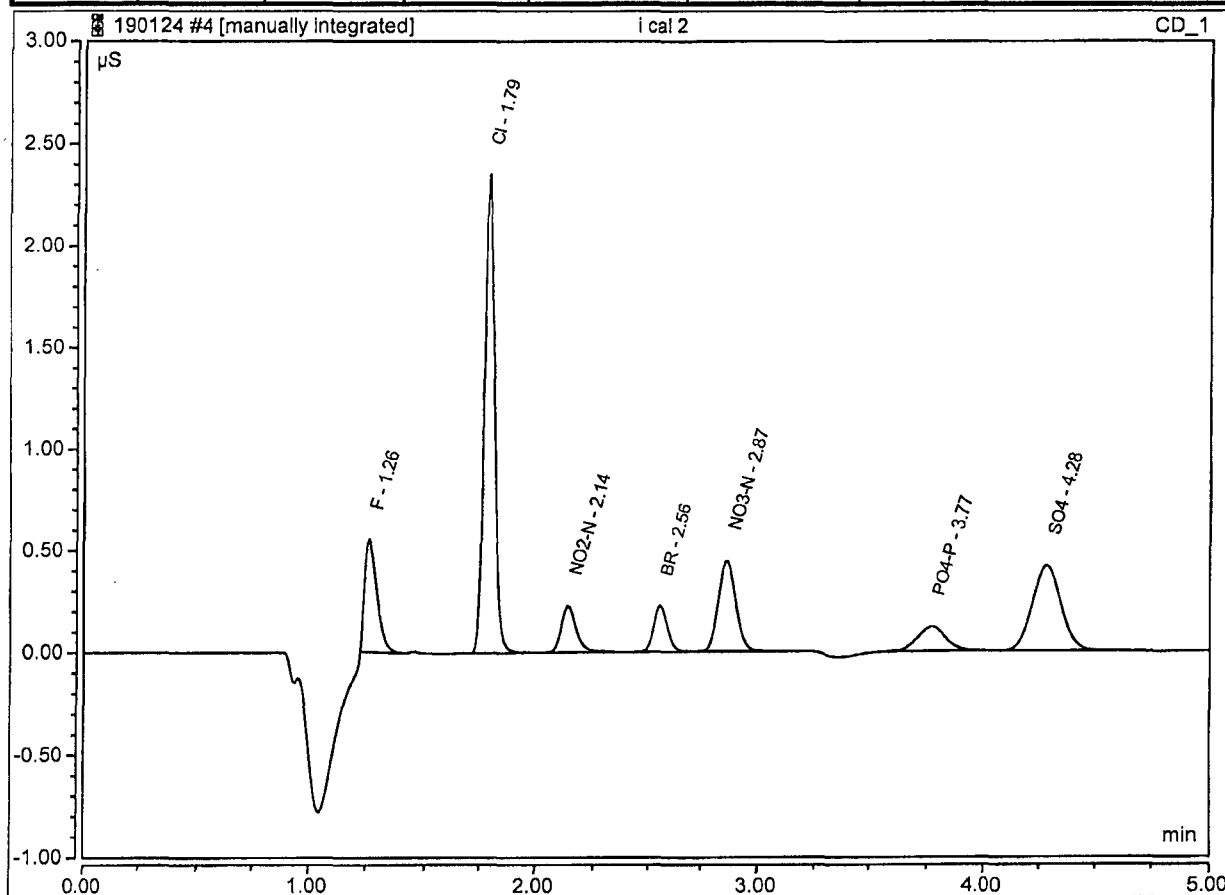
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height $\mu\text{S}$	Area $\mu\text{S} \cdot \text{min}$
1	1.26	F	BMB*	0.032	0.269	0.0900
2	1.79	Cl	BMB	0.039	0.720	0.3640
3	2.14	NO <sub>2</sub> -N	BMB	0.007	0.093	0.0383
4	2.56	BR	BMB	0.007	0.093	0.1945
5	2.87	NO <sub>3</sub> -N	BMB	0.016	0.183	0.0739
6	3.78	PO <sub>4</sub> -P	BMB	0.008	0.055	0.1109
7	4.28	SO <sub>4</sub>	BMB	0.026	0.174	0.3876



### Peak Integration Report

Sample Name:	i cal 2	Inj. Vol.:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 12:13	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.26	F	BMB*	0.033	0.551	0.3114
2	1.79	Cl	BMB	0.126	2.353	1.1844
3	2.14	NO2-N	BMB	0.017	0.228	0.0951
4	2.56	BR	BMB	0.017	0.224	0.4697
5	2.87	NO3-N	BMB	0.039	0.446	0.1790
6	3.77	PO4-P	BMB	0.018	0.121	0.2519
7	4.28	SO4	BMB	0.062	0.417	0.9266

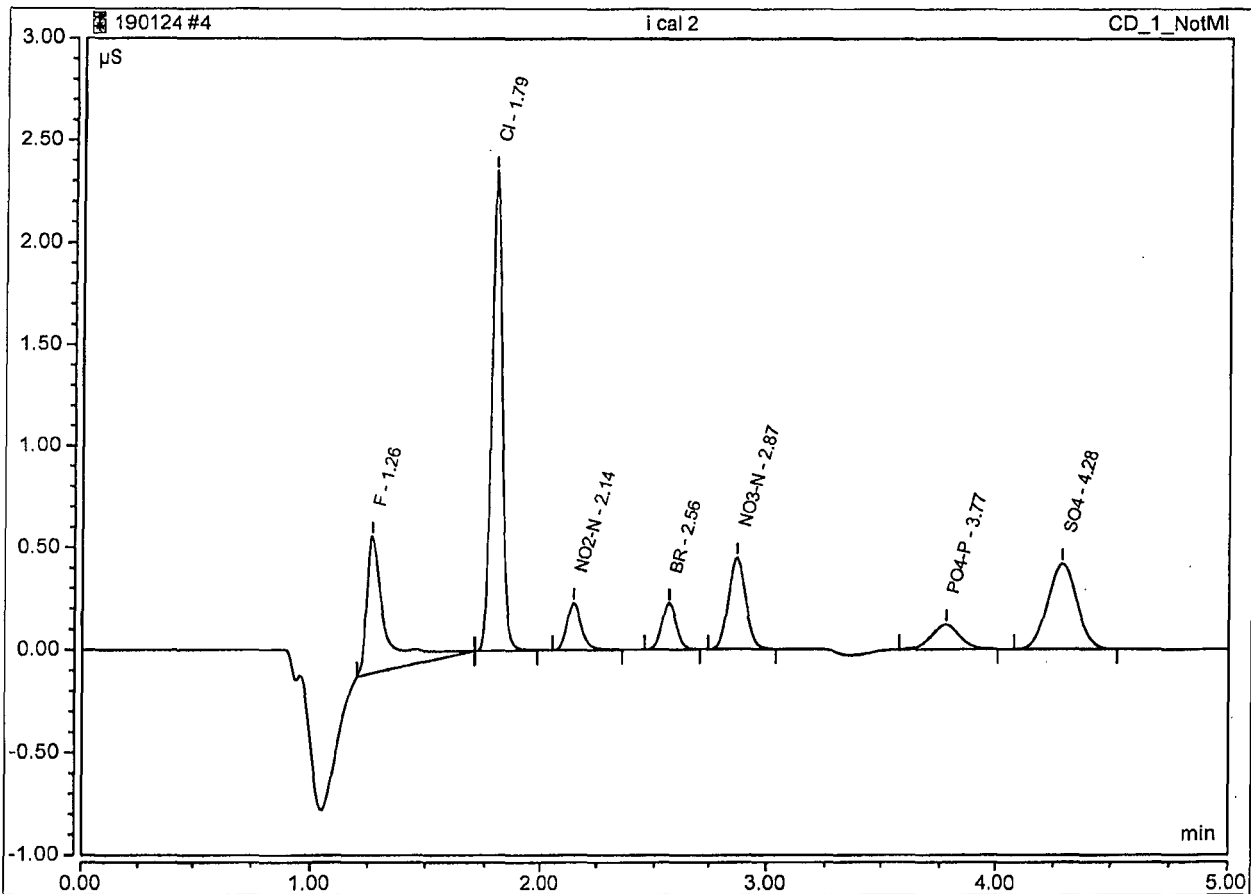


F mi1 HH 190128 MM

### Not Manipulated Peak Integration Report

Sample Name:	i cal 2	Inj. Vol.:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 12:13	Run Time:	5.00

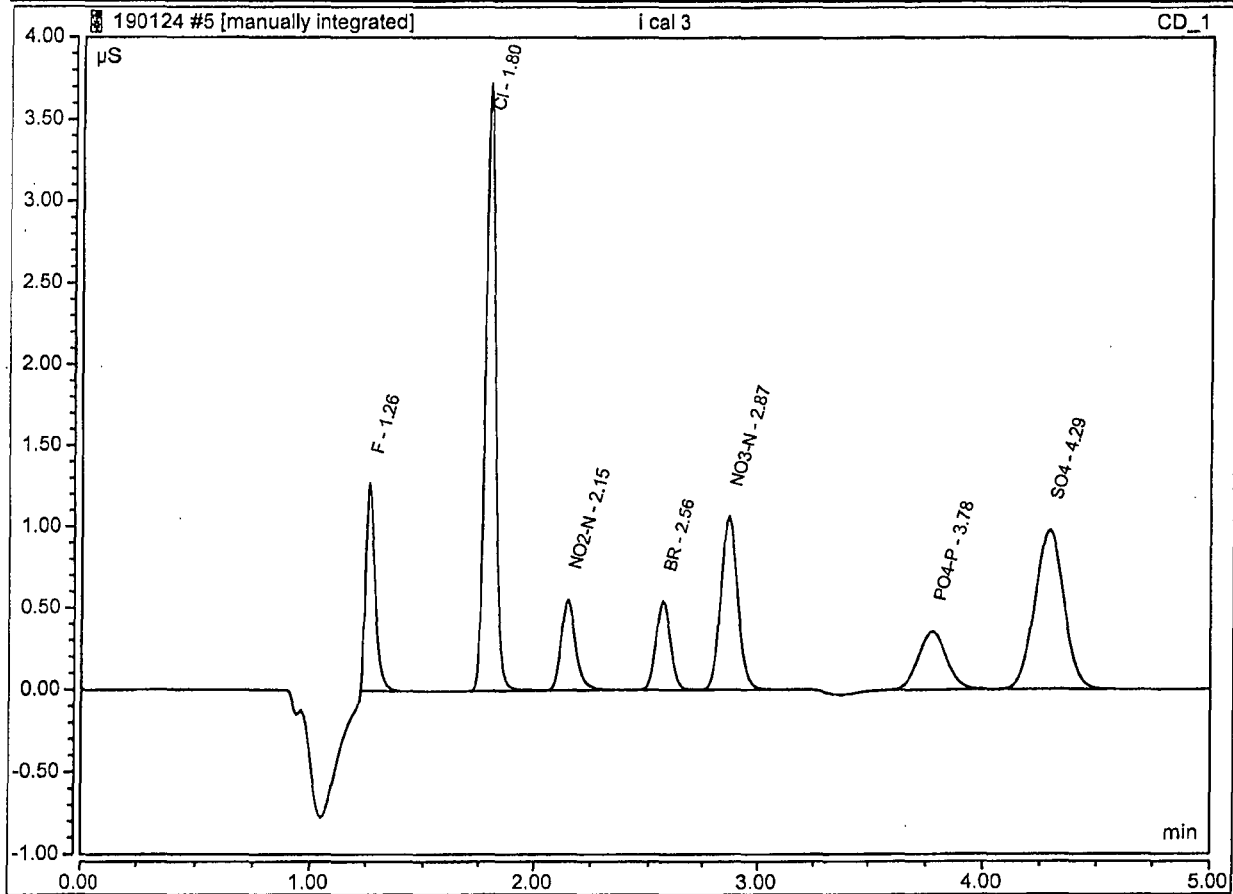
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height $\mu\text{S}$	Area $\mu\text{S}\cdot\text{min}$
1	1.26	F	BMB*	0.064	0.668	0.3399
2	1.79	Cl	BMB	0.126	2.353	1.1844
3	2.14	NO2-N	BMB	0.017	0.228	0.0951
4	2.56	BR	BMB	0.017	0.224	0.4697
5	2.87	NO3-N	BMB	0.039	0.446	0.1790
6	3.77	PO4-P	BMB	0.018	0.121	0.2519
7	4.28	SO4	BMB	0.062	0.417	0.9266



### Peak Integration Report

Sample Name:	I cal 3	Inj. Vol.:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 12:20	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.26	F	BMB*	0.060	1.273	0.5246
2	1.80	Cl	BMB	0.199	3.728	1.8672
3	2.15	NO2-N	BMB	0.041	0.554	0.2311
4	2.56	BR	BMB	0.042	0.544	1.1439
5	2.87	NO3-N	BMB	0.094	1.062	0.4271
6	3.78	PO4-P	BMB	0.051	0.355	0.7288
7	4.29	SO4	BMB	0.144	0.976	2.1737

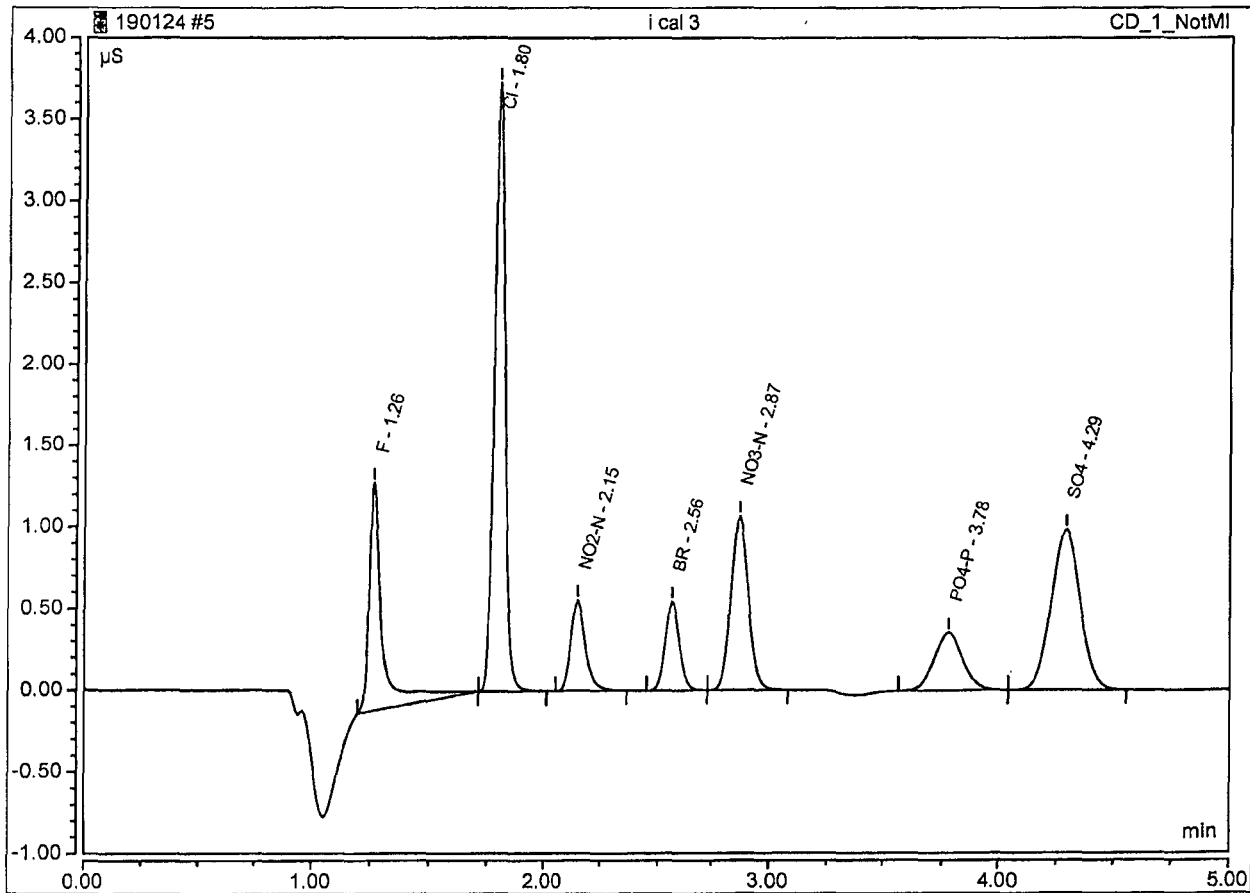


F mi1 HH 190128 MM

### Not Manipulated Peak Integration Report

Sample Name:	i cal 3	Inj. Vol.:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Anlon APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 12:20	Run Time:	5.00

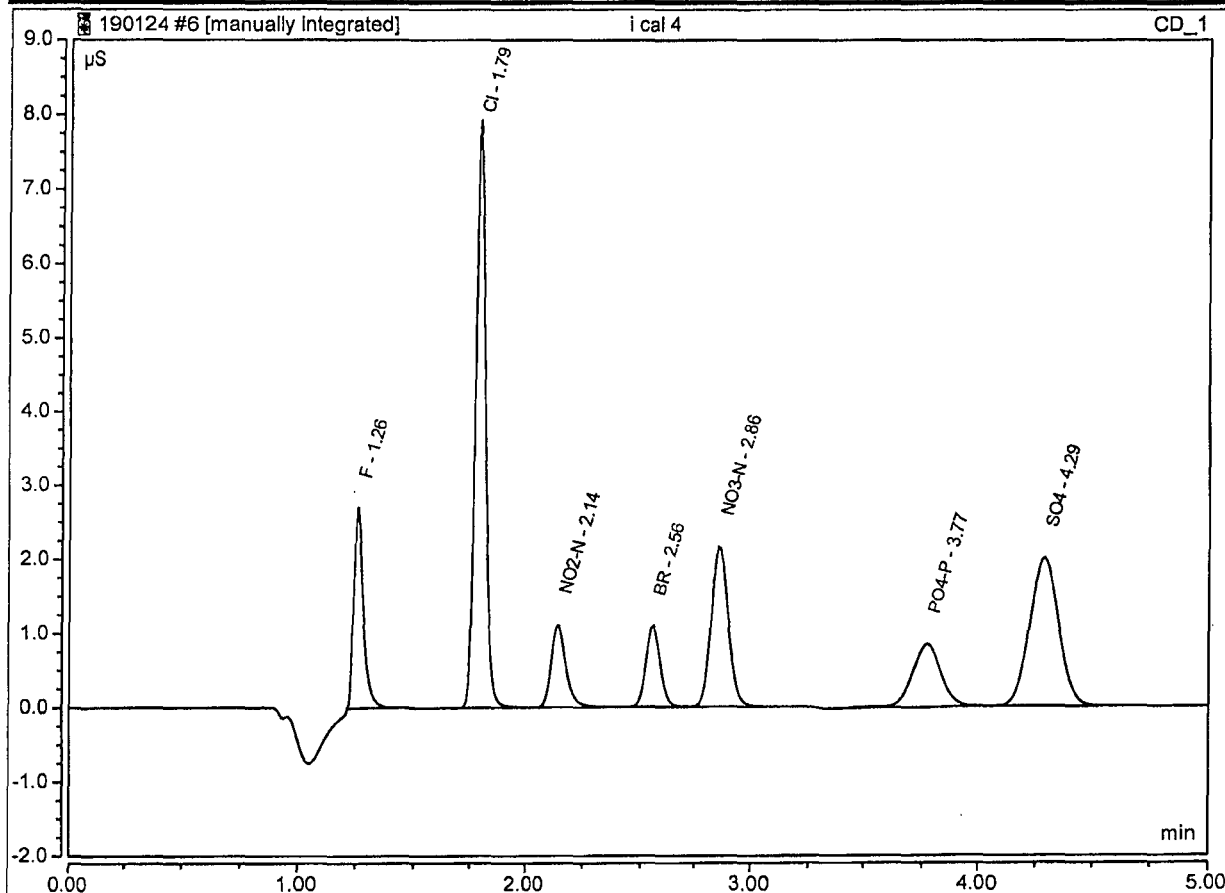
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height $\mu\text{S}$	Area $\mu\text{S} \cdot \text{min}$
1	1.26	F	BMB*	0.091	1.392	0.5597
2	1.80	Cl	BMB	0.199	3.728	1.8672
3	2.15	NO <sub>2</sub> -N	BMB	0.041	0.554	0.2311
4	2.56	BR	BMB	0.042	0.544	1.1439
5	2.87	NO <sub>3</sub> -N	BMB	0.094	1.062	0.4271
6	3.78	PO <sub>4</sub> -P	BMB	0.051	0.355	0.7288
7	4.29	SO <sub>4</sub>	BMB	0.144	0.976	2.1737



### Peak Integration Report

Sample Name:	i cal 4	Inj. Vol.:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 12:28	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.26	F	BMB*	0.132	2.702	1.0962
2	1.79	Cl	BMB	0.416	7.930	3.9059
3	2.14	NO2-N	BMB	0.083	1.119	0.4691
4	2.56	BR	BMB	0.084	1.099	2.3038
5	2.86	NO3-N	BMB	0.190	2.162	0.8648
6	3.77	PO4-P	BMB	0.125	0.850	1.7878
7	4.29	SO4	BMB	0.294	1.996	4.4209

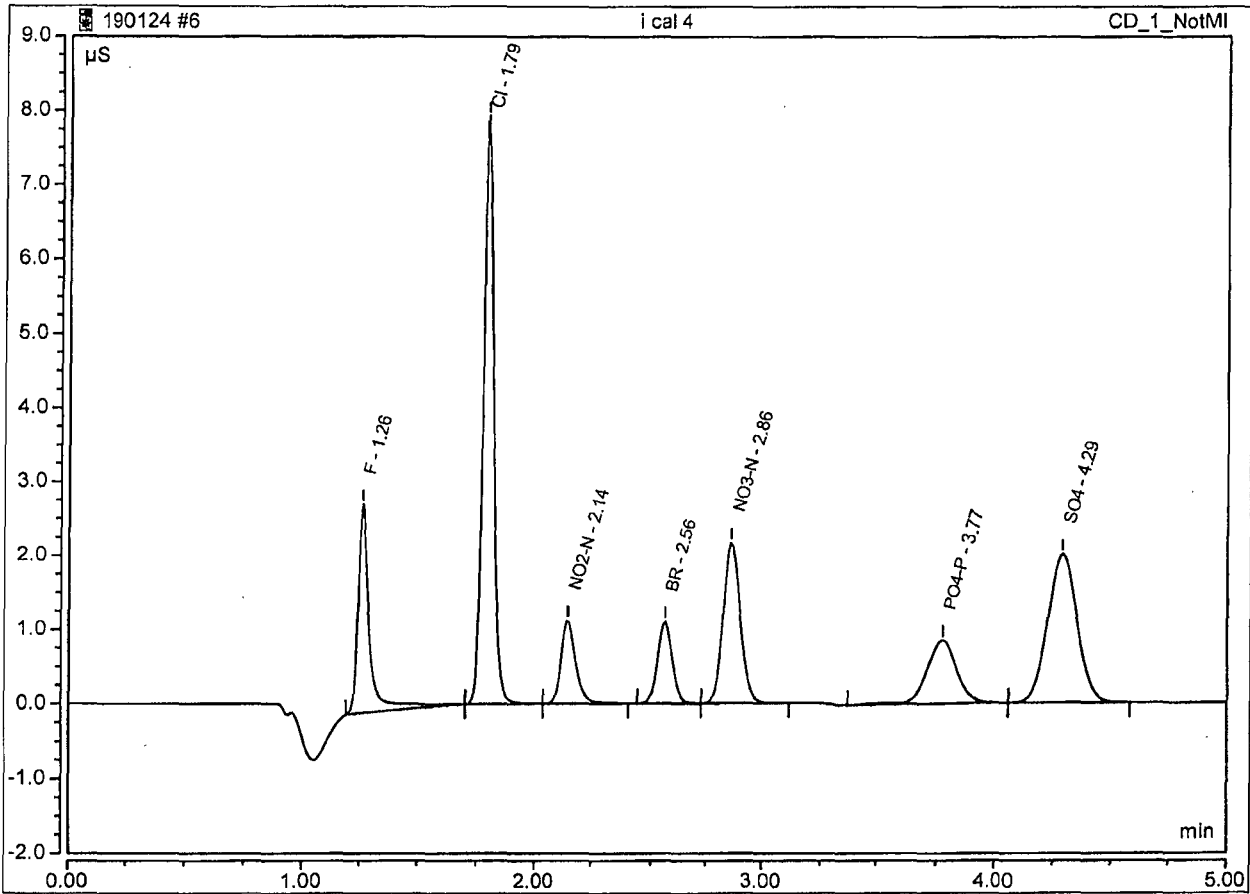


F mi1 HH 190128 MM

### Not Manipulated Peak Integration Report

Sample Name:	i cal 4	Inj. Vol.:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 12:28	Run Time:	5.00

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height $\mu\text{S}$	Area $\mu\text{S}\cdot\text{min}$
1	1.26	F	BMB*	0.164	2.815	1.1319
2	1.79	Cl	BMB	0.416	7.930	3.9059
3	2.14	NO <sub>2</sub> -N	BMB	0.083	1.119	0.4691
4	2.56	BR	BMB	0.084	1.099	2.3038
5	2.86	NO <sub>3</sub> -N	BMB	0.190	2.162	0.8648
6	3.77	PO <sub>4</sub> -P	BMB	0.125	0.850	1.7878
7	4.29	SO <sub>4</sub>	BMB	0.294	1.996	4.4209

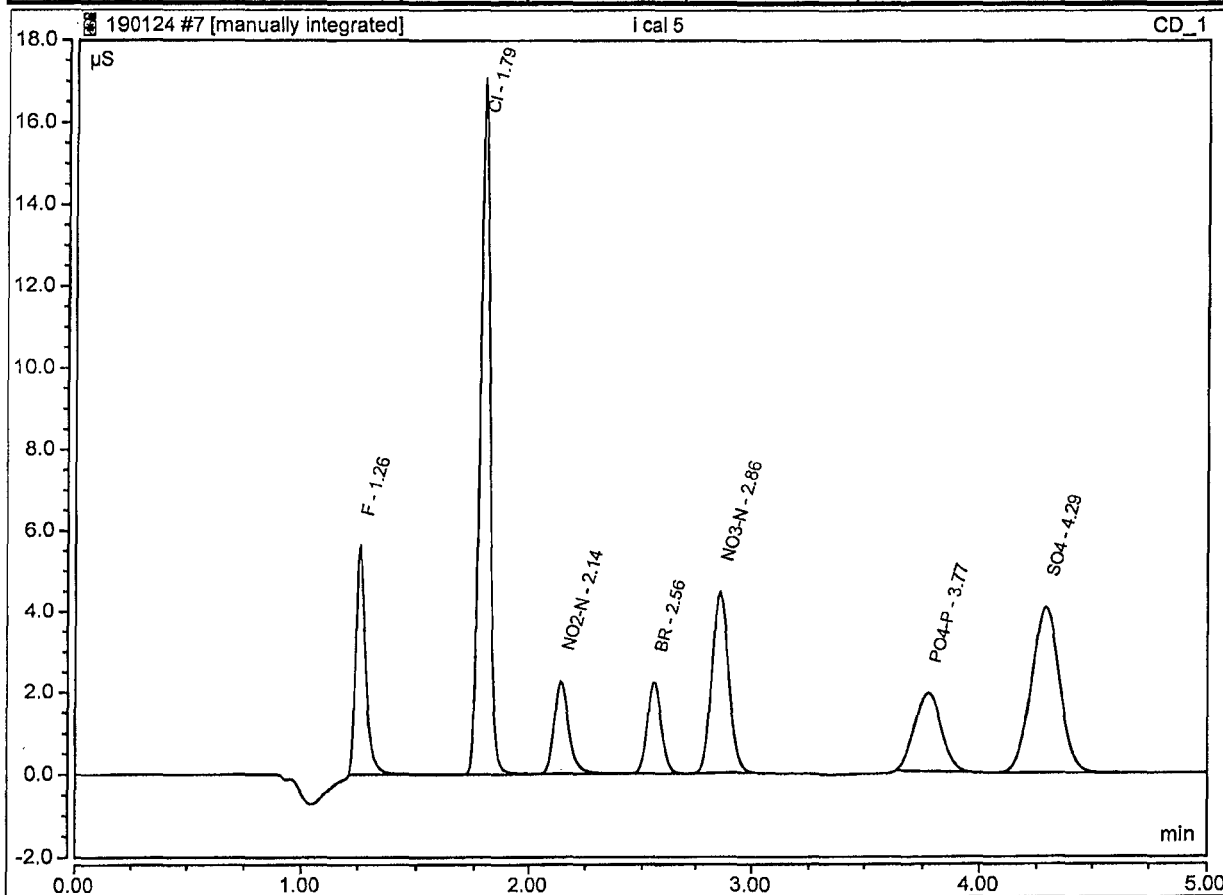




### Peak Integration Report

Sample Name:	i cal 5	Inj. Vol.:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 12:35	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.26	F	BMB*	0.279	5.622	2.2633
2	1.79	Cl	BMB	0.876	17.063	8.2279
3	2.14	NO2-N	BMB	0.168	2.261	0.9484
4	2.56	BR	BMB	0.169	2.232	4.6484
5	2.86	NO3-N	BMB	0.382	4.442	1.7432
6	3.77	PO4-P	BMB	0.255	1.894	3.6510
7	4.29	SO4	BMB	0.593	4.065	8.9251

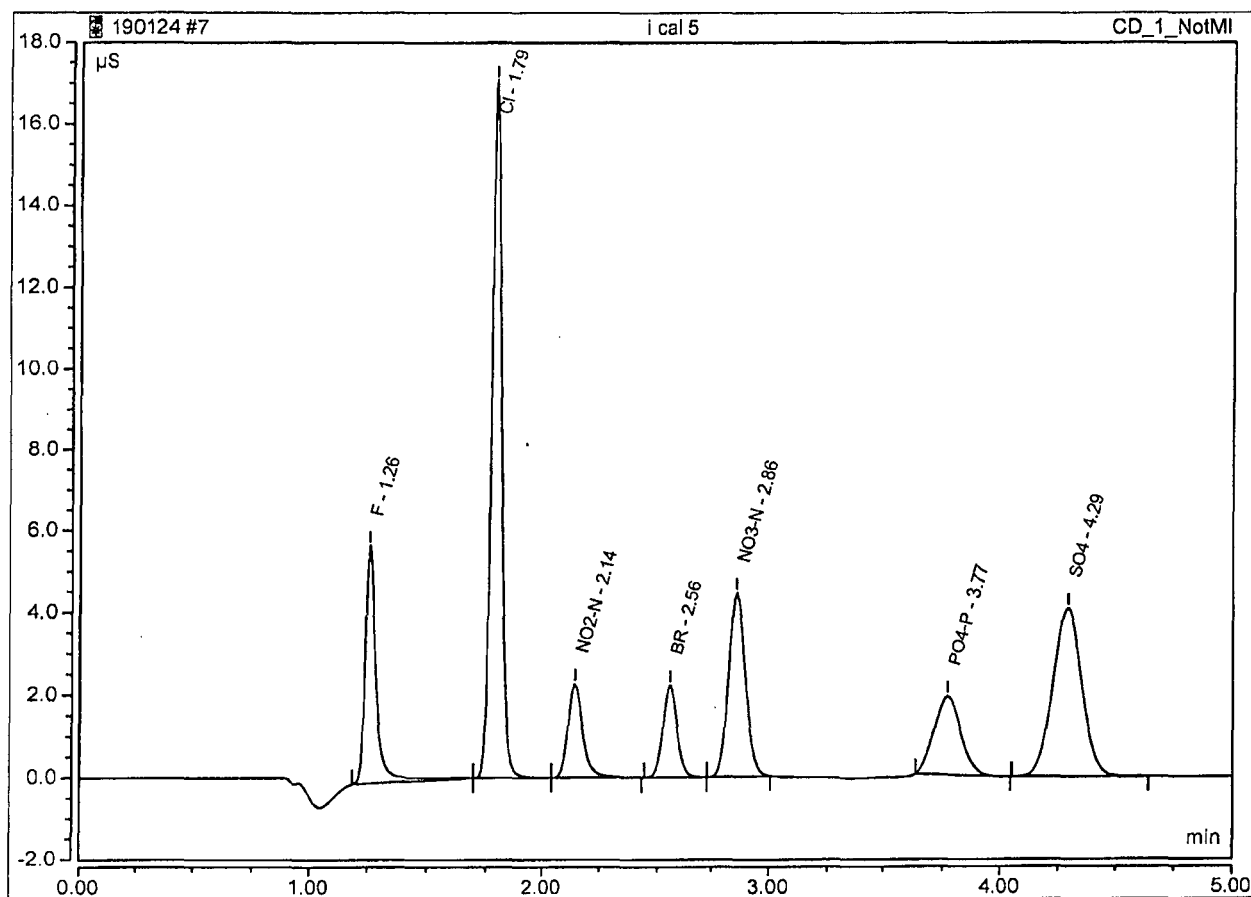


F mi1 HH 190128 MM

### Not Manipulated Peak Integration Report

Sample Name:	I cal 5	Inj. Vol.:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Anlon APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 12:35	Run Time:	5.00

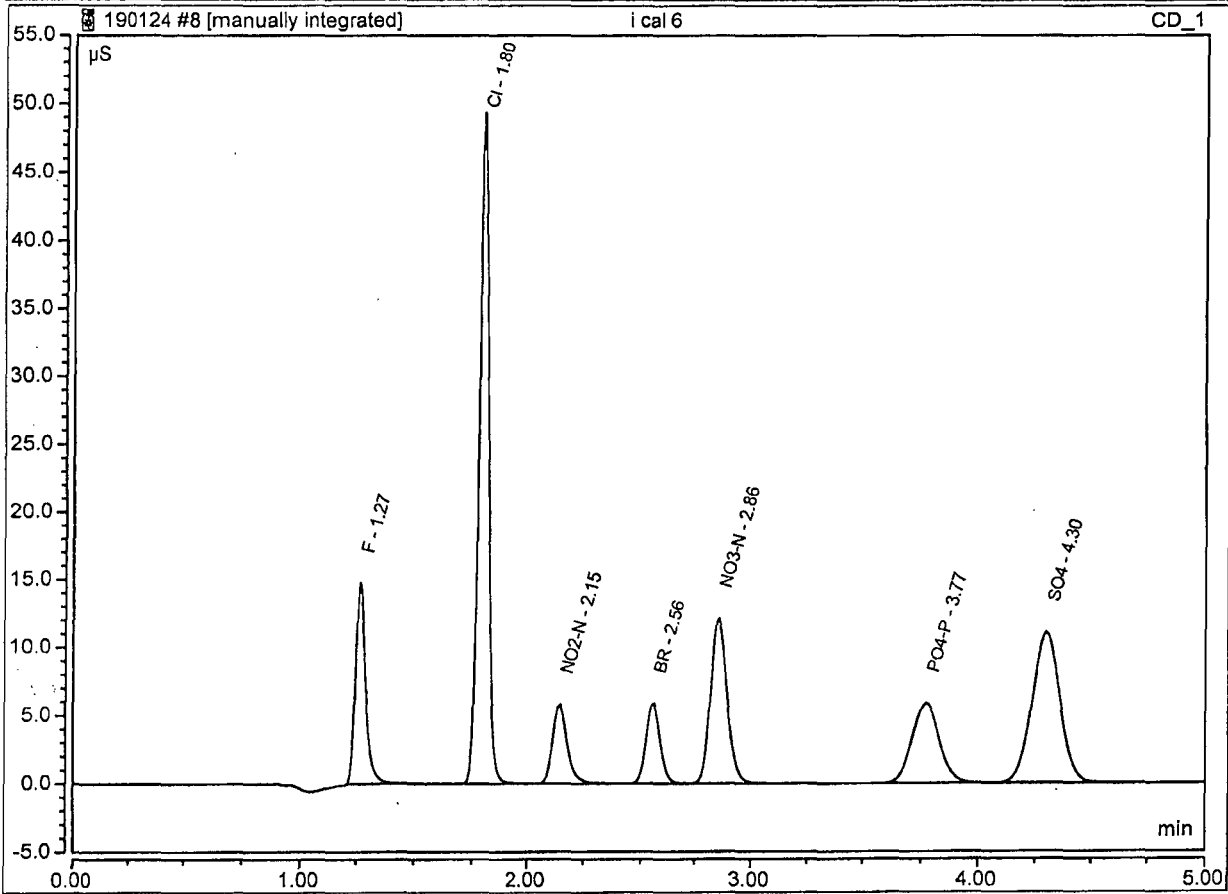
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height $\mu\text{S}$	Area $\mu\text{S}\cdot\text{min}$
1	1.26	F	BMB*	0.313	5.748	2.3094
2	1.79	Cl	BMB	0.876	17.063	8.2279
3	2.14	NO <sub>2</sub> -N	BMB	0.168	2.261	0.9484
4	2.56	BR	BMB	0.169	2.232	4.6484
5	2.86	NO <sub>3</sub> -N	BMB	0.382	4.442	1.7432
6	3.77	PO <sub>4</sub> -P	BMB	0.255	1.894	3.6510
7	4.29	SO <sub>4</sub>	BMB	0.593	4.065	8.9251



**Peak Integration Report**

Sample Name:	I cal 6	Inj. Vol.:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 12:43	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area (µS*mIn)	Height (µS)	Amount (mg/L)
1	1.27	F	BMB*	0.767	14.736	6.1409
2	1.80	Cl	BMB	2.485	49.285	23.3335
3	2.15	NO2-N	BMB	0.430	5.768	2.4325
4	2.56	BR	BMB	0.437	5.850	12.0236
5	2.86	NO3-N	BMB	1.031	12.086	4.7035
6	3.77	PO4-P	BMB	0.795	5.814	11.4097
7	4.30	SO4	BMB	1.571	10.997	23.6433

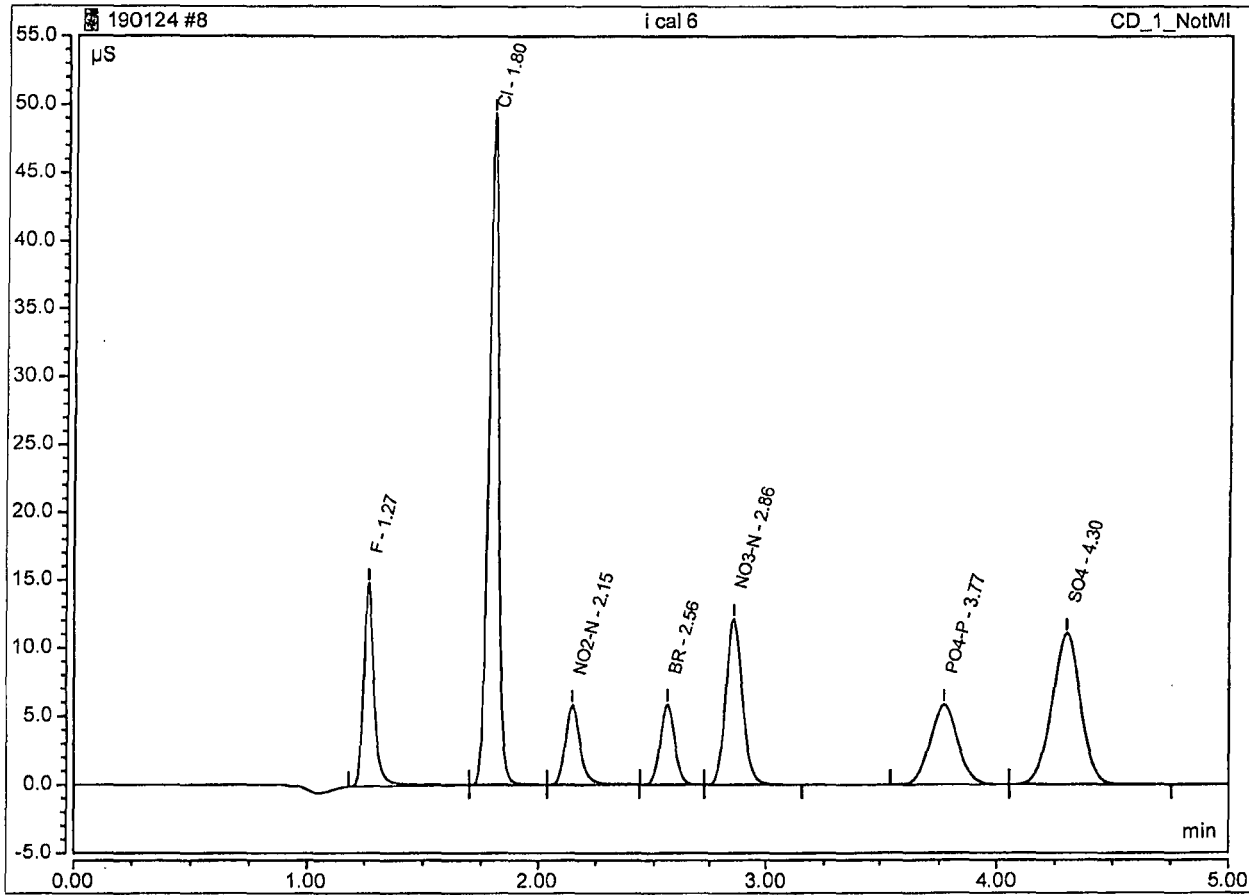


F mi1 HH 190128 MM

### Not Manipulated Peak Integration Report

Sample Name:	i cal 6	Inj. Vol.:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 12:43	Run Time:	5.00

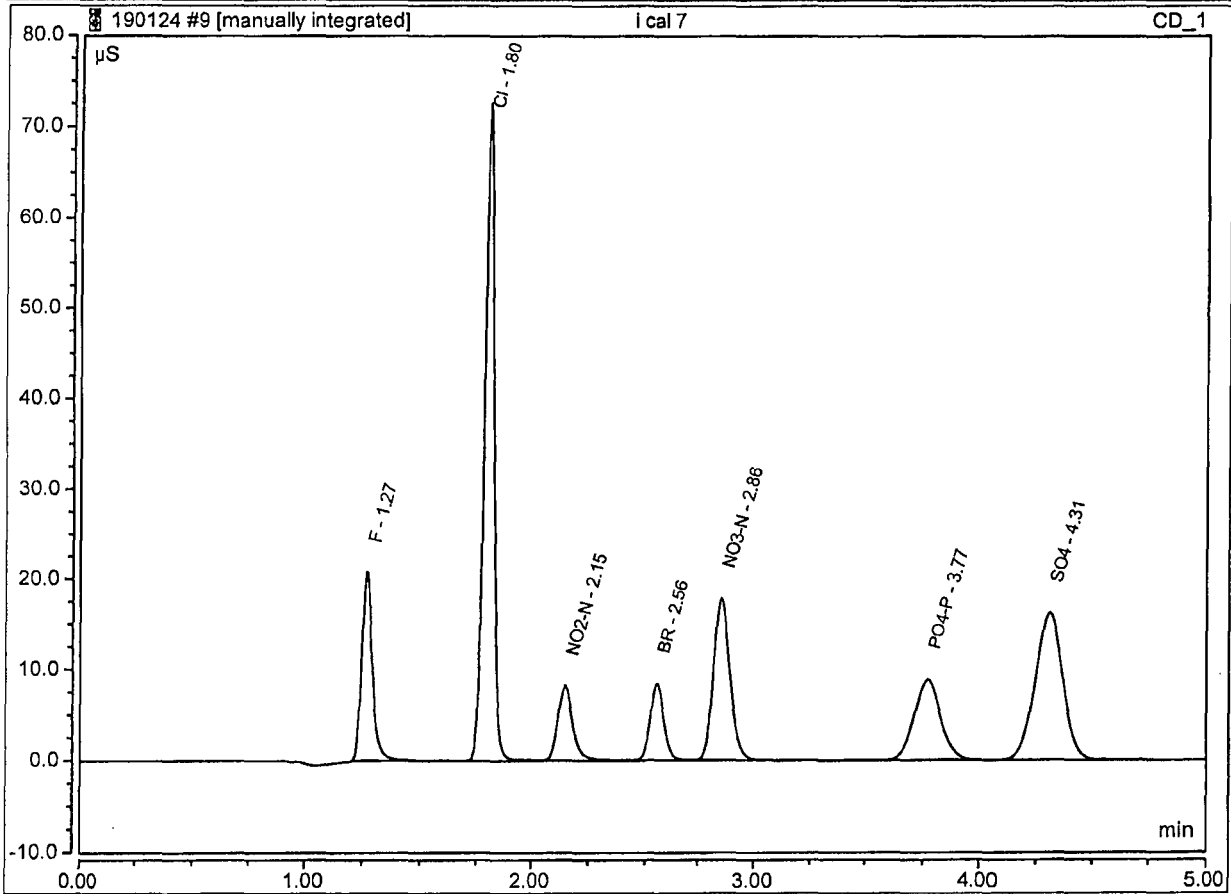
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height $\mu\text{S}$	Area $\mu\text{S}\cdot\text{min}$
1	1.27	F	BMB*	0.797	14.841	6.1203
2	1.80	Cl	BMB	2.485	49.285	23.3335
3	2.15	NO <sub>2</sub> -N	BMB	0.430	5.768	2.4325
4	2.56	BR	BMB	0.437	5.850	12.0236
5	2.86	NO <sub>3</sub> -N	BMB	1.031	12.086	4.7035
6	3.77	PO <sub>4</sub> -P	BMB	0.795	5.814	11.4097
7	4.30	SO <sub>4</sub>	BMB	1.571	10.997	23.6433



**Peak Integration Report**

Sample Name:	I cal 7	Inj. Vol.:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 12:50	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.27	F	BMB*	1.106	20.788	8.8373
2	1.80	Cl	BMB	3.678	72.562	34.5418
3	2.15	NO2-N	BMB	0.616	8.211	3.4811
4	2.56	BR	BMB	0.630	8.490	17.3110
5	2.86	NO3-N	BMB	1.509	17.791	6.8826
6	3.77	PO4-P	BMB	1.196	8.858	17.1532
7	4.31	SO4	BMB	2.290	16.201	34.4680

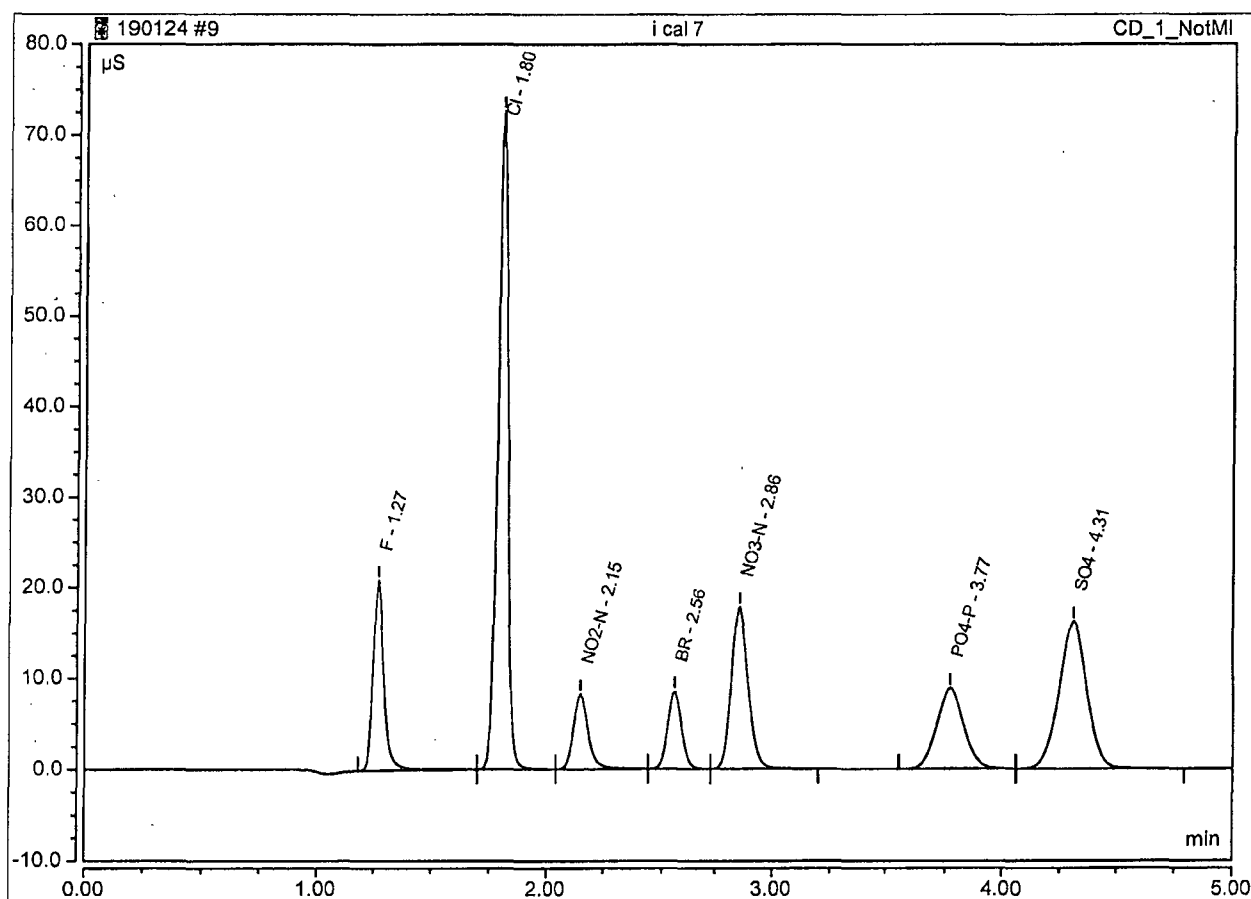


F mi1 HH 190128 MM

### Not Manipulated Peak Integration Report

Sample Name:	i cal 7	Inj. Vol.:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 12:50	Run Time:	5.00

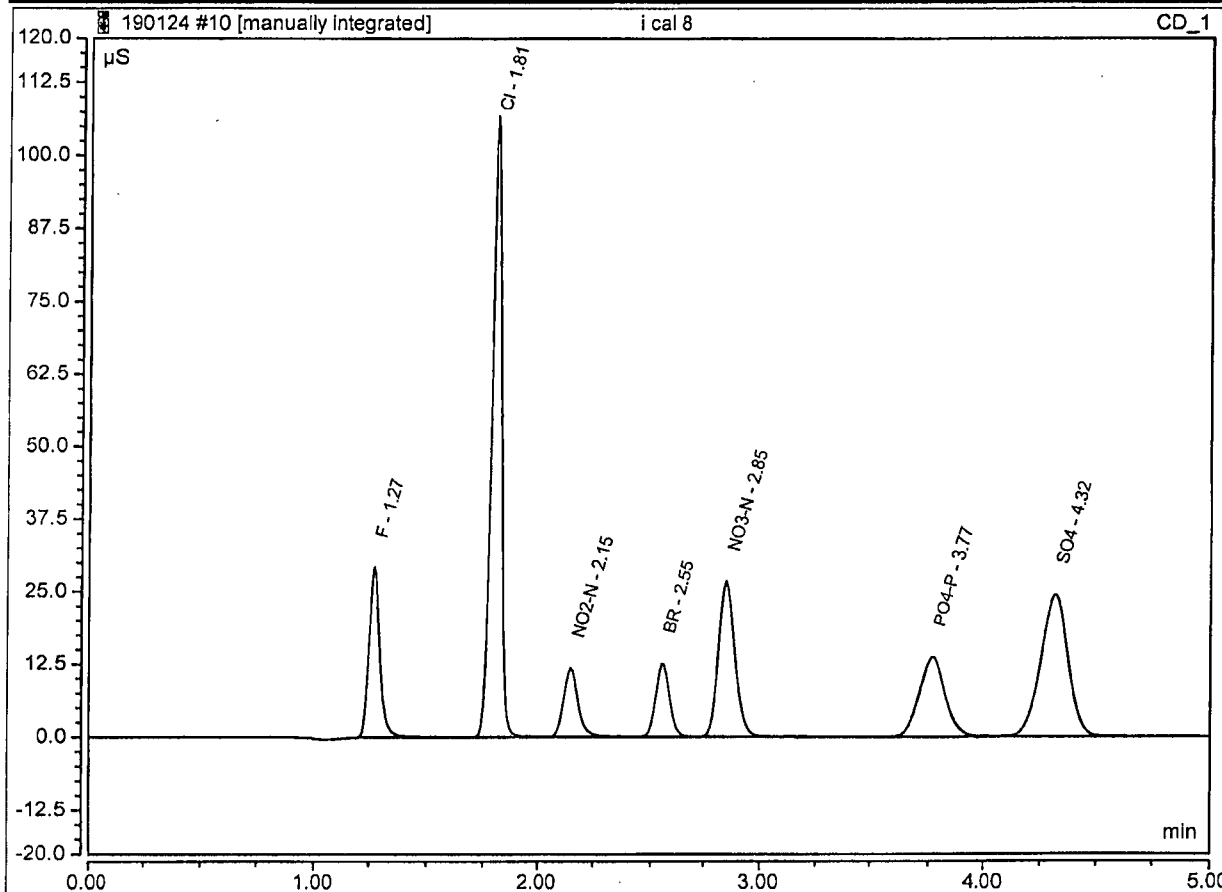
No.	Time min	Peak Name	Peak Type	Area μS*min	Height μS	Area μS*min
1	1.27	F	BMB*	1.139	20.900	8.8150
2	1.80	Cl	BMB	3.678	72.562	34.5418
3	2.15	NO2-N	BMB	0.616	8.211	3.4811
4	2.56	BR	BMB	0.630	8.490	17.3110
5	2.86	NO3-N	BMB	1.509	17.791	6.8826
6	3.77	PO4-P	BMB	1.196	8.858	17.1532
7	4.31	SO4	BMB	2.290	16.201	34.4680



### Peak Integration Report

Sample Name:	I cal 8	Inj. Vol.:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 12:57	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.27	F	BMB*	1.623	29.189	12.9407
2	1.81	Cl	BMB	5.499	106.635	51.6461
3	2.15	NO2-N	BMB	0.895	11.797	5.0614
4	2.55	BR	BMB	0.927	12.598	25.4664
5	2.85	NO3-N	BMB	2.258	26.658	10.2994
6	3.77	PO4-P	BMB	1.824	13.683	26.1607
7	4.32	SO4	BMB	3.411	24.358	51.3415

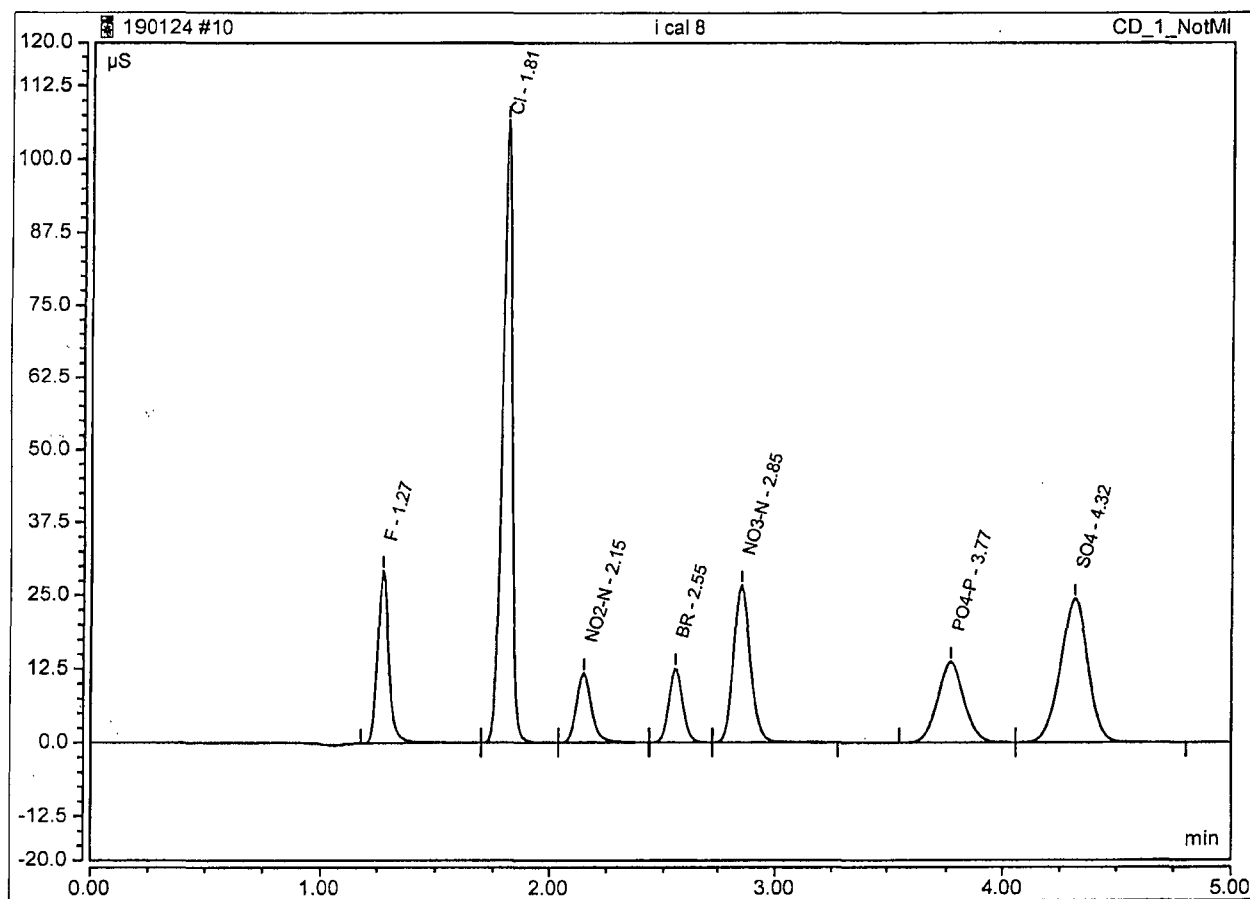


F mi1 HH 190128 MM

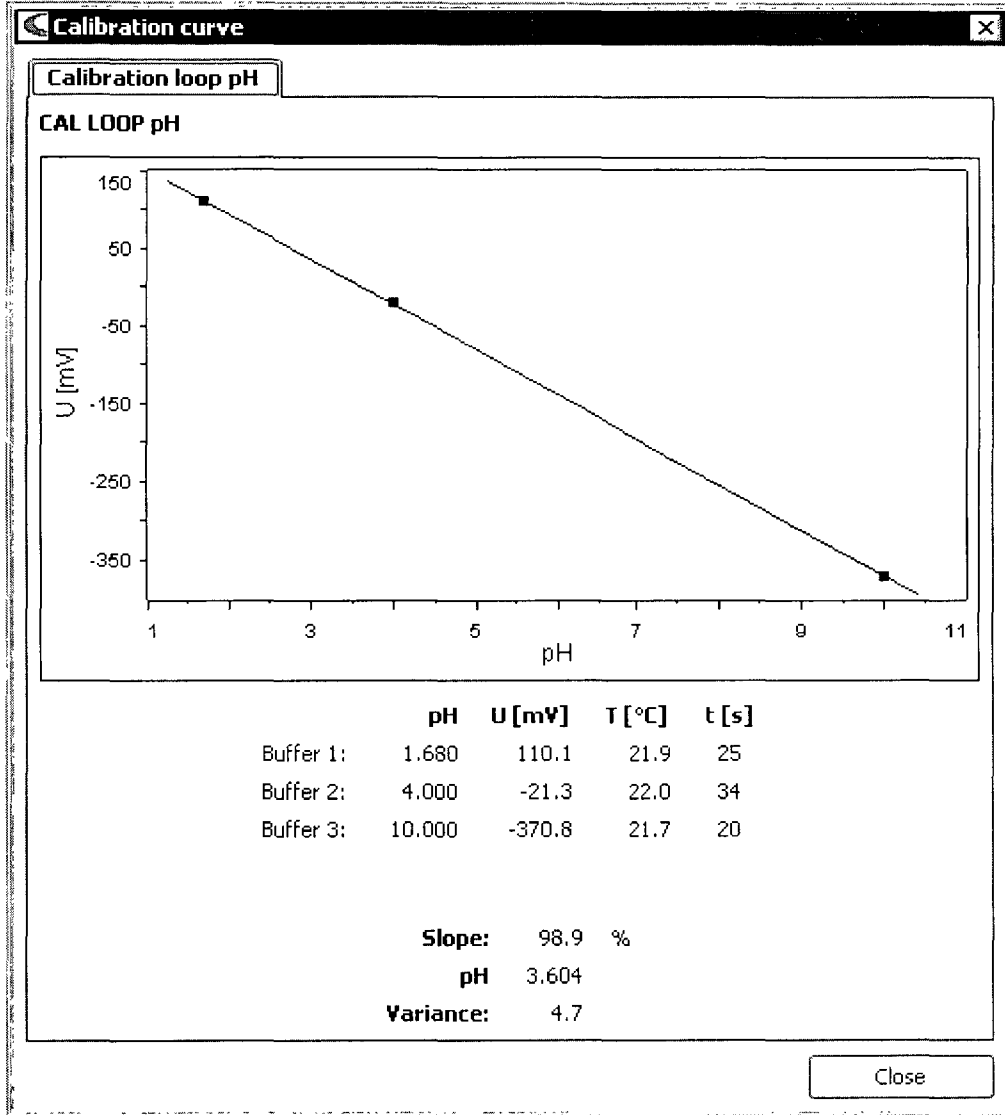
### Not Manipulated Peak Integration Report

Sample Name:	I cal 8	Inj. Vol.:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 12:57	Run Time:	5.00

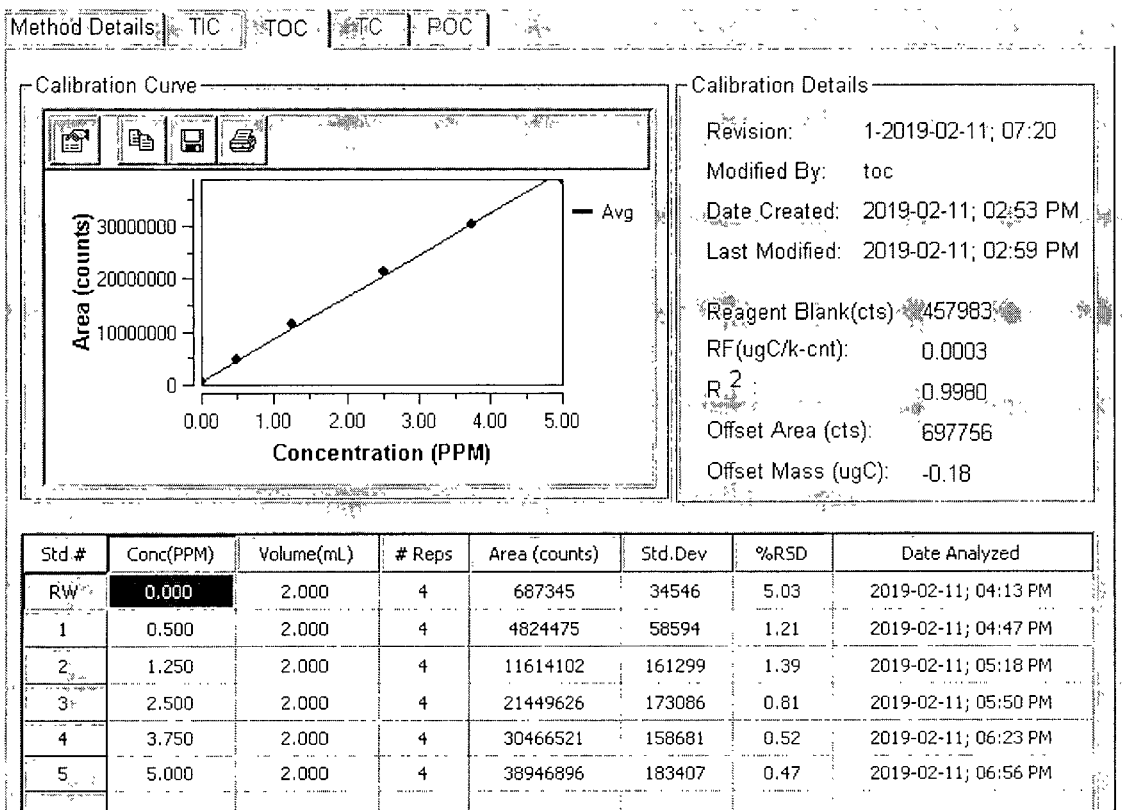
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height $\mu\text{S}$	Area $\mu\text{S} \cdot \text{min}$
1	1.27	F	BMB*	1.652	29.287	12.8588
2	1.81	Cl	BMB	5.499	106.635	51.6461
3	2.15	NO2-N	BMB	0.895	11.797	5.0614
4	2.55	BR	BMB	0.927	12.598	25.4664
5	2.85	NO3-N	BMB	2.258	26.658	10.2994
6	3.77	PO4-P	BMB	1.824	13.683	26.1607
7	4.32	SO4	BMB	3.411	24.358	51.3415







TicToc Calibration Curve 190211A





Appl.Inc  
 908 N Temperance Ave  
 Clovis, Ca  
 93611  
 USA

Date Prepared: 02/18/2019 By: TOC

Date Approved: By:

**Sample Results Summary**

Spl Vial		Num Act		Method	Type	Dil	Customer ID	Mode	Avg. Area	Avg. Mass	Avg. Conc	Std. Dev	% RSD	Notes
#	#	Rep	Rep						(cts)	(ug)	(PPM)			
2	1	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	Standard	1:1	00000000	TOC	687,345	0.000	0.000	34,546	5.03	
3	2	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	Standard	1:1	00000000	TOC	4,824,475	1.000	0.500	58,594	1.21	
4	3	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	Standard	1:1	00000000	TOC	11,614,102	2.500	1.250	161,299	1.39	
5	4	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	Standard	1:1	00000000	TOC	21,449,626	5.000	2.500	173,086	0.81	
6	5	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	Standard	1:1	00000000	TOC	30,466,521	7.500	3.750	158,681	0.52	
7	6	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	Standard	1:1	00000000	TOC	38,946,896	10.000	5.000	183,407	0.47	
8	7	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	Sample	1:1	00000000	TOC	1,717,970	0.316	0.158	31,138	1.81	Pass
9	8	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	Check_Stan	1:1	00000000	TOC	22,163,151	5.392	2.696	109,699	0.49	





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 Clovis, Ca  
 93611  
 USA

Date Prepared: 02/18/2019

By:

TOC

Date Approved:

By:

Sample Results

Spl #: 2 Sample ID: TOC-RW Type: Standard Date: 02/11/2019 Status: Passed  
 Vial #: 1 Method: NPOC - Feb 11, 2019; 02-54-31 Dilution: 1:1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	4:13 pm	-	-	-	668,867	0.000	0.000
2	4:21 pm	-	-	-	739,036	0.000	0.000
3	4:28 pm	-	-	-	667,973	0.000	0.000
4	4:36 pm	-	-	-	673,502	0.000	0.000
Avg.		-	-	-	687,345	0.000	0.000
Std.Dev.					5.03		
% RSD.							

Spl #: 3 Sample ID: TOC-Std#1-0.500 PPM Type: Standard Date: 02/11/2019 Status: Passed  
 Vial #: 2 Method: NPOC - Feb 11, 2019; 02-54-31 Dilution: 1:1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	4:47 pm	-	-	-	4,799,949	1.000	0.500
2	4:54 pm	-	-	-	4,769,063	1.000	0.500
3	5:02 pm	-	-	-	4,823,015	1.000	0.500
4	5:10 pm	-	-	-	4,905,872	1.000	0.500
Avg.		-	-	-	4,824,475	1.000	0.500
Std.Dev.					1.21		
% RSD.							





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 Clovis, Ca  
 93611  
 USA

Date Prepared: 02/18/2019 By: TOC

Date Approved: By:

Spl #: 4 Sample ID: TOC-Std#2-1.250 PPM Type: Standard Date: 02/11/2019 Status: Passed  
 Vial #: 3 Method: NPOC - Feb 11, 2019; 02-54-31 Dilution: 1:1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	5:18 pm	-	-	-	11,514,099	2.500	1.250
2	5:26 pm	-	-	-	11,788,000	2.500	1.250
3	5:34 pm	-	-	-	11,444,716	2.500	1.250
4	5:42 pm	-	-	-	11,709,594	2.500	1.250
Avg.		-	-	-	11,614,102	2.500	1.250
Std.Dev.							
% RSD.					1.39		

Spl #: 5 Sample ID: TOC-Std#3-2.500 PPM Type: Standard Date: 02/11/2019 Status: Passed  
 Vial #: 4 Method: NPOC - Feb 11, 2019; 02-54-31 Dilution: 1:1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	5:50 pm	-	-	-	21,654,245	5.000	2.500
2	5:58 pm	-	-	-	21,360,038	5.000	2.500
3	6:06 pm	-	-	-	21,521,272	5.000	2.500
4	6:15 pm	-	-	-	21,262,949	5.000	2.500
Avg.		-	-	-	21,449,626	5.000	2.500
Std.Dev.							
% RSD.					0.81		





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 Clovis, Ca  
 93611  
 USA

Date Prepared: 02/18/2019 By: TOC  
 Date Approved: By:

Spl #: 6 Sample ID: TOC-Std#4-3.750 PPM Type: Standard Date: 02/11/2019 Status: Passed  
 Vial #: 5 Method: NPOC - Feb 11, 2019; 02-54-31 Dilution: 1:1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	6:23 pm	-	-	-	30,612,289	7.500	3.750
2	6:31 pm	-	-	-	30,309,053	7.500	3.750
3	6:39 pm	-	-	-	30,351,074	7.500	3.750
4	6:47 pm	-	-	-	30,593,670	7.500	3.750
Avg.		-	-	-	30,466,521	7.500	3.750
Std.Dev.							
% RSD.					0.52		

Spl #: 7 Sample ID: TOC-Std#5-5.000 PPM Type: Standard Date: 02/11/2019 Status: Passed  
 Vial #: 6 Method: NPOC - Feb 11, 2019; 02-54-31 Dilution: 1:1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	6:56 pm	-	-	-	38,971,032	10.000	5.000
2	7:04 pm	-	-	-	38,706,906	10.000	5.000
3	7:12 pm	-	-	-	38,956,234	10.000	5.000
4	7:20 pm	-	-	-	39,153,413	10.000	5.000
Avg.		-	-	-	38,946,896	10.000	5.000
Std.Dev.							
% RSD.					0.47		





Appl.Inc  
 908 N Temperance Ave  
 Clovis, Ca  
 93611  
 USA

Date Prepared: 02/18/2019 By: TOC  
 Date Approved: By:

Spl #: 8 Sample ID: ICB Type: Sample Date: 02/11/2019 Status: Passed  
 Vial #: 7 Method: NPOC - Feb 11, 2019; 02-54-31 Dilution: 1:1 Customer ID: 00000000

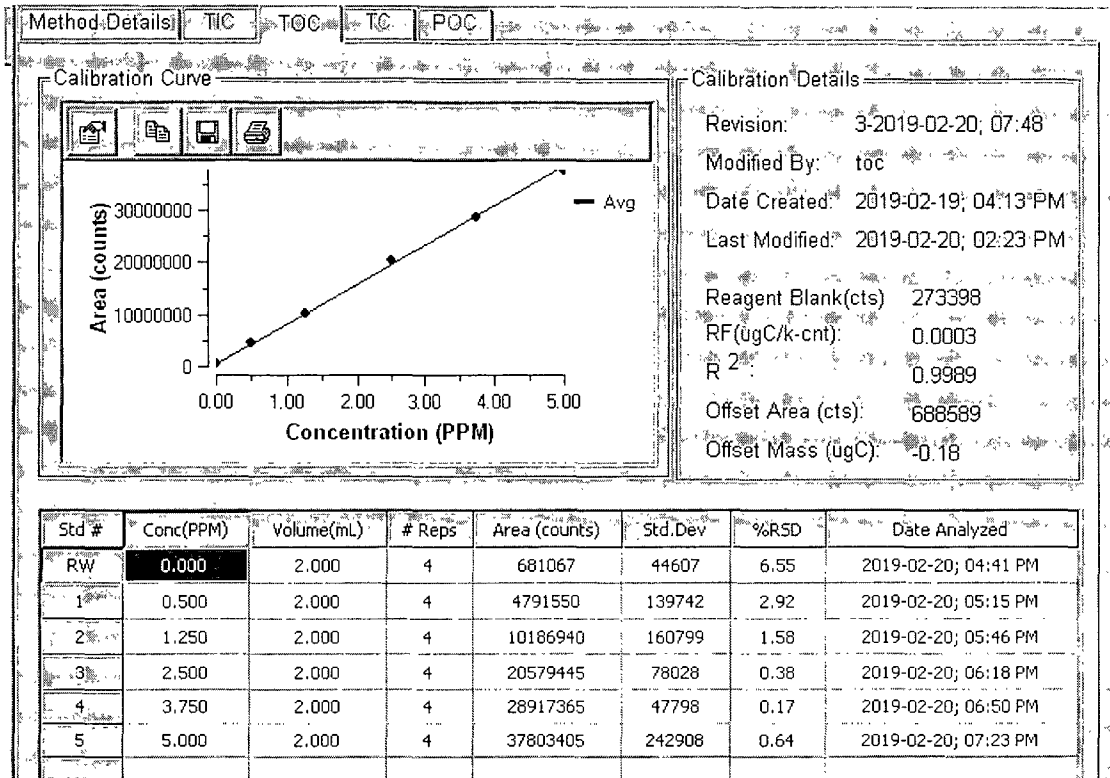
Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	7:31 pm	-	-	-	1,702,854	0.313	0.156
2	7:39 pm	-	-	-	1,725,871	0.318	0.159
3	7:46 pm	-	-	-	1,685,579	0.308	0.154
4	7:54 pm	-	-	-	1,757,576	0.326	0.163
Avg.		-	-	-	1,717,970	0.316	0.158
Std.Dev.							
% RSD.					1.81		

Spl #: 9 Sample ID: ICV Sugar Type: Check\_Stan Date: 02/11/2019 Status: Passed  
 Vial #: 8 Method: NPOC - Feb 11, 2019; 02-54-31 Dilution: 1:1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	8:02 pm	-	-	-	22,271,756	5.419	2.710
2	8:10 pm	-	-	-	22,113,536	5.379	2.690
3	8:18 pm	-	-	-	22,033,394	5.359	2.680
4	8:26 pm	-	-	-	22,233,919	5.409	2.705
Avg.		-	-	-	22,163,151	5.392	2.696
Std.Dev.							
% RSD.					0.49		



TicToc Calibration Curve 190220B





**INORGANIC ANALYSIS**  
**Raw Data**

**APPL, INC.**

Method SM3500Fe	Units mg/L	Ferrous Iron	Instrument: Genisis Spectrometer
Analyte Fe2+	QCG: 190125A		Wavelength: 510 nm
Analyst HH	Final Volume: 50mL		

Date	Time	Appl ID	[Fe2+]	Absorbance	% Recovery
06/15/18	12:27	ICB	0.00	0.000	
06/15/18	12:27	Ical 1	1.00	0.099	98.7%
06/15/18	12:28	Ical 2	2.00	0.201	100.4%
06/15/18	12:28	Ical 3	4.00	0.396	98.9%
06/15/18	12:29	Ical 4	5.00	0.501	100.1%
06/15/18	12:30	Ical 5	10.00	1.000	100.0%
06/15/18	12:31	ICV	3.00	0.316	105.2%
06/15/18	12:32	ICB	0.00	0.000	

Slope	0.100015306	Algorithm Check: Appl ID Absorbance Result 190125 LCS 0.310 3.10 Result = (Absorbance-Raw Blk-Intercept)/ Slope Test:
Intercept	0.000258661	
Coefficient of Determination	0.999973247	

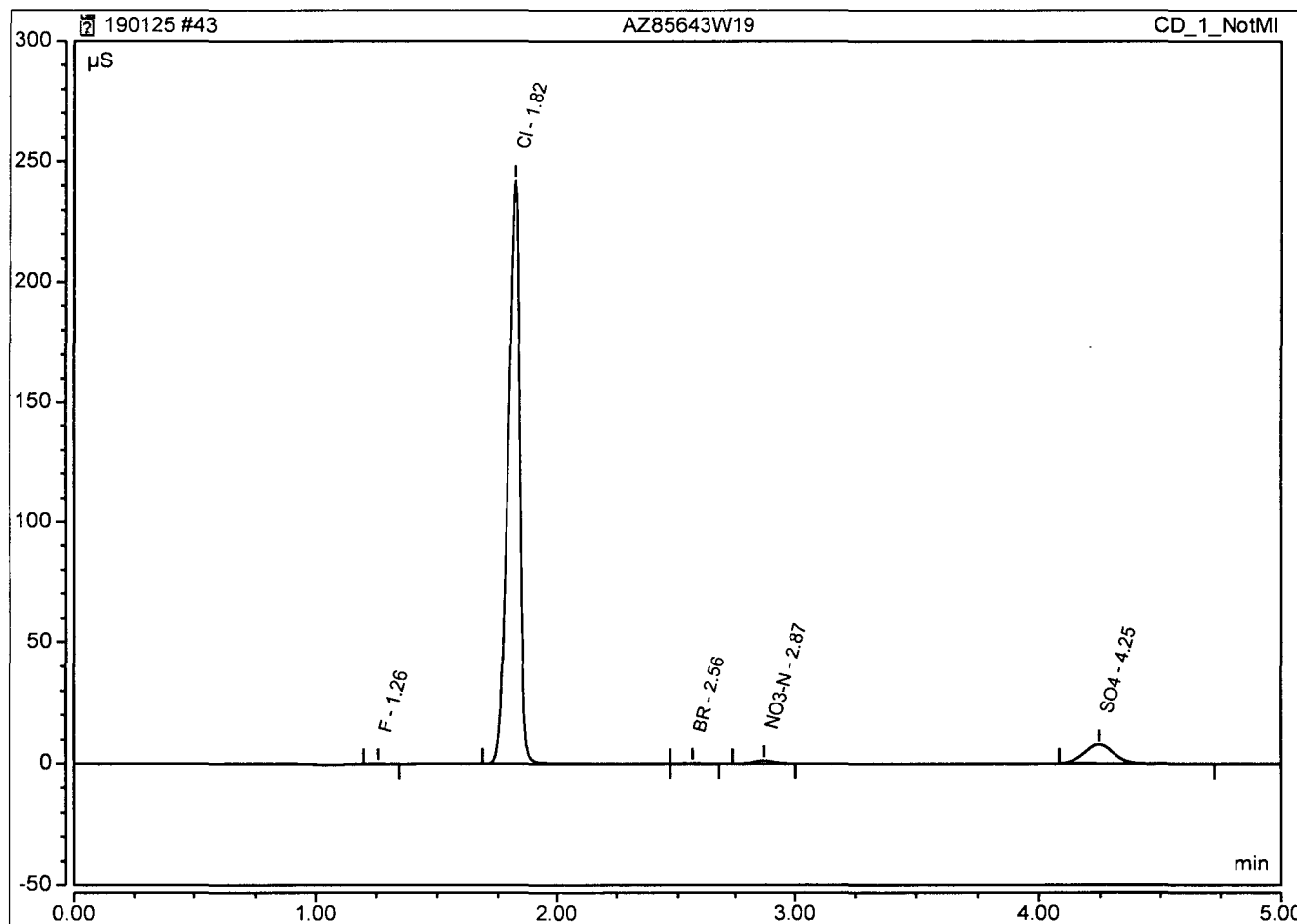
  

Date	Time	Appl ID	DF	Raw Result	SubSample Amount	Raw BLK	Calc Conc	Result	QC True	% Recovery
01/25/19	9:21	CCV 4.0 190125	1	0.393	25mL		3.93	3.93	4.00	98.2%
01/25/19	9:21	CCB 190125	1	0.000	25mL		0.00	0.00		
01/25/19	9:22	190125 LCS	1	0.310	25mL		3.10	3.10	3.00	103.2%
01/25/19	9:23	190125 LCSD	1	0.309	25mL		3.09	3.09	3.00	102.9%
01/25/19	9:23	AZ85618W13	1	0.140	25mL		1.40	1.40		
01/25/19	9:24	AZ85620W13	1	0.061	25mL		0.61	0.61		
01/25/19	9:24	AZ85619W13	1	0.055	25mL		0.55	0.55		
01/25/19	9:25	AZ85621W13	1	0.056	25mL		0.56	0.56		
01/25/19	9:26	AZ85622W13	1	0.064	25mL		0.64	0.64		
01/25/19	9:30	AZ85620W13 MS	1	0.364	25mL		3.64	3.64		
01/25/19	9:31	AZ85620W13 MSD	1	0.370	25mL		3.70	3.70		
01/25/19	9:31	CCV 4.0 190125	1	0.394	25mL		3.94	3.94	4.00	98.4%
01/25/19	9:32	CCB 190125	1	0.000	25mL		0.00	0.00		
01/25/19	10:37	CCV 4.0 190125	1	0.393	25mL		3.93	3.93	4.00	98.2%
01/25/19	10:38	CCB 190125	1	0.000	25mL		0.00	0.00		
01/25/19	10:38	AZ85643W21	1	0.005	25mL		0.05	0.05		
01/25/19	10:39	AZ85646W17	1	0.006	25mL		0.06	0.06		
01/25/19	10:39	CCV 4.0 190125	1	0.392	25mL		3.92	3.92	4.00	97.9%
01/25/19	10:40	CCB 190125	1	0.000	25mL		0.00	0.00		
01/25/19	12:47	CCV 4.0 190125	1	0.398	25mL		3.98	3.98	4.00	99.4%
01/25/19	12:48	CCB 190125	1	-0.001	25mL		-0.01	-0.01		
01/25/19	12:48	AZ85562W21	1	0.013	25mL		0.13	0.13		
01/25/19	12:49	AZ85567W17	1	0.011	25mL		0.11	0.11		
01/25/19	12:50	AZ85562W21 MS	1	0.321	25mL		3.21	3.21		
01/25/19	12:50	AZ85562W21 MSD	1	0.325	25mL		3.25	3.25		
01/25/19	12:51	CCV 4.0 190125	1	0.399	25mL		3.99	3.99	4.00	99.7%
01/25/19	12:51	CCB 190125	1	0.001	25mL		0.01	0.01		
01/25/19	15:18	CCV 4.0 190125	1	0.400	25mL		4.00	4.00	4.00	99.9%
01/25/19	15:19	CCB 190125	1	0.000	25mL		0.00	0.00		
01/25/19	15:21	AZ85653W17	1	0.007	25mL		0.07	0.07		
01/25/19	15:22	CCV 4.0 190125	1	0.401	25mL		4.01	4.01	4.00	100.2%
01/25/19	15:23	CCB 190125	1	0.001	25mL		0.01	0.01		

### Not Manipulated Peak Integration Report

Sample Name:	AZ85643W19	Inj. Vol.:	25.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	25-Jan-2019 / 19:37	Run Time:	5.00

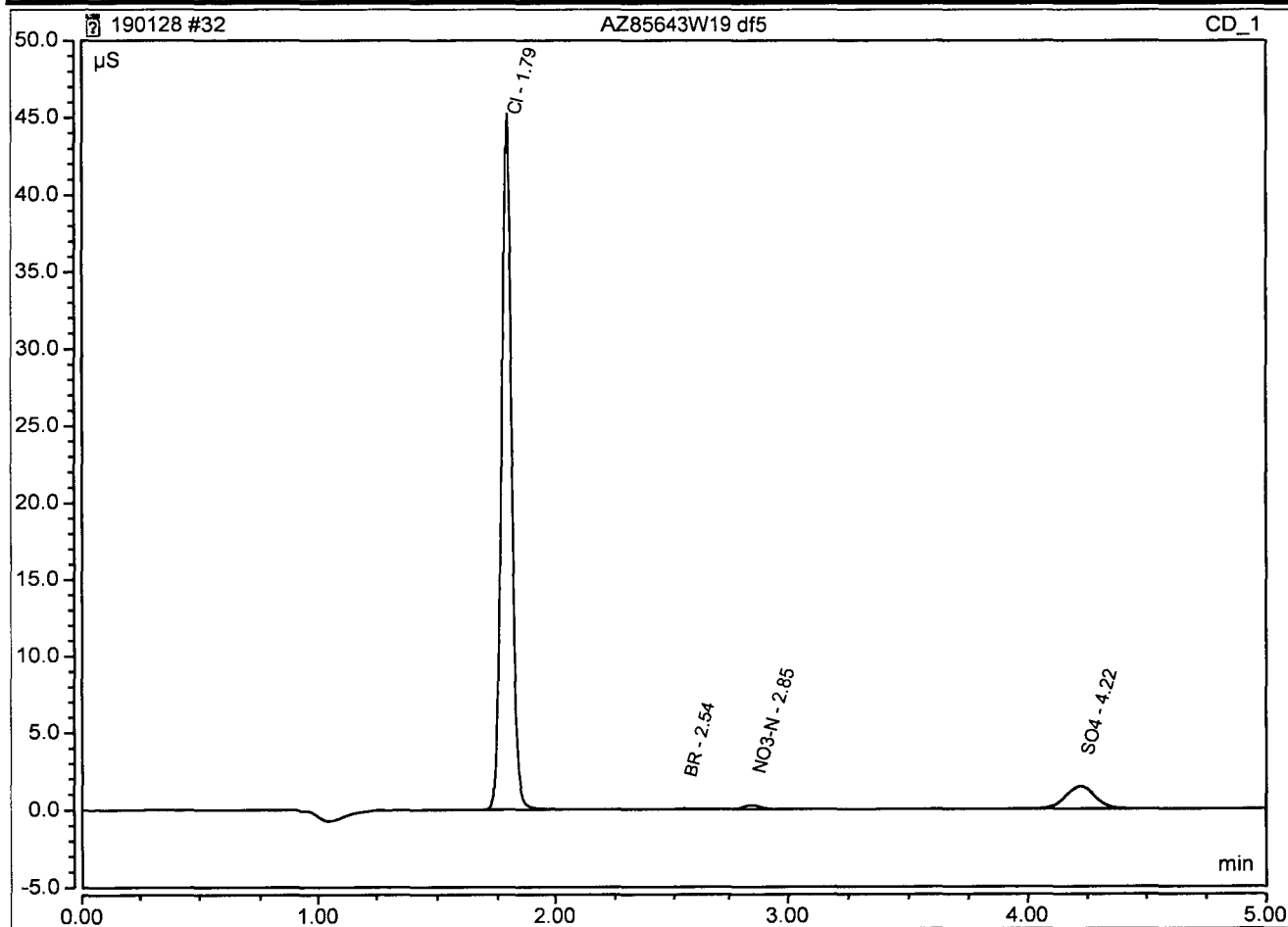
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height $\mu\text{S}$	Area $\mu\text{S}\cdot\text{min}$
1	1.26	F	BMB	0.008	0.165	-0.0947
2	1.82	Cl	BMB	13.806	242.116	129.6509
3	2.56	BR	BMB	0.013	0.174	0.3690
4	2.87	NO3-N	BMB	0.110	1.217	0.5028
5	4.25	SO4	BMB*	1.065	7.713	16.0313



### Peak Integration Report

Sample Name:	AZ85643W19 df5	Inj. Vol.:	25.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	28-Jan-2019 / 16:46	Run Time:	5.00

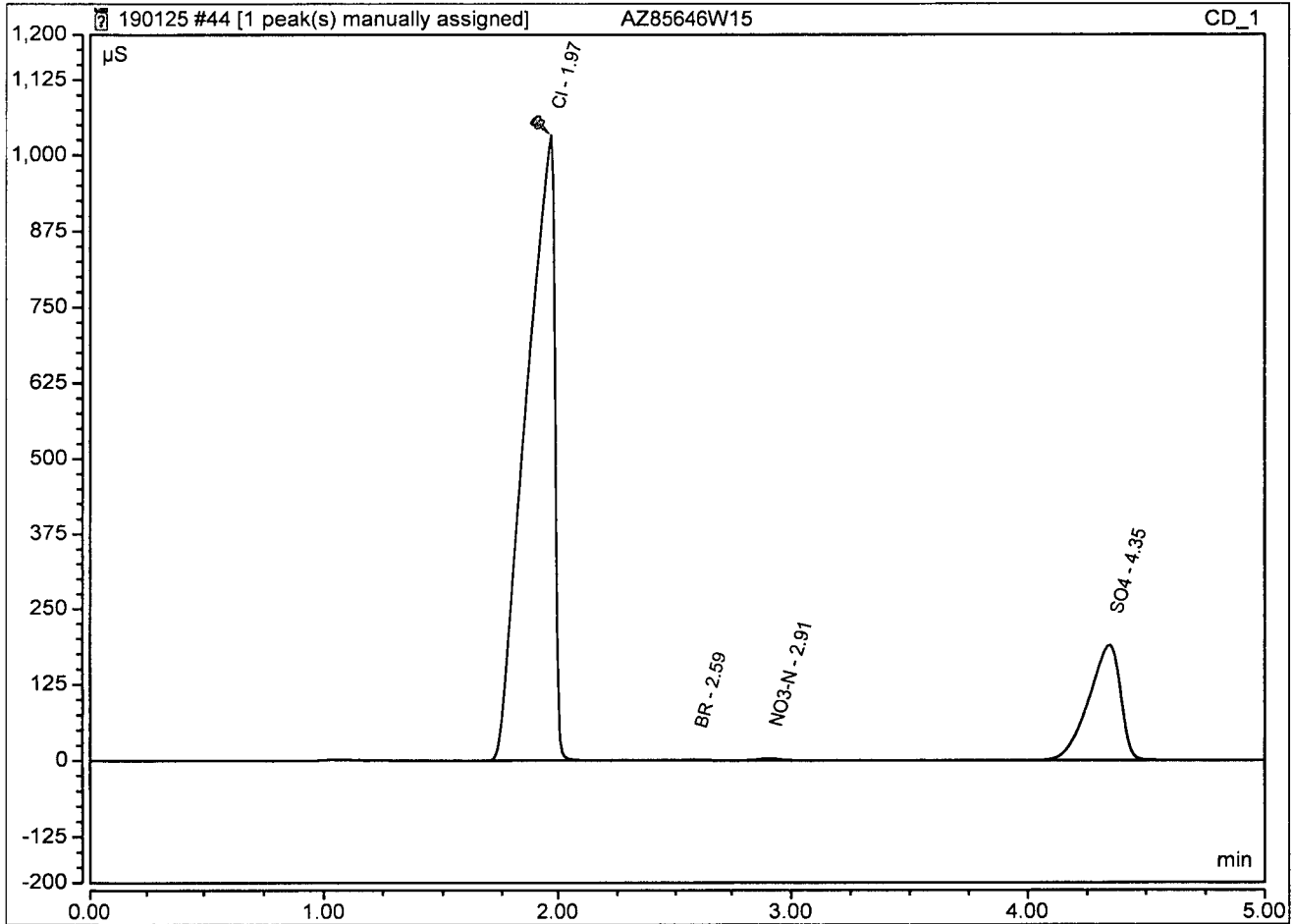
No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.79	Cl	BMB	2.291	45.236	107.5840
2	2.54	BR	BMB	0.003	0.037	0.3774
3	2.85	NO3-N	BMB	0.023	0.257	0.5206
4	4.22	SO4	BMB	0.211	1.446	15.8687



### Peak Integration Report

Sample Name:	AZ85646W15	Inj. Vol.:	25.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	25-Jan-2019 / 19:45	Run Time:	5.00

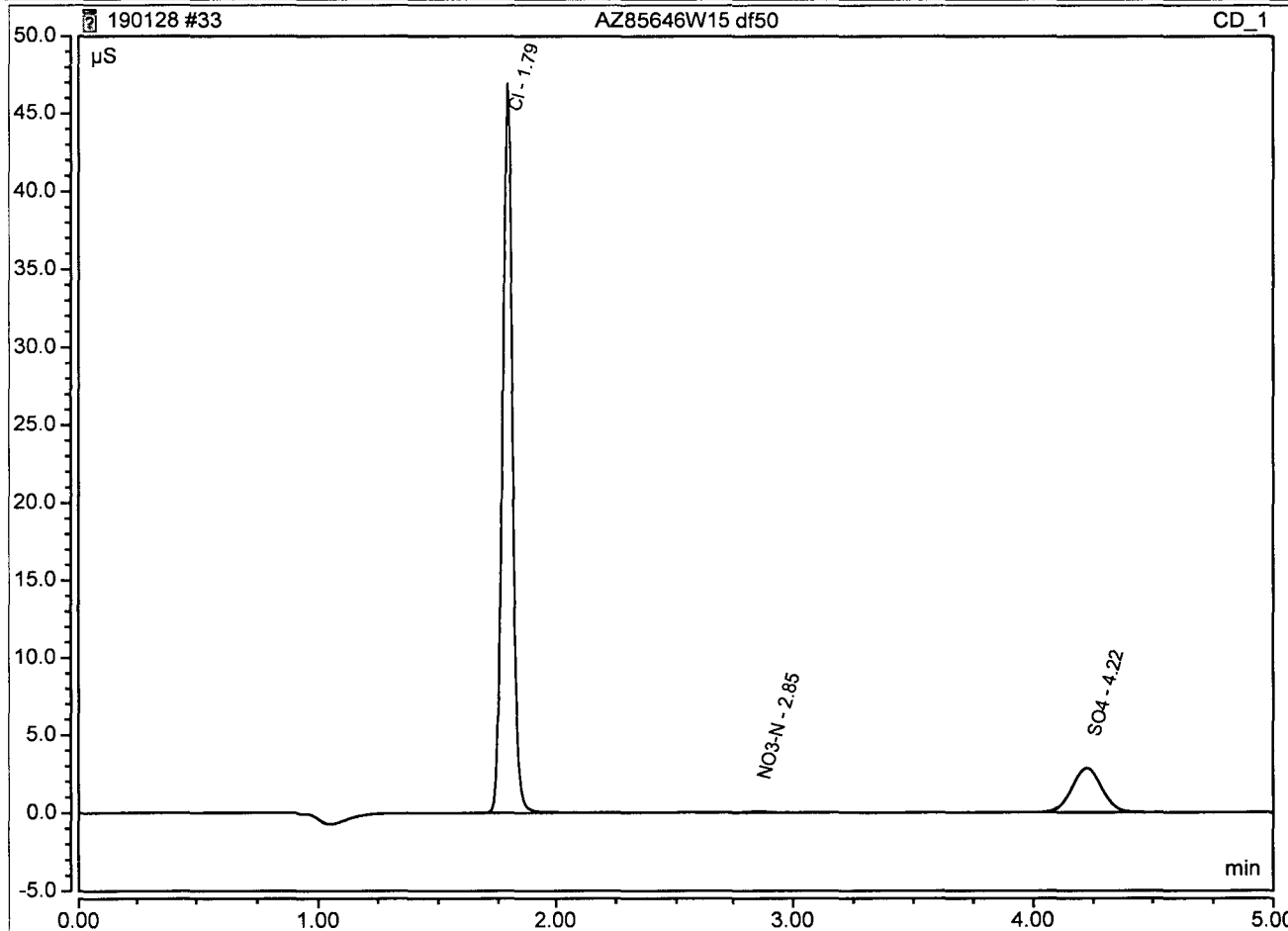
No.	Time (min)	Peak Name	Peak Type	Area (μS*min)	Height (μS)	Amount (mg/L)
1	1.97	Cl	BMB <sup>^</sup>	151.237	1032.269	1420.2739
3	2.59	BR	BMB	0.112	1.246	3.0663
4	2.91	NO3-N	BMB	0.329	3.249	1.5012
6	4.35	SO4	BMB	29.696	189.560	446.9384



### Peak Integration Report

Sample Name:	AZ85646W15 df50	Inj. Vol.:	25.00
Injection Type:	Unknown	Dilution Factor:	50.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	28-Jan-2019 / 16:54	Run Time:	5.00

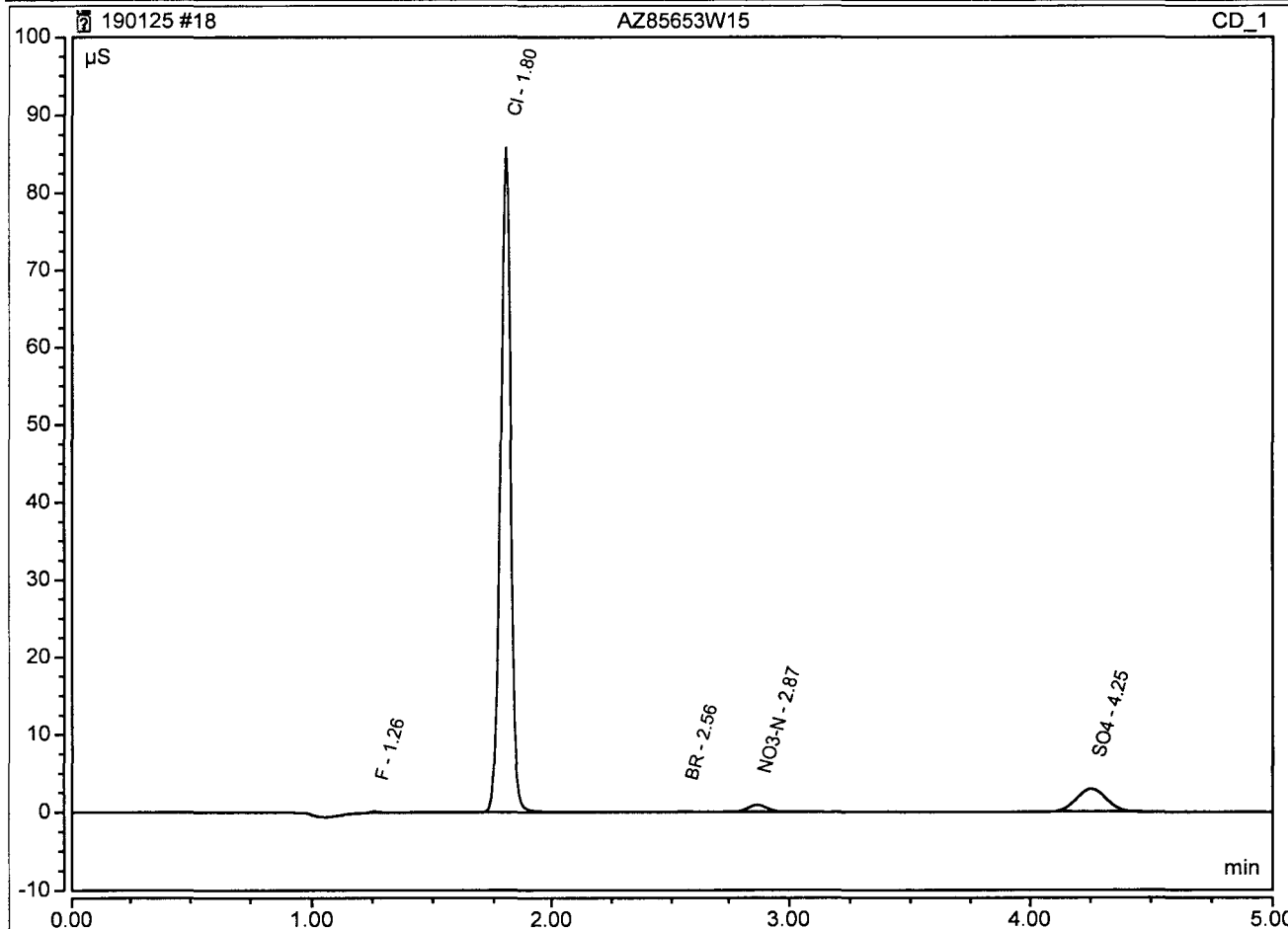
No.	Time (min)	Peak Name	Peak Type	Area ( $\mu\text{S}\cdot\text{min}$ )	Height ( $\mu\text{S}$ )	Amount (mg/L)
1	1.79	Cl	BMB	2.374	46.926	1114.4995
2	2.85	NO3-N	BMB	0.007	0.078	1.5715
3	4.22	SO4	BMB	0.413	2.829	311.0527



### Peak Integration Report

Sample Name:	AZ85653W15	Inj. Vol.:	25.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	25-Jan-2019 / 15:50	Run Time:	5.00

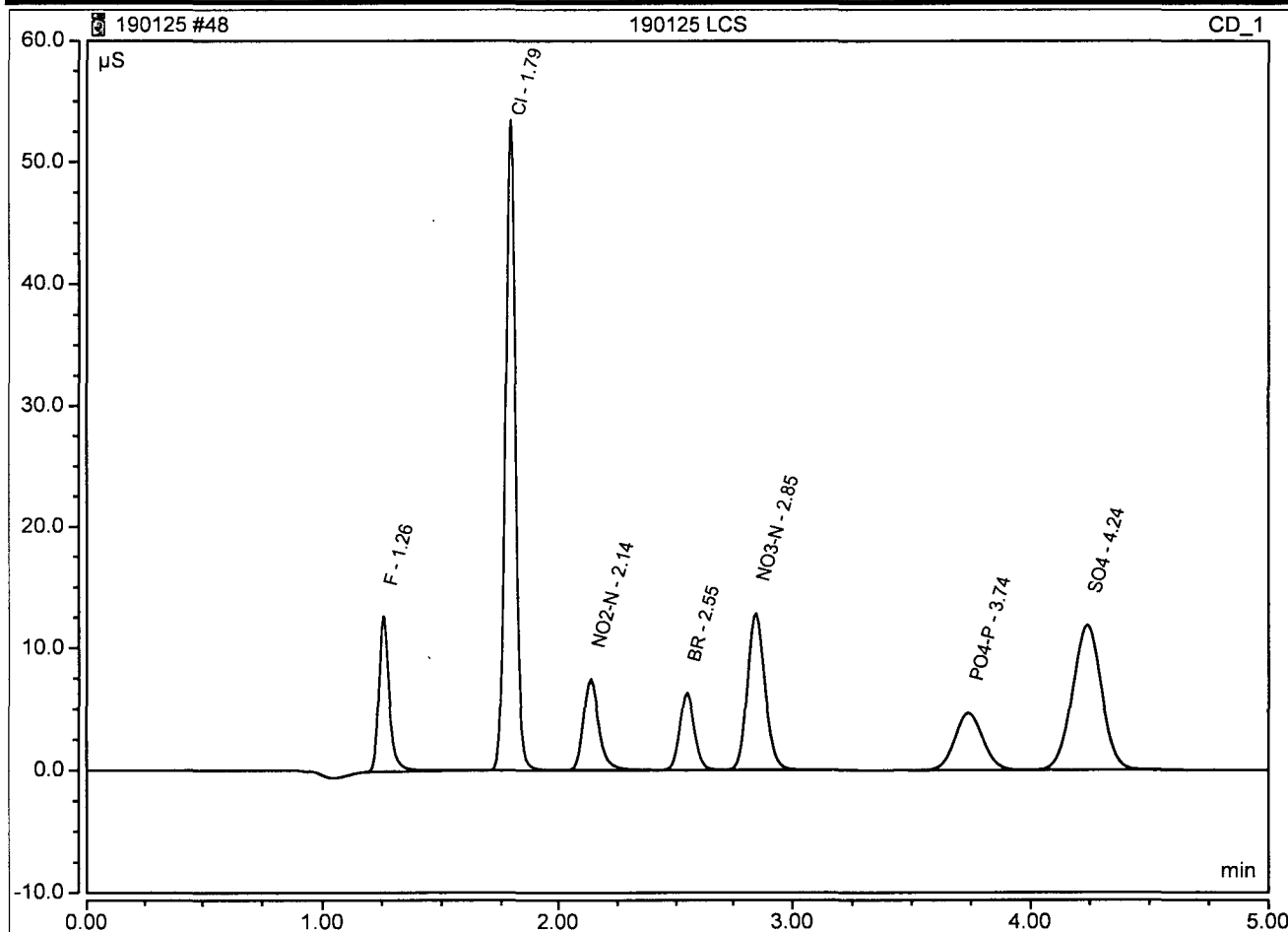
No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.26	F	BMB	0.009	0.193	0.1237
3	1.80	Cl	BMB	4.387	85.778	41.1966
4	2.56	BR	BMB	0.005	0.066	0.1409
5	2.87	NO3-N	BMB	0.082	0.898	0.3726
6	4.25	SO4	BMB	0.400	2.910	6.0145



### Peak Integration Report

Sample Name:	190125 LCS	Inj. Vol.:	25.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	25-Jan-2019 / 20:14	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.26	F	BMB	0.672	12.685	5.3843
2	1.79	Cl	BMB	2.708	53.417	25.4272
3	2.14	NO2-N	BMB	0.557	7.402	3.1518
4	2.55	BR	BMB	0.471	6.271	12.9539
5	2.85	NO3-N	BMB	1.101	12.836	5.0219
6	3.74	PO4-P	BMB	0.639	4.658	9.1695
7	4.24	SO4	BMB	1.673	11.848	25.1753



Algorithm Check:

y = Peak Area

x = mg/L S04

$$y = 0.0664 \quad x + \quad 0.0000$$

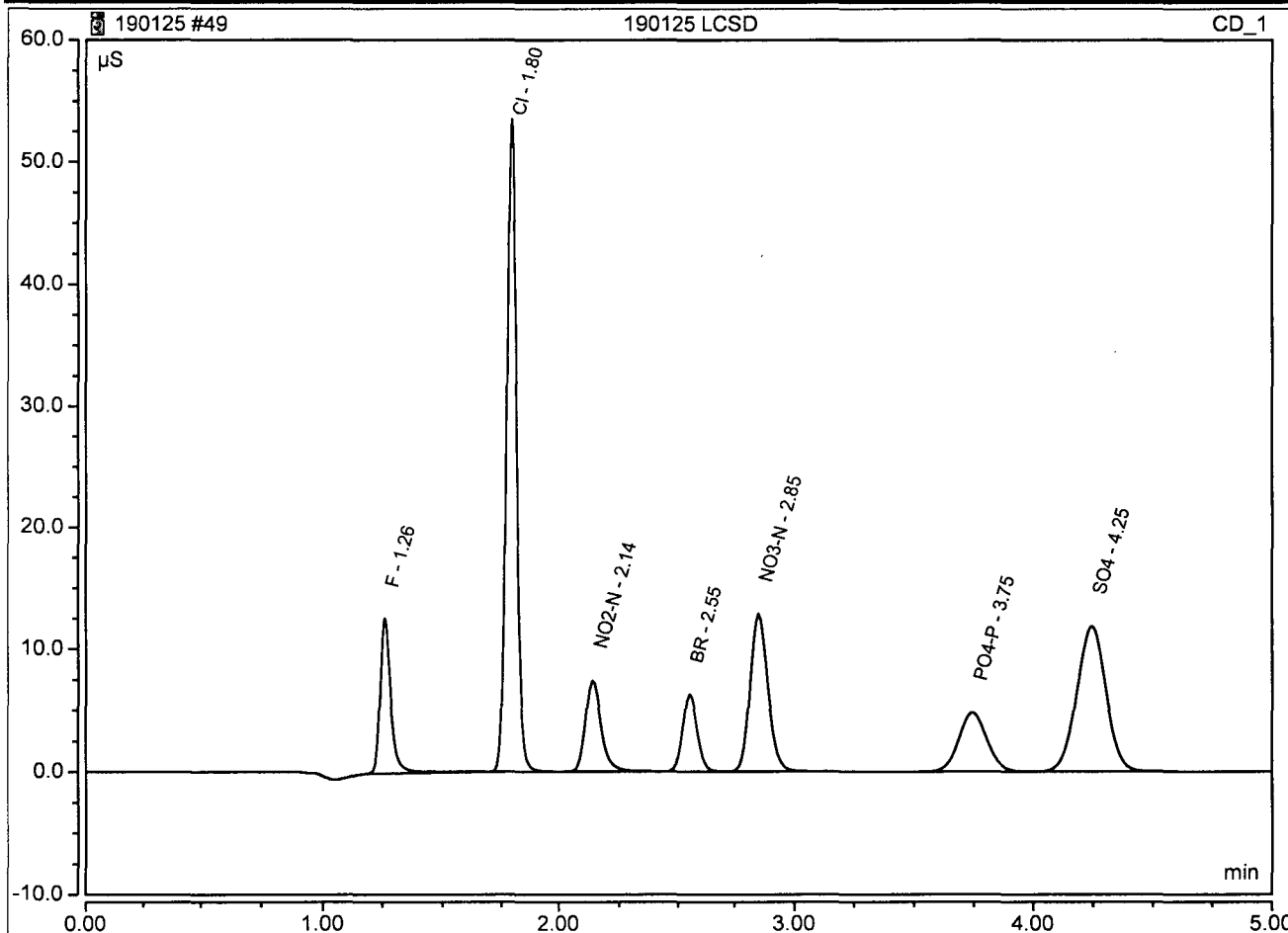
$$y = 1.6727 \quad \text{therefor } x = 25.20 \text{ HH } 190201$$



### Peak Integration Report

Sample Name:	190125 LCSD	Inj. Vol.:	25.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	25-Jan-2019 / 20:22	Run Time:	5.00

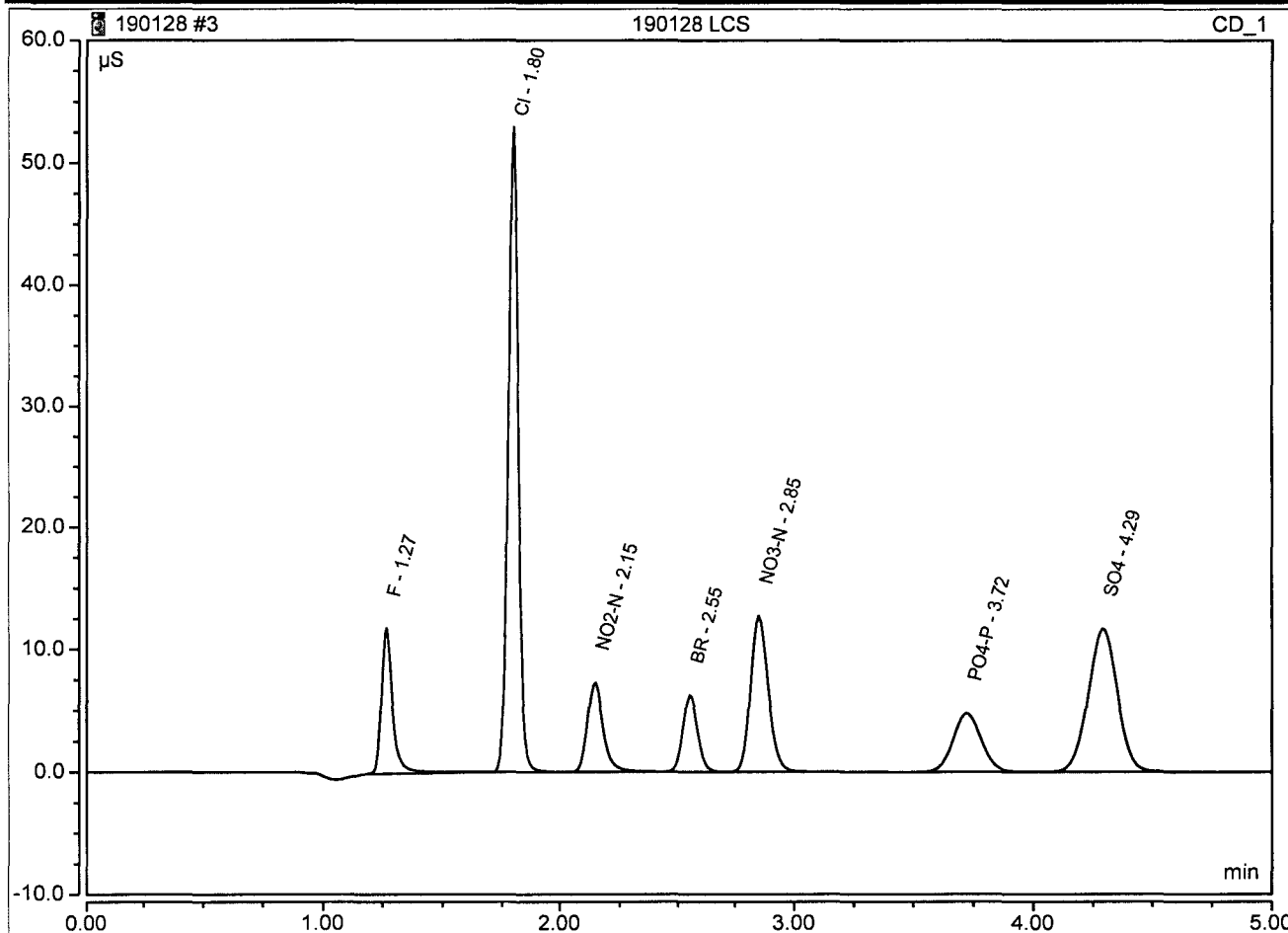
No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.26	F	BMB	0.669	12.620	5.3657
2	1.80	Cl	BMB	2.707	53.472	25.4219
3	2.14	NO2-N	BMB	0.558	7.412	3.1547
4	2.55	BR	BMB	0.472	6.280	12.9733
5	2.85	NO3-N	BMB	1.103	12.849	5.0294
6	3.75	PO4-P	BMB	0.656	4.789	9.4163
7	4.25	SO4	BMB	1.673	11.855	25.1725



### Peak Integration Report

Sample Name:	190128 LCS	Inj. Vol.:	25.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	28-Jan-2019 / 10:09	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.27	F	BMB	0.655	11.852	5.2552
2	1.80	Cl	BMB	2.693	52.886	25.2862
3	2.15	NO2-N	BMB	0.551	7.285	3.1178
4	2.55	BR	BMB	0.471	6.251	12.9383
5	2.85	NO3-N	BMB	1.098	12.700	5.0092
6	3.72	PO4-P	BMB	0.650	4.770	9.3232
7	4.29	SO4	BMB	1.666	11.683	25.0735



Algorithm Check:

y = Peak Area

x = mg/L S04

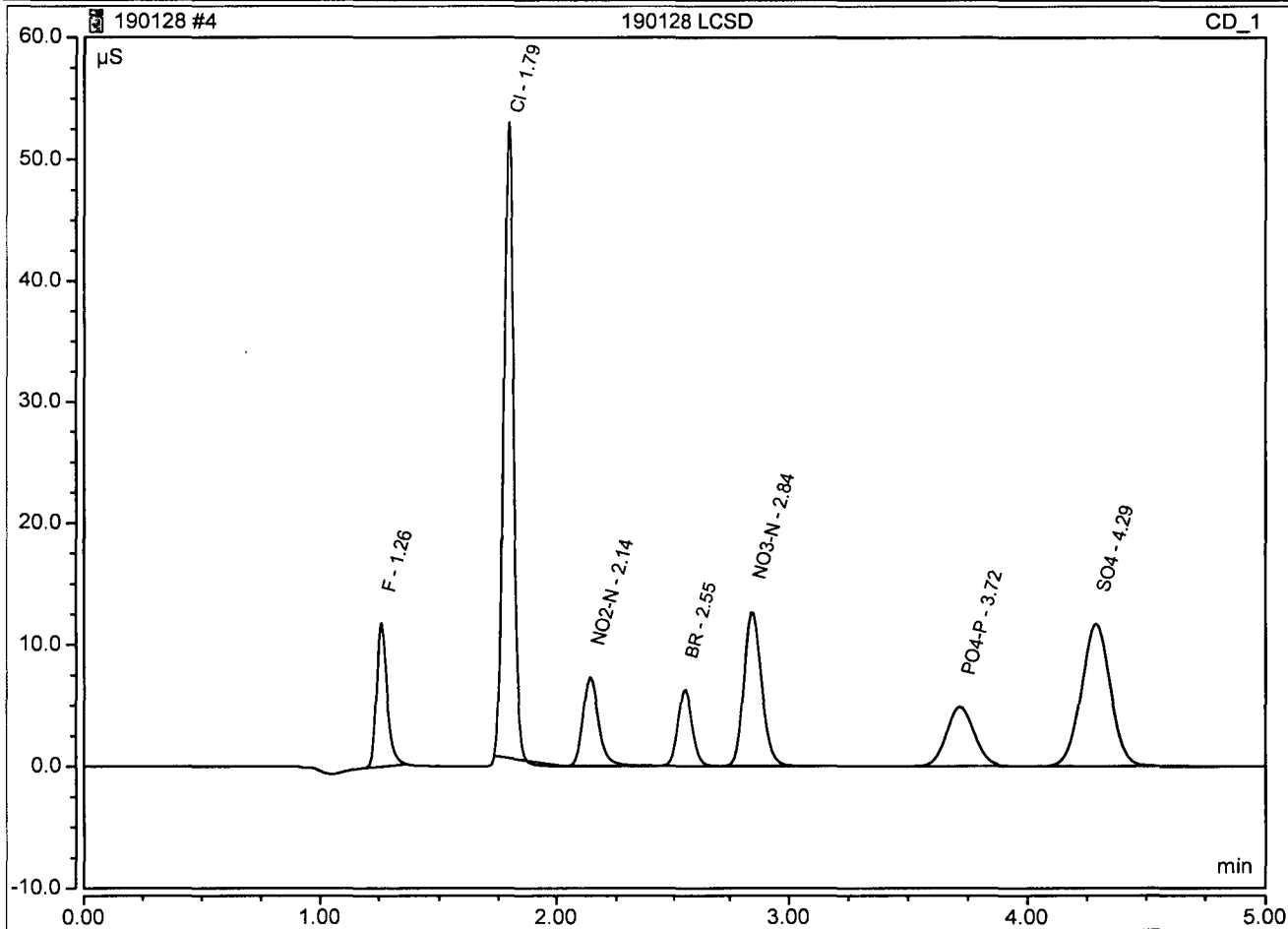
$$y = 0.0664 \quad x + \quad 0.0000$$

$$y = 1.6660 \quad \text{therefor } x = 25.09 \text{ HH } 190129$$

### Peak Integration Report

Sample Name:	190128 LCSD	Inj. Vol.:	25.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	28-Jan-2019 / 10:17	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.26	F	BMB	0.605	11.764	4.8564
2	1.79	Cl	BMB	2.562	52.342	24.0600
3	2.14	NO2-N	BMB	0.552	7.302	3.1229
4	2.55	BR	BMB	0.471	6.264	12.9479
5	2.84	NO3-N	BMB	1.100	12.727	5.0166
6	3.72	PO4-P	BMB	0.660	4.853	9.4717
7	4.29	SO4	BMB	1.667	11.692	25.0949



12	U10	1 PPM NO3 TOXN	-0.0004	mg/L	0.006601	Ev	2019-01-28 15:36:50
	CCV	CCV .75	0.7939	mg/L	0.669575	Ev	2019-01-28 15:38:04
	CCB	CCB	-0.0021	mg/L	0.005204	Ev	2019-01-28 15:39:19
13	U11	AZ85418W07	-0.0059	mg/L	0.002034	Ev	2019-01-28 15:40:33
14	U12	AZ85420W07	-0.0051	mg/L	0.002676	Ev	2019-01-28 15:41:48
15	U13	AZ85520W06	-0.0051	mg/L	0.002701	Ev	2019-01-28 15:43:02
16	U14	AZ85523W06	-0.0053	mg/L	0.002525	Ev	2019-01-28 15:44:17
17	U15	AZ85525W06	-0.0055	mg/L	0.002361	Ev	2019-01-28 15:45:31
18	U16	AZ85527W06	-0.0059	mg/L	0.002084	Ev	2019-01-28 15:46:46
19	U17	AZ85562W20	-0.0050	mg/L	0.002790	Ev	2019-01-28 15:48:00
20	U18	AZ85562W20 MS	0.7589	mg/L	0.640323	Ev	2019-01-28 15:49:14
21	U19	AZ85562W20 MSD	0.7671	mg/L	0.647217	Ev	2019-01-28 15:50:27
22	U20	AZ85565W16	-0.0017	mg/L	0.005559	Ev	2019-01-28 15:51:42
	CCV	CCV .75	0.7851	mg/L	0.662205	Ev	2019-01-28 15:52:57
	CCB	CCB	-0.0012	mg/L	0.005991	Ev	2019-01-28 15:53:35
23	U21	AZ85567W16	-0.0041	mg/L	0.003534	Ev	2019-01-28 15:55:44
24	U22	AZ85569W16	-0.0036	mg/L	0.004002	Ev	2019-01-28 15:57:58
25	U23	AZ85643W20	-0.0050	mg/L	0.002777	Ev	2019-01-28 16:00:17
26	U24	AZ85646W16	-0.0022	mg/L	0.005115	Ev	2019-01-28 16:02:35
27	U25	AZ85653W16	-0.0057	mg/L	0.002235	Ev	2019-01-28 16:04:53
	CCV	CCV .75	0.7063	mg/L	0.596435	Ev	2019-01-28 16:07:12
	CCB	CCB	-0.0028	mg/L	0.004672	Ev	2019-01-28 16:09:25

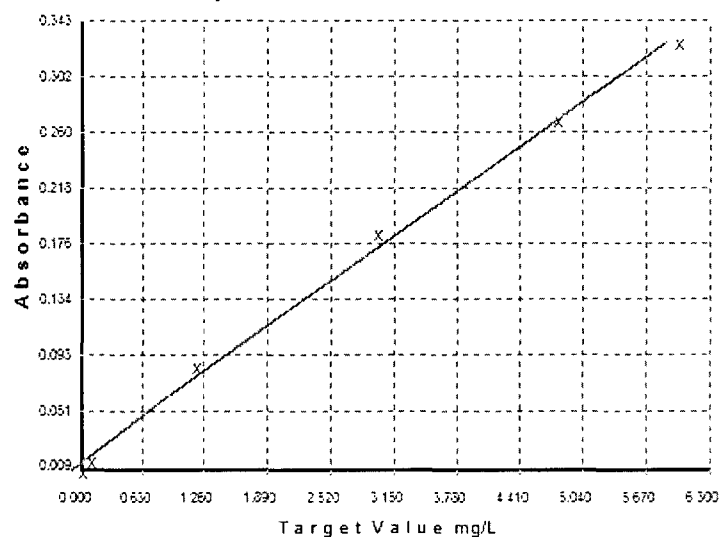
**TOXN**

**Calibration Chart**

Type	Absorbance	Calc mg/L	Target mg/L	% Error
S1	0.0089	-0.1257	0.0000	
S90	0.0168	0.0232	0.1000	-76.85
S91	0.0861	1.3311	1.2000	10.92
S92	0.1847	3.1931	3.0000	6.44
S93	0.2698	4.7990	4.8000	-0.02
S94	0.3270	5.8793	6.0000	-2.01
S0	0.0197	0.0772	0.0000	

Polynomial Order: 1  
 Correlation Coefficient: 0.9986  
 Carryover(%): 3.4  
 Calibration equation:  $y = bx + a$   
 y =: Concentration mg/L  
 x =: Measured absorbance  
 a =: -2.940597E-001  
 b =: 1.887621E+001  
 Date & Time: 2019-01-28 16:31:22

**Calibration Graph**



**Reagents**

Name	Batch	Prepared By	Expiry Date
NO3 W Buffer	Algorithm check	Joel	
Sulfa-NEDD	$y = 18.87621 \times 0.175034 - 0.2940597$ $y = 3.01$	Joel EV	1/29/19

Cup Type	ID	Result	Units	QC Pro	Raw Data	Auto Dil.	Man Dil.	User	Time/Date
S1	Standard 1	0.0089			0.008922			Ev	2019-01-28 16:18:12
S90	Standard 90	0.0168			0.016805			Ev	2019-01-28 16:20:24
S91	Standard 91	0.0861			0.086095			Ev	2019-01-28 16:22:36
S92	Standard 92	0.1847			0.184738			Ev	2019-01-28 16:24:47
S93	Standard 93	0.2698			0.269813			Ev	2019-01-28 16:26:59
S94	Standard 94	0.3270			0.327046			Ev	2019-01-28 16:29:10
S0	Standard 0	0.0197			0.019666			Ev	2019-01-28 16:31:22
CCV	CCV	3.0152	mg/L		0.175315			Ev	2019-01-28 16:33:33
CCB	CCB	-0.1244	mg/L		0.008986			Ev	2019-01-28 16:35:45
4	U2	✓ICV NO3 TOXN	3.0099	mg/L	0.175034			Ev	2019-01-28 16:37:56
5	U3	ICB NO2 NO3 TOXN	-0.0978	mg/L	0.010395			Ev	2019-01-28 16:40:08
6	U4	190128A BLK NO2 NO3 TOXN	-0.1119	mg/L	0.009651			Ev	2019-01-28 16:42:21
9	U7	190128A LCS NO3 TOXN	2.9894	mg/L	0.173948			Ev	2019-01-28 16:44:32
10	U8	190128A LCSD NO3 TOXN	3.0721	mg/L	0.178327			Ev	2019-01-28 16:46:43

12	U10	1 PPM NO3 TOXN	0.9478	mg/L	0.065792	Ev	2019-01-28 16:48:55
13	U11	AZ85418W07	0.7704	mg/L	0.056392	Ev	2019-01-28 16:51:06
14	U12	AZ85420W07	0.5308	mg/L	0.043700	Ev	2019-01-28 16:53:18
15	U13	AZ85520W06	-0.1087	mg/L	0.009818	Ev	2019-01-28 16:55:29
16	U14	AZ85523W06	0.4787	mg/L	0.040938	Ev	2019-01-28 16:57:40
	CCV	CCV	3.0892	mg/L	0.179234	Ev	2019-01-28 16:59:54
	CCB	CCB	-0.0918	mg/L	0.010715	Ev	2019-01-28 17:02:08
17	U15	AZ85525W06	1.1453	mg/L	0.076250	Ev	2019-01-28 17:04:22
18	U16	AZ85527W06	0.3767	mg/L	0.035535	Ev	2019-01-28 17:06:35
19	U17	AZ85562W20	0.5125	mg/L	0.042731	Ev	2019-01-28 17:08:49
20	U18	AZ85562W20 MS	4.1373	mg/L	0.234757	Ev	2019-01-28 17:11:02
21	U19	AZ85562W20 MSD	4.1137	mg/L	0.233511	Ev	2019-01-28 17:13:13
22	U20	AZ85565W16	-0.0707	mg/L	0.011834	Ev	2019-01-28 17:15:26
23	U21	AZ85567W16	1.6987	mg/L	0.105570	Ev	2019-01-28 17:16:04
24	U22	AZ85569W16	0.8856	mg/L	0.062496	Ev	2019-01-28 17:17:08
25	U23	AZ85643W20	0.5180	mg/L	0.043022	Ev	2019-01-28 17:18:05
26	U24	AZ85646W16	1.8067	mg/L	0.111293	Ev	2019-01-28 17:19:01
	CCV	CCV	3.0464	mg/L	0.176969	Ev	2019-01-28 17:19:57
	CCB	CCB	-0.0913	mg/L	0.010741	Ev	2019-01-28 17:20:54
27	U25	AZ85653W16	0.3759	mg/L	0.035494	Ev	2019-01-28 17:21:51
	CCV	CCV	2.9233	mg/L	0.170448	Ev	2019-01-28 17:22:47
	CCB	CCB	-0.1177	mg/L	0.009344	Ev	2019-01-28 17:23:44

## Metrohm 814/809 Titrando Data

Sample ID	Analysis Date/Time	Method	Titration Volume		OH	CO3	HCO3	Total Alk	Unit	Sample Vol	N	Batch	Initials
			(to 8.3)	(total)									
AZ85653W15	2019-01-30 15:29:41 UTC-8	Alkalinity	0.000	1.614	0.00	0.00	65.53	65.53	mg/L	25 mL	0.0203	190130A	AR
AZ85646W15	2019-01-30 15:23:05 UTC-8	Alkalinity	0.000	3.420	0.00	0.00	138.85	138.85	mg/L	25 mL	0.0203	190130A	AR
AZ85643W19	2019-01-30 15:18:04 UTC-8	Alkalinity	0.000	1.446	0.00	0.00	58.71	58.71	mg/L	25 mL	0.0203	190130A	AR
190130A LCSD	2019-01-30 13:45:02 UTC-8	Alkalinity	0.000	5.926	0.00	0.00	240.60	240.60	mg/L	25 mL	0.0203	190130A	AR
190130A LCS	2019-01-30 13:35:25 UTC-8	Alkalinity	0.000	5.606	0.00	0.00	227.60	227.60	mg/L	25 mL	0.0203	190130A	AR
190130A BLK	2019-01-30 13:32:23 UTC-8	Alkalinity	0.000	0.038	0.00	0.00	1.54	1.54	mg/L	25 mL	0.0203	190130A	AR

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 Clovis, Ca  
 93611  
 USA

Date Prepared: 02/18/2019

By:

TOC

Date Approved:

By:

Sample Results Summary

Spl #	Vial #	Sample ID	Num Rep	Act Rep	Method	Type	Dil	Customer ID	Mode	Avg. Area (cts)	Avg. Mass (ug)	Avg. Conc (PPM)	Std. Dev	% RSD	Notes
34	34	CCV	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	QC #1	1 : 1	00000000	TOC	21,173,836	5.316	2.658	461,598	2.18	
35	35	CCB	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	QC #1	1 : 1	00000000	TOC	2,431,812	0.611	0.306	63,952	2.63	
3	5	190213A LCS	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	QC #1	1 : 1	00000000	TOC	17,425,240	4.375	2.187	98,650	0.57	
4	6	190213A LCSD	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	QC #1	1 : 1	00000000	TOC	17,206,265	4.320	2.160	111,046	0.65	
11	10	CCV 190212	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	QC #1	1 : 1	00000000	TOC	21,546,495	5.409	2.704	129,277	0.60	
12	11	CCB	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	QC #1	1 : 1	00000000	TOC	2,243,558	0.563	0.282	64,732	2.89	
17	16	AZ85643W09 TOC	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	Sample	1 : 1	00000000	TOC	4,245,050	0.951	0.475	87,414	2.06	Pass
19	18	AZ85646W13 TOC	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	Sample	1 : 1	00000000	TOC	8,892,780	2.118	1.059	2,415,338	27.16	Pass
23	10	CCV 190212	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	QC #1	1 : 1	00000000	TOC	20,349,294	5.109	2.555	1,690,420	8.31	
24	11	CCB	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	QC #1	1 : 1	00000000	TOC	13,896	0.003	0.002	17,018	122.47	



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Date Approved: By:

**Sample Results**

Spl #: 34 Sample ID: CCV Type: QC #1 Date: 02/13/2019 Status: Passed  
 Vial #: 34 Method: NPOC - Feb 11, 2019; 02-54-31 Dilution: 1:1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	8:48 am	-	-	-	21,613,624	5.426	2.713
2	8:56 am	-	-	-	21,531,430	5.406	2.703
3	9:04 am	-	-	-	20,771,851	5.215	2.608
4	9:12 am	-	-	-	20,778,437	5.217	2.608
Avg.		-	-	-	21,173,836	5.316	2.658
Std.Dev.							
% RSD.					2.18		

Spl #: 35 Sample ID: CCB Type: QC #1 Date: 02/13/2019 Status: Passed  
 Vial #: 35 Method: NPOC - Feb 11, 2019; 02-54-31 Dilution: 1:1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	9:23 am	-	-	-	2,426,350	0.609	0.305
2	9:31 am	-	-	-	2,523,661	0.634	0.317
3	9:39 am	-	-	-	2,394,622	0.601	0.301
4	9:46 am	-	-	-	2,382,614	0.598	0.299
Avg.		-	-	-	2,431,812	0.611	0.306
Std.Dev.							
% RSD.					2.63		





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Date Prepared: 02/18/2019 By: *TOC*  
 Date Approved: By:

Spl #: 11 Sample ID: CCV 190212 Type: QC #1 Date: 02/13/2019 Status: Passed  
 Vial #: 10 Method: NPOC - Feb 11, 2019; 02-54-31 Dilution: 1:1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	9:23 pm	-	-	-	21,570,741	5.415	2.708
2	9:31 pm	-	-	-	21,668,118	5.440	2.719
3	9:39 pm	-	-	-	21,583,376	5.419	2.709
4	9:47 pm	-	-	-	21,363,745	5.364	2.682
Avg.		-	-	-	21,546,495	5.409	2.704
Std.Dev.							
% RSD.						0.60	

Spl #: 12 Sample ID: CCB Type: QC #1 Date: 02/13/2019 Status: Passed  
 Vial #: 11 Method: NPOC - Feb 11, 2019; 02-54-31 Dilution: 1:1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	9:58 pm	-	-	-	2,334,995	0.586	0.293
2	10:05 pm	-	-	-	2,221,045	0.558	0.279
3	10:13 pm	-	-	-	2,234,864	0.561	0.281
4	10:21 pm	-	-	-	2,183,327	0.548	0.274
Avg.		-	-	-	2,243,558	0.563	0.282
Std.Dev.							
% RSD.						2.89	



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Spl #: 17 Sample ID: AZ85643W09 TOC Type: Sample Date: 02/14/2019 Status: Passed  
 Vial #: 16 Method: NPOC - Feb 11, 2019; 02-54-31 Dilution: 1:1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	12:39 am	-	-	-	4,292,050	0.963	0.481
2	12:46 am	-	-	-	4,118,272	0.919	0.460
3	12:54 am	-	-	-	4,311,957	0.968	0.484
4	1:02 am	-	-	-	4,257,923	0.954	0.477
Avg.		-	-	-	4,245,050	0.951	0.475
Std.Dev.					2.06		
% RSD.							

Spl #: 19 Sample ID: AZ85646W13 TOC Type: Sample Date: 02/14/2019 Status: Passed  
 Vial #: 18 Method: NPOC - Feb 11, 2019; 02-54-31 Dilution: 1:1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	1:43 am	-	-	-	10,066,818	2.412	1.206
2	1:51 am	-	-	-	10,170,240	2.438	1.219
3	2:00 am	-	-	-	10,063,526	2.412	1.206
4	2:08 am	-	-	-	5,270,535	1.208	0.604
Avg.		-	-	-	8,892,780	2.118	1.059
Std.Dev.							
% RSD.					27.16		





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Date Prepared: 02/18/2019 By: *TOC*

Date Approved: By:

Spl #: 23 Sample ID: CCV 190212 Type: QC #1 Date: 02/14/2019 Status: Passed  
 Vial #: 10 Method: NPOC - Feb 11, 2019; 02-54-31 Dilution: 1 : 1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	3:55 am	-	-	-	21,306,554	5.349	2.675
2	4:03 am	-	-	-	21,028,032	5.279	2.640
3	4:11 am	-	-	-	21,242,621	5.333	2.667
4	4:20 am	-	-	-	17,819,967	4.474	2.237
Avg.		-	-	-	20,349,294	5.109	2.555
Std.Dev.							
% RSD.					8.31		

Spl #: 24 Sample ID: CCB Type: QC #1 Date: 02/14/2019 Status: Passed  
 Vial #: 11 Method: NPOC - Feb 11, 2019; 02-54-31 Dilution: 1 : 1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	4:31 am	-	-	-	19,402	0.005	0.002
2	4:39 am	-	-	-	622	0.000	0.000
3	4:46 am	-	-	-	0	0.000	0.000
4	4:54 am	-	-	-	35,558	0.009	0.005
Avg.		-	-	-	13,896	0.003	0.002
Std.Dev.							
% RSD.					122.47		



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Date Prepared: 02/18/2019

By:

TOC

Date Approved:

By:

Spl #: 3 Sample ID: 190213A LCS Type: QC #1 Date: 02/13/2019 Status: Passed  
 Vial #: 5 Method: NPOC - Feb 11, 2019; 02-54-31 Dilution: 1:1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	11:48 am	-	-	-	17,358,532	4.358	2.178
2	11:55 am	-	-	-	17,410,530	4.371	2.186
3	12:04 pm	-	-	-	17,362,958	4.359	2.180
4	12:12 pm	-	-	-	17,568,942	4.411	2.205
Avg.		-	-	-	17,425,240	4.375	2.187
Std.Dev.							
% RSD.					0.57		

Spl #: 4 Sample ID: 190213A LCSD Type: QC #1 Date: 02/13/2019 Status: Passed  
 Vial #: 6 Method: NPOC - Feb 11, 2019; 02-54-31 Dilution: 1:1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	12:23 pm	-	-	-	17,120,286	4.298	2.149
2	12:31 pm	-	-	-	17,200,482	4.318	2.159
3	12:39 pm	-	-	-	17,139,545	4.303	2.152
4	12:47 pm	-	-	-	17,364,746	4.360	2.180
Avg.		-	-	-	17,206,265	4.320	2.160
Std.Dev.							
% RSD.					0.65		





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Date Prepared: 02/21/2019

By:

TOC

Date Approved:

By:

**Sample Results Summary**

Spl #	Vial #	Sample ID	Num Rep	Act Rep	Method	Type	Dil	Customer ID	Mode	Avg. Area (cts)	Avg. Mass (ug)	Avg. Conc (PPM)	Std. Dev	% RSD	Notes
2	1	TOC-RW	4	4	190219A NPOC - Feb 19, 2019; 04-14-45 PM	Standard	1:1	00000000	TOC	681,067	0.000	0.000	44,607	6.55	
3	2	TOC-Std#1-0.500 PPM	4	4	190219A NPOC - Feb 19, 2019; 04-14-45 PM	Standard	1:1	00000000	TOC	4,791,550	1.000	0.500	139,742	2.92	
4	3	TOC-Std#2-1.250 PPM	4	4	190219A NPOC - Feb 19, 2019; 04-14-45 PM	Standard	1:1	00000000	TOC	10,186,940	2.500	1.250	160,799	1.58	
5	4	TOC-Std#3-2.500 PPM	4	4	190219A NPOC - Feb 19, 2019; 04-14-45 PM	Standard	1:1	00000000	TOC	20,579,445	5.000	2.500	78,028	0.38	
6	5	TOC-Std#4-3.750 PPM	4	4	190219A NPOC - Feb 19, 2019; 04-14-45 PM	Standard	1:1	00000000	TOC	28,917,365	7.500	3.750	47,798	0.17	
7	6	TOC-Std#5-5.000 PPM	4	4	190219A NPOC - Feb 19, 2019; 04-14-45 PM	Standard	1:1	00000000	TOC	37,803,405	10.000	5.000	242,908	0.64	
8	7	ICB	4	4	190219A NPOC - Feb 19, 2019; 04-14-45 PM	QC #1	1:1	-	TOC	556,114	0.146	0.073	98,441	17.70	
9	8	ICV 190219	4	4	190219A NPOC - Feb 19, 2019; 04-14-45 PM	QC #1	1:1	-	TOC	19,807,222	5.218	2.609	52,054	0.26	
10	9	190219A LCS	4	4	190219A NPOC - Feb 19, 2019; 04-14-45 PM	QC #1	1:1	-	TOC	10,361,817	2.730	1.365	15,831	0.15	
11	10	190219A LCSD	4	4	190219A NPOC - Feb 19, 2019; 04-14-45 PM	QC #1	1:1	-	TOC	10,045,827	2.646	1.323	72,354	0.72	
14	13	AZ85653W12	4	4	190219A NPOC - Feb 19, 2019; 04-14-45 PM	Sample	1:1	-	TOC	5,023,846	1.251	0.625	85,082	1.69	Pass
26	25	CCV 190219	4	4	190219A NPOC - Feb 19, 2019; 04-14-45 PM	QC #1	1:1	-	TOC	20,151,776	5.309	2.654	139,048	0.69	
27	26	CCB	4	4	190219A NPOC - Feb 19, 2019; 04-14-45 PM	QC #1	1:1	-	TOC	680,881	0.179	0.090	129,653	19.04	



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 USA

Date Prepared: 02/21/2019

By:

TOC

Date Approved:

By:

Sample Results

Spl #: 2 Sample ID: TOC-RW Type: Standard Date: 02/20/2019 Status: Passed  
 Vial #: 1 Method: 190219A NPOC - Feb 19, 2019 Dilution: 1 : 1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	4:41 pm	-	-	-	726,964	0.000	0.000
2	4:49 pm	-	-	-	704,589	0.000	0.000
3	4:56 pm	-	-	-	625,143	0.000	0.000
4	5:04 pm	-	-	-	667,572	0.000	0.000
Avg.		-	-	-	681,067	0.000	0.000
Std.Dev.							
% RSD.					6.55		

Spl #: 3 Sample ID: TOC-Std#1-0.500 PPM Type: Standard Date: 02/20/2019 Status: Passed  
 Vial #: 2 Method: 190219A NPOC - Feb 19, 2019 Dilution: 1 : 1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	5:15 pm	-	-	-	4,641,024	1.000	0.500
2	5:23 pm	-	-	-	4,874,897	1.000	0.500
3	5:30 pm	-	-	-	4,709,550	1.000	0.500
4	5:38 pm	-	-	-	4,940,729	1.000	0.500
Avg.		-	-	-	4,791,550	1.000	0.500
Std.Dev.							
% RSD.					2.92		



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Date Prepared: 02/21/2019

By:

TOC

Date Approved:

By:

Spl #: 4 Sample ID: TOC-Std#2-1.250 PPM Type: Standard Date: 02/20/2019 Status: Passed  
 Vial #: 3 Method: 190219A NPOC - Feb 19, 2019 Dilution: 1 : 1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	5:46 pm	-	-	-	10,382,144	2.500	1.250
2	5:54 pm	-	-	-	10,119,219	2.500	1.250
3	6:02 pm	-	-	-	10,007,543	2.500	1.250
4	6:10 pm	-	-	-	10,238,854	2.500	1.250
Avg.		-	-	-	10,186,940	2.500	1.250
Std.Dev.							
% RSD.					1.58		

Spl #: 5 Sample ID: TOC-Std#3-2.500 PPM Type: Standard Date: 02/20/2019 Status: Passed  
 Vial #: 4 Method: 190219A NPOC - Feb 19, 2019 Dilution: 1 : 1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	6:18 pm	-	-	-	20,595,511	5.000	2.500
2	6:26 pm	-	-	-	20,475,483	5.000	2.500
3	6:34 pm	-	-	-	20,582,555	5.000	2.500
4	6:42 pm	-	-	-	20,664,233	5.000	2.500
Avg.		-	-	-	20,579,445	5.000	2.500
Std.Dev.							
% RSD.					0.38		





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Date Prepared: 02/21/2019 By: TOC

Date Approved: By:

Spl #: 6 Sample ID: TOC-Std#4-3.750 PPM Type: Standard Date: 02/20/2019 Status: Passed  
 Vial #: 5 Method: 190219A NPOC - Feb 19, 2019 Dilution: 1:1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	6:50 pm	-	-	-	28,976,611	7.500	3.750
2	6:59 pm	-	-	-	28,912,244	7.500	3.750
3	7:07 pm	-	-	-	28,920,740	7.500	3.750
4	7:15 pm	-	-	-	28,859,866	7.500	3.750
Avg.		-	-	-	28,917,365	7.500	3.750
Std.Dev.							
% RSD.					0.17		

Spl #: 7 Sample ID: TOC-Std#5-5.000 PPM Type: Standard Date: 02/20/2019 Status: Passed  
 Vial #: 6 Method: 190219A NPOC - Feb 19, 2019 Dilution: 1:1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	7:23 pm	-	-	-	37,840,185	10.000	5.000
2	7:31 pm	-	-	-	37,529,902	10.000	5.000
3	7:39 pm	-	-	-	37,730,932	10.000	5.000
4	7:48 pm	-	-	-	38,112,603	10.000	5.000
Avg.		-	-	-	37,803,405	10.000	5.000
Std.Dev.							
% RSD.					0.64		







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Date Prepared: 02/21/2019

By:

TOC

Date Approved:

By:

Spl #: 8 Sample ID: ICB Type: QC #1 Date: 02/20/2019 Status: Passed  
 Vial #: 7 Method: 190219A NPOC - Feb 19, 2019 Dilution: 1 : 1 Customer ID: -

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	7:58 pm	-	-	-	701,631	0.185	0.092
2	8:06 pm	-	-	-	508,696	0.134	0.067
3	8:13 pm	-	-	-	527,518	0.139	0.070
4	8:21 pm	-	-	-	486,612	0.128	0.064
Avg.		-	-	-	556,114	0.146	0.073
Std.Dev.							
% RSD.					17.70		

Comments: -

Spl #: 9 Sample ID: ICV 190219 Type: QC #1 Date: 02/20/2019 Status: Passed  
 Vial #: 8 Method: 190219A NPOC - Feb 19, 2019 Dilution: 1 : 1 Customer ID: -

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	8:32 pm	-	-	-	19,756,277	5.204	2.602
2	8:40 pm	-	-	-	19,846,027	5.228	2.613
3	8:48 pm	-	-	-	19,857,756	5.231	2.616
4	8:56 pm	-	-	-	19,768,829	5.208	2.604
Avg.		-	-	-	19,807,222	5.218	2.609
Std.Dev.							
% RSD.					0.26		

Comments: -





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Date Prepared: 02/21/2019 By:

TOC

Date Approved: By:

Spl #: 10 Sample ID: 190219A LCS Type: QC #1 Date: 02/20/2019 Status: Passed  
 Vial #: 9 Method: 190219A NPOC - Feb 19, 2019 Dilution: 1 : 1 Customer ID: -

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	9:07 pm	-	-	-	10,342,801	2.725	1.362
2	9:15 pm	-	-	-	10,368,587	2.731	1.366
3	9:23 pm	-	-	-	10,356,332	2.728	1.364
4	9:31 pm	-	-	-	10,379,548	2.734	1.367
Avg.		-	-	-	10,361,817	2.730	1.365
Std.Dev.							
% RSD.					0.15		

Comments: -

Spl #: 11 Sample ID: 190219A LCSD Type: QC #1 Date: 02/20/2019 Status: Passed  
 Vial #: 10 Method: 190219A NPOC - Feb 19, 2019 Dilution: 1 : 1 Customer ID: -

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	9:42 pm	-	-	-	9,951,587	2.622	1.311
2	9:50 pm	-	-	-	10,084,342	2.656	1.328
3	9:58 pm	-	-	-	10,117,211	2.665	1.333
4	10:06 pm	-	-	-	10,030,167	2.642	1.321
Avg.		-	-	-	10,045,827	2.646	1.323
Std.Dev.							
% RSD.					0.72		

Comments: -



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Date Prepared: 02/21/2019 By: TOC  
 Date Approved: By:

Spl #: 14 Sample ID: AZ85653W12 Type: Sample Date: 02/20/2019 Status: Passed  
 Vial #: 13 Method: 190219A NPOC - Feb 19, 2019 Dilution: 1 : 1 Customer ID: -

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	11:26 pm	-	-	-	5,080,406	1.266	0.633
2	11:34 pm	-	-	-	4,900,002	1.219	0.609
3	11:42 pm	-	-	-	5,078,896	1.266	0.633
4	11:49 pm	-	-	-	5,036,079	1.255	0.627
Avg.		-	-	-	5,023,846	1.251	0.625
Std.Dev.							
% RSD.					1.69		

Comments: -

Spl #: 26 Sample ID: CCV 190219 Type: QC #1 Date: 02/21/2019 Status: Passed  
 Vial #: 25 Method: 190219A NPOC - Feb 19, 2019 Dilution: 1 : 1 Customer ID: -

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	5:48 am	-	-	-	20,358,201	5.363	2.682
2	5:57 am	-	-	-	20,065,750	5.286	2.643
3	6:05 am	-	-	-	20,072,294	5.288	2.644
4	6:13 am	-	-	-	20,110,859	5.298	2.649
Avg.		-	-	-	20,151,776	5.309	2.654
Std.Dev.							
% RSD.					0.69		

Comments: -



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Date Prepared: 02/21/2019

By:

TOC

Date Approved:

By:

Spl #: 27 Sample ID: CCB Type: QC #1 Date: 02/21/2019 Status: Passed  
 Vial #: 26 Method: 190219A NPOC - Feb 19, 2019 Dilution: 1:1 Customer ID: -

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	6:23 am	-	-	-	860,358	0.227	0.113
2	6:31 am	-	-	-	689,856	0.182	0.091
3	6:38 am	-	-	-	600,445	0.158	0.079
4	6:46 am	-	-	-	572,864	0.151	0.076
Avg.		-	-	-	680,881	0.179	0.090
Std.Dev.							
% RSD.					19.04		

Comments: -

Standard Prep							
Prep Date	Ferrous Iron Standards		Prep'd By (Initials)		HH		
Exp Date	06/15/18		06/15/19				
Stock Label	Supplier	Batch Number	Exp Date	Aliquot from Stock	Final Volume	Solvent	Ferrous Iron Concentration
Ferrous Ammonium Sulfate	J.T.Baker	0000184592	08/21/20	0.351	250mL	5ml H2SO4 (0000167828) Diluted with water	200ug/L
Ferrous Sulfate	Mallinckrodt	Lot 5056 KDRX	NA	0.249	250mL	5ml H2SO4 (0000167828) Diluted with water	200ug/L
Ferrous Iron CCV/LCS/MS/ICV			Prep'd By (Initials)		HH		
Prep Date	See Injection Log						
Exp Date	24 Hours						
Initial Standard Information	Supplier	Batch Number	Exp Date	Final Standard Information			
Ferrous Iron CCV	J.T.Baker	0000184592	06/14/19	500uL	25mL	Deionized water	4mg/L
Ferrous Iron ICV/LCS	Mallinckrodt	Lot 5056 KDRX	06/14/19	375uL	25mL	Deionized water	3mg/L
Ferrous Iron Calibration Curve			Prep'd By (Initials)		HH		
Prep Date	06/15/18		06/16/18				
Exp Date							
Final Standard Information							
Point Label	Supplier	Batch Number	Exp Date	Aliquot from Stock (mL)	Final Volume	Solvent	Ferrous Iron Concentration
CCB	J.T.Baker	0000184592	06/14/19	0	25mL	Deionized water	0mg/L
Ical 1	J.T.Baker	0000184592	06/14/19	0.125	25mL	Deionized water	1mg/L
Ical 2	J.T.Baker	0000184592	06/14/19	0.25	25mL	Deionized water	2mg/L
Ical 3	J.T.Baker	0000184592	06/14/19	0.5	25mL	Deionized water	4mg/L
Ical 4	J.T.Baker	0000184592	06/14/19	0.625	25mL	Deionized water	5mg/L
Ical 5	J.T.Baker	0000184592	06/14/19	1.25	25mL	Deionized water	10mg/L
ICV	Mallinckrodt	Lot 5056 KDRX	06/14/19	0.375	25mL	Deionized water	3mg/L
Reagent Prep							
Reagent	Chemical Lot #	Chemical	Chemical Expiration Date	Amount	Date Prep		
Colorizer	0747C107	1,10-phenanthroline	na	0.2025	12:32 PM		
		HCL conc	na	8drops			
Buffer	228B018	Ammonia Acetate	na	249.3g	01/15/19		
		2018071399	Glacial Acetic Acid	06/27/20	700mL		

Anion Chromatography Working Standard									
Prep Date: 01/24/19									
Exp Date: 01/25/19									
Prep'd By (Initials): HH									
Initial Standard Information						Final Standard Information			
Name of Initial Standard (QAU Label)	Supplier	Supplier Part No.	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date	Aliquot from Stock	Final Volume	Solvent	Final Standard Conc (ug/mL)
Ion Chromatography Standard Fluoride 1000ug/mL in H2O	o2si	O2SI-062002-01-01	1000	142626-24-38407	04/20/19	312.5 µL	25 mL	Millipore Water	12.5
Ion Chromatography Standard Nitrite as N 1000 ug/mL in H2O	o2si	O2SI-062004-01-01	1000	142626-24-38408	04/20/19	125 µL	25 mL	Millipore Water	5
Ion Chromatography Standard Chloride, 500mL 5,000 mg/L in H2O	o2si	062001-08-03	5000	10084781-1-39578	02/21/20	250 µL	25 mL	Millipore Water	50
Ortho-Phosphate as P Standard	Ultra Scientific	ICC-005A	1000	G34-CP-3323-39057	08/31/23	625 µL	25 mL	Millipore Water	25
Ion Chromatography Standard Nitrate as N, 500mL 1,000 mg/L in H2O	o2si	062003-01-03	1000	880117-4-39577	02/21/20	250 µL	25 mL	Millipore Water	10
Bromide Standard	Ultra Scientific	ICC-001	1000	CR-5372-39521	12/31/21	625 µL	25 mL	Millipore Water	25
Sulfate Standard	Agilent	ICC-006	1000	CS-0688-40047	03/31/22	1250 µL	25 mL	Millipore Water	50

Anion Chromatography Calibration Curve									
Prep Date: 01/24/19									
Exp Date: 01/25/19									
Prep'd By (Initials): HH									
Initial Standard Information						Final Standard Information			
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. Range (ug/mL)	Reference To APPL Prep Date	Exp. Date	Aliquot from Stock	Final Volume	Solvent	Final Conc. Range (ug/mL)
Ical2	Varries	ICal1	5.0-50.0	Prepared 01/24/19	01/25/19	400 µL	1000 µL	Millipore Water	0.08-0.40
Anion Chromatography Working Standard	Varries	ICal2	5.0-50.0	Prepared 01/24/19	01/25/19	20 µL	1000 µL	Millipore Water	0.1-1.0
Anion Chromatography Working Standard	Varries	ICal3	5.0-50.0	Prepared 01/24/19	01/25/19	50 µL	1000 µL	Millipore Water	0.25-2.5
Anion Chromatography Working Standard	Varries	ICal4	5.0-50.0	Prepared 01/24/19	01/25/19	100 µL	1000 µL	Millipore Water	0.5-5.0
Anion Chromatography Working Standard	Varries	ICal5	5.0-50.0	Prepared 01/24/19	01/25/19	200 µL	1000 µL	Millipore Water	1.0-10.0
Anion Chromatography Working Standard	Varries	ICal6	5.0-50.0	Prepared 01/24/19	01/25/19	500 µL	1000 µL	Millipore Water	2.5-25.0
Anion Chromatography Working Standard	Varries	ICal7	5.0-50.0	Prepared 01/24/19	01/25/19	700 µL	1000 µL	Millipore Water	3.5-35.0
Anion Chromatography Working Standard	Varries	ICal8	5.0-50.0	Prepared 01/24/19	01/25/19	1000 µL	1000 µL	Millipore Water	5.0-50.0

Anion Chromatography LCS/ICV									
Prep Date: See Injection Log									
Exp Date: 24 hours after prep									
Prep'd By (Initials): HH									
Initial Standard Information						Final Standard Information			
Name of Initial Standard (QAU Label)	Supplier	Supplier Part No.	Conc. Range (ug/mL)	Lot Number - QA Number	Exp. Date	Aliquot from Stock	Final Volume	Solvent	Final Standard Conc (ug/mL)
Fluoride	Inorganic Ventures	ICF1	993-999	K-F632018-39801	10/23/19	62.5 µL	25 mL	Millipore Water	5
Nitrite	Inorganic Ventures	ICNO21	993-1001	M2-NOX660562-39802	10/23/19	250 µL	25 mL	Millipore Water	3.04
Chloride	Inorganic Ventures	ICCL1	995-1001	NaCL664868-39904	11/26/19	500 µL	25 mL	Millipore Water	20
O-Phosphate as P	Inorganic Ventures	IPPO41	1001-1009	M2-POX655826-39803	10/23/19	125 µL	25 mL	Millipore Water	10
Nitrate as N	Inorganic Ventures	ICNNO31	994-1002	Na-NOX667147-39510	10/23/19	125 µL	25 mL	Millipore Water	5
Ion Chromatography Bromide Standard	CPI International	4400-ICBM	1000	161681-8-39539	02/06/20	312.5 µL	25 mL	Millipore Water	12.5
Sulfate	Inorganic Ventures	ICSO41	998-1006	Ka-SOX01111-38875	08/13/19	500 µL	25 mL	Millipore Water	20

Anion Chromatography CCV									
Prep Date: See Injection Log									
Exp Date: 24 hours after prep									
Prep'd By (Initials): HH									
Initial Standard Information						Final Standard Information			
Name of Initial Standard (QAU Label)	Supplier	Supplier Part No.	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date	Aliquot from Stock	Final Volume	Solvent	Final Standard Conc (ug/mL)
Ion Chromatography Standard Fluoride 1000ug/mL in H2O	o2si	O2SI-062002-01-01	1000	142626-24-38407	04/20/19	125 µL	25 mL	Millipore Water	5
Ion Chromatography Standard Nitrite as N 1000 ug/mL in H2O	o2si	O2SI-062004-01-01	1000	142626-24-38408	04/20/19	62.5 µL	25 mL	Millipore Water	2.5
Ion Chromatography Standard Chloride, 500mL 5,000 mg/L in H2O	o2si	062001-08-03	5000	10084781-1-39578	02/21/20	125 µL	25 mL	Millipore Water	25
Ortho-Phosphate as P Standard	Ultra Scientific	ICC-005A	1000	G34-CP-3323-39057	08/31/23	250 µL	25 mL	Millipore Water	10
Ion Chromatography Standard Nitrate as N, 500mL 1,000 mg/L in H2O	o2si	062003-01-03	1000	880117-4-39577	02/21/20	125 µL	25 mL	Millipore Water	5
Bromide Standard	Ultra Scientific	ICC-001	1000	CR-5372-39521	12/31/21	312.5 µL	25 mL	Millipore Water	12.5
Sulfate Standard	Agilent	ICC-006	1000	CS-0688-40047	03/31/22	625 µL	25 mL	Millipore Water	25

## Nitrite

### High Point @ 1.5 mg/L

0.075 mL NO<sub>2</sub> O<sub>2</sub>Si lot 142626-24 - 38408 exp: 4/20/19  
50 mL DI Water

### CCV @ 0.75 mg/L

0.0375 mL NO<sub>2</sub> O<sub>2</sub>Si lot 142626-24-38408 exp: 4/20/19  
50 mL DI Water

### ICV/LCS @ 0.73 mg/L

0.12mL NO<sub>2</sub> Inorganic Ventures lot M2-NOX660562-39802 exp: 10/23/19  
50 mL DI Water

### 1 mg/L NO<sub>2</sub>

400 uL of High point and 200 uL of DI made directly into a sample cup

Prep 12/20/18  
Exp 12/27/18  
Initials BP

## Nitrate/TOXN

### High Point @ 6 mg/L

0.30 mL NO<sub>3</sub> O<sub>2</sub>Si lot 880117-39577 exp: 2/21/20  
50 mL DI Water

### CCV @ 3.0 mg/L

0.15 mL NO<sub>3</sub> O<sub>2</sub>Si lot 880117-39577 exp: 2/21/20  
50 mL DI Water

### ICV/LCS @ 3.0 mg/L

0.150 mL NO<sub>3</sub> Inorganic Ventures lot N2-NOX667147-39510 exp: 10/23/19  
50 mL DI Water

### 1 mg/L NO<sub>3</sub>

100 uL of High point and 500 uL of DI made directly into a sample cup

### MS @ 2.5 mg/L NO<sub>3</sub> and 0.73 mg/L NO<sub>2</sub>

0.125 mL NO<sub>3</sub> Inorganic Ventures lot N2-NOX667147-39510 exp: 10/23/19  
and 0.12mL Inorganic Ventures lot M2-NOX660562-39802 exp: 10/23/19  
Final volume 50 mL of sample

Prep 01/28/19  
Exp 2/4/19  
EV

**Tiamo Alkalinity Standard Prep**

Prep Date:

Exp Date:

Prep'd By (Initials): AR

Initial Standard Information

Final Standard Information

Name of Initial Standard (QAU Label)	Supplier	Unit	Conc	Lot Number - QA Number	Prep/Opened	Exp. Date	Aliquot from Stock	Final Volume	Solvent	Final Standard Conc
Sulfuric Acid (H2SO4)	J.T.Baker	NA	NA	167828	NA	NA	PURCHASED	NA	NA	NA
0.10N Sulfuric Acid (H2SO4)	J.T.Baker	Normality	0.1N	167828	12/19/18	12/19/19	3ml	1L	DI	0.10N
0.02N Sulfuric Acid (H2SO4)	J.T.Baker	Normality	0.02N	167828	12/19/18	12/19/19	200mL	1L	DI	0.02N
Inorganic Spike(NaHCO3)	BDH	NA	NA	1575C510	10/18/18	08/14/20	PURCHASED	NA	NA	NA
Inorganic Spike Solution	BDH	Milligrams/Liters	250mg/L	1575C510	01/29/19	01/29/20	3.5g	500mL	DI	250mg/L
Standarizing Solution(NaCO3)	J.T Baker	Normality	1N	178494	07/25/17	07/25/19	PURCHASED	NA	NA	NA



Name of Final Standard **TOC Calibration Curve**  
 Prep Date 02/11/19  
 Exp Date 03/11/19

Prep'd By (Initials) HH

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
Total Organic Carbon (TOC) Standard	Agilent	IQC-1 06-5	1000 mg/L	CS-5157-40233	11/30/20	20 uL	40 mL	DI Water	0.5 ppm
Total Organic Carbon (TOC) Standard	Agilent	IQC-1 06-5	1000 mg/L	CS-5157-40233	11/30/20	50 uL	40 mL	DI Water	1.25 ppm
Total Organic Carbon (TOC) Standard	Agilent	IQC-1 06-5	1000 mg/L	CS-5157-40233	11/30/20	100 uL	40 mL	DI Water	2.5 ppm
Total Organic Carbon (TOC) Standard	Agilent	IQC-1 06-5	1000 mg/L	CS-5157-40233	11/30/20	150 uL	40 mL	DI Water	3.75 ppm
Total Organic Carbon (TOC) Standard	Agilent	IQC-1 06-5	1000 mg/L	CS-5157-40233	11/30/20	200 uL	40 mL	DI Water	5 ppm

Name of Final Standard **1000 PPM ICV TOC Intermediate**  
 Prep Date 02/11/19  
 Exp Date 02/11/20

Prep'd By (Initials) HH

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
Sugar	Millenia	814-293	42% Carbon	V298J-NA	NA	2.3831 g	1 L	DI Water	1003.45 ppm

Name of Final Standard **ICV (TOC)**  
 Prep Date 02/11/19  
 Exp Date 03/11/19

Prep'd By (Initials) HH

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
1000 PPM ICV TOC Intermediate	APPL Inc.	Prep: 2/11/19	1000 mg/L	Prep: 2/11/19	03/11/19	100 uL	40mL	DI Water	2.5 ppm

Name of Final Standard CCV (TOC)  
 Prep Date 02/12/19  
 Exp Date 03/12/19

Prep'd By (Initials) MM

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc. (range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
Total Organic Carbon (TOC) Standard	Agilent	IQC-1 06-5	1000 mg/L	CS-5157-40233	11/30/20	100 uL	40 mL	DI Water	2.5 ppm

Name of Final Standard TOC LCS/LCSD  
 Prep Date 02/13/19  
 Exp Date 03/13/19

Prep'd By (Initials) MM

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc. (range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
Total Organic Carbon (TOC) Standard	ULTRA Scientific	IQC-106-5	1000 mg/L	CR-0328-37639	02/28/19	80 uL	40 mL	DI Water	2.0 ppm

Name of Final Standard TOC MS/MSD  
 Prep Date 02/13/19  
 Exp Date 03/13/19

Prep'd By (Initials) MM

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc. (range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
Total Organic Carbon (TOC) Standard	ULTRA Scientific	IQC-106-5	1000 mg/L	CR-0328-37639	02/28/19	100 uL	40 mL	sample	2.5 ppm

Name of Final Standard **TOC Calibration Curve**  
 Prep Date 02/20/19  
 Exp Date 03/20/19

Prep'd By (Initials) MM

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
Total Organic Carbon (TOC) Standard	Agilent	IQC-1 06-5	1000 mg/L	CS-5157-40233	11/30/20	20 uL	40 mL	DI Water	0.5 ppm
Total Organic Carbon (TOC) Standard	Agilent	IQC-1 06-5	1000 mg/L	CS-5157-40233	11/30/20	50 uL	40 mL	DI Water	1.25 ppm
Total Organic Carbon (TOC) Standard	Agilent	IQC-1 06-5	1000 mg/L	CS-5157-40233	11/30/20	100 uL	40 mL	DI Water	2.5 ppm
Total Organic Carbon (TOC) Standard	Agilent	IQC-1 06-5	1000 mg/L	CS-5157-40233	11/30/20	150 uL	40 mL	DI Water	3.75 ppm
Total Organic Carbon (TOC) Standard	Agilent	IQC-1 06-5	1000 mg/L	CS-5157-40233	11/30/20	200 uL	40 mL	DI Water	5 ppm

Name of Final Standard **ICV (TOC)**  
 Prep Date 02/19/19  
 Exp Date 03/19/19

Prep'd By (Initials) AR

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
Total Organic Carbon (TOC) Standard	ULTRA Scientific	IQC-106-5	1000 mg/L	CR-0328-37639	02/28/19	100 uL	40 mL	DI Water	2.50 ppm

Name of Final Standard CCV (TOC)  
 Prep Date 02/19/19  
 Exp Date 03/19/19

Prep'd By (Initials) AR

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
Total Organic Carbon (TOC) Standard	Agilent	IQC-1 06-5	1000 mg/L	CS-5157-40233	11/30/20	100 uL	40 mL	DI Water	2.5 ppm

Name of Final Standard TOC LCS/LCSD  
 Prep Date 02/19/19  
 Exp Date 03/19/19

Prep'd By (Initials) AR

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
Total Organic Carbon (TOC) Standard	ULTRA Scientific	IQC-106-5	1000 mg/L	CR-0328-37639	02/28/19	50 uL	40 mL	DI Water	1.25 ppm

Name of Final Standard TOC MS/MSD  
 Prep Date 02/19/19  
 Exp Date 03/19/19

Prep'd By (Initials) AR

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
Total Organic Carbon (TOC) Standard	ULTRA Scientific	IQC-106-5	1000 mg/L	CR-0328-37639	02/28/19	100 uL	40 mL	sample	2.5 ppm

# SM3500FeB Injection Log

Directory: I:\Spec Sheets\Ferrous Iron (Fe2)\2019\

RunID	Injected		Sample Name	Misc Info	FileName	Multiplier
2	25 Jan 2019	09:21	CCB 190125		190125A	1.
1	25 Jan 2019	09:21	CCV 4.0 190125		190125A	1.
3	25 Jan 2019	09:22	190125 LCS		190125A	1.
4	25 Jan 2019	09:23	190125 LCSD		190125A	1.
12	25 Jan 2019	09:31	CCV 4.0 190125		190125A	1.
13	25 Jan 2019	09:32	CCB 190125		190125A	1.
14	25 Jan 2019	10:37	CCV 4.0 190125		190125A	1.
15	25 Jan 2019	10:38	AZ85643W21		190125A	1.
16	25 Jan 2019	10:38	CCB 190125		190125A	1.
17	25 Jan 2019	10:39	CCV 4.0 190125		190125A	1.
18	25 Jan 2019	10:39	AZ85646W17		190125A	1.
19	25 Jan 2019	10:40	CCB 190125		190125A	1.
28	25 Jan 2019	15:18	CCV 4.0 190125		190125A	1.
29	25 Jan 2019	15:19	CCB 190125		190125A	1.
30	25 Jan 2019	15:21	AZ85653W17		190125A	1.
31	25 Jan 2019	15:22	CCV 4.0 190125		190125A	1.
32	25 Jan 2019	15:23	CCB 190125		190125A	1.
33	15 Jun 2018	12:27	Ical 1		190125A	1.
34	15 Jun 2018	12:27	ICB		190125A	1.
35	15 Jun 2018	12:28	Ical 2		190125A	1.
36	15 Jun 2018	12:28	Ical 3		190125A	1.
37	15 Jun 2018	12:29	Ical 4		190125A	1.
38	15 Jun 2018	12:30	Ical 5		190125A	1.
39	15 Jun 2018	12:31	ICV		190125A	1.
40	15 Jun 2018	12:32	ICB		190125A	1.

# EPA 300.0 Injection Log

Directory: I:\Dionex\Charlie\

RunID	Injected		Sample Name	Misc Info	FileName	Multiplier
2	24 Jan 2019	11:58	CCB		Anions	1.
3	24 Jan 2019	12:06	i cal 1		Anions	1.
4	24 Jan 2019	12:13	i cal 2		Anions	1.
5	24 Jan 2019	12:20	i cal 3		Anions	1.
6	24 Jan 2019	12:28	i cal 4		Anions	1.
7	24 Jan 2019	12:35	i cal 5		Anions	1.
8	24 Jan 2019	12:43	i cal 6		Anions	1.
9	24 Jan 2019	12:50	i cal 7		Anions	1.
10	24 Jan 2019	12:57	i cal 8		Anions	1.
11	24 Jan 2019	13:05	CCB		Anions	1.
12	24 Jan 2019	13:12	ICV LCS 190124		Anions	1.
13	24 Jan 2019	13:20	ICVD LCSD 190124		Anions	1.

# EPA 300.0 Injection Log

Directory: I:\Dionex\Charlie\

RunID	Injected		Sample Name	Misc Info	FileName	Multiplier
16	25 Jan 2019	15:35	CCV 190125		Anions	1.
17	25 Jan 2019	15:42	CCB		Anions	1.
18	25 Jan 2019	15:50	AZ85653W15		Anions	1.
19	25 Jan 2019	15:57	CCV 190125		Anions	1.
20	25 Jan 2019	16:04	CCB		Anions	1.
34	25 Jan 2019	18:31	CCV 190125		Anions	1.
35	25 Jan 2019	18:38	CCB		Anions	1.
43	25 Jan 2019	19:37	AZ85643W19		Anions	1.
44	25 Jan 2019	19:45	AZ85646W15		Anions	1.
46	25 Jan 2019	19:59	CCV 190125		Anions	1.
47	25 Jan 2019	20:07	CCB		Anions	1.
48	25 Jan 2019	20:14	190125 LCS		Anions	1.
49	25 Jan 2019	20:22	190125 LCSD		Anions	1.
50	25 Jan 2019	20:29	CCV 190125		Anions	1.
51	25 Jan 2019	20:36	CCB		Anions	1.

# EPA 300.0 Injection Log

Directory: I:\Dionex\Charlie\

RunID	Injected		Sample Name	Misc Info	FileName	Multiplier
1	28 Jan 2019	09:55	CCV 190128		Anions	1.
2	28 Jan 2019	10:02	CCB		Anions	1.
3	28 Jan 2019	10:09	190128 LCS		Anions	1.
4	28 Jan 2019	10:17	190128 LCSD		Anions	1.
7	28 Jan 2019	11:58	CCV 190128		Anions	1.
8	28 Jan 2019	12:06	CCB		Anions	1.
30	28 Jan 2019	16:31	CCV 190128		Anions	1.
31	28 Jan 2019	16:39	CCB		Anions	1.
32	28 Jan 2019	16:46	AZ85643W19 df5		Anions	5.
33	28 Jan 2019	16:54	AZ85646W15 df50		Anions	50.
34	28 Jan 2019	17:01	CCV 190128		Anions	1.
35	28 Jan 2019	17:08	CCB		Anions	1.



# EPA 353.2 Injection Log

Directory: I:\EVE\Export\2019\

RunID	Injected		Sample Name	Misc Info	FileName	Multiplier
1	28 Jan 2019	16:18	Standard 1 TOXN/NO3		190128A TO	1.
2	28 Jan 2019	16:20	Standard 90 TOXN/NO3		190128A TO	1.
3	28 Jan 2019	16:22	Standard 91 TOXN/NO3		190128A TO	1.
4	28 Jan 2019	16:24	Standard 92 TOXN/NO3		190128A TO	1.
5	28 Jan 2019	16:26	Standard 93 TOXN/NO3		190128A TO	1.
6	28 Jan 2019	16:29	Standard 94 TOXN/NO3		190128A TO	1.
7	28 Jan 2019	16:31	Standard 0 TOXN/NO3		190128A TO	1.
8	28 Jan 2019	16:33	CCV TOXN/NO3		190128A TO	1.
9	28 Jan 2019	16:35	CCB TOXN/NO3		190128A TO	1.
10	28 Jan 2019	16:37	ICV NO3 TOXN		190128A TO	1.
11	28 Jan 2019	16:40	ICB NO2 NO3 TOXN		190128A TO	1.
12	28 Jan 2019	16:42	190128A BLK NO2 NO3 TOXN		190128A TO	1.
13	28 Jan 2019	16:44	190128A LCS NO3 TOXN		190128A TO	1.
14	28 Jan 2019	16:46	190128A LCSD NO3 TOXN		190128A TO	1.
20	28 Jan 2019	16:59	CCV TOXN/NO3		190128A TO	1.
21	28 Jan 2019	17:02	CCB TOXN/NO3		190128A TO	1.
30	28 Jan 2019	17:18	AZ85643W20 TOXN/NO3		190128A TO	1.
31	28 Jan 2019	17:19	AZ85646W16 TOXN/NO3		190128A TO	1.
32	28 Jan 2019	17:19	CCV TOXN/NO3		190128A TO	1.
33	28 Jan 2019	17:20	CCB TOXN/NO3		190128A TO	1.
34	28 Jan 2019	17:21	AZ85653W16 TOXN/NO3		190128A TO	1.
35	28 Jan 2019	17:22	CCV TOXN/NO3		190128A TO	1.
36	28 Jan 2019	17:23	CCB TOXN/NO3		190128A TO	1.

# SM 2320B Injection Log

Directory: I:\Tiamo\EXPORT\

RunID	Injected		Sample Name	Misc Info	FileName	Multiplier
1	30 Jan 2019	13:32	190130A BLK		190130A_AL	1.
2	30 Jan 2019	13:35	190130A LCS		190130A_AL	1.
3	30 Jan 2019	13:45	190130A LCSD		190130A_AL	1.
15	30 Jan 2019	15:18	AZ85643W19		190130A_AL	1.
16	30 Jan 2019	15:23	AZ85646W15		190130A_AL	1.
17	30 Jan 2019	15:29	AZ85653W15		190130A_AL	1.

## 9060A Injection Log

Directory: OI Analytical - TOC Reporter - G949730077 - Wet Chemistry

RunID	Injected		Sample Name	Misc Info	FileName	Multiplier
1	11 Feb 2019	16:13	TOC-RW		190211A	1.
2	11 Feb 2019	16:47	TOC-Std#1-0.500 PPM		190211A	1.
3	11 Feb 2019	17:18	TOC-Std#2-1.250 PPM		190211A	1.
4	11 Feb 2019	17:50	TOC-Std#3-2.500 PPM		190211A	1.
5	11 Feb 2019	18:23	TOC-Std#4-3.750 PPM		190211A	1.
6	11 Feb 2019	18:56	TOC-Std#5-5.000 PPM		190211A	1.
7	11 Feb 2019	19:31	ICB		190211A	1.
8	11 Feb 2019	20:02	ICV Sugar		190211A	1.

## 9060A Injection Log

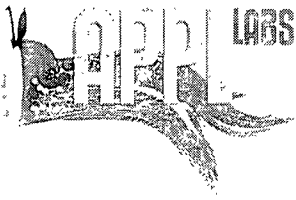
Directory: OI Analytical - TOC Reporter - G949730077 - Wet Chemistry

RunID	Injected		Sample Name	Misc Info	FileName	Multiplier
34	13 Feb 2019	8:48	CCV		190212A	1.
35	13 Feb 2019	9:23	CCB		190212A	1.
38	13 Feb 2019	11:48	190213A LCS		190213A	1.
39	13 Feb 2019	12:23	190213A LCSD		190213A	1.
52	13 Feb 2019	21:23	CCV		190213A	1.
53	13 Feb 2019	21:58	CCB		190213A	1.
58	14 Feb 2019	0:39	AZ85643W09 TOC		190213A	1.
60	14 Feb 2019	1:43	AZ85646W13 TOC		190213A	1.
64	14 Feb 2019	3:55	CCV		190213A	1.
65	14 Feb 2019	4:31	CCB		190213A	1.

## 9060A Injection Log

Directory: OI Analytical - TOC Reporter - G949730077 - Wet Chemistry

RunID	Injected		Sample Name	Misc Info	FileName	Multiplier
1	20 Feb 2019	16:41	TOC-RW		190220B	1.
2	20 Feb 2019	17:15	TOC-Std#1-0.500 PPM		190220B	1.
3	20 Feb 2019	17:46	TOC-Std#2-1.250 PPM		190220B	1.
4	20 Feb 2019	18:18	TOC-Std#3-2.500 PPM		190220B	1.
5	20 Feb 2019	18:50	TOC-Std#4-3.750 PPM		190220B	1.
6	20 Feb 2019	19:23	TOC-Std#5-5.000 PPM		190220B	1.
7	20 Feb 2019	19:58	ICB		190220B	1.
8	20 Feb 2019	20:32	ICV 190219		190220B	1.
9	20 Feb 2019	21:07	190219A LCS		190220B	1.
10	20 Feb 2019	21:42	190219A LCSD		190220B	1.
13	20 Feb 2019	23:26	AZ85653W12		190220B	1.
25	21 Feb 2019	5:48	CCV 190219		190220B	1.
26	21 Feb 2019	6:23	CCB		190220B	1.



908 North Temperance Ave. ▽ Clovis, CA 93611 ▽ Phone 559-275-2175 ▽ Fax 559-275-4422

Certification Number: CA1312  
NELAP Certification number: CA00046  
DoD-ELAP Certificate number: 4064.01

## Data Validatable Report

February 28, 2019

AECOM  
1001 Bishop Street, Suite 1600  
Honolulu, Hawaii 96813

Attn: Margie Pascua

Title: Report of Data: Case 87986

Project: 60571032 CV18F0126 Red Hill Fuel Storage. HI

Contract #: Prime contract # for DoD: NAVY CLEAN N62742-17-F-1800, CV18F0126  
Subcontract: 18S-22209-HI27

Dear Ms. Pascua:

Five water samples were received January 30, 2019. Written results for the requested analyses are being provided on this February 28, 2019.

Results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

If you have any questions or require further information, please contact your APPL Project Manager, Libby Cheeseborough, libby@applinc.com, at your convenience. Thank you for choosing APPL, Inc.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. These test results meet all requirements of NELAC and DoD QSM. Release of the hard copy has been authorized by the Laboratory Manager or her designee, as verified by the following signature.

Paula McCartney, Laboratory Director  
APPL, Inc.

PM/rp  
Enclosure  
cc: File

Number of pages in this report: \_\_\_\_\_

Data Validation Package  
for  
60481245 CIV 0053 Red Hill Fuel Storage  
APPL SDG 87986

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# CASE NARRATIVE



# Case Narrative

ARF: 87986

Project: 60571032 CV18F0126 Red Hill Fuel Storage. HI

## Sample Receipt Information:

Five water samples were received January 30, 2019, at 2.5°C, and 2.0°C. The sample group was assigned Analytical Request Form (ARF) number 87986.

## Sample Preparation and Analysis Information:

For the EPA 8015B analysis, the samples were extracted according to EPA method 3520C. The sample extracts were silica gel cleaned according to APPL's SOP CLN004 and placed on hold.

For the EPA 8270D SIM analysis, the samples were extracted according to EPA method 3520C.

For the EPA 8270D Phenol analysis, the samples were extracted according to EPA method 3520C. The samples were screened for Tentatively Identified Compounds (TICs).

For the APPL SOP ANA2MEE analysis, the samples were extracted according to EPA method 3535.

For the EPA 8260B analyses, the samples were purged according to EPA method 5030B.

For the RSK-175 analysis, the samples were allowed to equilibrate for 10 minutes at 40°C and a portion of the headspace was analyzed.

For the EPA 300.0, 353.2, 9060A, SM 2320B, and SM 3500FeB analyses, the sample was prepared according to the methods.

Only the portion of the injection log relative to these samples is included. A full sequence log is available upon request. Measurement uncertainty can be reported upon request.

## Analytical Exceptions, Deviations and Abnormalities.

**EPA 8015B:** The surrogate octacosane was manually integrated in the LCS and LCSD. Manual integrations were performed in accordance with APPL's SOP. Chromatograms of before and after manual integration are enclosed

**EPA 8270D SIM:** Manual integrations were performed in accordance with APPL's SOP. Chromatograms of before and after manual integration are enclosed.

**APPL SOP ANA2MEE:** Manual integrations were performed in accordance with APPL's SOP. Chromatograms of before and after manual integration are enclosed.

**EPA 8260B:** The surrogate 1,2-Dichloroethane-d4 recovered above the upper control limit in most of the samples, the blank and lab control spike. Corrective action: None, no target compound was detected in the samples.

**EPA 8260B Gasoline:** In the ending continuing calibration 0202L28.D, Gasoline increased in sensitivity with a 63%Drift. Corrective action: None, Gasoline was not detected in the bracketed samples.

**Inorganics:** The sample was analyzed as soon as possible for ferrous iron and nitrate.

In the method blank, alkalinity and bicarbonate were detected above one-half the LOQ.

Corrective action: None, the concentration of alkalinity and bicarbonate in the sample exceeds the blank concentration by ten-fold or more.

## tblCOC\_APPLCaseNarrative

SDG	Received	Client ID	APPL ID	Collected DateTime	Matrix	Method	Method Description
87986	01/30/19	ERH760	AZ85762	01/28/19 10:40:00 AM	WATER	EPA 8260B	EPA 8260B BTEX WATER
87986	01/30/19	ERH760	AZ85762	01/28/19 10:40:00 AM	WATER	EPA 8260B	EPA 8260B GRO WATER
87986	01/30/19	ERH761	AZ85763	01/28/19 11:00:00 AM	WATER	EPA 8260B	EPA 8260B BTEX WATER
87986	01/30/19	ERH761	AZ85763	01/28/19 11:00:00 AM	WATER	EPA 8270D	EPA 8270D WATER
87986	01/30/19	ERH761	AZ85763	01/28/19 11:00:00 AM	WATER	EPA 8270D	EPA 8270D MODIFIED WATER
87986	01/30/19	ERH761	AZ85763	01/28/19 11:00:00 AM	WATER	EPA 8015B-eLL	EPA 8015B TPH LIQ-LIQ
87986	01/30/19	ERH761	AZ85763	01/28/19 11:00:00 AM	WATER	EPA 8260B	EPA 8260B GRO WATER
87986	01/30/19	ERH761	AZ85763	01/28/19 11:00:00 AM	WATER	8270D-SIM	EPA 8270D SIM LIQ-LIQ
87986	01/30/19	ERH762	AZ85764	01/28/19 10:45:00 AM	WATER	EPA 8260B	EPA 8260B BTEX WATER
87986	01/30/19	ERH762	AZ85764	01/28/19 10:45:00 AM	WATER	EPA 8270D	EPA 8270D WATER
87986	01/30/19	ERH762	AZ85764	01/28/19 10:45:00 AM	WATER	EPA 8270D	EPA 8270D MODIFIED WATER
87986	01/30/19	ERH762	AZ85764	01/28/19 10:45:00 AM	WATER	EPA 8015B-eLL	EPA 8015B TPH LIQ-LIQ
87986	01/30/19	ERH762	AZ85764	01/28/19 10:45:00 AM	WATER	EPA 8260B	EPA 8260B GRO WATER
87986	01/30/19	ERH762	AZ85764	01/28/19 10:45:00 AM	WATER	8270D-SIM	EPA 8270D SIM LIQ-LIQ
87986	01/30/19	ERH763	AZ85765	01/28/19 7:50:00 AM	WATER	EPA 8260B	EPA 8260B BTEX WATER
87986	01/30/19	ERH763	AZ85765	01/28/19 7:50:00 AM	WATER	EPA 8260B	EPA 8260B GRO WATER
87986	01/30/19	ERH763	AZ85765	01/28/19 7:50:00 AM	WATER	RSK 175	METHANE BY RSK 175
87986	01/30/19	ERH764	AZ85766	01/28/19 9:10:00 AM	WATER	SM 2320B	Wetlab 2320B - Water
87986	01/30/19	ERH764	AZ85766	01/28/19 9:10:00 AM	WATER	EPA 300.0	Wetlab 300.0 - Water
87986	01/30/19	ERH764	AZ85766	01/28/19 9:10:00 AM	WATER	SM3500FeB	Ferrous Iron
87986	01/30/19	ERH764	AZ85766	01/28/19 9:10:00 AM	WATER	EPA 353.2	EPA 353.2 - WATER
87986	01/30/19	ERH764	AZ85766	01/28/19 9:10:00 AM	WATER	EPA 8260B	EPA 8260B BTEX WATER
87986	01/30/19	ERH764	AZ85766	01/28/19 9:10:00 AM	WATER	EPA 8270D	EPA 8270D WATER
87986	01/30/19	ERH764	AZ85766	01/28/19 9:10:00 AM	WATER	EPA 8270D	EPA 8270D MODIFIED WATER
87986	01/30/19	ERH764	AZ85766	01/28/19 9:10:00 AM	WATER	EPA 8015B-eLL	EPA 8015B TPH LIQ-LIQ
87986	01/30/19	ERH764	AZ85766	01/28/19 9:10:00 AM	WATER	EPA 8260B	EPA 8260B GRO WATER
87986	01/30/19	ERH764	AZ85766	01/28/19 9:10:00 AM	WATER	RSK 175	METHANE BY RSK 175
87986	01/30/19	ERH764	AZ85766	01/28/19 9:10:00 AM	WATER	8270D-SIM	EPA 8270D SIM LIQ-LIQ
87986	01/30/19	ERH764	AZ85766	01/28/19 9:10:00 AM	WATER	SW846 9060A	9060A TOC & DOC

**APPL Inc.**  
**Abbreviations and Flags**


<b>FLAG</b>	<b>DESCRIPTION</b>
#	Recovery or RPD outside control limits
*	Recovery or RPD outside control limits
B	Analyte detected in associated method blank
C1	Reason for correction: wrote incorrect response
C2	Reason for correction: calculated incorrectly
C3	Reason for correction: needs to be rechecked
C4	Reason for correction: data not usable
DO	Diluted out
E	Exceeds linear range
F	Estimated value
G1	Includes a wide range of hydrocarbons which does not match our gasoline standard
G10	Includes a match to hydrocarbon profiles within the range of mineral spirits
G11	Includes a match to hydrocarbon profiles within the range of JP-4
G12	Pattern does not match the gasoline standard; the carbon range for this sample is consistent with JP8
G13	Closely resembles the hydrocarbon profile of aviation gasoline
G14	Analyte concentration may be biased due to carry over
G2	Closely resembles the boiling point hydrocarbon profile consistent with weathered gasoline
G3	Includes higher boiling hydrocarbons
G4	Includes dominant peak(s) not indicative of petroleum hydrocarbons
G5	Is mainly dominant peak(s) not indicative of petroleum hydrocarbons
G6	Contains recognizable contaminant peak(s) which has been removed from quantitation
G7	Is mainly a match to hydrocarbons within the range of gasoline
G8	Closely resembles the boiling point hydrocarbon profile consistent with weathered gasoline
G9	Includes hydrocarbons within the range of kerosene
J	Estimated value
M	Matrix effect
MI1	Manual integration: integration does not follow baseline
MI2	Manual integration: non-target peak interference
MI3	Manual integration: to split a peak that was integrated as one peak by the computer.
MI4	Manual integration: to integrate a split peak
MI5	Manual integration: the whole peak or part of the peak was not integrated
MI6	Manual integration: computer integrated wrong peak
MI7	Manual integration: other -- (See case narrative)
MDL	Method detection limit
ND	Not detected
NT	Non-target
Q	Acceptance criteria not met
T1 I	Includes wide range of hydrocarbons not indicative of diesel
T1 M	Is mainly wide range of hydrocarbons not necessarily indicative of diesel
T2 I	Includes lower boiling hydrocarbons, e.g. mineral spirits, kerosene, stoddard solvent, white gas
T2 M	Is mainly lower boiling hydrocarbons, e.g. mineral spirits, kerosene, stoddard solvent, white gas
T3 I	Includes higher boiling hydrocarbons, e.g. asphaltene, waste oil, motor oil, or weathered diesel fuel
T3 M	Is mainly higher boiling hydrocarbons, e.g. asphaltene, waste oil, motor oil, or weathered diesel fuel
T4 I	Includes dominant peak(s) not indicative of hydrocarbons
T4 M	Is mainly dominant peak(s) not indicative of hydrocarbons
T5	Contains recognizable contaminant peak(s) which has been removed from quantitation
T6	Is mainly a match to hydrocarbons within range of diesel fuel
T7	Closely resembles the boiling point hydrocarbon profile consistent with diesel fuel
T8	Includes a match to hydrocarbon profiles within range of diesel and kerosene fuel
T9 I	Includes non-diesel hydrocarbons within boiling point range of diesel fuel
T9 M	Is mainly non-diesel hydrocarbons within boiling point range of diesel fuel
U	Not detected
Y	Percent difference between primary and confirmation column > 40%

**SAMPLE RECORDS MANAGEMENT**  
**CHAIN OF CUSTODY,**  
**ARF, CRF, AND**  
**CLIENT COMMUNICATION**

# APPL - Analysis Request Form

87986

Client: AECOM  
 Address: 1001 Bishop Street, Suite 1600  
Honolulu, HI 96813  
 Attn: Margie Pascua  
 Phone: 808-356-5373 Fax: 808-523-8950  
 Job: 60571032 CV18F0126 Red Hill Fuel Storage  
 PO #: 18S-22209-HI27 PO# 102604  
 Chain of Custody (Y/N): Y # 014,024-025  
 RAD Screen (Y/N): Y pH (Y/N): Y  
 Turn Around Type: 1 WEEK

Received by: AAR   
 Date Received: 01/30/19 Time: 09:30  
 Delivered by: FEDEX  
 Shuttle Custody Seals (Y/N): Y Time Zone: -10  
 Chest Temp(s): 2.0,2.5°C  
 Color: VOA/E-Brwn  
 Samples Chilled until Placed in Refrig/Freezer: Y  
 Project Manager: Libby Cheesebor *LC*  
 QC Report Type: DVP4DOD/EQUIS/HI  
 Due Date: 02/06/19

**Comments:**

*PM: login and F1s to Margie.Pascua@aecom.com*  
*AN: 7 day TAT for Form 1s; 21 day TAT for PKG STYLE 1; DOD v5.1; DOD Forms (LOQ/LOD database/DL)*  
*8260: BTEX & TPH-G only; 8270 SIM: 1-methylnaphthalene, 2-methylnaphthalene & naphthalene only.*  
*TPH D & O both with and w/o SGC, reverse surrogate for the SGC; analyze SGC if detections*  
*RSK: Methane only; \$87DC53W5: report phenol + TICs; \$87DMEEW5: 2-MEE (LCS Spk 80ppb).*  
  
*FR: HC to LDC, 2 labeled CDs to Margie Pascua.*  
*EDD: AECOM EQUIS EDD 2.5.3 Red Hill 87DMEE->3535A to Margie.Pascua@aecom.com & jecklund@lab-data.com*

Sample Distribution:  
**GC: 3-\$87DC53W5, 3-\$87DMEEW5, 3-\$DOC53W5LIQ, 3-\$SIM53LIQ51**  
Extractions: 3- LIQ003, 3- LIQ005, 3- MWE2MEE  
VOA: 5-\$86BTOTXDOD5W, 5-\$GASBL, 5-\$GRO86BW, 2-\$RSKMETH  
Wetlab: 1-\$232W(HCO3,CO3,ALK), 1-\$300W(NO3,CL,SO4), 1-\$35FE, 1-\$35OF, 1-\$TOCDOCW

Charges:  
Invoice To:  
**ACCOUNTS PAYABLE**  
 1001 Bishop Street, Ste 1600  
 USAPImaging@aecom.com  
 mary.basano@aecom.com

Client ID	APPL ID	Sampled	Analyses Requested
1. ERH760	AZ85762W <small>LCSD</small>	01/28/19 10:40	\$86BTOTXDOD5W, \$GASBL, \$GRO86BW
2. ERH761	AZ85763W <small>LCSD</small>	01/28/19 11:00	\$86BTOTXDOD5W, \$87DC53W5, \$87DMEEW5, \$DOC53W5LIQ, \$GASBL, \$GRO86BW, \$SIM53LIQ51 -- D&O: sgc analysis if detections
3. ERH762	AZ85764W <small>LCSD</small>	01/28/19 10:45	\$86BTOTXDOD5W, \$87DC53W5, \$87DMEEW5, \$DOC53W5LIQ, \$GASBL, \$GRO86BW, \$SIM53LIQ51 -- D&O: sgc analysis if detections

**APPL - Analysis Request Form**

**87986**

4. ERH763

LCSD AZ85765W 01/28/19 07:50  


\$86BTOTXDOD5W, \$GASBL, \$GRO86BW,  
\$RSKMETH

5. ERH764

LCSD AZ85766W 01/28/19 09:10  


\$232W(HCO3,CO3,ALK),  
\$300W(NO3,CL,SO4), \$35FE, \$35OF,  
\$86BTOTXDOD5W, \$87DC53W5,  
\$87DMEEW5, \$DOC53W5LIQ, \$GASBL,  
\$GRO86BW, \$RSKMETH, \$SIM53LIQ51,  
\$TOCDOCW -- D&O: sgc analysis if detections

Note: All times, excluding sample collection times, are Pacific Time Zone unless noted otherwise. Collection times are in: -10 UTC

# APPL Sample Receipt Form

ARF# 87986

Sample	Container Type	Count	p
AZ85762	13 VOAs - HCL	3	NA
AZ85763	13 VOAs - HCL	3	NA
	17 Amber Liter	5	NA
	40 500mL Amber, unprsvd	2	NA
AZ85764	13 VOAs - HCL	3	NA
	17 Amber Liter	5	NA
	40 500mL Amber, unprsvd	2	NA
AZ85765	13 VOAs - HCL	4	NA
AZ85766	3 PL 250mL	1	NA
	10 PL 250mL - H2SO4	1	1.7
	13 VOAs - HCL	3	NA
	17 Amber Liter	5	NA
	32 Clear VOA - H2SO4	10	NA
	33 Clear VOA - HCL	1	NA
	38 250mL brn poly, HCl prsvd	1	NA
	40 500mL Amber, unprsvd	2	NA

Sample    Container Type    Count    p



01700



APPL, Inc.  
908 N Temperance Ave  
Clovis, CA 93611  
www.applinc.com

CHAIN OF CUSTODY RECORD

Phone: (559) 275-2175  
Fax: (559) 275-4422  
coc@applinc.com

C.O.C. 014

Report to: PLEASE PRINT  
Company Name: AECOM Phone: 808-356-5373  
Address: 1001 Bishop St, Suite 1600  
Honolulu, HI 96813 Fax: 808-523-8950  
Attn: Margie Pascua  
Email: margie.pascua@aecom.com

Invoice to: PLEASE PRINT  
Company Name: AECOM Phone: 808-529-7249  
Address: 1001 Bishop St, Suite 1600  
Honolulu, HI 96813 Fax: 808-523-8950  
Attn: Mary Basano  
Email: mary.basano@aecom.com; usapimaging@aecom.com

Project Name/Number CV18F0126 / 60571032		Sampler (Print)			No. of Containers	Matrix			Analysis Requested/Method Number												Date Shipped: <u>01/29/19</u>						
Purchase Order Number 102604		Sampler (Signature)				Aq	Sed.	Soil	8260C BTEX, TPH-g	8260C DCA	8011 EDB	8015C TPH-d/o	3630/8015C TPH-d/o w/SGT	8270DSIM PAHs short list	8270D Phenol, TICs	8270D 2-(2-methoxy ethoxy)-ethanol	RSK175M Methane	SM3500-Fe Ferrous Iron	353.2 Nitrate-Nitrite N	SM2320B Alkalinity	300.0 Nitrate, Sulfate, Chloride	300.0 Bromide/Fluoride	3010 Total Ca, Mg, Mn, K, Na	SM4500 Total & Dissolved Silica	Carrier: FedEx		
Sample Identification	Location	Date Collected	Time Collected	Time Zone																						Waybill No.:	
ERH 763	RHMW11-5 - <u>Top Blank</u>	1/28/19	0750	HST	4	X			X							X										Comments:	
ERH 764	RHMW11-5	1/28/19	0910	HST	24	X			X		X*	X	X	X	X	X	X	X	X					X			
<i>[Large handwritten signature and date 1/29/19]</i>																											

Shuttle Temperature: 2.0, 2.5

Turnaround Requested: Check one  
 Standard 2-3 wk  One week  3 days  24/48 Hrs.  Other: \_\_\_\_\_

Sample Disposal:  
 Return to client  Disposal by Lab (30-day retention)

Relinquished by sampler: AECOM  
 Danielle Huang Date: 1/29/19 Time: 1000 Received by: \_\_\_\_\_

Relinquished by: \_\_\_\_\_ Date: 1.30.19 Time: 0930 Received at lab by: \_\_\_\_\_



APPL, Inc.  
 908 N Temperance Ave  
 Clovis, CA 93611  
 www.applinc.com

CHAIN OF CUSTODY RECORD

Phone: (559) 275-2175  
 Fax: (559) 275-4422  
 coc@applinc.com

C.O.C. 025

Report to: PLEASE PRINT  
 Company Name: AECOM Phone: 808-356-5373  
 Address: 1001 Bishop St, Suite 1600  
Honolulu, HI 96813 Fax: 808-523-8950  
 Attn: Margie Pascua  
 Email: margie.pascua@aecom.com

Invoice to: PLEASE PRINT  
 Company Name: AECOM Phone: 808-529-7249  
 Address: 1001 Bishop St, Suite 1600  
Honolulu, HI 96813 Fax: 808-523-8950  
 Attn: Mary Basano  
 Email: mary.basano@aecom.com; usapimaging@aecom.com

Project Name/Number CV18F0126 / 60571032	Sampler (Print)					No. of Containers	Matrix			Analysis Requested/Method Number												Date Shipped: <u>01/29/19</u>					
	Sampler (Signature)						Aq	Sed.	Soil	8260C BTEX, TPH-g	8260C DCA	8011 EDB	8015C TPH-d/o	3630/8015C TPH-d/o w/ SGT	8270DSIM PAHs short list	8270D Phenol, TICs	8270D 2-(2-methoxyethoxy)-ethanol	RSK175M Methane	SM3500-Fe Ferrous Iron	353.2 Nitrate-Nitrite N	SM2320B Alkalinity		300.0 Nitrate-Sulfate, Chloride	300.0 Bromide/Fluoride	8010 Total Ca, Mg, Mn, K, Na	SM4500 Total & Dissolved Silica	9060A TOC
Purchase Order Number 102604	Sampler (Signature)																										Carrier: FedEx
Sample Identification	Location	Date Collected	Time Collected	Time Zone																						Waybill No.:	
ERH762	BHMW11-EB3	1/28/19	1045	HST	7	X						X	X	X	X	X										Comments: See other codes for VBA's	
<p><i>Del Hg 1/29/19</i></p>																											
<p>*Analyze TPH w/SGT only if TPH-d/o detected.          TPH-d/o &amp; PAHs need liquid-liquid extraction.</p>																											

Shuttle Temperature: \_\_\_\_\_ Turnaround Requested: Check one  
 Standard 2-3 wk  One week  3 days  24/48 Hrs.  Other: \_\_\_\_\_ Sample Disposal:  
 Return to client  Disposal by Lab (30-day retention)

Relinquished by sampler: AECOM Date 1/29/19 Time 10:00 Received by: \_\_\_\_\_ Relinquished by: \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_ Received by: \_\_\_\_\_  
*Danielle Huang*

Relinquished by: \_\_\_\_\_ Date 1.30.19 Time 09:30 Received at lab by: \_\_\_\_\_



APPL, Inc.  
908 N Temperance Ave  
Clovis, CA 93611  
www.applinc.com

CHAIN OF CUSTODY RECORD

Phone: (559) 275-2175  
Fax: (559) 275-4422  
coc@applinc.com

C.O.C. 024

Report to: <u>PLEASE PRINT</u> Company Name: <u>AECOM</u> Phone: <u>808-356-5373</u> Address: <u>1001 Bishop St, Suite 1600</u> <u>Honolulu, HI 96813</u> Fax: <u>808-523-8950</u> Attn: <u>Margie Pascua</u> Email: <u>margie.pascua@aecom.com</u>	Invoice to: <u>PLEASE PRINT</u> Company Name: <u>AECOM</u> Phone: <u>808-529-7249</u> Address: <u>1001 Bishop St, Suite 1600</u> <u>Honolulu, HI 96813</u> Fax: <u>808-523-8950</u> Attn: <u>Mary Basano</u> Email: <u>mary.basano@aecom.com; usapimaging@aecom.com</u>
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Project Name/Number	Sampler (Print)	Analysis Requested/Method Number													Date Shipped: <u>01/29/19</u>									
		No. of Containers	Matrix			8260C BTEX, TPH-g	8260C DCA	8011 EDB	8015C TPH-d/o	3630/8015C TPH-d/o w/ SGT	8270DSIM PAHs short list	8270D Phenol, TICs	8270D 2-(2-methoxy ethoxy)-ethanol	RSK175M Methane		SM3500-Fe Ferrous Iron	353.2 Nitrate-Nitrite N	SM2320B Alkalinity	300.0 Nitrate, Sulfate, Chloride	300.0 Bromide/Fluoride	3010 Total Ca, Mg, Mn, K, Na	SM4500 Total & Dissolved Sulfate	9060A TOC	Carrier: FedEx
Purchase Order Number	Sampler (Signature)		Aq	Sed.	Soil	Comments:																		
Sample Identification	Location	Date Collected	Time Collected	Time Zone																				
ERH760	RHMWN <sup>EB</sup> - Trip Blank	1/28/19	1040	HST	3	X			X															
ERH761	RHMWN - EB	1/28/19	1100	HST	10	X			X	X	X	X												
ERH762	RHMWN - EB	1/28/19	1045	HST	3	X			X															see other cooler for non-bi
<div style="font-size: 2em; font-family: cursive;">             All Hg 1/29/19           </div>																								
																	<small>*Analyze TPH w/SGT only if TPH-d/o detected.</small> <small>TPH-d/o &amp; PAHs need liquid-liquid extraction.</small>							

Shuttle Temperature:	Turnaround Requested: Check one <input type="checkbox"/> Standard 2-3 wk <input checked="" type="checkbox"/> One week <input type="checkbox"/> 3 days <input type="checkbox"/> 24/48 Hrs. <input type="checkbox"/> Other: _____						Sample Disposal: <input type="checkbox"/> Return to client <input checked="" type="checkbox"/> Disposal by Lab (30-day retention)					
Relinquished by sampler: AECOM <i>Danielle Huang</i>	Date 1/29/19	Time 1000	Received by:	Relinquished by:	Date	Time	Received by:	Relinquished by:	Date 1.30.19	Time 0930	Received at lab by:	

COOLER RECEIPT FORM

ARF: 87986

- 1) Project: 60571032 CV18F0126 Red Hill Fuel Storage Date Received: 01/30/19
- 2) Coolers: Number of Coolers: 2
- 3) YES Were custody seals present and intact?  
How many? 4 Name/Date on seal? not salvageable
- 4) YES Was there a shipping slip? Carrier name: FEDEX
- 5) Type of packing in cooler:  bubble wrap  popcorn  foam  plastic bags  other  
 wet ice  dry ice  no ice  gel ice
- 6) YES Were cooler temperatures acceptable?
- 7) Serial number of certified NIST thermometer use R1
- 8) Cooler temp(s): In °C  
1: 2.0°C 2: 2.5°C 3: 4: 5: 6:  
7: 8: 9: 10: 11: 12:

Chain of custody:

- 9) YES Was a chain of custody received?
- 10) YES Were the custody papers complete/signed in the appropriate places?

Sample Labels:

- 11) YES Were all sample labels complete (sample ID, date/time of sampling, etc.)?
- 12) YES Did all container labels agree with custody papers?

Sample Containers:

- 13) YES Were all containers sealed in separate bags?
- 14) YES Did all containers arrive in good condition:(unbroken, no leakage, no cracked/broken lids)?
- 15) YES Were correct containers and preservatives used for the tests indicated?
- 16) YES Was a sufficient amount of sample sent for tests indicated?
- 17) Yes Were bubbles present in volatile samples?

If yes, the following were received with air bubbles:

Larger than a pea:

Smaller than a pea: AZ85765W01-4

Preservation Hold time:

- 18) Yes Was a sufficient amount of holding time remaining to analyze the samples?
- 19) Yes Was the pH taken of all non-VOA preserved samples and written on the sample container?
- 20) Yes Was the pH of acid preserved non-VOA samples < 2?
- 21) NA Was the pH of sodium hydroxide preserved samples for Cyanide > 12 and Sulfide >9?
- 22) NO Were unpreserved VOA Vials received?
- 23) NA Are unpreserved VOA vials noted in the ADD TEST FIELD on the ARF?  
pH strip lot number: 90B2031  
Lab notified if pH was not adequate:

Notes/Deficiencies:

Personnel receiving samples: ZG Second reviewer: AA  
 Personnel labeling samples: ZG  
 Project manager notified: ZG Date/Time of notification 01/31/19  
 Name of client notified: Date/Time of notification

## **SAMPLE RESULTS**

# EPA 8015B TPH LIQ-LIQ

AECOM  
1001 Bishop Street, Suite 1600  
Honolulu, HI 96813

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

Attn: Margie Pascua  
Project: 60571032 CV18F0126 Red Hill Fuel Storage

ARF: 87986  
APPL ID: **AZ85763**  
QCG: #DOC53-190201A-237182

**Sample ID: ERH761**

Sample Collection Date: 01/28/19

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
EPA 8015B-eL	DIESEL (C10-C24)	25.00 U	40.0	25.00	13.07	ug/L	02/01/19	02/04/19
EPA 8015B-eL	OIL (C24-C40)	40.00 U	40.0	40.00	5.54	ug/L	02/01/19	02/04/19
EPA 8015B-eL	SURROGATE: OCTACOSANE (S)	69.5	60-142			%	02/01/19	02/04/19
EPA 8015B-eL	SURROGATE: ORTHO-TERPHENYL (S)	94.6	56-125			%	02/01/19	02/04/19

Quant Method: DOC0117.M
Run #: 204011
Instrument: Apollo
Sequence: 190204
Dilution Factor: 1
Initials: DPO

Printed: 02/04/19 4:53:55 PM  
APPL-F1-SC-NoMC-REG MDLs-DOD

# EPA 8015B TPH LIQ-LIQ

AECOM  
1001 Bishop Street, Suite 1600  
Honolulu, HI 96813

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

Attn: Margie Pascua  
Project: 60571032 CV18F0126 Red Hill Fuel Storage

ARF: 87986

**Sample ID: ERH762**

**APPL ID: AZ85764**

Sample Collection Date: 01/28/19

QCG: #DOC53-190201A-237182

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
EPA 8015B-eL	DIESEL (C10-C24)	25.00 U	40.0	25.00	13.07	ug/L	02/01/19	02/04/19
EPA 8015B-eL	OIL (C24-C40)	40.00 U	40.0	40.00	5.54	ug/L	02/01/19	02/04/19
EPA 8015B-eL	SURROGATE: OCTACOSANE (S)	75.2	60-142			%	02/01/19	02/04/19
EPA 8015B-eL	SURROGATE: ORTHO-TERPHENYL (S)	94.2	56-125			%	02/01/19	02/04/19

Quant Method: DOC0117.M  
Run #: 204012  
Instrument: Apollo  
Sequence: 190204  
Dilution Factor: 1  
Initials: DPO

Printed: 02/04/19 4:53:55 PM  
APPL-F1-SC-NoMC-REG MDLs-DOD

# EPA 8015B TPH LIQ-LIQ

AECOM  
1001 Bishop Street, Suite 1600  
Honolulu, HI 96813

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

Attn: Margie Pascua

Project: 60571032 CV18F0126 Red Hill Fuel Storage

**Sample ID: ERH764**

Sample Collection Date: 01/28/19

ARF: 87986

**APPL ID: AZ85766**

QCG: #DOC53-190201A-237182

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
EPA 8015B-eL	DIESEL (C10-C24)	25.00 U	40.0	25.00	13.07	ug/L	02/01/19	02/04/19
EPA 8015B-eL	OIL (C24-C40)	40.00 U	40.0	40.00	5.54	ug/L	02/01/19	02/04/19
EPA 8015B-eL	SURROGATE: OCTACOSANE (S)	118	60-142			%	02/01/19	02/04/19
EPA 8015B-eL	SURROGATE: ORTHO-TERPHENYL (S)	95.1	56-125			%	02/01/19	02/04/19

Quant Method: DOC0117.M  
Run #: 204013  
Instrument: Apollo  
Sequence: 190204  
Dilution Factor: 1  
Initials: DPO

Printed: 02/04/19 4:53:55 PM  
APPL-F1-SC-NoMC-REG MDLs-DOD



# EPA 8270D SIM LIQ-LIQ

AECOM  
1001 Bishop Street, Suite 1600  
Honolulu, HI 96813

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

Attn: Margie Pascua  
Project: 60571032 CV18F0126 Red Hill Fuel Storage

ARF: 87986  
APPL ID: **AZ85763**  
QCG: #SIM53-190130A-237166

**Sample ID: ERH761**

Sample Collection Date: 01/28/19

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
8270D-SIM	1-METHYLNAPHTHALENE	0.10 U	0.2	0.10	0.04	ug/L	01/30/19	02/01/19
8270D-SIM	2-METHYLNAPHTHALENE	0.10 U	0.2	0.10	0.04	ug/L	01/30/19	02/01/19
8270D-SIM	NAPHTHALENE	0.10 U	0.2	0.10	0.04	ug/L	01/30/19	02/01/19
8270D-SIM	SURROGATE: 2-METHYLNAPHTHALEN	105	39-114			%	01/30/19	02/01/19
8270D-SIM	SURROGATE: FLUORANTHENE-D10 (S	99.7	58-120			%	01/30/19	02/01/19

Quant Method: L0122.M
Run #: 0122L100
Instrument: Linus
Sequence: L190122
Dilution Factor: 1
Initials: AAB

Printed: 02/06/19 7:38:19 AM  
APPL-F1-SC-NoMC-REG MDLs-DOD

# EPA 8270D SIM LIQ-LIQ

AECOM  
1001 Bishop Street, Suite 1600  
Honolulu, HI 96813

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

Attn: Margie Pascua  
Project: 60571032 CV18F0126 Red Hill Fuel Storage

ARF: 87986  
APPL ID: **AZ85764**  
QCG: #SIM53-190130A-237166

**Sample ID: ERH762**

Sample Collection Date: 01/28/19

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
8270D-SIM	1-METHYLNAPHTHALENE	0.10 U	0.2	0.10	0.04	ug/L	01/30/19	02/01/19
8270D-SIM	2-METHYLNAPHTHALENE	0.10 U	0.2	0.10	0.04	ug/L	01/30/19	02/01/19
8270D-SIM	NAPHTHALENE	0.10 U	0.2	0.10	0.04	ug/L	01/30/19	02/01/19
8270D-SIM	SURROGATE: 2-METHYLNAPHTHALEN	93.8	39-114			%	01/30/19	02/01/19
8270D-SIM	SURROGATE: FLUORANTHENE-D10 (S	93.7	58-120			%	01/30/19	02/01/19

Quant Method: L0122.M
Run #: 0122L101
Instrument: Linus
Sequence: L190122
Dilution Factor: 1
Initials: AAB

Printed: 02/06/19 7:38:19 AM  
APPL-F1-SC-NoMC-REG MDLs-DOD

**EPA 8270D SIM LIQ-LIQ**

AECOM  
1001 Bishop Street, Suite 1600  
Honolulu, HI 96813

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

Attn: Margie Pascua  
Project: 60571032 CV18F0126 Red Hill Fuel Storage

ARF: 87986  
APPL ID: **AZ85766**  
QCG: #SIM53-190130A-237166

**Sample ID: ERH764**

Sample Collection Date: 01/28/19

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
8270D-SIM	1-METHYLNAPHTHALENE	0.10 U	0.2	0.10	0.04	ug/L	01/30/19	02/01/19
8270D-SIM	2-METHYLNAPHTHALENE	0.10 U	0.2	0.10	0.04	ug/L	01/30/19	02/01/19
8270D-SIM	NAPHTHALENE	0.10 U	0.2	0.10	0.04	ug/L	01/30/19	02/01/19
8270D-SIM	SURROGATE: 2-METHYLNAPHTHALEN	96.6	39-114			%	01/30/19	02/01/19
8270D-SIM	SURROGATE: FLUORANTHENE-D10 (S	95.8	58-120			%	01/30/19	02/01/19

Quant Method: L0122.M  
Run #: 0122L102  
Instrument: Linus  
Sequence: L190122  
Dilution Factor: 1  
Initials: AAB

Printed: 02/06/19 7:38:19 AM  
APPL-F1-SC-NoMC-REG MDLs-DOD

# EPA 8270D WATER

AECOM  
1001 Bishop Street, Suite 1600  
Honolulu, HI 96813

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

Attn: Margie Pascua

Project: 60571032 CV18F0126 Red Hill Fuel Storage

**Sample ID: ERH761**

Sample Collection Date: 01/28/19

ARF: 87986

**APPL ID: AZ85763**

QCG: #87DC5-190130A-237158

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
EPA 8270D	3-PENTEN-2-ONE, 4-METHYL-	61 T	TIC			ug/L	01/30/19	02/01/19
EPA 8270D	HEXANEDIOIC ACID, DIOCTYL ESTER	6.9 T	TIC			ug/L	01/30/19	02/01/19
EPA 8270D	PHENOL	4.00 U	5.0	4.00	1.00	ug/L	01/30/19	02/01/19
EPA 8270D	SURROGATE: 2,4,6-TRIBROMOPHENO	102	43-140			%	01/30/19	02/01/19
EPA 8270D	SURROGATE: 2-FLUORBIPHENYL (S)	89.3	44-119			%	01/30/19	02/01/19
EPA 8270D	SURROGATE: 2-FLUOROPHENOL (S)	75.3	19-119			%	01/30/19	02/01/19
EPA 8270D	SURROGATE: NITROBENZENE-D5 (S)	80.6	44-120			%	01/30/19	02/01/19
EPA 8270D	SURROGATE: PHENOL-D6 (S)	69.6	10-115			%	01/30/19	02/01/19
EPA 8270D	SURROGATE: TERPHENYL-D14 (S)	87.3	50-134			%	01/30/19	02/01/19

T = Tentatively identified compound.

Quant Method: Y0125NC.M
Run #: 0124Y112
Instrument: Yoda
Sequence: Y190124
Dilution Factor: 1
Initials: AAB

Printed: 02/08/19 8:44:53 AM  
APPL-F1-SC-NoMC-REG MDLs-DOD

# EPA 8270D WATER

AECOM  
1001 Bishop Street, Suite 1600  
Honolulu, HI 96813

Attn: Margie Pascua

Project: 60571032 CV18F0126 Red Hill Fuel Storage

Sample ID: ERH762

Sample Collection Date: 01/28/19

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

ARF: 87986

APPL ID: AZ85764

QCG: #87DC5-190130A-237158

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
EPA 8270D	1,2-BENZENEDICARBOXYLIC ACID, BI	5.1 T	TIC			ug/L	01/30/19	02/01/19
EPA 8270D	PHENOL	4.00 U	5.0	4.00	1.00	ug/L	01/30/19	02/01/19
EPA 8270D	SURROGATE: 2,4,6-TRIBROMOPHENO	95.2	43-140			%	01/30/19	02/01/19
EPA 8270D	SURROGATE: 2-FLUORBIPHENYL (S)	84.3	44-119			%	01/30/19	02/01/19
EPA 8270D	SURROGATE: 2-FLUOROPHENOL (S)	78.1	19-119			%	01/30/19	02/01/19
EPA 8270D	SURROGATE: NITROBENZENE-D5 (S)	83.4	44-120			%	01/30/19	02/01/19
EPA 8270D	SURROGATE: PHENOL-D6 (S)	77.2	10-115			%	01/30/19	02/01/19
EPA 8270D	SURROGATE: TERPHENYL-D14 (S)	87.6	50-134			%	01/30/19	02/01/19

T = Tentatively identified compound.

Quant Method: Y0125NC.M
Run #: 0124Y113
Instrument: Yoda
Sequence: Y190124
Dilution Factor: 1
Initials: AAB

**AMENDED PAGE**

# EPA 8270D WATER

AECOM  
1001 Bishop Street, Suite 1600  
Honolulu, HI 96813

Attn: Margie Pascua  
Project: 60571032 CV18F0126 Red Hill Fuel Storage

Sample ID: ERH764

Sample Collection Date: 01/28/19

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

ARF: 87986

APPL ID: AZ85766

QCG: #87DC5-190130A-237158

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
EPA 8270D	1,2-BENZENEDICARBOXYLIC ACID, BU	5.7 T	TIC			ug/L	01/30/19	02/01/19
EPA 8270D	HEXANEDIOIC ACID, DIOCTYL ESTER	20 T	TIC			ug/L	01/30/19	02/01/19
EPA 8270D	PHENOL	4.00 U	5.0	4.00	1.00	ug/L	01/30/19	02/01/19
EPA 8270D	SURROGATE: 2,4,6-TRIBROMOPHENO	97.4	43-140			%	01/30/19	02/01/19
EPA 8270D	SURROGATE: 2-FLUORBIPHENYL (S)	84.0	44-119			%	01/30/19	02/01/19
EPA 8270D	SURROGATE: 2-FLUOROPHENOL (S)	73.5	19-119			%	01/30/19	02/01/19
EPA 8270D	SURROGATE: NITROBENZENE-D5 (S)	80.2	44-120			%	01/30/19	02/01/19
EPA 8270D	SURROGATE: PHENOL-D6 (S)	73.4	10-115			%	01/30/19	02/01/19
EPA 8270D	SURROGATE: TERPHENYL-D14 (S)	86.4	50-134			%	01/30/19	02/01/19

T = Tentatively identified compound.

Quant Method: Y0125NC.M
Run #: 0124Y114
Instrument: Yoda
Sequence: Y190124
Dilution Factor: 1
Initials: AAB

**AMENDED PAGE**

# EPA 8270D MODIFIED WATER

AECOM  
1001 Bishop Street, Suite 1600  
Honolulu, HI 96813

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

Attn: Margie Pascua  
Project: 60571032 CV18F0126 Red Hill Fuel Storage

ARF: 87986  
APPL ID: **AZ85763**  
QCG: #87DME-190204A-237333

**Sample ID: ERH761**  
Sample Collection Date: 01/28/19

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
EPA 8270D	2-(2-METHOXYETHOXY)-ETHANOL	80.0 U	100	80.0	40.0	ug/L	02/04/19	02/08/19

Quant Method: YMEE1128.M  
Run #: 1128Y111  
Instrument: Yoda  
Sequence: Y181128M  
Dilution Factor: 1  
Initials: AAB

Printed: 02/08/19 3:01:29 PM  
APPL-F1-SC-NoMC-REG MDLs-DOD

# EPA 8270D MODIFIED WATER

AECOM  
1001 Bishop Street, Suite 1600  
Honolulu, HI 96813

Attn: Margie Pascua  
Project: 60571032 CV18F0126 Red Hill Fuel Storage

**Sample ID: ERH762**

Sample Collection Date: 01/28/19

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

ARF: 87986

**APPL ID: AZ85764**

QCG: #87DME-190204A-237333

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
EPA 8270D	2-(2-METHOXYETHOXY)-ETHANOL	80.0 U	100	80.0	40.0	ug/L	02/04/19	02/08/19

Quant Method: YMEE1128.M  
Run #: 1128Y112  
Instrument: Yoda  
Sequence: Y181128M  
Dilution Factor: 1  
Initials: AAB

Printed: 02/08/19 3:01:29 PM  
APPL-F1-SC-NoMC-REG MDLs-DOD



# EPA 8270D MODIFIED WATER

AECOM  
1001 Bishop Street, Suite 1600  
Honolulu, HI 96813

Attn: Margie Pascua  
Project: 60571032 CV18F0126 Red Hill Fuel Storage

**Sample ID: ERH764**

Sample Collection Date: 01/28/19

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

ARF: 87986

**APPL ID: AZ85766**

QCG: #87DME-190204A-237333

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
EPA 8270D	2-(2-METHOXYETHOXY)-ETHANOL	80.0 U	100	80.0	40.0	ug/L	02/04/19	02/08/19

Quant Method: YMEE1128.M  
Run #: 1128Y113  
Instrument: Yoda  
Sequence: Y181128M  
Dilution Factor: 1  
Initials: AAB

Printed: 02/08/19 3:01:29 PM  
APPL-F1-SC-NoMC-REG MDLs-DOD

# EPA 8260B BTEX WATER

AECOM  
1001 Bishop Street, Suite 1600  
Honolulu, HI 96813

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

Attn: Margie Pascua

Project: 60571032 CV18F0126 Red Hill Fuel Storage

ARF: 87986

**Sample ID: ERH760**

**APPL ID: AZ85762**

Sample Collection Date: 01/28/19

QCG: #86BTO-190202AL-237189

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
EPA 8260B	BENZENE	0.30 U	1.0	0.30	0.15	ug/L	02/02/19	02/02/19
EPA 8260B	ETHYLBENZENE	0.50 U	1.0	0.50	0.23	ug/L	02/02/19	02/02/19
EPA 8260B	TOLUENE	0.30 U	1.0	0.30	0.15	ug/L	02/02/19	02/02/19
EPA 8260B	XYLENES (TOTAL)	0.30 U	2.0	0.30	0.15	ug/L	02/02/19	02/02/19
EPA 8260B	SURROGATE: 1,2-DICHLOROETHANE-	122 #	81-118			%	02/02/19	02/02/19
EPA 8260B	SURROGATE: 4-BROMOFLUOROBENZ	97.3	85-114			%	02/02/19	02/02/19
EPA 8260B	SURROGATE: DIBROMOFLUOROMETH	107	80-119			%	02/02/19	02/02/19
EPA 8260B	SURROGATE: TOLUENE-D8 (S)	101	89-112			%	02/02/19	02/02/19

# = Recovery (or RPD) is outside QC limits.

Quant Method: LGAS0201.M
Run #: 0202L23
Instrument: Loki
Sequence: 190201
Dilution Factor: 1
Initials: KVA

Printed: 02/05/19 11:26:07 AM  
APPL-F1-SC-NoMC-REG MDLs-DOD

# EPA 8260B BTEX WATER

AECOM  
1001 Bishop Street, Suite 1600  
Honolulu, HI 96813

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

Attn: Margie Pascua

Project: 60571032 CV18F0126 Red Hill Fuel Storage

ARF: 87986

**Sample ID: ERH761**

**APPL ID: AZ85763**

Sample Collection Date: 01/28/19

QCG: #86BTO-190202AL-237189

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
EPA 8260B	BENZENE	0.30 U	1.0	0.30	0.15	ug/L	02/02/19	02/02/19
EPA 8260B	ETHYLBENZENE	0.50 U	1.0	0.50	0.23	ug/L	02/02/19	02/02/19
EPA 8260B	TOLUENE	0.30 U	1.0	0.30	0.15	ug/L	02/02/19	02/02/19
EPA 8260B	XYLENES (TOTAL)	0.30 U	2.0	0.30	0.15	ug/L	02/02/19	02/02/19
EPA 8260B	SURROGATE: 1,2-DICHLOROETHANE-	122 #	81-118			%	02/02/19	02/02/19
EPA 8260B	SURROGATE: 4-BROMOFLUOROBENZ	99.3	85-114			%	02/02/19	02/02/19
EPA 8260B	SURROGATE: DIBROMOFLUOROMETH	105	80-119			%	02/02/19	02/02/19
EPA 8260B	SURROGATE: TOLUENE-D8 (S)	102	89-112			%	02/02/19	02/02/19

# = Recovery (or RPD) is outside QC limits.

Quant Method: LGAS0201.M
Run #: 0202L24
Instrument: Loki
Sequence: 190201
Dilution Factor: 1
Initials: KVA

Printed: 02/05/19 11:26:07 AM  
APPL-F1-SC-NoMC-REG MDLs-DOD

# EPA 8260B BTEX WATER

AECOM  
1001 Bishop Street, Suite 1600  
Honolulu, HI 96813

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

Attn: Margie Pascua

Project: 60571032 CV18F0126 Red Hill Fuel Storage

ARF: 87986

**Sample ID: ERH762**

**APPL ID: AZ85764**

Sample Collection Date: 01/28/19

QCG: #86BTO-190202AL-237189

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
EPA 8260B	BENZENE	0.30 U	1.0	0.30	0.15	ug/L	02/02/19	02/02/19
EPA 8260B	ETHYLBENZENE	0.50 U	1.0	0.50	0.23	ug/L	02/02/19	02/02/19
EPA 8260B	TOLUENE	0.30 U	1.0	0.30	0.15	ug/L	02/02/19	02/02/19
EPA 8260B	XYLENES (TOTAL)	0.30 U	2.0	0.30	0.15	ug/L	02/02/19	02/02/19
EPA 8260B	SURROGATE: 1,2-DICHLOROETHANE-	121 #	81-118			%	02/02/19	02/02/19
EPA 8260B	SURROGATE: 4-BROMOFLUOROBENZ	102	85-114			%	02/02/19	02/02/19
EPA 8260B	SURROGATE: DIBROMOFLUOROMETH	107	80-119			%	02/02/19	02/02/19
EPA 8260B	SURROGATE: TOLUENE-D8 (S)	107	89-112			%	02/02/19	02/02/19

# = Recovery (or RPD) is outside QC limits.

Quant Method: L0201W.M
Run #: 0202L25
Instrument: Loki
Sequence: 190201
Dilution Factor: 1
Initials: KVA

Printed: 02/05/19 11:26:07 AM  
APPL-F1-SC-NoMC-REG MDLs-DOD

# EPA 8260B BTEX WATER

AECOM  
1001 Bishop Street, Suite 1600  
Honolulu, HI 96813

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

Attn: Margie Pascua

Project: 60571032 CV18F0126 Red Hill Fuel Storage

**Sample ID: ERH763**

Sample Collection Date: 01/28/19

ARF: 87986

**APPL ID: AZ85765**

QCG: #86BTO-190202AL-237189

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
EPA 8260B	BENZENE	0.30 U	1.0	0.30	0.15	ug/L	02/02/19	02/02/19
EPA 8260B	ETHYLBENZENE	0.50 U	1.0	0.50	0.23	ug/L	02/02/19	02/02/19
EPA 8260B	TOLUENE	0.30 U	1.0	0.30	0.15	ug/L	02/02/19	02/02/19
EPA 8260B	XYLENES (TOTAL)	0.30 U	2.0	0.30	0.15	ug/L	02/02/19	02/02/19
EPA 8260B	SURROGATE: 1,2-DICHLOROETHANE-	121 #	81-118			%	02/02/19	02/02/19
EPA 8260B	SURROGATE: 4-BROMOFLUOROBENZ	100	85-114			%	02/02/19	02/02/19
EPA 8260B	SURROGATE: DIBROMOFLUOROMETH	107	80-119			%	02/02/19	02/02/19
EPA 8260B	SURROGATE: TOLUENE-D8 (S)	104	89-112			%	02/02/19	02/02/19

# = Recovery (or RPD) is outside QC limits.

Quant Method: L0201W.M
Run #: 0202L22
Instrument: Loki
Sequence: 190201
Dilution Factor: 1
Initials: KVA

Printed: 02/05/19 11:26:07 AM  
APPL-F1-SC-NoMC-REG MDLs-DOD

# EPA 8260B BTEX WATER

AECOM  
1001 Bishop Street, Suite 1600  
Honolulu, HI 96813

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

Attn: Margie Pascua  
Project: 60571032 CV18F0126 Red Hill Fuel Storage

ARF: 87986

**Sample ID: ERH764**

**APPL ID: AZ85766**

Sample Collection Date: 01/28/19

QCG: #86BTO-190202AL-237189

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
EPA 8260B	BENZENE	0.30 U	1.0	0.30	0.15	ug/L	02/02/19	02/02/19
EPA 8260B	ETHYLBENZENE	0.50 U	1.0	0.50	0.23	ug/L	02/02/19	02/02/19
EPA 8260B	TOLUENE	0.30 U	1.0	0.30	0.15	ug/L	02/02/19	02/02/19
EPA 8260B	XYLENES (TOTAL)	0.30 U	2.0	0.30	0.15	ug/L	02/02/19	02/02/19
EPA 8260B	SURROGATE: 1,2-DICHLOROETHANE-	118	81-118			%	02/02/19	02/02/19
EPA 8260B	SURROGATE: 4-BROMOFLUOROBENZ	92.4	85-114			%	02/02/19	02/02/19
EPA 8260B	SURROGATE: DIBROMOFLUOROMETH	105	80-119			%	02/02/19	02/02/19
EPA 8260B	SURROGATE: TOLUENE-D8 (S)	99.2	89-112			%	02/02/19	02/02/19

Quant Method: L0201W.M  
Run #: 0202L26  
Instrument: Loki  
Sequence: 190201  
Dilution Factor: 1  
Initials: KVA

Printed: 02/05/19 11:26:07 AM

APPL-F1-SC-NoMC-REG MDLs-DOD

# EPA 8260B GRO WATER

AECOM  
1001 Bishop Street, Suite 1600  
Honolulu, HI 96813

Attn: Margie Pascua  
Project: 60571032 CV18F0126 Red Hill Fuel Storage

**Sample ID: ERH760**

Sample Collection Date: 01/28/19

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

ARF: 87986

**APPL ID: AZ85762**

QCG: #GRO86-190202AL-237190

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
EPA 8260B	GASOLINE RANGE ORGANICS	18.0 U	20	18.0	8.6	ug/L	02/02/19	02/02/19
EPA 8260B	SURROGATE: 4-BROMOFLUOROBENZ	97.3	85-114			%	02/02/19	02/02/19

Quant Method: LSUR201W.M  
Run #: 0202L23  
Instrument: Loki  
Sequence: 190201  
Dilution Factor: 1  
Initials: KVA

Printed: 02/05/19 11:26:40 AM  
APPL-F1-SC-NoMC-REG MDLs-DOD

**EPA 8260B GRO WATER**

AECOM  
1001 Bishop Street, Suite 1600  
Honolulu, HI 96813

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

Attn: Margie Pascua  
Project: 60571032 CV18F0126 Red Hill Fuel Storage

ARF: 87986

**Sample ID: ERH761**

**APPL ID: AZ85763**

Sample Collection Date: 01/28/19

QCG: #GRO86-190202AL-237190

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
EPA 8260B	GASOLINE RANGE ORGANICS	18.0 U	20	18.0	8.6	ug/L	02/02/19	02/02/19
EPA 8260B	SURROGATE: 4-BROMOFLUOROBENZ	99.3	85-114			%	02/02/19	02/02/19

Quant Method: LSUR201W.M  
Run #: 0202L24  
Instrument: Loki  
Sequence: 190201  
Dilution Factor: 1  
Initials: KVA

Printed: 02/05/19 11:26:40 AM  
APPL-F1-SC-NoMC-REG MDLs-DOD



# EPA 8260B GRO WATER

AECOM  
1001 Bishop Street, Suite 1600  
Honolulu, HI 96813

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

Attn: Margie Pascua

Project: 60571032 CV18F0126 Red Hill Fuel Storage

ARF: 87986

**Sample ID: ERH762**

**APPL ID: AZ85764**

Sample Collection Date: 01/28/19

QCG: #GRO86-190202AL-237190

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
EPA 8260B	GASOLINE RANGE ORGANICS	18.0 U	20	18.0	8.6	ug/L	02/02/19	02/02/19
EPA 8260B	SURROGATE: 4-BROMOFLUOROBENZ	102	85-114			%	02/02/19	02/02/19

Quant Method: LSUR201W.M  
Run #: 0202L25  
Instrument: Loki  
Sequence: 190201  
Dilution Factor: 1  
Initials: KVA

Printed: 02/05/19 11:26:40 AM  
APPL-F1-SC-NoMC-REG MDLs-DOD

# EPA 8260B GRO WATER

AECOM  
1001 Bishop Street, Suite 1600  
Honolulu, HI 96813

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

Attn: Margie Pascua  
Project: 60571032 CV18F0126 Red Hill Fuel Storage

ARF: 87986

**Sample ID: ERH763**

**APPL ID: AZ85765**

Sample Collection Date: 01/28/19

QCG: #GRO86-190202AL-237190

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
EPA 8260B	GASOLINE RANGE ORGANICS	18.0 U	20	18.0	8.6	ug/L	02/02/19	02/02/19
EPA 8260B	SURROGATE: 4-BROMOFLUOROBENZ	100	85-114			%	02/02/19	02/02/19

Quant Method: LSUR201W.M  
Run #: 0202L22  
Instrument: Loki  
Sequence: 190201  
Dilution Factor: 1  
Initials: KVA

Printed: 02/05/19 11:26:40 AM  
APPL-F1-SC-NoMC-REG MDLs-DOD

# EPA 8260B GRO WATER

AECOM  
1001 Bishop Street, Suite 1600  
Honolulu, HI 96813

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

Attn: Margie Pascua  
Project: 60571032 CV18F0126 Red Hill Fuel Storage

ARF: 87986

**Sample ID: ERH764**

**APPL ID: AZ85766**

Sample Collection Date: 01/28/19

QCG: #GRO86-190202AL-237190

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
EPA 8260B	GASOLINE RANGE ORGANICS	18.0 U	20	18.0	8.6	ug/L	02/02/19	02/02/19
EPA 8260B	SURROGATE: 4-BROMOFLUOROBENZ	92.4	85-114			%	02/02/19	02/02/19

Quant Method: LSUR201W.M  
Run #: 0202L26  
Instrument: Loki  
Sequence: 190201  
Dilution Factor: 1  
Initials: KVA

Printed: 02/05/19 11:26:40 AM  
APPL-F1-SC-NoMC-REG MDLs-DOD

# METHANE

AECOM  
1001 Bishop Street, Suite 1600  
Honolulu, HI 96813

Attn: Margie Pascua  
Project: 60571032 CV18F0126 Red Hill Fuel Storage

**Sample ID: ERH763**

Sample Collection Date: 01/28/19

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

ARF: 87986

**APPL ID: AZ85765**

QCG: #RSKME-190204A-237156

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
RSK 175	METHANE	1.00 U	5.0	1.00	0.25	ug/L	02/04/19	02/04/19

Quant Method: RSK0120.M  
Run #: 19020414  
Instrument: Rocky  
Sequence: 190120  
Dilution Factor: 1  
Initials: CMO

Printed: 02/04/19 10:58:44 AM  
APPL-F1-SC-NoMC-REG MDLs-DOD

# METHANE

AECOM  
1001 Bishop Street, Suite 1600  
Honolulu, HI 96813

Attn: Margie Pascua  
Project: 60571032 CV18F0126 Red Hill Fuel Storage

**Sample ID: ERH764**

Sample Collection Date: 01/28/19

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

ARF: 87986

**APPL ID: AZ85766**

QCG: #RSKME-190204A-237156

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
RSK 175	METHANE	1.00 U	5.0	1.00	0.25	ug/L	02/04/19	02/04/19

Quant Method: RSK0120.M  
Run #: 19020415  
Instrument: Rocky  
Sequence: 190120  
Dilution Factor: 1  
Initials: CMO

Printed: 02/04/19 10:58:44 AM  
APPL-F1-SC-NoMC-REG MDLs-DOD

# QC FORMS

# EPA 8015B-eLL

Form 2 & 8

## Surrogate Recovery

Lab Name: APPL, Inc.

SDG No: 87986

Case No: 87986

Date Analyzed: 02/04/19

Matrix: WATER

Instrument: Apollo

APPL ID.	Client Sample No.	SURROGATE: OCTACOSANE (S)			SURROGATE: ORTHO-TERPHENYL (S)		
		Limits	Result	Qualifier	Limits	Result	Qualifier
190201A-BLK	Blank	60-142	60.2		56-125	94.2	
190201A-LCS	Lab Control Spike	60-142	89.7		56-125	87.2	
190201A-LCSD	Lab Control Spiked	60-142	90.4		56-125	90.7	
AZ85763	ERH761	60-142	69.5		56-125	94.6	
AZ85764	ERH762	60-142	75.2		56-125	94.2	
AZ85766	ERH764	60-142	118		56-125	95.1	

Comments: Batch: #DOC53-190201A

Printed: 02/04/19 4:58:22 PM  
Form 2 & 8, Surrogate Recovery Summary

# EPA 8015B-eL

Form 4

## Blank Summary

Lab Name: APPL, Inc.

SDG No: 87986

Case No: 87986

Date Analyzed: 02/04/19

Matrix: WATER

Instrument: Apollo

Blank ID: 190201A-BLK

Time Analyzed: 1133

<u>APPL ID.</u>	<u>Client Sample No.</u>	<u>File ID.</u>	<u>Date Analyzed</u>
190201A-BLK	Blank	204003	02/04/19 1133
190201A-LCS	Lab Control Spike	204004	02/04/19 1153
190201A-LCSD	Lab Control SpikeD	204005	02/04/19 1213
AZ85763	ERH761	204011	02/04/19 1413
AZ85764	ERH762	204012	02/04/19 1433
AZ85766	ERH764	204013	02/04/19 1453

Comments: Batch: #DOC53-190201A

Printed: 02/04/19 4:53:58 PM  
Form 4, Blank Summary



**Method Blank**  
**EPA 8015B TPH LIQ-LIQ**

Blank Name/QCG: **190201W-85763 - 237182**  
Batch ID: #DOC53-190201A

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

Sample Type	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
BLANK	DIESEL (C10-C24)	25.00 U	40.0	25.00	13.07	ug/L	02/01/19	02/04/19
BLANK	OIL (C24-C40)	40.00 U	40.0	40.00	5.54	ug/L	02/01/19	02/04/19
BLANK	SURROGATE: OCTACOSANE (S)	60.2	60-142			%	02/01/19	02/04/19
BLANK	SURROGATE: ORTHO-TERPHEN	94.2	56-125			%	02/01/19	02/04/19

Quant Method: DOC0117.M  
Run #: 204003  
Instrument: Apollo  
Sequence: 190204  
Initials: DPO

GC SC-Blank-REG MDLs-DOD  
Printed: 02/04/19 4:54:05 PM

**EPA 8015B-eL**

Form 4

**LCS Summary**

Lab Name: APPL, Inc.

SDG No: 87986

Case No: 87986

Date Analyzed: 02/04/19

Matrix: WATER

Instrument: Apollo

LCS ID: 190201A-LCS

Time Analyzed: 1153

APPL ID.	Client Sample No.	File ID.	Date Analyzed
190201A-BLK	Blank	204003	02/04/19 1133
190201A-LCS	Lab Control Spike	204004	02/04/19 1153
190201A-LCSD	Lab Control SpikeD	204005	02/04/19 1213
AZ85763	ERH761	204011	02/04/19 1413
AZ85764	ERH762	204012	02/04/19 1433
AZ85766	ERH764	204013	02/04/19 1453

Comments: Batch: #DOC53-190201A

Printed: 02/04/19 4:53:56 PM  
Form 4, LCS Summary

**Laboratory Control Spike Recoveries**  
**EPA 8015B TPH LIQ-LIQ**

APPL ID: **190201W-85763 LCS - 237182**  
 Batch ID: #DOC53-190201A

APPL Inc.  
 908 North Temperance Avenue  
 Clovis, CA 93611

Compound Name	Spike Lvl ug/L	SPK Result ug/L	DUP Result ug/L	SPK % Recovery	DUP % Recovery	Recovery Limits	RPD %	RPD Limits
DIESEL (C10-C24)	1250	1120	1140	89.6	91.2	36-132	1.8	30
OIL (C24-C40)	1250	1320	1330	106	106	41-113	0.75	30
-----								
SURROGATE: OCTACOSANE (S)	75.0	67.3	67.8	89.7	90.4	60-142		
SURROGATE: ORTHO-TERPHENYL (S)	75.0	65.4	68.0	87.2	90.7	56-125		
-----								

Comments: \_\_\_\_\_

<u>Primary</u>	<u>SPK</u>	<u>DUP</u>
Quant Method :	DOC0117.M	DOC0117.M
Extraction Date :	02/01/19	02/01/19
Analysis Date :	02/04/19	02/04/19
Instrument :	Apollo	Apollo
Run :	204004	204005
Initials :	DPO	

# 8270D-SIM

Form 2 & 8

## Surrogate Recovery

Lab Name: APPL, Inc.

SDG No: 87986

Case No: 87986

Date Analyzed: 02/01/19

Matrix: WATER

Instrument: Linus

APPL ID.	Client Sample No.	SURROGATE: 2-METHYLNAPHTHALENE-D10 (S)			SURROGATE: FLUORANTHENE-D10 (S)		
		Limits	Result	Qualifier	Limits	Result	Qualifier
190130A-BLK	Blank	39-114	101		58-120	96.6	
190130A-LCS	Lab Control Spike	39-114	110		58-120	93.6	
190130A-LCSD	Lab Control SpikeD	39-114	112		58-120	97.6	
AZ85763	ERH761	39-114	105		58-120	99.7	
AZ85764	ERH762	39-114	93.8		58-120	93.7	
AZ85766	ERH764	39-114	96.6		58-120	95.8	

Comments: Batch: #SIM53-190130A

Printed: 02/06/19 7:38:07 AM  
Form 2 & 8, Surrogate Recovery Summary

# 8270D-SIM

Form 4

## Blank Summary

Lab Name: APPL, Inc.

SDG No: 87986

Case No: 87986

Date Analyzed: 02/01/19

Matrix: WATER

Instrument: Linus

Blank ID: 190130A-BLK

Time Analyzed: 1251

APPL ID.	Client Sample No.	File ID.	Date Analyzed
190130A-BLK	Blank	0122L084	02/01/19 1251
190130A-LCS	Lab Control Spike	0122L085	02/01/19 1313
190130A-LCSD	Lab Control SpikeD	0122L086	02/01/19 1335
AZ85763	ERH761	0122L100	02/01/19 2045
AZ85764	ERH762	0122L101	02/01/19 2108
AZ85766	ERH764	0122L102	02/01/19 2130

Comments: Batch: #SIM53-190130A

Printed: 02/06/19 7:38:03 AM  
Form 4, Blank Summary

**Method Blank**  
**EPA 8270D SIM LIQ-LIQ**

Blank Name/QCG: 190130W-85562 - 237166  
Batch ID: #SIM53-190130A

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

Sample Type	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
BLANK	1-METHYLNAPHTHALENE	0.10 U	0.2	0.10	0.04	ug/L	01/30/19	02/01/19
BLANK	2-METHYLNAPHTHALENE	0.10 U	0.2	0.10	0.04	ug/L	01/30/19	02/01/19
BLANK	NAPHTHALENE	0.10 U	0.2	0.10	0.04	ug/L	01/30/19	02/01/19
BLANK	SURROGATE: 2-METHYLNAPHT	101	39-114			%	01/30/19	02/01/19
BLANK	SURROGATE: FLUORANTHENE-	96.6	58-120			%	01/30/19	02/01/19

Quant Method:L0122.M  
Run #:0122L084  
Instrument:Linus  
Sequence:L190122  
Initials:AAB

GC SC-Blank-REG MDLs-DOD  
Printed: 02/06/19 7:38:23 AM

# 8270D-SIM

Form 4

## LCS Summary

Lab Name: APPL, Inc.

SDG No: 87986

Case No: 87986

Date Analyzed: 02/01/19

Matrix: WATER

Instrument: Linus

LCS ID: 190130A-LCS

Time Analyzed: 1313

APPL ID.	Client Sample No.	File ID.	Date Analyzed
190130A-BLK	Blank	0122L084	02/01/19 1251
190130A-LCS	Lab Control Spike	0122L085	02/01/19 1313
190130A-LCSD	Lab Control Spiked	0122L086	02/01/19 1335
AZ85763	ERH761	0122L100	02/01/19 2045
AZ85764	ERH762	0122L101	02/01/19 2108
AZ85766	ERH764	0122L102	02/01/19 2130

Comments: Batch: #SIM53-190130A

Printed: 02/06/19 7:37:58 AM  
Form 4, LCS Summary

## Laboratory Control Spike Recoveries

### EPA 8270D SIM LIQ-LIQ

APPL ID: 190130W-85562 LCS - 237166  
 Batch ID: #SIM53-190130A

APPL Inc.  
 908 North Temperance Avenue  
 Clovis, CA 93611

Compound Name	Spike Lvl ug/L	SPK Result ug/L	DUP Result ug/L	SPK % Recovery	DUP % Recovery	Recovery Limits	RPD %	RPD Limits
1-METHYLNAPHTHALENE	6.25	6.34	6.29	101	101	41-115	0.79	20
2-METHYLNAPHTHALENE	6.25	6.28	6.45	100	103	39-114	2.7	20
NAPHTHALENE	6.25	6.00	6.17	96.0	98.7	43-114	2.8	20
-----								
SURROGATE: 2-METHYLNAPHTHALEN	6.25	6.85	6.98	110	112	39-114		
SURROGATE: FLUORANTHENE-D10 (S)	6.25	5.85	6.10	93.6	97.6	58-120		
-----								

Comments: \_\_\_\_\_

<u>Primary</u>	<u>SPK</u>	<u>DUP</u>
Quant Method :	L0122.M	L0122.M
Extraction Date :	01/30/19	01/30/19
Analysis Date :	02/01/19	02/01/19
Instrument :	Linus	Linus
Run :	0122L085	0122L086
Initials :	AAB	



Form 5  
Tune Summary

Lab Name: APPL Inc.  
 Case No: \_\_\_\_\_  
 Matrix: Water  
 ID: 0122L002.D

SDG No: \_\_\_\_\_  
 Date Analyzed: 01/22/19  
 Instrument: Linus  
 Time Analyzed: 9:21

	Client Sample No.	APPL ID.	File ID.	Date Analyzed
1		0.1 SIM 01/18/19	0122L003.D	01/22/19 9:37
2		0.2 SIM 01/18/19	0122L004.D	01/22/19 9:59
3		0.5 SIM 01/18/19	0122L005.D	01/22/19 10:21
4		1 SIM 01/18/19	0122L006.D	01/22/19 10:43
5		5 SIM 01/18/19	0122L007.D	01/22/19 11:30
6		10 SIM 01/18/19	0122L008.D	01/22/19 11:53
7		50 SIM 01/18/19	0122L009.D	01/22/19 12:15
8		100 SIM 01/18/19	0122L010.D	01/22/19 12:37
9		SS SIM 01/18/19	0122L011.D	01/22/19 12:59
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				

m/e

51 9.95 - 80% of mass 198	<u>52.3</u>
68 0 - 2.05% of mass 69	<u>0.0</u>
70 0 - 2% of mass 69	<u>0.8</u>
127 10 - 80% of mass 198	<u>58.6</u>
197 0 - 2% of mass 198	<u>0.0</u>
198 100 - 100% of mass 198	<u>100.0</u>
199 5 - 9% of mass 198	<u>6.7</u>
275 10 - 60% of mass 198	<u>22.8</u>
365 1 - 100% of mass 198	<u>3.3</u>
441 0.01 - 24% of mass 442	<u>16.7</u>
442 50 - 150% of mass 198	<u>68.2</u>
443 15 - 24% of mass 442	<u>19.2</u>

Form 5  
Tune Summary

Lab Name: APPL Inc.  
 Case No: \_\_\_\_\_  
 Matrix: Water  
 ID: 0122L080.D

SDG No: \_\_\_\_\_  
 Date Analyzed: 02/01/19  
 Instrument: Linus  
 Time Analyzed: 8:11

Client Sample No.	APPL ID.	File ID.	Date Analyzed
1	5 SIM 01/18/19	0122L081.D	02/01/19 8:27
2	Blank	190130A BIK 1/800	0122L084.D
3	Lab Control Spike	190130A LCS-1 1/800	0122L085.D
4	Lab Control SpikeD	190130A LCSD-1 1/800	0122L086.D
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			

m/e

51 9.95 - 80% of mass 198	<u>49.6</u>
68 0 - 2.05% of mass 69	<u>0.0</u>
70 0 - 2% of mass 69	<u>0.6</u>
127 10 - 80% of mass 198	<u>53.4</u>
197 0 - 2% of mass 198	<u>0.0</u>
198 100 - 100% of mass 198	<u>100.0</u>
199 5 - 9% of mass 198	<u>6.8</u>
275 10 - 60% of mass 198	<u>21.5</u>
365 1 - 100% of mass 198	<u>2.7</u>
441 0.01 - 24% of mass 442	<u>17.2</u>
442 50 - 150% of mass 198	<u>70.5</u>
443 15 - 24% of mass 442	<u>19.0</u>

Form 5  
Tune Summary

Lab Name: APPL Inc.  
Case No: 87986  
Matrix: Water  
ID: 0122L087.D

SDG No: 87986  
Date Analyzed: 02/01/19  
Instrument: Linus  
Time Analyzed: 15:16

	Client Sample No.	APPL ID.	File ID.	Date Analyzed
1		5 SIM 01/18/19	0122L088.D	02/01/19 15:32
2	ERH761	AZ85763W10 1/800	0122L100.D	02/01/19 20:45
3	ERH762	AZ85764W10 1/800	0122L101.D	02/01/19 21:08
4	ERH764	AZ85766W24 1/800	0122L102.D	02/01/19 21:30
5		5 SIM 01/18/19 (1)	0122L103.D	02/01/19 21:52
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				

m/e

51 9.95 - 80% of mass 198	<u>57.2</u>
68 0 - 2.05% of mass 69	<u>0.0</u>
70 0 - 2% of mass 69	<u>0.6</u>
127 10 - 80% of mass 198	<u>59.3</u>
197 0 - 2% of mass 198	<u>0.0</u>
198 100 - 100% of mass 198	<u>100.0</u>
199 5 - 9% of mass 198	<u>6.6</u>
275 10 - 60% of mass 198	<u>20.9</u>
365 1 - 100% of mass 198	<u>2.7</u>
441 0.01 - 24% of mass 442	<u>17.4</u>
442 50 - 150% of mass 198	<u>61.4</u>
443 15 - 24% of mass 442	<u>21.1</u>

8A  
INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: APPL Inc. Contract: Review  
 Lab Code: \_\_\_\_\_ SDG No.: 87986  
 Lab File ID (Standard): 0122L081.D Date Analyzed: 1 Feb 19 8:27  
 Instrument ID: Linus Time Analyzed: 1 Feb 19 8:27  
 GC Column: \_\_\_\_\_ ID: \_\_\_\_\_ Heated Purge: (Y/N) \_\_\_\_\_

		Napthalene-D8(IS)		Acenaphthene-D10(IS)		Phenanthrene-D10(IS)	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD		20177	4.03	9030	6.06	17612	7.79
UPPER LIMIT		40354	4.20	18060	6.23	35224	7.96
LOWER LIMIT		10089	3.86	4515	5.89	8806	7.62
SAMPLE NO.							
01	190130A Blk 1/800	17323	4.03	8262	6.06	17139	7.79
02	190130A LCS-1 1/800	16459	4.03	8259	6.06	17794	7.79
03	190130A LCSD-1 1/800	15802	4.03	7807	6.06	18324	7.79
04	5 SIM 01/18/19	21775	4.03	9726	6.06	19119	7.79
05	AZ85763W10 1/800	20213	4.05	9122	6.06	18692	7.80
06	AZ85764W10 1/800	22712	4.05	11217	6.06	21586	7.80
07	AZ85766W24 1/800	21676	4.05	10114	6.06	19192	7.79
08	5 SIM 01/18/19 (1)	38045	4.05	16950	6.06	33136	7.79
09							
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22							

AREA UPPER LIMIT = +100% of internal standard area.  
 AREA LOWER LIMIT = -50% of internal standard area.  
 RT UPPER LIMIT = +0.17 minutes of internal standard RT  
 RT LOWER LIMIT = -0.17 minutes of internal standard RT

# Column used to flag values outside QC limits with an asterisk.  
 \* Values outside of QC limits.

8A  
INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: APPL Inc. Contract: Review  
 Lab Code: \_\_\_\_\_ SDG No.: 87986  
 Lab File ID (Standard): 0122L081.D Date Analyzed: 1 Feb 19 8:27  
 Instrument ID: Linus Time Analyzed: 1 Feb 19 8:27  
 GC Column: \_\_\_\_\_ ID: \_\_\_\_\_ Heated Purge: (Y/N) \_\_\_\_\_

	Chrysene-D12(IS)		Perylene-D12(IS)		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12 HOUR STD	25878	10.89	25566	13.28		
UPPER LIMIT	51756	11.06	51132	13.45		
LOWER LIMIT	12939	10.72	12783	13.11		
SAMPLE NO.						
01 190130A BIK 1/800	25466	10.90	25914	13.29		
02 190130A LCS-1 1/800	24439	10.89	25760	13.28		
03 190130A LCSD-1 1/800	27968	10.89	18922	13.28		
04 5 SIM 01/18/19	28633	10.89	25493	13.29		
05 AZ85763W10 1/800	26373	10.90	13275	13.30		
06 AZ85764W10 1/800	30663	10.90	28943	13.29		
07 AZ85766W24 1/800	28193	10.89	27499	13.29		
08 5 SIM 01/18/19 (1)	47162	10.89	45173	13.28		
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22						

AREA UPPER LIMIT = +100% of internal standard area.  
 AREA LOWER LIMIT = -50% of internal standard area.  
 RT UPPER LIMIT = +0.17 minutes of internal standard RT  
 RT LOWER LIMIT = -0.17 minutes of internal standard RT

# Column used to flag values outside QC limits with an asterisk.  
 \* Values outside of QC limits.

# EPA 8270D

Form 2 & 8

## Surrogate Recovery

Lab Name: APPL, Inc.

SDG No: 87986

Case No: 87986

Date Analyzed: 02/01/19

Matrix: WATER

Instrument: Yoda

APPL ID.	Client Sample No.	SURROGATE: 2,4,6-TRIBROMOPHENOL (S)			SURROGATE: 2-FLUORBIPHENYL (S)		
		Limits	Result	Qualifier	Limits	Result	Qualifier
190130A-BLK	Blank	43-140	115		44-119	103	
190130A-LCS	Lab Control Spike	43-140	92.8		44-119	77.8	
190130A-LCSD	Lab Control SpikeD	43-140	95.2		44-119	80.8	
AZ85763	ERH761	43-140	102		44-119	89.3	
AZ85764	ERH762	43-140	95.2		44-119	84.3	
AZ85766	ERH764	43-140	97.4		44-119	84.0	

Comments: Batch: #87DC5-190130A

Printed: 02/06/19 7:39:52 AM  
Form 2 & 8, Surrogate Recovery Summary

# EPA 8270D

Form 2 & 8

## Surrogate Recovery

Lab Name: APPL, Inc.

SDG No: 87986

Case No: 87986

Date Analyzed: 02/01/19

Matrix: WATER

Instrument: Yoda

APPL ID.	Client Sample No.	SURROGATE: 2-FLUOROPHENOL (S)			SURROGATE: NITROBENZENE-D5 (S)		
		Limits	Result	Qualifier	Limits	Result	Qualifier
190130A-BLK	Blank	19-119	91.1		44-120	97.8	
190130A-LCS	Lab Control Spike	19-119	72.0		44-120	75.5	
190130A-LCSD	Lab Control SpikeD	19-119	73.6		44-120	77.5	
AZ85763	ERH761	19-119	75.3		44-120	80.6	
AZ85764	ERH762	19-119	78.1		44-120	83.4	
AZ85766	ERH764	19-119	73.5		44-120	80.2	

Comments: Batch: #87DC5-190130A

Printed: 02/06/19 7:39:52 AM  
Form 2 & 8, Surrogate Recovery Summary

# EPA 8270D

Form 2 & 8

## Surrogate Recovery

Lab Name: APPL, Inc.

SDG No: 87986

Case No: 87986

Date Analyzed: 02/01/19

Matrix: WATER

Instrument: Yoda

APPL ID.	Client Sample No.	SURROGATE: PHENOL-D6 (S)			SURROGATE: TERPHENYL-D14 (S)		
		Limits	Result	Qualifier	Limits	Result	Qualifier
190130A-BLK	Blank	10-115	88.0		50-134	107	
190130A-LCS	Lab Control Spike	10-115	70.8		50-134	80.8	
190130A-LCSD	Lab Control SpikeD	10-115	73.2		50-134	86.4	
AZ85763	ERH761	10-115	69.6		50-134	87.3	
AZ85764	ERH762	10-115	77.2		50-134	87.6	
AZ85766	ERH764	10-115	73.4		50-134	86.4	

Comments: Batch: #87DC5-190130A

Printed: 02/06/19 7:39:52 AM  
Form 2 & 8, Surrogate Recovery Summary



# EPA 8270D

Form 4

## Blank Summary

Lab Name: APPL, Inc.

SDG No: 87986

Case No: 87986

Date Analyzed: 02/01/19

Matrix: WATER

Instrument: Yoda

Blank ID: 190130A-BLK

Time Analyzed: 1619

<u>APPL ID.</u>	<u>Client Sample No.</u>	<u>File ID.</u>	<u>Date Analyzed</u>
190130A-BLK	Blank	0124Y098	02/01/19 1619
190130A-LCS	Lab Control Spike	0124Y099	02/01/19 1647
190130A-LCSD	Lab Control SpikeD	0124Y100	02/01/19 1714
AZ85763	ERH761	0124Y112	02/01/19 2249
AZ85764	ERH762	0124Y113	02/01/19 2316
AZ85766	ERH764	0124Y114	02/01/19 2344

Comments: Batch: #87DC5-190130A

Printed: 02/06/19 7:39:47 AM

Form 4, Blank Summary

**Method Blank**  
**EPA 8270D WATER**

Blank Name/QCG: **190130W-85562 - 237158**  
Batch ID: #87DC5-190130A

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

Sample Type	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
BLANK	PHENOL	4.00 U	5.0	4.00	1.00	ug/L	01/30/19	02/01/19
BLANK	SURROGATE: 2,4,6-TRIBROMOP	115	43-140			%	01/30/19	02/01/19
BLANK	SURROGATE: 2-FLUORBIPHENY	103	44-119			%	01/30/19	02/01/19
BLANK	SURROGATE: 2-FLUOROPHENO	91.1	19-119			%	01/30/19	02/01/19
BLANK	SURROGATE: NITROBENZENE-	97.8	44-120			%	01/30/19	02/01/19
BLANK	SURROGATE: PHENOL-D6 (S)	88.0	10-115			%	01/30/19	02/01/19
BLANK	SURROGATE: TERPHENYL-D14 (	107	50-134			%	01/30/19	02/01/19

Quant Method: Y0125NC.M  
Run #: 0124Y098  
Instrument: Yoda  
Sequence: Y190124  
Initials: AAB

GC SC-Blank-REG MDLs-DOD  
Printed: 02/06/19 7:40:09 AM

# EPA 8270D

Form 4

## LCS Summary

Lab Name: APPL, Inc.

SDG No: 87986

Case No: 87986

Date Analyzed: 02/01/19

Matrix: WATER

Instrument: Yoda

LCS ID: 190130A-LCS

Time Analyzed: 1647

<u>APPL ID.</u>	<u>Client Sample No.</u>	<u>File ID.</u>	<u>Date Analyzed</u>
190130A-BLK	Blank	0124Y098	02/01/19 1619
190130A-LCS	Lab Control Spike	0124Y099	02/01/19 1647
190130A-LCSD	Lab Control SpikeD	0124Y100	02/01/19 1714
AZ85763	ERH761	0124Y112	02/01/19 2249
AZ85764	ERH762	0124Y113	02/01/19 2316
AZ85766	ERH764	0124Y114	02/01/19 2344

Comments: Batch: #87DC5-190130A

Printed: 02/06/19 7:39:43 AM  
Form 4, LCS Summary

# Laboratory Control Spike Recoveries

## EPA 8270D WATER

APPL ID: 190130W-85562 LCS - 237158  
 Batch ID: #87DC5-190130A

APPL Inc.  
 908 North Temperance Avenue  
 Clovis, CA 93611

Compound Name	Spike Lvl ug/L	SPK Result ug/L	DUP Result ug/L	SPK % Recovery	DUP % Recovery	Recovery Limits	RPD %	RPD Limits
PHENOL	62.5	37.4	38.7	59.8	61.9	10-115	3.4	20
SURROGATE: 2,4,6-TRIBROMOPHENOL	250	232	238	92.8	95.2	43-140		
SURROGATE: 2-FLUOROBIPHENYL (S)	125	97.3	101	77.8	80.8	44-119		
SURROGATE: 2-FLUOROPHENOL (S)	250	180	184	72.0	73.6	19-119		
SURROGATE: NITROBENZENE-D5 (S)	125	94.4	96.9	75.5	77.5	44-120		
SURROGATE: PHENOL-D6 (S)	250	177	183	70.8	73.2	10-115		
SURROGATE: TERPHENYL-D14 (S)	125	101	108	80.8	86.4	50-134		

Comments: \_\_\_\_\_

	<u>Primary</u>	<u>SPK</u>	<u>DUP</u>
Quant Method :	Y0125NC.M	Y0125NC.M	Y0125NC.M
Extraction Date :	01/30/19	01/30/19	01/30/19
Analysis Date :	02/01/19	02/01/19	02/01/19
Instrument :	Yoda	Yoda	Yoda
Run :	0124Y099	0124Y099	0124Y100
Initials :	AAB		

Form 5  
Tune Summary

Lab Name: APPL Inc.  
Case No: \_\_\_\_\_  
Matrix: Soil  
ID: 0124Y014.D

SDG No: \_\_\_\_\_  
Date Analyzed: 01/25/19  
Instrument: Yoda  
Time Analyzed: 7:05

	Client Sample No.	APPL ID.	File ID.	Date Analyzed
1		50ug/mL 8270 01/24/	0124Y015.D	01/25/19 7:20
2		4ug/mL 8270 01/24/1	0124Y016.D	01/25/19 9:53
3		5ug/mL 8270 01/24/1	0124Y017.D	01/25/19 10:21
4		10ug/mL 8270 01/24/	0124Y018.D	01/25/19 10:49
5		40ug/mL 8270 01/24/	0124Y020.D	01/25/19 11:44
6		60ug/mL 8270 01/24/	0124Y021.D	01/25/19 12:11
7		80ug/mL 8270 01/24/	0124Y022.D	01/25/19 12:39
8		100ug/mL 8270 01/24	0124Y023.D	01/25/19 13:07
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m/e

51 10 - 80% of mass 198	<u>38.0</u>
68 0 - 2% of mass 69	<u>0.0</u>
70 0 - 2% of mass 69	<u>0.2</u>
127 10 - 80% of mass 198	<u>52.7</u>
197 0 - 2% of mass 198	<u>0.0</u>
198 100 - 100% of mass 198	<u>100.0</u>
199 5 - 9% of mass 198	<u>6.9</u>
275 10 - 60% of mass 198	<u>26.4</u>
365 1 - 100% of mass 198	<u>3.2</u>
441 0.01 - 24% of mass 442	<u>16.3</u>
442 50 - 150% of mass 198	<u>96.4</u>
443 17 - 23% of mass 442	<u>19.1</u>

Form 5  
Tune Summary

Lab Name: APPL Inc.  
 Case No: \_\_\_\_\_  
 Matrix: Soil  
 ID: 0124Y030.D

SDG No: \_\_\_\_\_  
 Date Analyzed: 01/28/19  
 Instrument: Yoda  
 Time Analyzed: 11:49

	Client Sample No.	APPL ID.	File ID.	Date Analyzed
1		20ug/mL 8270 01/24/	0124Y033.D	01/28/19 13:36
2		SS-8270 01/24/19	0124Y034.D	01/28/19 14:11
3				
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17				
18				
19				
20				
21				
22				

m/e

51 9.95 - 80.04% of mass 198	<u>36.7</u>
68 0 - 2% of mass 69	<u>0.0</u>
70 0 - 2% of mass 69	<u>0.5</u>
127 10 - 80% of mass 198	<u>51.8</u>
197 0 - 2% of mass 198	<u>0.0</u>
198 100 - 100% of mass 198	<u>100.0</u>
199 5 - 9% of mass 198	<u>6.7</u>
275 10 - 60% of mass 198	<u>26.6</u>
365 1 - 100% of mass 198	<u>3.4</u>
441 0.01 - 24% of mass 442	<u>10.6</u>
442 50 - 150% of mass 198	<u>104.5</u>
443 15 - 24% of mass 442	<u>19.5</u>

Form 5  
Tune Summary

Lab Name: APPL Inc.  
Case No: 87986  
Matrix: Water  
ID: 0124Y094.D

SDG No: 87986  
Date Analyzed: 02/01/19  
Instrument: Yoda  
Time Analyzed: 13:23

Client Sample No.	APPL ID.	File ID.	Date Analyzed
1	50ug/mL 8270 01/24/	0124Y095.D	02/01/19 13:38
2	Blank	190130A Blk 1/800	0124Y098.D
3	Lab Control Spike	190130A LCS-1 1/800	0124Y099.D
4	Lab Control SpikeD	190130A LCSD-1 1/800	0124Y100.D
5	ERH761	AZ85763W10 1/800	0124Y112.D
6	ERH762	AZ85764W10 1/800	0124Y113.D
7	ERH764	AZ85766W24 1/800	0124Y114.D
8	50ug/mL 8270 01/24/	0124Y115.D	02/02/19 0:12
9			
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17			
18			
19			
20			
21			
22			

m/e

51 9.95 - 80.04% of mass 198	<u>33.4</u>
68 0 - 2% of mass 69	<u>0.0</u>
70 0 - 2% of mass 69	<u>0.6</u>
127 10 - 80% of mass 198	<u>49.6</u>
197 0 - 2% of mass 198	<u>0.0</u>
198 100 - 100% of mass 198	<u>100.0</u>
199 5 - 9% of mass 198	<u>6.7</u>
275 10 - 60% of mass 198	<u>28.3</u>
365 1 - 100% of mass 198	<u>3.4</u>
441 0.01 - 24% of mass 442	<u>16.1</u>
442 50 - 150% of mass 198	<u>115.1</u>
443 15 - 24% of mass 442	<u>18.9</u>

## INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: APPL Inc.Contract: Review

Lab Code: \_\_\_\_\_

SDG No.: 87986Lab File ID (Standard): 0124Y095.DDate Analyzed: 1 Feb 19 13:38Instrument ID: YodaTime Analyzed: 1 Feb 19 13:38

GC Column: \_\_\_\_\_

ID: Heated Purge: (Y/N) \_\_\_\_\_

		1,4-dichlorobenzene-D4(IS)		Napthalene-D8(IS)		Acenaphthene-D10(IS)	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD		416513	5.46	1765190	6.90	989986	8.92
UPPER LIMIT		833026	5.63	3530380	7.07	1979972	9.09
LOWER LIMIT		208257	5.29	882595	6.73	494993	8.75
SAMPLE NO.							
01	190130A Bik 1/800	407906	5.46	1730020	6.90	912178	8.92
02	190130A LCS-1 1/800	511564	5.47	2139040	6.91	1151770	8.92
03	190130A LCSD-1 1/800	493547	5.47	2051250	6.91	1092290	8.92
04	AZ85763W10 1/800	531985	5.47	2225890	6.90	1111760	8.92
05	AZ85764W10 1/800	491998	5.47	2109210	6.90	1161120	8.92
06	AZ85766W24 1/800	519880	5.46	2168270	6.90	1149480	8.92
07	50ug/mL 8270 01/24/19	496552	5.47	2165400	6.90	1244880	8.92
08							
09							
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19							
20							
21							
22							

AREA UPPER LIMIT = +100% of internal standard area.

AREA LOWER LIMIT = -50% of internal standard area.

RT UPPER LIMIT = +0.17 minutes of internal standard RT

RT LOWER LIMIT = -0.17 minutes of internal standard RT

# Column used to flag values outside QC limits with an asterisk.

\* Values outside of QC limits.



# EPA 8270D

Form 4

## Blank Summary

Lab Name: APPL, Inc.

SDG No: 87986

Case No: 87986

Date Analyzed: 02/08/19

Matrix: WATER

Instrument: Yoda

Blank ID: 190204A-BLK

Time Analyzed: 0924

<u>APPL ID.</u>	<u>Client Sample No.</u>	<u>File ID.</u>	<u>Date Analyzed</u>
190204A-BLK	Blank	1128Y108	02/08/19 0924
190204A-LCS	Lab Control Spike	1128Y109	02/08/19 0947
190204A-LCSD	Lab Control SpikeD	1128Y110	02/08/19 1010
AZ85763	ERH761	1128Y111	02/08/19 1034
AZ85764	ERH762	1128Y112	02/08/19 1058
AZ85766	ERH764	1128Y113	02/08/19 1121

Comments: Batch: #87DME-190204A

Printed: 02/08/19 3:03:02 PM  
Form 4, Blank Summary

**Method Blank**  
**EPA 8270D MODIFIED WATER**

Blank Name/QCG: **190204W-85763 - 237333**  
Batch ID: #87DME-190204A

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

Sample Type	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
BLANK	2-(2-METHOXYETHOXY)-ETHAN	80.0 U	100	80.0	40.0	ug/L	02/04/19	02/08/19

Quant Method: YMEE1128.M  
Run #: 1128Y108  
Instrument: Yoda  
Sequence: Y181128M  
Initials: AAB

GC SC-Blank-REG MDLs-DOD  
Printed: 02/08/19 3:01:28 PM

# EPA 8270D

Form 4

## LCS Summary

Lab Name: APPL, Inc.

SDG No: 87986

Case No: 87986

Date Analyzed: 02/08/19

Matrix: WATER

Instrument: Yoda

LCS ID: 190204A-LCS

Time Analyzed: 0947

<b>APPL ID.</b>	<b>Client Sample No.</b>	<b>File ID.</b>	<b>Date Analyzed</b>
190204A-BLK	Blank	1128Y108	02/08/19 0924
190204A-LCS	Lab Control Spike	1128Y109	02/08/19 0947
190204A-LCSD	Lab Control SpikeD	1128Y110	02/08/19 1010
AZ85763	ERH761	1128Y111	02/08/19 1034
AZ85764	ERH762	1128Y112	02/08/19 1058
AZ85766	ERH764	1128Y113	02/08/19 1121

Comments: Batch: #87DME-190204A

Printed: 02/08/19 3:03:03 PM  
Form 4, LCS Summary

**Laboratory Control Spike Recoveries**  
**EPA 8270D MODIFIED WATER**

APPL ID: 190204W-85763 LCS - 237333  
 Batch ID: #87DME-190204A

APPL Inc.  
 908 North Temperance Avenue  
 Clovis, CA 93611

Compound Name	Spike Lvl ug/L	SPK Result ug/L	DUP Result ug/L	SPK % Recovery	DUP % Recovery	Recovery Limits	RPD %	RPD Limits
2-(2-METHOXYETHOXY)-ETHANOL	80.0	55.1	54.3	68.9	67.9	30-130	1.5	20

Comments: \_\_\_\_\_

	<u>Primary</u>	<u>SPK</u>	<u>DUP</u>
Quant Method :		YMEE1128.M	YMEE1128.M
Extraction Date :		02/04/19	02/04/19
Analysis Date :		02/08/19	02/08/19
Instrument :		Yoda	Yoda
Run :		1128Y109	1128Y110
Initials :		AAB	

Form 5  
Tune Summary

Lab Name: APPL Inc.  
 Case No: \_\_\_\_\_  
 Matrix: Water  
 ID: 1128Y002.D

SDG No: \_\_\_\_\_  
 Date Analyzed: 11/28/18  
 Instrument: Yoda  
 Time Analyzed: 7:30

	Client Sample No.	APPL ID.	File ID.	Date Analyzed
1		50ug/ml MEE 08/01/18	1128Y004.D	11/28/18 8:08
2		100ug/ml MEE 08/01/1	1128Y005.D	11/28/18 8:32
3		200ug/ml MEE 08/01/1	1128Y006.D	11/28/18 8:55
4		400ug/ml MEE 08/01/1	1128Y007.D	11/28/18 9:19
5		600ug/ml MEE 08/01/1	1128Y008.D	11/28/18 9:43
6		800ug/ml MEE 08/01/1	1128Y009.D	11/28/18 10:06
7		1000ug/ml MEE 08/01/	1128Y010.D	11/28/18 10:30
8		500ug/ml MEE 08/01/1	1128Y012.D	11/28/18 11:17
9		SS ug/ml MEE 08/01/1	1128Y014.D	11/28/18 12:26
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21				
22				

m/e

51 9.95 - 80.04% of mass 198	37.6
68 0 - 2.04% of mass 69	0.0
70 0 - 2.04% of mass 69	0.4
127 10 - 80% of mass 198	49.3
197 0 - 2% of mass 198	0.0
198 100 - 100% of mass 198	100.0
199 5 - 9% of mass 198	6.6
275 10 - 60% of mass 198	27.6
365 1 - 100% of mass 198	3.7
441 0.01 - 24% of mass 442	15.6
442 50 - 150% of mass 198	104.9
443 15 - 24% of mass 442	19.5

Form 5  
Tune Summary

Lab Name: APPL Inc.  
 Case No: 87986  
 Matrix: Water  
 ID: 1128Y106.D

SDG No: 87986  
 Date Analyzed: 02/08/19  
 Instrument: Yoda  
 Time Analyzed: 8:31

Client Sample No.	APPL ID.	File ID.	Date Analyzed
1	500ug/ml MEE 12/19/1	1128Y107.D	02/08/19 8:51
2	Blank	190204A BLK 2/500	02/08/19 9:24
3	Lab Control Spike	190204A LCS-1 2/500	02/08/19 9:47
4	Lab Control SpikeD	190204A LCSD-1 2/500	02/08/19 10:10
5	ERH761	AZ85763W05 2/500	02/08/19 10:34
6	ERH762	AZ85764W04 2/500	02/08/19 10:58
7	ERH764	AZ85766W18 2/500	02/08/19 11:21
8	500ug/ml MEE 12/19/1	1128Y114.D	02/08/19 11:45
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			

m/e

51 9.95 - 80.04% of mass 198	<u>38.9</u>
68 0 - 2.04% of mass 69	<u>0.0</u>
70 0 - 2.04% of mass 69	<u>0.6</u>
127 10 - 80% of mass 198	<u>53.0</u>
197 0 - 2% of mass 198	<u>0.0</u>
198 100 - 100% of mass 198.05	<u>100.0</u>
199 5 - 9% of mass 198	<u>6.8</u>
275 10 - 60% of mass 198	<u>26.5</u>
365 1 - 100% of mass 198	<u>3.2</u>
441 0.01 - 24% of mass 442	<u>16.6</u>
442 50 - 150% of mass 198.05	<u>96.0</u>
443 15 - 24% of mass 442	<u>19.4</u>

8A  
INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: APPL Inc. Contract: Review  
 Lab Code: \_\_\_\_\_ SDG No.: 87986  
 Lab File ID (Standard): 1128Y107.D Date Analyzed: 8 Feb 19 8:51  
 Instrument ID: Yoda Time Analyzed: 8 Feb 19 8:51  
 GC Column: \_\_\_\_\_ ID: \_\_\_\_\_ Heated Purge: (Y/N) \_\_\_\_\_

		1,4-dichlorobenzene-D4(IS)		Naphthalene-D8(IS)		Acenaphthene-D10(IS)			
		AREA	#	RT	#	AREA	#	RT	#
	12 HOUR STD	342119		5.18		1451940		6.61	
	UPPER LIMIT	684238		5.35		2903880		6.78	
	LOWER LIMIT	171060		5.01		725970		6.44	
	SAMPLE NO.								
01	190204A BLK 2/500	390792		5.20		1736850		6.62	
02	190204A LCS-1 2/500	309955		5.20		1348280		6.61	
03	190204A LCSD-1 2/500	282552		5.20		1187670		6.61	
04	AZ85763W05 2/500	327245		5.20		1378460		6.61	
05	AZ85764W04 2/500	438611		5.19		1879680		6.61	
06	AZ85766W18 2/500	324164		5.18		1619950		6.61	
07	500ug/ml MEE 12/19/18	374263		5.19		1577150		6.61	
08									
09									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									

AREA UPPER LIMIT = +100% of internal standard area.  
 AREA LOWER LIMIT = -50% of internal standard area.  
 RT UPPER LIMIT = +0.17 minutes of internal standard RT  
 RT LOWER LIMIT = -0.17 minutes of internal standard RT

# Column used to flag values outside QC limits with an asterisk.  
 \* Values outside of QC limits.

8A  
INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: APPL Inc. Contract: Review  
 Lab Code: \_\_\_\_\_ SDG No.: 87986  
 Lab File ID (Standard): 1128Y107.D Date Analyzed: 8 Feb 19 8:51  
 Instrument ID: Yoda Time Analyzed: 8 Feb 19 8:51  
 GC Column: \_\_\_\_\_ ID: \_\_\_\_\_ Heated Purge: (Y/N) \_\_\_\_\_

	Phenanthrene-D10(IS)		Chrysene-D12(IS)		Perylene-D12(IS)		
	AREA #	RT #	AREA #	RT #	AREA #	RT #	
12 HOUR STD	1465580	10.36	1321250	13.45	1210050	15.19	
UPPER LIMIT	2931160	10.53	2642500	13.62	2420100	15.36	
LOWER LIMIT	732790	10.19	660625	13.28	605025	15.02	
SAMPLE NO.							
01 190204A BLK 2/500	1774580	10.36	1462950	13.45	1095580	15.20	
02 190204A LCS-1 2/500	1456180	10.36	1243430	13.45	1109290	15.20	
03 190204A LCSD-1 2/500	1195340	10.36	1084070	13.44	875079	15.20	
04 AZ85763W05 2/500	1567840	10.36	1259320	13.44	1024050	15.20	
05 AZ85764W04 2/500	1985840	10.36	1767040	13.45	1442830	15.20	
06 AZ85766W18 2/500	1935390	10.36	1455960	13.44	1247050	15.20	
07 500ug/ml MEE 12/19/18	1616240	10.36	1482260	13.44	1355920	15.20	
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

AREA UPPER LIMIT = +100% of internal standard area.  
 AREA LOWER LIMIT = -50% of internal standard area.  
 RT UPPER LIMIT = +0.17 minutes of internal standard RT  
 RT LOWER LIMIT = -0.17 minutes of internal standard RT

# Column used to flag values outside QC limits with an asterisk.  
 \* Values outside of QC limits.



**EPA 8260B**

Form 2 & 8

**Surrogate Recovery**

Lab Name: APPL, Inc.  
Case No: 87986  
Matrix: WATER

SDG No: 87986  
Date Analyzed: 02/02/19  
Instrument: Loki

APPL ID.	Client Sample No.	SURROGATE: 1,2-DICHLOROETHANE-D4 (S)			SURROGATE: 4-BROMOFLUOROBENZENE (S)		
		Limits	Result	Qualifier	Limits	Result	Qualifier
190202AL-LCS	Lab Control Spike	81-118	124	*	85-114	101	
190202AL-LCSD	Lab Control Spiked	81-118	117		85-114	102	
190202AL-BLK	Blank	81-118	124	#	85-114	103	
AZ85765	ERH763	81-118	121	#	85-114	100	
AZ85762	ERH760	81-118	122	#	85-114	97.3	
AZ85763	ERH761	81-118	122	#	85-114	99.3	
AZ85764	ERH762	81-118	121	#	85-114	102	
AZ85766	ERH764	81-118	118		85-114	92.4	

Comments: Batch: #86BTO-190202AL

\* = Recovery outside of Control Limits on QC Sample.

# = Recovery outside of Control Limits on Sample.

Printed: 02/05/19 11:25:51 AM  
Form 2 & 8, Surrogate Recovery Summary

# EPA 8260B

Form 2 & 8

## Surrogate Recovery

Lab Name: APPL, Inc.

SDG No: 87986

Case No: 87986

Date Analyzed: 02/02/19

Matrix: WATER

Instrument: Loki

APPL ID.	Client Sample No.	SURROGATE: DIBROMOFLUOROMETHANE (S)			SURROGATE: TOLUENE-D8 (S)		
		Limits	Result	Qualifier	Limits	Result	Qualifier
190202AL-LCS	Lab Control Spike	80-119	103		89-112	103	
190202AL-LCSD	Lab Control SpikeD	80-119	103		89-112	102	
190202AL-BLK	Blank	80-119	105		89-112	104	
AZ85765	ERH763	80-119	107		89-112	104	
AZ85762	ERH760	80-119	107		89-112	101	
AZ85763	ERH761	80-119	105		89-112	102	
AZ85764	ERH762	80-119	107		89-112	107	
AZ85766	ERH764	80-119	105		89-112	99.2	

Comments: Batch: #86BTO-190202AL

Printed: 02/05/19 11:25:51 AM  
Form 2 & 8, Surrogate Recovery Summary

# EPA 8260B

Form 4

## Blank Summary

Lab Name: APPL, Inc.

SDG No: 87986

Case No: 87986

Date Analyzed: 02/02/19

Matrix: WATER

Instrument: Loki

Blank ID: 190202AL-BLK

Time Analyzed: 1701

<u>APPL ID.</u>	<u>Client Sample No.</u>	<u>File ID.</u>	<u>Date Analyzed</u>
190202AL-LCS	Lab Control Spike	0202L14	02/02/19 1340
190202AL-LCSD	Lab Control SpikeD	0202L15	02/02/19 1205
190202AL-BLK	Blank	0202L21	02/02/19 1701
AZ85765	ERH763	0202L22	02/02/19 1729
AZ85762	ERH760	0202L23	02/02/19 1758
AZ85763	ERH761	0202L24	02/02/19 1826
AZ85764	ERH762	0202L25	02/02/19 1855
AZ85766	ERH764	0202L26	02/02/19 1923

Comments: Batch: #86BTO-190202AL

Printed: 02/05/19 11:25:59 AM  
Form 4, Blank Summary

**Method Blank**  
**EPA 8260B BTEX WATER**

Blank Name/QCG: **190202W-85762 - 237189**  
Batch ID: #86BTO-190202AL

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

Sample Type	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
BLANK	BENZENE	0.30 U	1.0	0.30	0.15	ug/L	02/02/19	02/02/19
BLANK	ETHYLBENZENE	0.50 U	1.0	0.50	0.23	ug/L	02/02/19	02/02/19
BLANK	TOLUENE	0.30 U	1.0	0.30	0.15	ug/L	02/02/19	02/02/19
BLANK	XYLENES (TOTAL)	0.30 U	2.0	0.30	0.15	ug/L	02/02/19	02/02/19
BLANK	SURROGATE: 1,2-DICHLOROET	124 #	81-118			%	02/02/19	02/02/19
BLANK	SURROGATE: 4-BROMOFLUORO	103	85-114			%	02/02/19	02/02/19
BLANK	SURROGATE: DIBROMOFLUOR	105	80-119			%	02/02/19	02/02/19
BLANK	SURROGATE: TOLUENE-D8 (S)	104	89-112			%	02/02/19	02/02/19

# = Recovery (or RPD) is outside QC limits.

<p>Quant Method: L0201W.M Run #: 0202L21 Instrument: Loki Sequence: 190201 Initials: KVA</p>
--

GC SC-Blank-REG MDLs-DOD  
Printed: 02/05/19 11:26:11 AM

# EPA 8260B

Form 4

## LCS Summary

Lab Name: APPL, Inc.

SDG No: 87986

Case No: 87986

Date Analyzed: 02/02/19

Matrix: WATER

Instrument: Loki

LCS ID: 190202AL-LCS

Time Analyzed: 1340

<u>APPL ID.</u>	<u>Client Sample No.</u>	<u>File ID.</u>	<u>Date Analyzed</u>
190202AL-LCS	Lab Control Spike	0202L14	02/02/19 1340
190202AL-LCSD	Lab Control SpikeD	0202L15	02/02/19 1205
190202AL-BLK	Blank	0202L21	02/02/19 1701
AZ85765	ERH763	0202L22	02/02/19 1729
AZ85762	ERH760	0202L23	02/02/19 1758
AZ85763	ERH761	0202L24	02/02/19 1826
AZ85764	ERH762	0202L25	02/02/19 1855
AZ85766	ERH764	0202L26	02/02/19 1923

Comments: Batch: #86BTO-190202AL

Printed: 02/05/19 11:25:55 AM  
Form 4, LCS Summary

**Laboratory Control Spike Recoveries**  
**EPA 8260B BTEX WATER**

APPL ID: 190202W-85762 LCS - 237189

Batch ID: #86BTO-190202AL

APPL Inc.

908 North Temperance Avenue

Clovis, CA 93611

Compound Name	Spike Lvl ug/L	SPK Result ug/L	DUP Result ug/L	SPK % Recovery	DUP % Recovery	Recovery Limits	RPD %	RPD Limits
BENZENE	10.00	10.1	10.2	101	102	79-120	0.99	20
ETHYLBENZENE	10.00	11.2	11.0	112	110	79-121	1.8	20
TOLUENE	10.00	10.8	10.8	108	108	80-121	0.0	20
XYLENES (TOTAL)	30.0	33.7	34.9	112	116	79-121	3.5	20
-----								
SURROGATE: 1,2-DICHLOROETHANE-D	25.0	31.1	29.3	124 #	117	81-118		
SURROGATE: 4-BROMOFLUOROBENZE	25.0	25.3	25.6	101	102	85-114		
SURROGATE: DIBROMOFLUOROMETH	25.0	25.8	25.8	103	103	80-119		
SURROGATE: TOLUENE-D8 (S)	25.0	25.8	25.6	103	102	89-112		
-----								

# = Recovery is outside QC limits.

Comments: \_\_\_\_\_

<u>Primary</u>	<u>SPK</u>	<u>DUP</u>
Quant Method :	L0201W.M	L0201W.M
Extraction Date :	02/02/19	02/02/19
Analysis Date :	02/02/19	02/02/19
Instrument :	Loki	Loki
Run :	0202L14	0202L15
Initials :	KVA	

Form 5  
Tune Summary

Lab Name: APPL Inc.  
Case No: \_\_\_\_\_  
Matrix: Water  
ID: 0201L01.D

SDG No: \_\_\_\_\_  
Date Analyzed: 02/01/19  
Instrument: Loki  
Time Analyzed: 11:00

	Client Sample No.	APPL ID.	File ID.	Date Analyzed
1		0.3ug/L VOC STD 02/0	0201L03.D	02/01/19 11:44
2		0.5ug/L VOC STD 02/0	0201L04.D	02/01/19 12:13
3		1.0ug/L VOC STD 02/0	0201L05.D	02/01/19 12:42
4		2.0ug/L VOC STD 02/0	0201L06.D	02/01/19 13:10
5		5.0ug/L VOC STD 02/0	0201L07.D	02/01/19 13:39
6		10ug/L VOC STD 02/01	0201L08.D	02/01/19 14:08
7		20ug/L VOC STD 02/01	0201L09.D	02/01/19 14:36
8		40ug/L VOC STD 02/01	0201L10.D	02/01/19 15:05
9		50ug/L VOC STD 02/01	0201L11.D	02/01/19 15:34
10		100ug/L VOC STD 02/0	0201L12.D	02/01/19 16:03
11		(SS)10ug/L VOC STD 0	0201L15.D	02/01/19 17:28
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				

m/e

50 15.0 - 40.0% of mass 95	<u>15.9</u>
75 30.0 - 60.0% of mas 95	<u>48.8</u>
95 Base peak, 100% relative abundance	<u>100.0</u>
96 5.0 - 9.0% of mass 95	<u>7.0</u>
173 Less than 2.0% of mass 174	<u>0.0</u>
174 50.0 - 100.0% of mass 95	<u>96.1</u>
175 5.0 - 9.0% of mass 174	<u>7.8</u>
176 95.0 - 101.0% of mass 174	<u>100.7</u>
177 5.0 - 9.0% of mass 176	<u>8.7</u>

Form 5  
Tune Summary

Lab Name: APPL Inc.  
 Case No: 87986  
 Matrix: Water  
 ID: 0202L12.D

SDG No: 87986  
 Date Analyzed: 02/02/19  
 Instrument: Loki  
 Time Analyzed: 12:43

Client Sample No.	APPL ID.	File ID.	Date Analyzed
1		190202A CCV 10ug/L	0202L13.D
2	Lab Control Spike	190202A LCS 10ug/L	0202L14.D
3	Lab Control SpikeD	190202A LCSD 10ug/L	0202L15.D
4	Blank	190202A blk	0202L21.D
5	ERH763	AZ85765W02	0202L22.D
6	ERH760	AZ85762W02	0202L23.D
7	ERH761	AZ85763W02	0202L24.D
8	ERH762	AZ85764W02	0202L25.D
9	ERH764	AZ85766W02	0202L26.D
10		Ending CCV 10ug/L 02	0202L27.D
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			

m/e

50 15 - 40% of mass 95	18.8
75 30 - 60% of mass 95	56.0
95 100 - 100% of mass 95	100.0
96 5 - 9% of mass 95	7.3
173 0 - 2% of mass 174	0.6
174 50 - 100% of mass 95	99.7
175 5 - 9% of mass 174	8.2
176 94.95 - 101% of mass 174	96.3
177 5 - 9% of mass 176	6.8



8A  
INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: APPL Inc. Contract: \_\_\_\_\_  
 Lab Code: \_\_\_\_\_ SDG No.: \_\_\_\_\_  
 Lab File ID (Standard): 0201L08.D Date Analyzed: 1 Feb 19 14:08  
 Instrument ID: Loki Time Analyzed: 1 Feb 19 14:08  
 GC Column: \_\_\_\_\_ ID: \_\_\_\_\_ Heated Purge: (Y/N) \_\_\_\_\_

		Fluorobenzene (IS)		Chlorobenzene-D5 (IS)		1,4-Dichlorobenzene-D (IS)	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD		283840	6.50	250496	9.97	133824	12.53
UPPER LIMIT		567680	6.67	500992	10.14	267648	12.70
LOWER LIMIT		141920	6.33	125248	9.80	66912	12.36
SAMPLE NO.							
01	(SS)10ug/L VOC STD 01	287232	6.50	240704	9.97	133440	12.53
02							
03							
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

AREA UPPER LIMIT = +100% of internal standard area.  
 AREA LOWER LIMIT = -50% of internal standard area.  
 RT UPPER LIMIT = +0.17 minutes of internal standard RT  
 RT LOWER LIMIT = -0.17 minutes of internal standard RT

# Column used to flag values outside QC limits with an asterisk.  
 \* Values outside of QC limits.

8A  
INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: APPL Inc. Contract: Review  
 Lab Code: \_\_\_\_\_ SDG No.: 87986  
 Lab File ID (Standard): 0202L13.D Date Analyzed: 2 Feb 19 13:12  
 Instrument ID: Loki Time Analyzed: 2 Feb 19 13:12  
 GC Column: \_\_\_\_\_ ID: \_\_\_\_\_ Heated Purge: (Y/N) \_\_\_\_\_

	Fluorobenzene (IS)		Chlorobenzene-D5 (IS)		1,4-Dichlorobenzene-D (IS)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	214720	6.50	175872	9.97	94968	12.54
UPPER LIMIT	429440	6.67	351744	10.14	189936	12.71
LOWER LIMIT	107360	6.33	87936	9.80	47484	12.37
SAMPLE NO.						
01 190202A LCS 10ug/L	207104	6.50	175680	9.97	97056	12.53
02 190202A LCSD 10ug/L	212160	6.50	177280	9.97	99664	12.53
03 190202A blk	183936	6.50	152384	9.97	79728	12.53
04 AZ85765W02	195520	6.50	161536	9.97	83872	12.53
05 AZ85762W02	186048	6.50	157376	9.97	79384	12.53
06 AZ85763W02	190080	6.50	155712	9.96	78000	12.53
07 AZ85764W02	175872	6.50	141184	9.97	80168	12.53
08 AZ85766W02	188288	6.50	158976	9.97	83368	12.54
09 Ending CCV 10ug/L 02/0	190720	6.50	158144	9.97	89232	12.53
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

AREA UPPER LIMIT = +100% of internal standard area.  
 AREA LOWER LIMIT = -50% of internal standard area.  
 RT UPPER LIMIT = +0.17 minutes of internal standard RT  
 RT LOWER LIMIT = -0.17 minutes of internal standard RT

# Column used to flag values outside QC limits with an asterisk.  
 \* Values outside of QC limits.

**EPA 8260B**

Form 2 & 8

**Surrogate Recovery**

Lab Name: APPL, Inc.

SDG No: 87986

Case No: 87986

Date Analyzed: 02/02/19

Matrix: WATER

Instrument: Loki

APPL ID.	Client Sample No.	SURROGATE: 4-BROMOFLUOROBENZENE (S)			Limits	Result	Qualifier
		Limits	Result	Qualifier			
190202AL-LCS	Lab Control Spike	85-114	101				
190202AL-LCSD	Lab Control Spiked	85-114	102				
190202AL-BLK	Blank	85-114	103				
AZ85765	ERH763	85-114	100				
AZ85762	ERH760	85-114	97.3				
AZ85763	ERH761	85-114	99.3				
AZ85764	ERH762	85-114	102				
AZ85766	ERH764	85-114	92.4				

Comments: Batch: #GRO86-190202AL

# EPA 8260B

Form 4

## Blank Summary

Lab Name: APPL, Inc.

SDG No: 87986

Case No: 87986

Date Analyzed: 02/02/19

Matrix: WATER

Instrument: Loki

Blank ID: 190202AL-BLK

Time Analyzed: 1701

<u>APPL ID.</u>	<u>Client Sample No.</u>	<u>File ID.</u>	<u>Date Analyzed</u>
190202AL-LCS	Lab Control Spike	0202L18	02/02/19 1535
190202AL-LCSD	Lab Control SpikeD	0202L19	02/02/19 1603
190202AL-BLK	Blank	0202L21	02/02/19 1701
AZ85765	ERH763	0202L22	02/02/19 1729
AZ85762	ERH760	0202L23	02/02/19 1758
AZ85763	ERH761	0202L24	02/02/19 1826
AZ85764	ERH762	0202L25	02/02/19 1855
AZ85766	ERH764	0202L26	02/02/19 1923

Comments: Batch: #GRO86-190202AL

Printed: 02/05/19 11:26:31 AM  
Form 4, Blank Summary

**Method Blank**  
**EPA 8260B GRO WATER**

Blank Name/QCG: **190202W-85762 - 237190**  
Batch ID: #GRO86-190202AL

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

Sample Type	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
BLANK	GASOLINE RANGE ORGANICS	18.0 U	20	18.0	8.6	ug/L	02/02/19	02/02/19
BLANK	SURROGATE: 4-BROMOFLUORO	103	85-114			%	02/02/19	02/02/19

Quant Method:LSUR201W.  
Run #:0202L21  
Instrument:Loki  
Sequence:190201  
Initials:KVA

GC SC-Blank-REG MDLs-DOD  
Printed: 02/05/19 11:26:44 AM

# EPA 8260B

Form 4

## LCS Summary

Lab Name: APPL, Inc.

SDG No: 87986

Case No: 87986

Date Analyzed: 02/02/19

Matrix: WATER

Instrument: Loki

LCS ID: 190202AL-LCS

Time Analyzed: 1535

<u>APPL ID.</u>	<u>Client Sample No.</u>	<u>File ID.</u>	<u>Date Analyzed</u>
190202AL-LCS	Lab Control Spike	0202L18	02/02/19 1535
190202AL-LCSD	Lab Control SpikeD	0202L19	02/02/19 1603
190202AL-BLK	Blank	0202L21	02/02/19 1701
AZ85765	ERH763	0202L22	02/02/19 1729
AZ85762	ERH760	0202L23	02/02/19 1758
AZ85763	ERH761	0202L24	02/02/19 1826
AZ85764	ERH762	0202L25	02/02/19 1855
AZ85766	ERH764	0202L26	02/02/19 1923

Comments: Batch: #GRO86-190202AL

Printed: 02/05/19 11:26:28 AM  
Form 4, LCS Summary

## Laboratory Control Spike Recoveries

### EPA 8260B GRO WATER

APPL ID: 190202W-85762 LCS - 237190

Batch ID: #GRO86-190202AL

APPL Inc.

908 North Temperance Avenue

Clovis, CA 93611

Compound Name	Spike Lvl ug/L	SPK Result ug/L	DUP Result ug/L	SPK % Recovery	DUP % Recovery	Recovery Limits	RPD %	RPD Limits
GASOLINE RANGE ORGANICS	300	318	301	106	100	78-122	5.5	20
SURROGATE: 4-BROMOFLUOROBENZE	25.0	25.2	25.6	101	102	85-114		

Comments: \_\_\_\_\_

<u>Primary</u>	<u>SPK</u>	<u>DUP</u>
Quant Method :	LSUR201W.M	LSUR201W.M
Extraction Date :	02/02/19	02/02/19
Analysis Date :	02/02/19	02/02/19
Instrument :	Loki	Loki
Run :	0202L18	0202L19
Initials :	KVA	

# RSK 175

Form 4

## Blank Summary

Lab Name: APPL, Inc.

SDG No: 87986

Case No: 87986

Date Analyzed: 02/04/19

Matrix: WATER

Instrument: Rocky

Blank ID: 190204A-BLK

Time Analyzed: 0924

<u>APPL ID.</u>	<u>Client Sample No.</u>	<u>File ID.</u>	<u>Date Analyzed</u>
190204A-LCS	Lab Control Spike	19020400	02/04/19 0914
190204A-LCSD	Lab Control SpikeD	19020402	02/04/19 0920
190204A-BLK	Blank	19020403	02/04/19 0924
AZ85765	ERH763	19020414	02/04/19 0954
AZ85766	ERH764	19020415	02/04/19 0957

Comments: Batch: #RSKME-190204A

Printed: 02/04/19 10:58:36 AM

Form 4, Blank Summary



**Method Blank**  
**METHANE**

Blank Name/QCG: **190204W-85765 - 237156**  
Batch ID: #RSKME-190204A

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

Sample Type	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
BLANK	METHANE	1.00 U	5.0	1.00	0.25	ug/L	02/04/19	02/04/19

Quant Method: RSK0120.M  
Run #: 19020403  
Instrument: Rocky  
Sequence: 190120  
Initials: CMO

GC SC-Blank-REG MDLs-DOD  
Printed: 02/04/19 10:58:47 AM

# RSK 175

Form 4

## LCS Summary

Lab Name: APPL, Inc.

SDG No: 87986

Case No: 87986

Date Analyzed: 02/04/19

Matrix: WATER

Instrument: Rocky

LCS ID: 190204A-LCS

Time Analyzed: 0914

<u>APPL ID.</u>	<u>Client Sample No.</u>	<u>File ID.</u>	<u>Date Analyzed</u>
190204A-LCS	Lab Control Spike	19020400	02/04/19 0914
190204A-LCSD	Lab Control SpikeD	19020402	02/04/19 0920
190204A-BLK	Blank	19020403	02/04/19 0924
AZ85765	ERH763	19020414	02/04/19 0954
AZ85766	ERH764	19020415	02/04/19 0957

Comments: Batch: #RSKME-190204A

Printed: 02/04/19 10:58:33 AM

Form 4, LCS Summary

# Laboratory Control Spike Recoveries

## METHANE

APPL ID: 190204W-85765 LCS - 237156

Batch ID: #RSKME-190204A

APPL Inc.

908 North Temperance Avenue

Clovis, CA 93611

Compound Name	Spike Lvl ug/L	SPK Result ug/L	DUP Result ug/L	SPK % Recovery	DUP % Recovery	Recovery Limits	RPD %	RPD Limits
METHANE	83.4	80.7	71.4	96.8	85.6	72-125	12.2	30

Comments: \_\_\_\_\_

<u>Primary</u>	<u>SPK</u>	<u>DUP</u>
Quant Method :	RSK0120.M	RSK0120.M
Extraction Date :	02/04/19	02/04/19
Analysis Date :	02/04/19	02/04/19
Instrument :	Rocky	Rocky
Run :	19020400	19020402
Initials :	CMO	

## Wet Lab Analysis

AECOM  
1001 Bishop Street, Suite 1600  
Honolulu, HI 96813

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

Attn: Margie Pascua

Project: 60571032 CV18F0126 Red Hill Fuel Storage

**Sample ID: ERH764**

Sample Collection Date: 01/28/19

**APPL ID: AZ85766**

ARF: 87986

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
EPA 300.0	NITRATE	0.18 U	0.5	0.18	0.04	mg/L	1	01/30/19	01/30/19
EPA 300.0	SULFATE	10.5	1.0	0.20	0.09	mg/L	1	01/30/19	01/30/19
EPA 300.0	CHLORIDE	52.3	2.0	0.40	0.16	mg/L	2	01/30/19	01/30/19
EPA 353.2	NITRATE-NITRITE-N	0.100 U	0.10	0.100	0.028	mg/L	1	02/04/19	02/04/19
SM 2320B	BICARBONATE AS CaCO3	114	2.0	1.70	0.85	mg/L	1	02/05/19	02/05/19
SM 2320B	CARBONATE AS CaCO3	1.70 U	2.0	1.70	0.85	mg/L	1	02/05/19	02/05/19
SM 2320B	TOTAL ALKALINITY AS CaCO3	114	2.0	1.70	0.85	mg/L	1	02/05/19	02/05/19
SM3500FeB	FERROUS IRON	0.20 J	1.0	0.32	0.16	mg/L	1	01/30/19	01/30/19
SW846 9060A	TOTAL ORGANIC CARBON	1.0	0.93	0.350	0.130	mg/L	1	02/13/19	02/13/19

J = Estimated value.

Printed: 02/17/19 9:37:10 AM

APPL-F1-SC-NoMC-REG MDLs

# EPA 300.0

Form 4

## Blank Summary

Lab Name: APPL, Inc.

SDG No: 87986

Case No: 87986

Date Analyzed: 01/30/19

Matrix: WATER

Instrument: Charlie

Blank ID: 190130A4-BLK

Time Analyzed: 0910

<b>APPL ID.</b>	<b>Client Sample No.</b>	<b>File ID.</b>	<b>Date Analyzed</b>
190130A4-BLK	Blank	2	01/30/19 0910
190130A4-LCS	Lab Control Spike	3	01/30/19 0918
AZ85766	ERH764	31	01/30/19 1451
190130A4-LCSD	Lab Control SpikeD	4	01/30/19 0925
AZ85766	ERH764	6	01/30/19 1016

Comments: Batch: #300W-190130A4

Printed: 02/17/19 9:37:13 AM

Form 4, Blank Summary

# WETLAB BLANK

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

Method	Analyte	Result	LOQ	LOD	DL	Units	Prep Date	Analysis Date	QC Group
EPA 300.0	CHLORIDE	0.20 U	1.0	0.20	0.08	mg/L	01/30/19	01/30/19	#300W-190130A4-AZ85766
EPA 300.0	NITRATE	0.18 U	0.5	0.18	0.04	mg/L	01/30/19	01/30/19	#300W-190130A4-AZ85766
EPA 300.0	SULFATE	0.20 U	1.0	0.20	0.09	mg/L	01/30/19	01/30/19	#300W-190130A4-AZ85766

Wetlab SC-Blank-REG MDLs  
Printed: 02/17/19 9:37:15 AM

# EPA 353.2

Form 4

## Blank Summary

Lab Name: APPL, Inc.

SDG No: 87986

Case No: 87986

Date Analyzed: 02/04/19

Matrix: WATER

Instrument: EVE

Blank ID: 190204A-BLK

Time Analyzed: 1436

<b>APPL ID.</b>	<b>Client Sample No.</b>	<b>File ID.</b>	<b>Date Analyzed</b>
190204A-BLK	Blank	12	02/04/19 1436
190204A-LCS	Lab Control Spike	13	02/04/19 1436
190204A-LCSD	Lab Control SpikeD	14	02/04/19 1437
AZ85766	ERH764	16	02/04/19 1439

Comments: Batch: #35OF-190204A

Printed: 02/17/19 9:37:13 AM

Form 4, Blank Summary

# WETLAB BLANK

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

Method	Analyte	Result	LOQ	LOD	DL	Units	Prep Date	Analysis Date	QC Group
EPA 353.2	NITRATE-NITRITE-N	0.100 U	0.10	0.100	0.028	mg/L	02/04/19	02/04/19	#35OF-190204A-AZ85766

Wetlab SC-Blank-REG MDLs  
Printed: 02/17/19 9:37:15 AM



# SM 2320B

Form 4

## Blank Summary

Lab Name: APPL, Inc.

SDG No: 87986

Case No: 87986

Date Analyzed: 02/05/19

Matrix: WATER

Instrument: Tiamo

Blank ID: 190205A-BLK

Time Analyzed: 1135

APPL ID.	Client Sample No.	File ID.	Date Analyzed
190205A-BLK	Blank	1	02/05/19 1135
AZ85766	ERH764	18	02/05/19 1529
190205A-LCS	Lab Control Spike	2	02/05/19 1138
190205A-LCSD	Lab Control SpikeD	3	02/05/19 1148

Comments: Batch: #232W-190205A

Printed: 02/17/19 9:37:13 AM  
Form 4, Blank Summary

# WETLAB BLANK

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

Method	Analyte	Result	LOQ	LOD	DL	Units	Prep Date	Analysis Date	QC Group
SM 2320B	BICARBONATE AS CA	2.2	2.0	1.70	0.85	mg/L	02/05/19	02/05/19	#232W-190205A-AZ85766
SM 2320B	CARBONATE AS CACO	1.70 U	2.0	1.70	0.85	mg/L	02/05/19	02/05/19	#232W-190205A-AZ85766
SM 2320B	TOTAL ALKALINITY AS	2.2	2.0	1.70	0.85	mg/L	02/05/19	02/05/19	#232W-190205A-AZ85766

Wetlab SC-Blank-REG MDLs  
Printed: 02/17/19 9:37:15 AM

# SM3500FeB

Form 4

## Blank Summary

Lab Name: APPL, Inc.

SDG No: 87986

Case No: 87986

Date Analyzed: 01/30/19

Matrix: WATER

Instrument: Manual Spec

Blank ID: 190130A-BLK

Time Analyzed: 0811

APPL ID.	Client Sample No.	File ID.	Date Analyzed
190130A-BLK	Blank	14	01/30/19 0811
190130A-LCS	Lab Control Spike	15	01/30/19 0812
190130A-LCSD	Lab Control SpikeD	16	01/30/19 0812
AZ85766	ERH764	31	01/30/19 1018

Comments: Batch: #35FE-190130A

Printed: 02/17/19 9:37:13 AM  
Form 4, Blank Summary

# WETLAB BLANK

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

Method	Analyte	Result	LOQ	LOD	DL	Units	Prep Date	Analysis Date	QC Group
SM3500Fe	FERROUS IRON	0.32 U	1.0	0.32	0.16	mg/L	01/30/19	01/30/19	#35FE-190130A-AZ85761

Wetlab SC-Blank-REG MDLs  
Printed: 02/17/19 9:37:15 AM

# SW846 9060A

Form 4

## Blank Summary

Lab Name: APPL, Inc.

SDG No: 87986

Case No: 87986

Date Analyzed: 02/13/19

Matrix: WATER

Instrument: Manual

Blank ID: 190213A-BLK

Time Analyzed: 0923

<u>APPL ID.</u>	<u>Client Sample No.</u>	<u>File ID.</u>	<u>Date Analyzed</u>
AZ85766	ERH764		02/13/19 1134
190213A-BLK	Blank		02/13/19 0923
190213A-LCS	Lab Control Spike		02/13/19 1148
190213A-LCSD	Lab Control SpikeD		02/13/19 1223

Comments: Batch: #TOCDOCW-19021

Printed: 02/17/19 9:37:13 AM

Form 4, Blank Summary

# WETLAB BLANK

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

Method	Analyte	Result	LOQ	LOD	DL	Units	Prep Date	Analysis Date	QC Group
SW846 90	TOTAL ORGANIC CAR	0.31 J	0.93	0.350	0.130	mg/L	02/13/19	02/13/19	CDOCW-190213A-AZ85643

J = Estimated value.

Wetlab SC-Blank-REG MDLs  
Printed: 02/17/19 9:37:15 AM

# EPA 300.0

Form 4

## LCS Summary

Lab Name: APPL, Inc.

SDG No: 87986

Case No: 87986

Date Analyzed: 01/30/19

Matrix: WATER

Instrument: Charlie

LCS ID: 190130A4-LCS

Time Analyzed: 0918

<b>APPL ID.</b>	<b>Client Sample No.</b>	<b>File ID.</b>	<b>Date Analyzed</b>
190130A4-BLK	Blank	2	01/30/19 0910
190130A4-LCS	Lab Control Spike	3	01/30/19 0918
AZ85766	ERH764	31	01/30/19 1451
190130A4-LCSD	Lab Control SpikeD	4	01/30/19 0925
AZ85766	ERH764	6	01/30/19 1016

Comments: Batch: #300W-190130A4

Printed: 02/17/19 9:37:19 AM  
Form 4, LCS Summary

# Laboratory Control Spike Recoveries

## WETLAB

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

Method	Compound Name	Spike Lvl mg/L	SPK Res mg/L	DUP Res mg/L	SPK % Recov	DUP % Recov	RPD	RPD Max	QC Limits	Extract Date-Spk	Analysis Date-Spk	Extract Date-Dup	Analysis Date-Dup	QC Group
EPA 300.0	CHLORIDE	25.0	23.2	23.2	92.8	92.8	0.0	20	90-110	01/30/19	01/30/19	01/30/19	01/30/19	#300W-190130A4-AZ8576
EPA 300.0	NITRATE	22.1	21.1	21.1	95.5	95.5	0.0	20	90-110	01/30/19	01/30/19	01/30/19	01/30/19	#300W-190130A4-AZ8576
EPA 300.0	SULFATE	25.0	23.5	23.6	94.0	94.4	0.42	20	90-110	01/30/19	01/30/19	01/30/19	01/30/19	#300W-190130A4-AZ8576

Comments: \_\_\_\_\_



# EPA 353.2

Form 4

## LCS Summary

Lab Name: APPL, Inc.

SDG No: 87986

Case No: 87986

Date Analyzed: 02/04/19

Matrix: WATER

Instrument: EVE

LCS ID: 190204A-LCS

Time Analyzed: 1436

<u>APPL ID.</u>	<u>Client Sample No.</u>	<u>File ID.</u>	<u>Date Analyzed</u>
190204A-BLK	Blank	12	02/04/19 1436
190204A-LCS	Lab Control Spike	13	02/04/19 1436
190204A-LCSD	Lab Control SpikeD	14	02/04/19 1437
AZ85766	ERH764	16	02/04/19 1439

Comments: Batch: #35OF-190204A

Printed: 02/17/19 9:37:19 AM  
Form 4, LCS Summary

# Laboratory Control Spike Recoveries

## WETLAB

APPL Inc.  
 908 North Temperance Avenue  
 Clovis, CA 93611

Method	Compound Name	Spike Lvl mg/L	SPK Res mg/L	DUP Res mg/L	SPK % Recov	DUP % Recov	RPD	RPD Max	QC Limits	Extract Analysis Date-Spk	Extract Analysis Date-Spk	Extract Analysis Date-Dup	Extract Analysis Date-Dup	QC Group
EPA 353.2	NITRATE-NITRITE-N	3.00	2.89	2.72	96.3	90.7	6.1	20	90-110	02/04/19	02/04/19	02/04/19	02/04/19	#35OF-190204A-AZ85766

Comments: \_\_\_\_\_

# SM 2320B

Form 4

## LCS Summary

Lab Name: APPL, Inc.

SDG No: 87986

Case No: 87986

Date Analyzed: 02/05/19

Matrix: WATER

Instrument: Tiamo

LCS ID: 190205A-LCS

Time Analyzed: 1138

APPL ID.	Client Sample No.	File ID.	Date Analyzed
190205A-BLK	Blank	1	02/05/19 1135
AZ85766	ERH764	18	02/05/19 1529
190205A-LCS	Lab Control Spike	2	02/05/19 1138
190205A-LCSD	Lab Control SpikeD	3	02/05/19 1148

Comments: Batch: #232W-190205A

Printed: 02/17/19 9:37:19 AM  
Form 4, LCS Summary

# Laboratory Control Spike Recoveries

## WETLAB

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

Method	Compound Name	Spike Lvl mg/L	SPK Res mg/L	DUP Res mg/L	SPK % Recov	DUP % Recov	RPD	RPD Max	QC Limits	Extract Date-Spk	Analysis Date-Spk	Extract Date-Dup	Analysis Date-Dup	QC Group
SM 2320B	BICARBONATE AS CaCO3	250	238	238	95.2	95.2	0.0	20	90-110	02/05/19	02/05/19	02/05/19	02/05/19	#232W-190205A-AZ85766
SM 2320B	TOTAL ALKALINITY AS CA	250	238	238	95.2	95.2	0.0	20	90-110	02/05/19	02/05/19	02/05/19	02/05/19	#232W-190205A-AZ85766

Comments: \_\_\_\_\_

# SM3500FeB

Form 4

## LCS Summary

Lab Name: APPL, Inc.

SDG No: 87986

Case No: 87986

Date Analyzed: 01/30/19

Matrix: WATER

Instrument: Manual Spec

LCS ID: 190130A-LCS

Time Analyzed: 0812

<b>APPL ID.</b>	<b>Client Sample No.</b>	<b>File ID.</b>	<b>Date Analyzed</b>
190130A-BLK	Blank	14	01/30/19 0811
190130A-LCS	Lab Control Spike	15	01/30/19 0812
190130A-LCSD	Lab Control SpikeD	16	01/30/19 0812
AZ85766	ERH764	31	01/30/19 1018

Comments: Batch: #35FE-190130A

Printed: 02/17/19 9:37:19 AM

Form 4, LCS Summary

## Laboratory Control Spike Recoveries

### WETLAB

APPL Inc.  
 908 North Temperance Avenue  
 Clovis, CA 93611

Method	Compound Name	Spike Lvl mg/L	SPK Res mg/L	DUP Res mg/L	SPK % Recov	DUP % Recov	RPD	RPD Max	QC Limits	Extract Date-Spk	Analysis Date-Spk	Extract Date-Dup	Analysis Date-Dup	QC Group
SM3500Fe	FERROUS IRON	3.00	2.96	3.00	98.7	100	1.3	20	80-120	01/30/19	01/30/19	01/30/19	01/30/19	#35FE-190130A-AZ85761

Comments: \_\_\_\_\_

**SW846 9060A**

Form 4

**LCS Summary**

Lab Name: APPL, Inc.  
Case No: 87986  
Matrix: WATER  
LCS ID: 190213A-LCS

SDG No: 87986  
Date Analyzed: 02/13/19  
Instrument: Manual  
Time Analyzed: 1148

<b>APPL ID.</b>	<b>Client Sample No.</b>	<b>File ID.</b>	<b>Date Analyzed</b>
AZ85766	ERH764		02/13/19 1134
190213A-BLK	Blank		02/13/19 0923
190213A-LCS	Lab Control Spike		02/13/19 1148
190213A-LCSD	Lab Control SpikeD		02/13/19 1223

Comments: Batch: #TOCDOCW-19021

# Laboratory Control Spike Recoveries

## WETLAB

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

Method	Compound Name	Spike Lvl mg/L	SPK Res mg/L	DUP Res mg/L	SPK % Recov	DUP % Recov	RPD	RPD Max	QC Limits	Extract Date-Spk	Analysis Date-Spk	Extract Date-Dup	Analysis Date-Dup	QC Group
SW846 90	TOTAL ORGANIC CARBO	2.00	2.19	2.16	110	108	1.4	20	90-110	02/13/19	02/13/19	02/13/19	02/13/19	#TOCDOCW-190213A-AZ8

Comments: \_\_\_\_\_



**ORGANICS**  
**Calibration Data**

TPH Extractables  
DOC0117

Form 6  
Initial Calibration

Lab Name: APPL, Inc.

Case No: \_\_\_\_\_

Matrix: Water

SDG No: \_\_\_\_\_

Initial Cal. Date: 01/17/19

Instrument: Apollo

Initials: \_\_\_\_\_

117002.D    117003.D    117004.D    117005.D    117006.D    117007.D

	Compound	1	2	3	4	5	6					Avg	%RSD	Type	r^2	Q
1	HATM Diesel (C10-C24)	1247225	1163187	1209913	1221573	1152277	1133164					1187890	3.8	HATM		
2	HBTM Motor Oil (C24-C40)	1046830	917795	948443	920306	882639	861594					929601	7.0	HBTM		
3	SC Decanoic Acid(S)	648675	1095549	1090928	1053315	1004335	1065935					993123	17	SC		
4	SA Ortho-Terphenyl(S)	2315091	2079412	2039254	2009486	1862079	1811493					2019469	8.8	SA		
5	SA Octacosane(S)	2056338	1855545	1881468	1912913	1840710	1711226					1876367	6.0	SA		
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1.225349

Data File : G:\APOLLO\DATA\190117\117002.D Vial: 2  
 Acq On : 1-17-19 16:38:28 Operator: DP  
 Sample : Diesel / Motor Oil - 1 1/17/19 Inst : Apollo  
 Misc : water Multiplr: 1.00  
 IntFile : events.e  
 Quant Time: Jan 24 13:42 2019 Quant Results File: DOC0117.RES

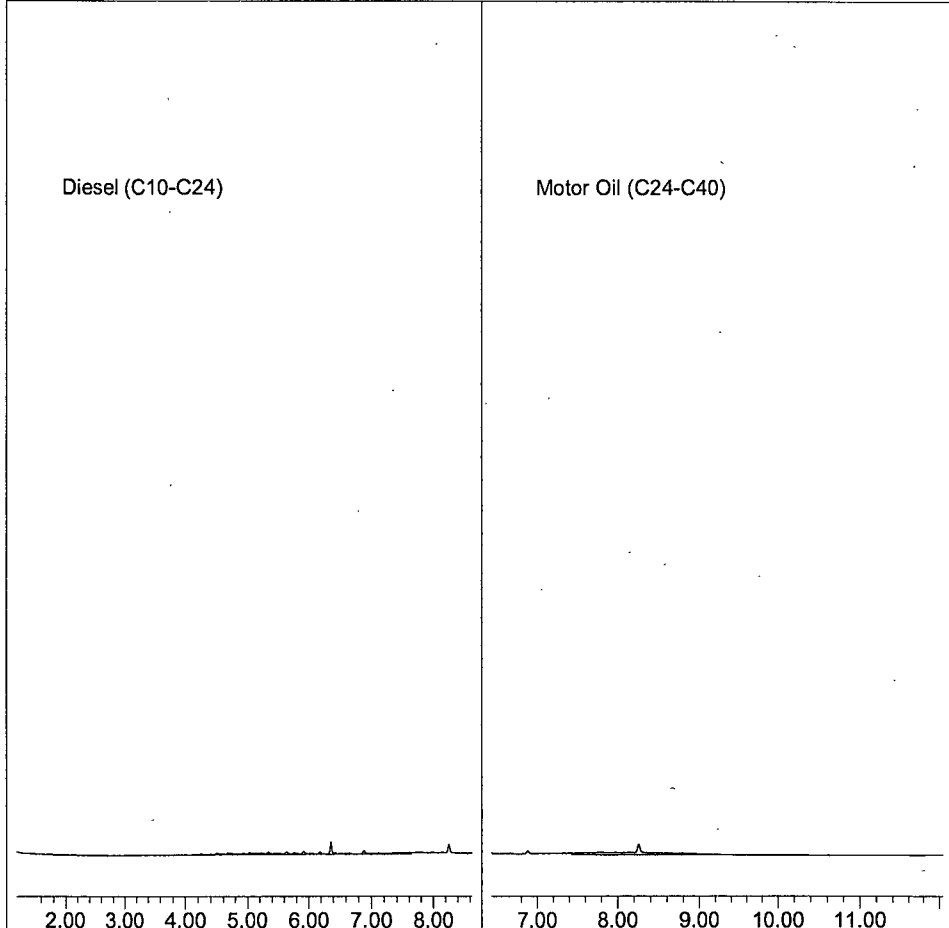
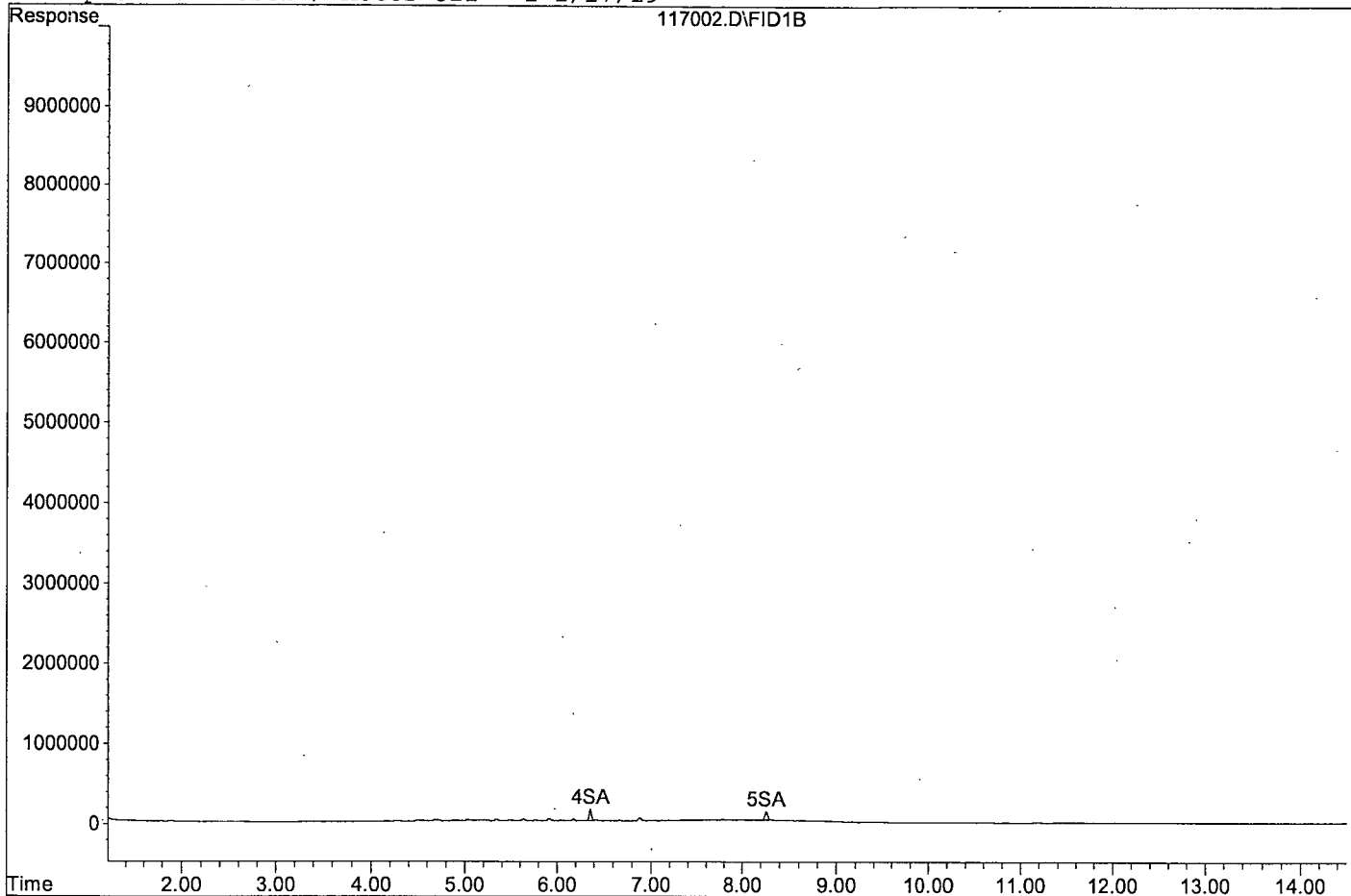
Method : G:\APOLLO\DATA\190117\DOC0117.M (Chemstation Integrator)  
 Title : 8015 B&C  
 Last Update : Thu Jan 24 13:38:12 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 2UL  
 Signal Phase : DB-5  
 Signal Info : FID02A

Compound	R.T.	Response	Conc Units
-----			
System Monitoring Compounds			
4) SA Ortho-Terphenyl(S)	6.36	2315091	0.573 ppb
Surrogate Spike 30.000		Recovery =	1.91%
5) SA Octacosane(S)	8.26	2056338	0.548 ppb
Surrogate Spike 30.000		Recovery =	1.83%
Target Compounds			
1) HATM Diesel (C10-C24)	4.71	24944497	10.500 ppb
2) HBTM Motor Oil (C24-C40)	9.23	20936598	11.261 ppb

Quantitation Report

Data File: G:\APOLLO\DATA\190117\117002.D  
Sample : Diesel / Motor Oil - 1 1/17/19



Data File : G:\APOLLO\DATA\190117\117003.D Vial: 3  
 Acq On : 1-17-19 16:58:29 Operator: DP  
 Sample : Diesel / Motor Oil - 2 1/17/19 Inst : Apollo  
 Misc : water Multiplr: 1.00  
 IntFile : events.e  
 Quant Time: Jan 24 13:42 2019 Quant Results File: DOC0117.RES

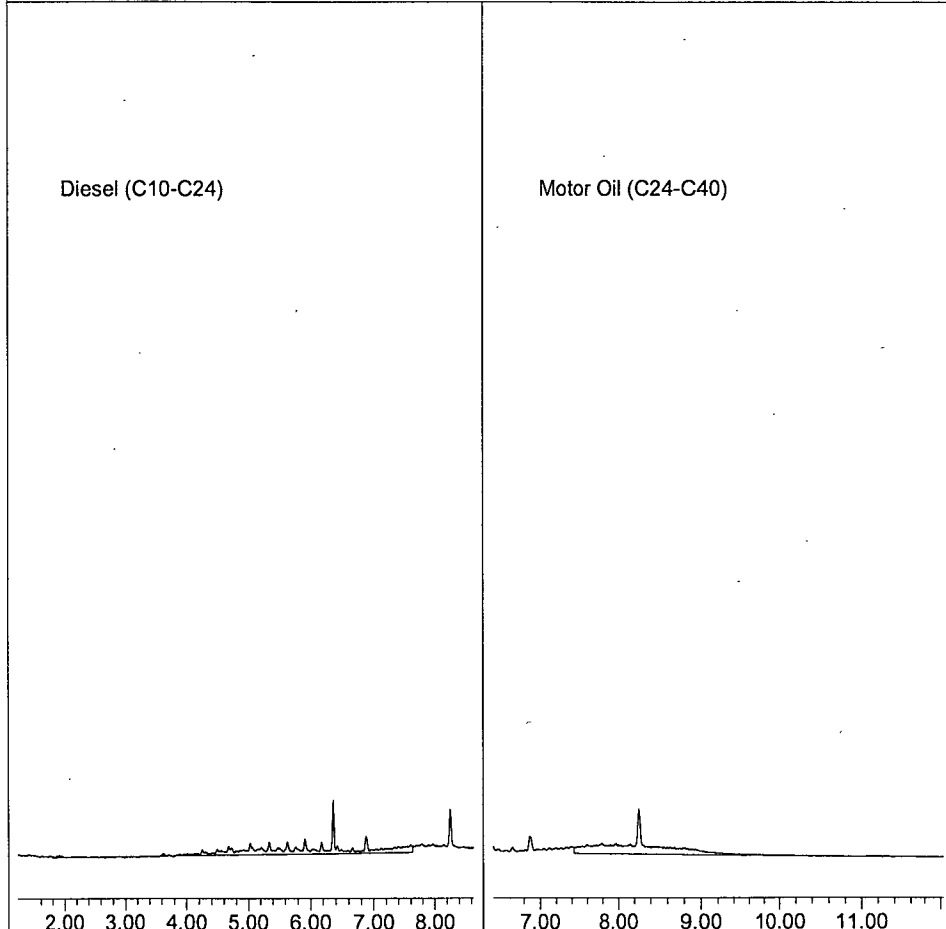
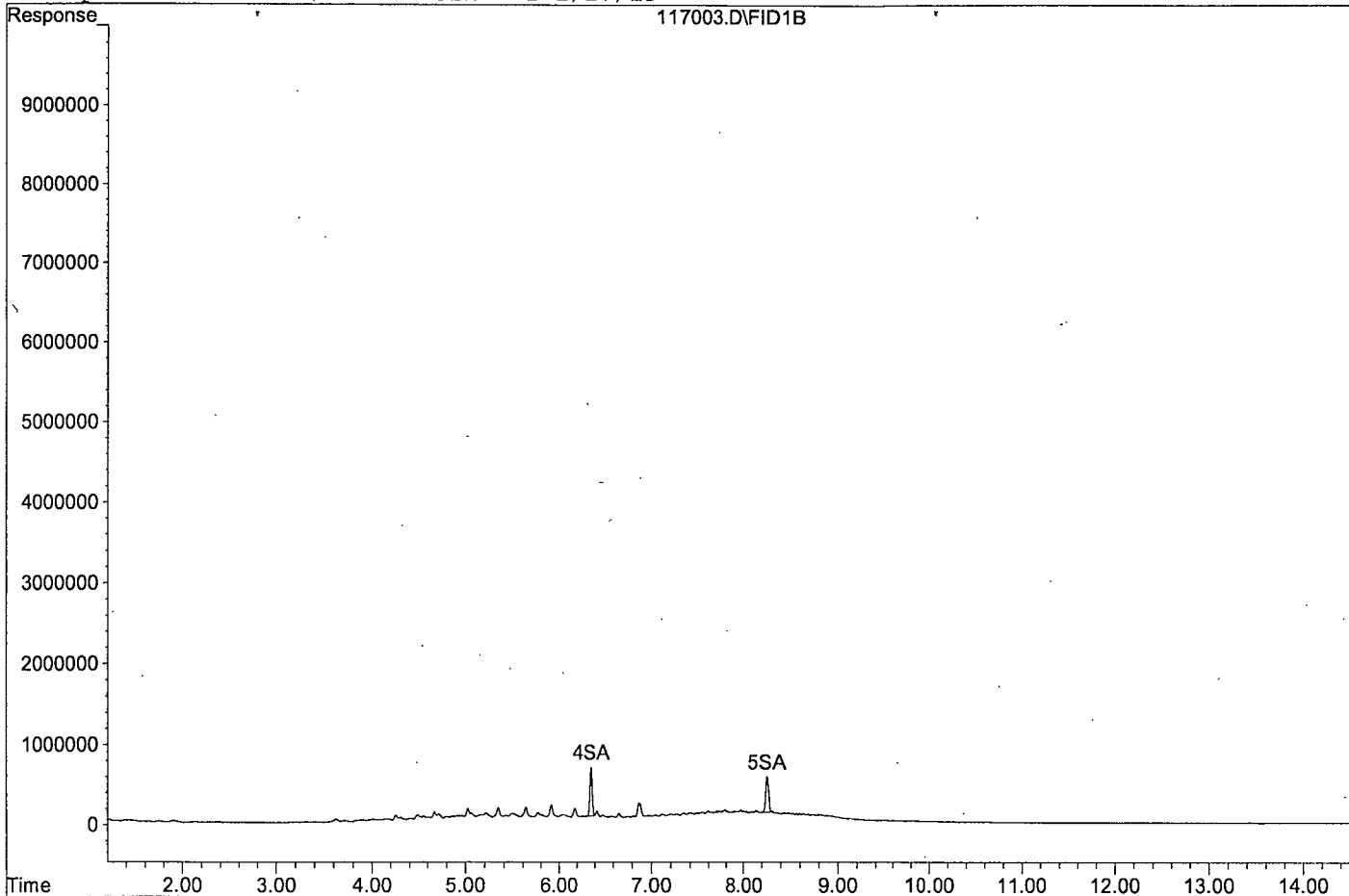
Method : G:\APOLLO\DATA\190117\DOC0117.M (Chemstation Integrator)  
 Title : 8015 B&C  
 Last Update : Thu Jan 24 13:38:12 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 2UL  
 Signal Phase : DB-5  
 Signal Info : FID02A

Compound	R.T.	Response	Conc Units
-----			
System Monitoring Compounds			
4) SA Ortho-Terphenyl(S)	6.36	10397059	2.574 ppb
Surrogate Spike 30.000		Recovery =	8.58%
5) SA Octacosane(S)	8.26	9277725	2.472 ppb
Surrogate Spike 30.000		Recovery =	8.24%
Target Compounds			
1) HATM Diesel (C10-C24)	4.71	116318686	48.960 ppb
2) HBTM Motor Oil (C24-C40)	9.23	91779450	49.365 ppb

Quantitation Report

Data File: G:\APOLLO\DATA\190117\117003.D  
Sample : Diesel / Motor Oil - 2 1/17/19



Data File : G:\APOLLO\DATA\190117\117004.D Vial: 4  
 Acq On : 1-17-19 17:17:50 Operator: DP  
 Sample : Diesel / Motor Oil - 3 1/17/19 Inst : Apollo  
 Misc : water Multiplr: 1.00  
 IntFile : events.e  
 Quant Time: Jan 24 13:42 2019 Quant Results File: DOC0117.RES

Method : G:\APOLLO\DATA\190117\DOC0117.M (Chemstation Integrator)  
 Title : 8015 B&C  
 Last Update : Thu Jan 24 13:38:12 2019  
 Response via : Multiple Level Calibration

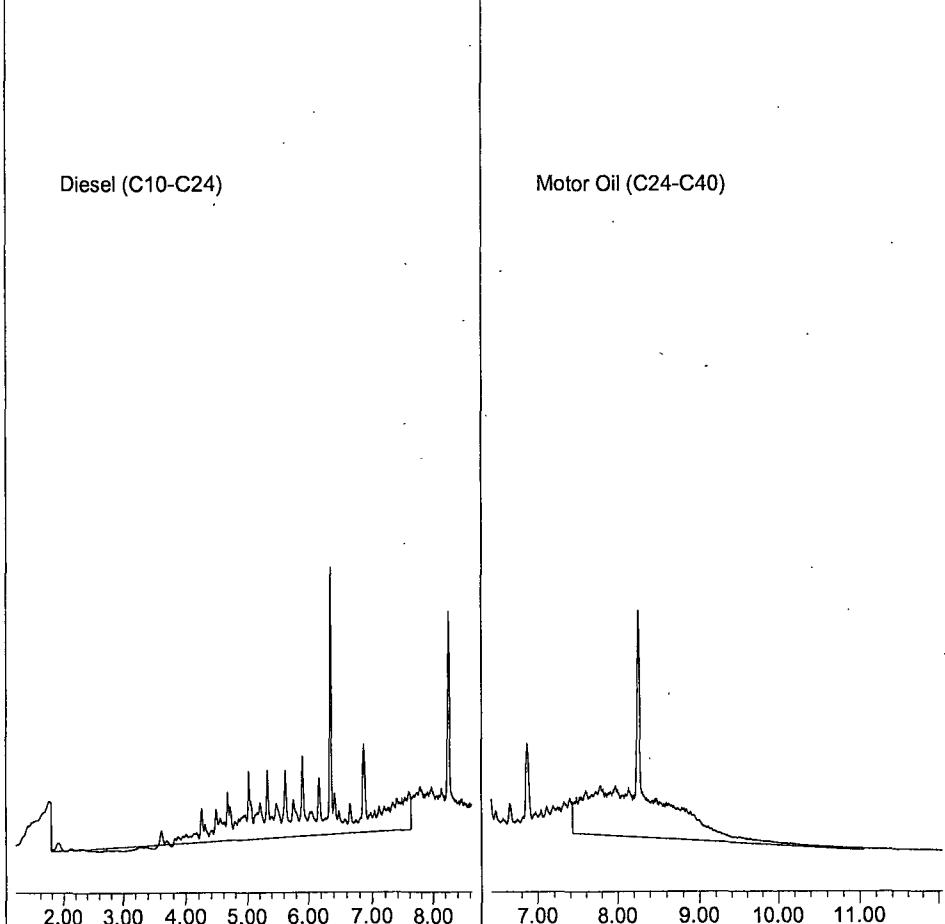
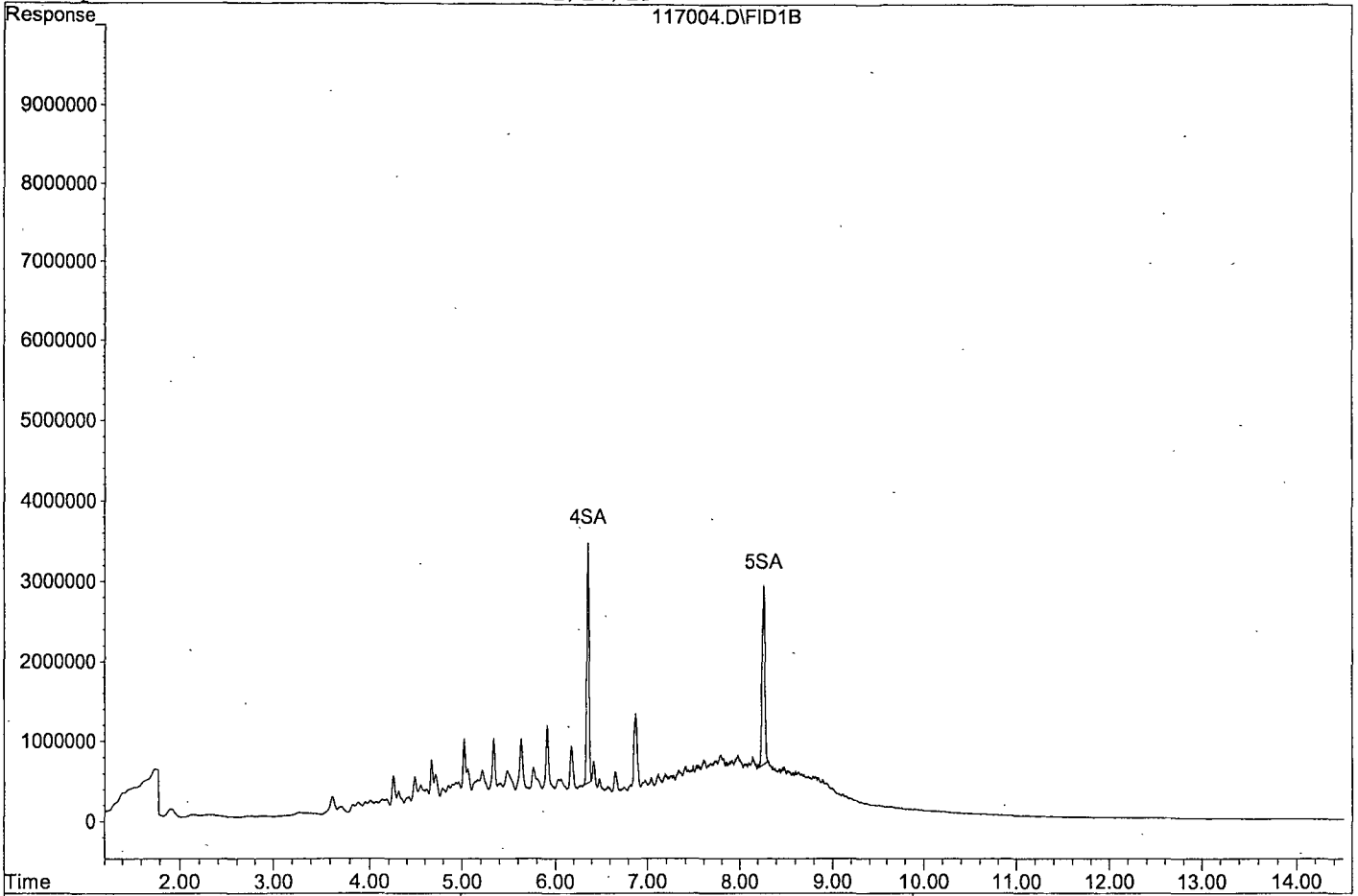
Volume Inj. : 2UL  
 Signal Phase : DB-5  
 Signal Info : FID02A

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
4) SA Ortho-Terphenyl(S)	6.36	50981338	12.622 ppb
Surrogate Spike 30.000		Recovery =	42.07%
5) SA Octacosane(S)	8.26	47036708	12.534 ppb
Surrogate Spike 30.000		Recovery =	41.78%
Target Compounds			
1) HATM Diesel (C10-C24)	4.71	604956690	254.635 ppb
2) HBTM Motor Oil (C24-C40)	9.23	474221646	255.067 ppb

Quantitation Report

Data File: G:\APOLLO\DATA\190117\117004.D

Sample : Diesel / Motor Oil - 3 1/17/19





Data File : G:\APOLLO\DATA\190117\117005.D Vial: 5  
 Acq On : 1-17-19 17:37:44 Operator: DP  
 Sample : Diesel / Motor Oil - 4 1/17/19 Inst : Apollo  
 Misc : water Multiplr: 1.00  
 IntFile : events.e  
 Quant Time: Jan 24 13:42 2019 Quant Results File: DOC0117.RES

Method : G:\APOLLO\DATA\190117\DOC0117.M (Chemstation Integrator)  
 Title : 8015 B&C  
 Last Update : Thu Jan 24 13:38:12 2019  
 Response via : Multiple Level Calibration

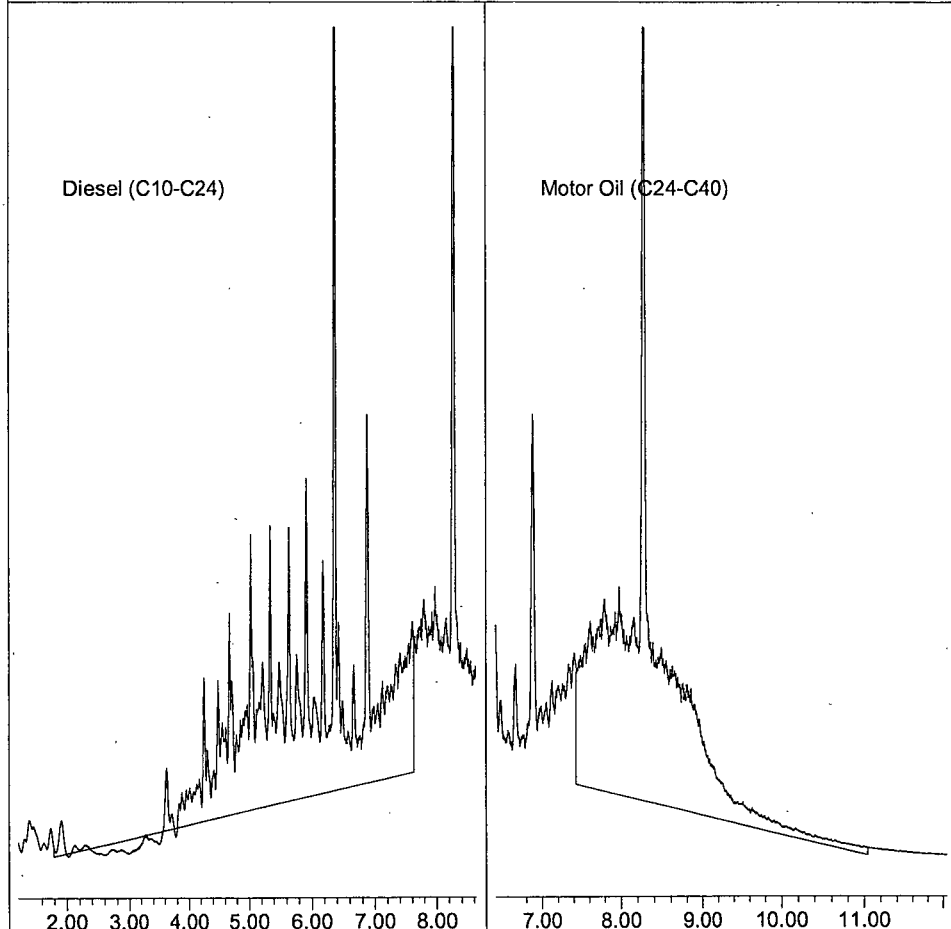
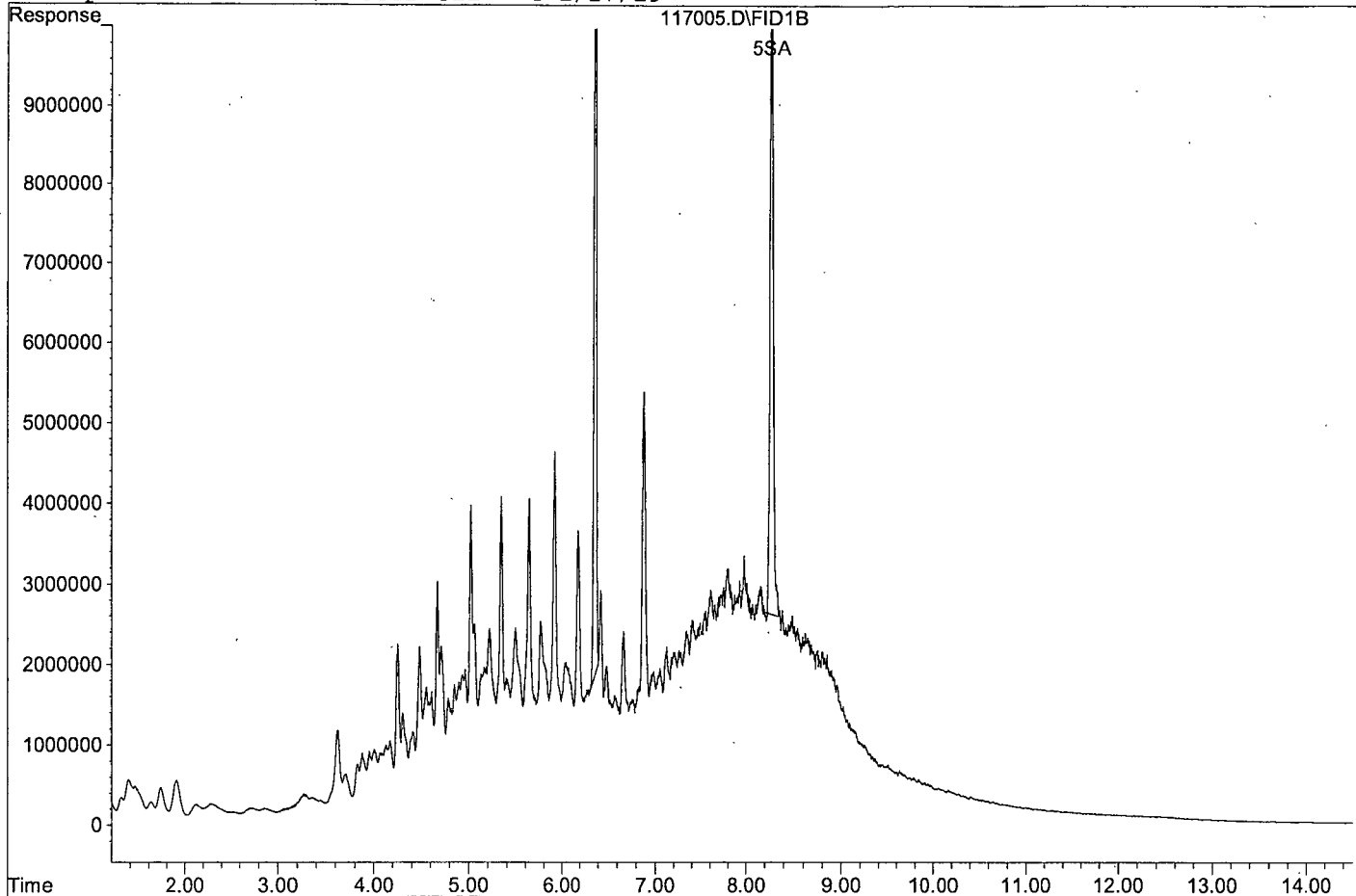
Volume Inj. : 2UL  
 Signal Phase : DB-5  
 Signal Info : FID02A

Compound	R.T.	Response	Conc Units
-----			
System Monitoring Compounds			
4) SA Ortho-Terphenyl(S)	6.37	200948587	49.753 ppb
Surrogate Spike 30.000		Recovery =	165.84%
5) SA Octacosane(S)	8.27	191291289	50.974 ppb
Surrogate Spike 30.000		Recovery =	169.91%
Target Compounds			
1) HATM Diesel (C10-C24)	4.71	2443146618	1028.356 ppb
2) HBTM Motor Oil (C24-C40)	9.23	1840612778	990.001 ppb

Quantitation Report

Data File: G:\APOLLO\DATA\190117\117005.D

Sample : Diesel / Motor Oil - 4 1/17/19



Data File : G:\APOLLO\DATA\190117\117006.D Vial: 6  
 Acq On : 1-17-19 17:57:32 Operator: DP  
 Sample : Diesel / Motor Oil - 5 1/17/19 Inst : Apollo  
 Misc : water Multiplr: 1.00  
 IntFile : events.e  
 Quant Time: Jan 24 13:42 2019 Quant Results File: DOC0117.RES

Method : G:\APOLLO\DATA\190117\DOC0117.M (Chemstation Integrator)  
 Title : 8015 B&C  
 Last Update : Thu Jan 24 13:38:12 2019  
 Response via : Multiple Level Calibration

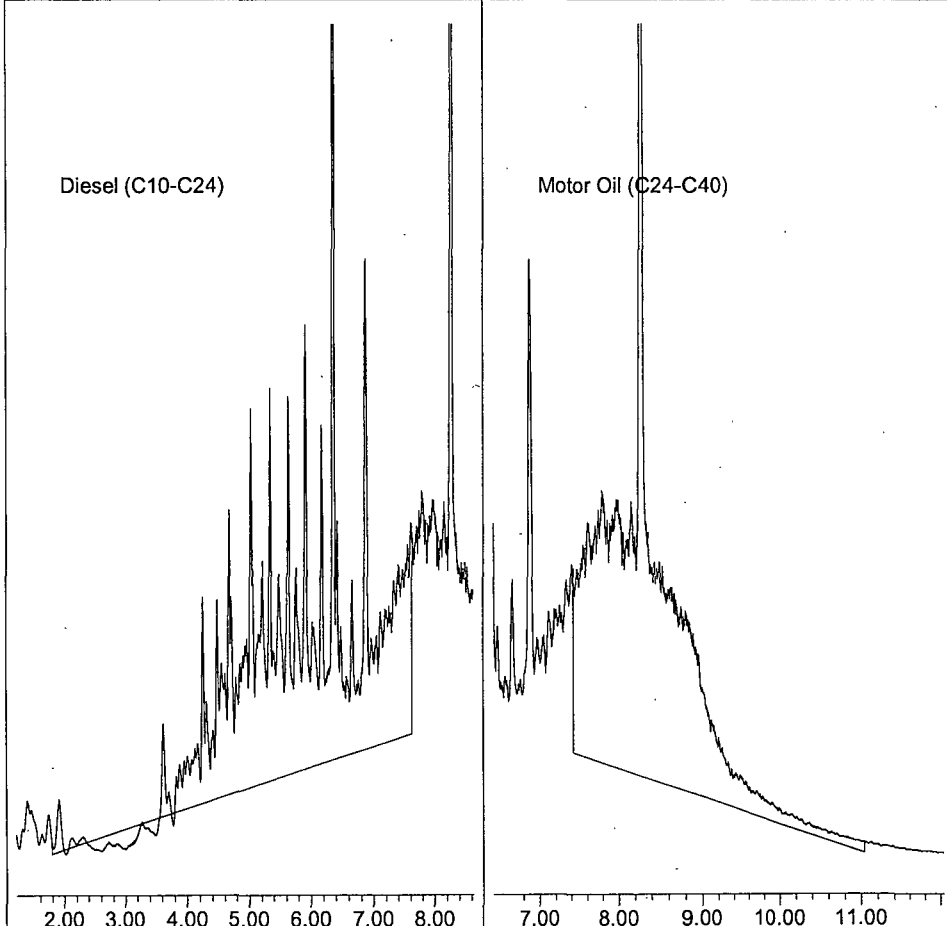
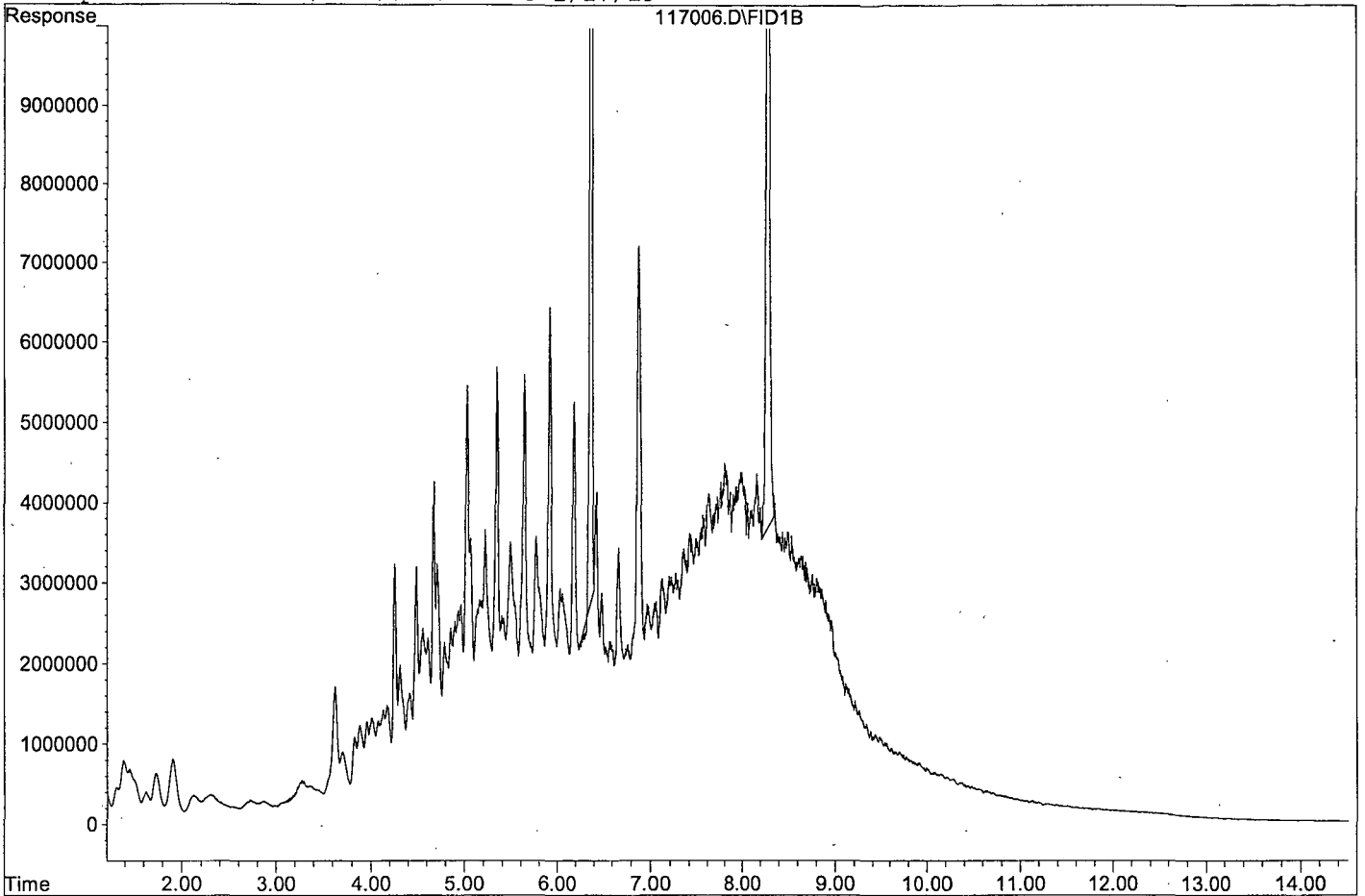
Volume Inj. : 2UL  
 Signal Phase : DB-5  
 Signal Info : FID02A

Compound	R.T.	Response	Conc Units
-----			
System Monitoring Compounds			
4) SA Ortho-Terphenyl(S)	6.37	279311894	69.155 ppb
Surrogate Spike 30.000		Recovery =	230.52%
5) SA Octacosane(S)	8.28	276106552	73.575 ppb
Surrogate Spike 30.000		Recovery =	245.25%
Target Compounds			
1) HATM Diesel (C10-C24)	4.71	3456829820	1455.030 ppb
2) HBTM Motor Oil (C24-C40)	9.23	2647918269	1424.223 ppb

Quantitation Report

Data File: G:\APOLLO\DATA\190117\117006.D

Sample : Diesel / Motor Oil - 5 1/17/19



Data File : G:\APOLLO\DATA\190117\117007.D Vial: 7  
 Acq On : 1-17-19 18:17:22 Operator: DP  
 Sample : Diesel / Motor Oil - 6 1/17/19 Inst : Apollo  
 Misc : water Multiplr: 1.00  
 IntFile : events.e  
 Quant Time: Jan 24 13:42 2019 Quant Results File: DOC0117.RES

Method : G:\APOLLO\DATA\190117\DOC0117.M (Chemstation Integrator)  
 Title : 8015 B&C  
 Last Update : Thu Jan 24 13:38:12 2019  
 Response via : Multiple Level Calibration

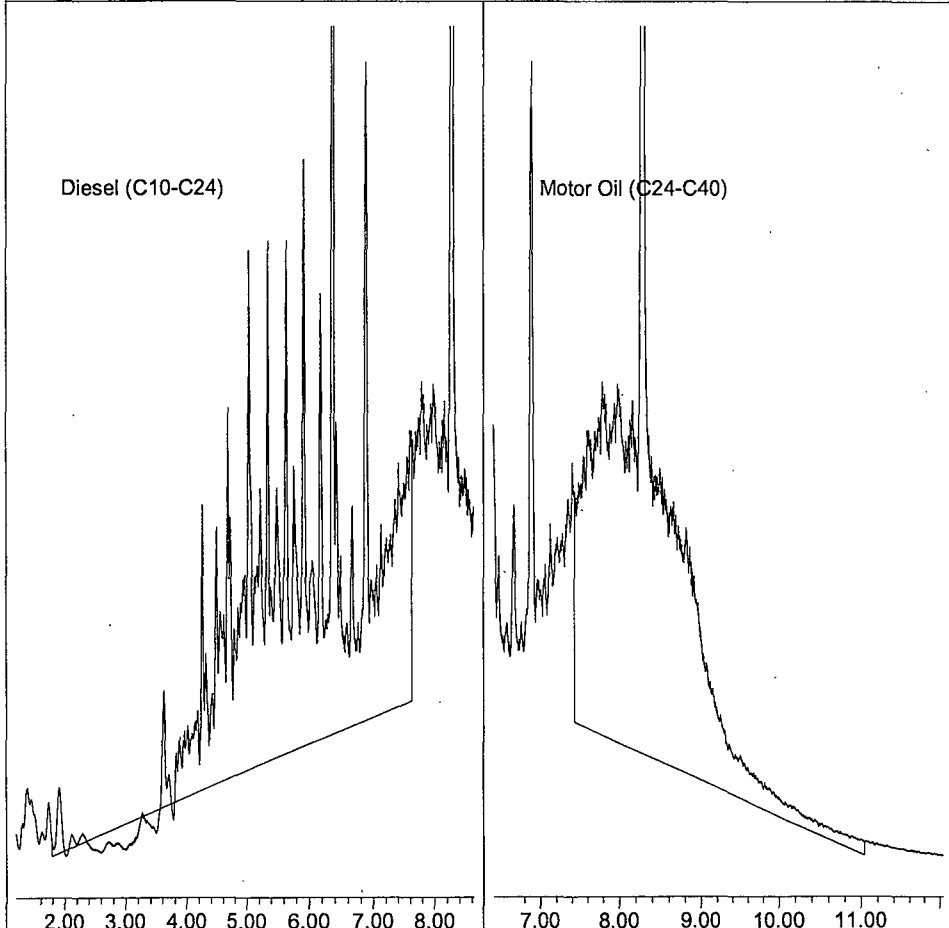
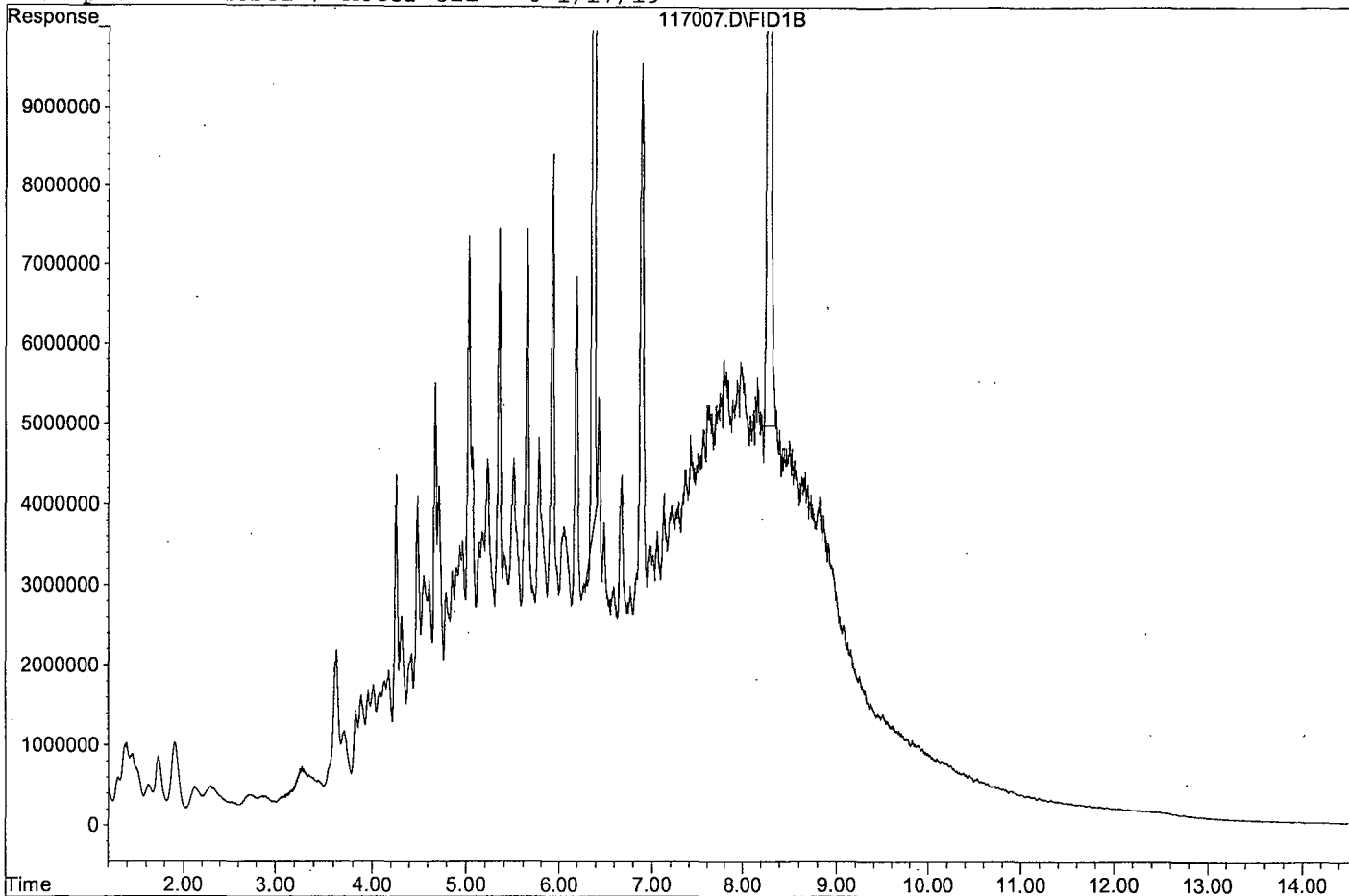
Volume Inj. : 2UL  
 Signal Phase : DB-5  
 Signal Info : FID02A

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
4) SA Ortho-Terphenyl(S)	6.38	362298697	89.701 ppb
Surrogate Spike 30.000		Recovery =	299.00%
5) SA Octacosane(S)	8.29	342245296	91.199 ppb
Surrogate Spike 30.000		Recovery =	304.00%
Target Compounds			
1) HATM Diesel (C10-C24)	4.71	4532654243	1907.860 ppb
2) HBTM Motor Oil (C24-C40)	9.23	3446375794	1853.685 ppb

Quantitation Report

Data File: G:\APOLLO\DATA\190117\117007.D

Sample : Diesel / Motor Oil - 6 1/17/19



TPH Extractables  
DOC0117

Form 7

Second Source Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: Water

SDG No: \_\_\_\_\_  
Date Analyzed: 01/17/19  
Instrument: Apollo  
Initial Cal. Date: 01/17/19  
Data File: 117008.D

		Compound	MEAN	CCRF	%D	%Drift
1	HATM	Diesel (C10-C24)	1187890	1199930	1.0	HATM
2	HBTM	Motor Oil (C24-C40)	929601	923236	0.68	HBTM
3						
4						
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32						
33						
34						
35						
36						
37						
38						
39						
40		Average			0.8	

Data File : G:\APOLLO\DATA\190117\117008.D Vial: 8  
 Acq On : 1-17-19 18:37:21 Operator: DP  
 Sample : Diesel / Motor Oil - SS 1/15/19 Inst : Apollo  
 Misc : water Multiplr: 1.00  
 IntFile : events.e  
 Quant Time: Jan 24 13:42 2019 Quant Results File: DOC0117.RES

Method : G:\APOLLO\DATA\190117\DOC0117.M (Chemstation Integrator)  
 Title : 8015 B&C  
 Last Update : Thu Jan 24 13:38:12 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 2UL  
 Signal Phase : DB-5  
 Signal Info : FID02A

Compound	R.T.	Response	Conc Units
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System Monitoring Compounds

Target Compounds

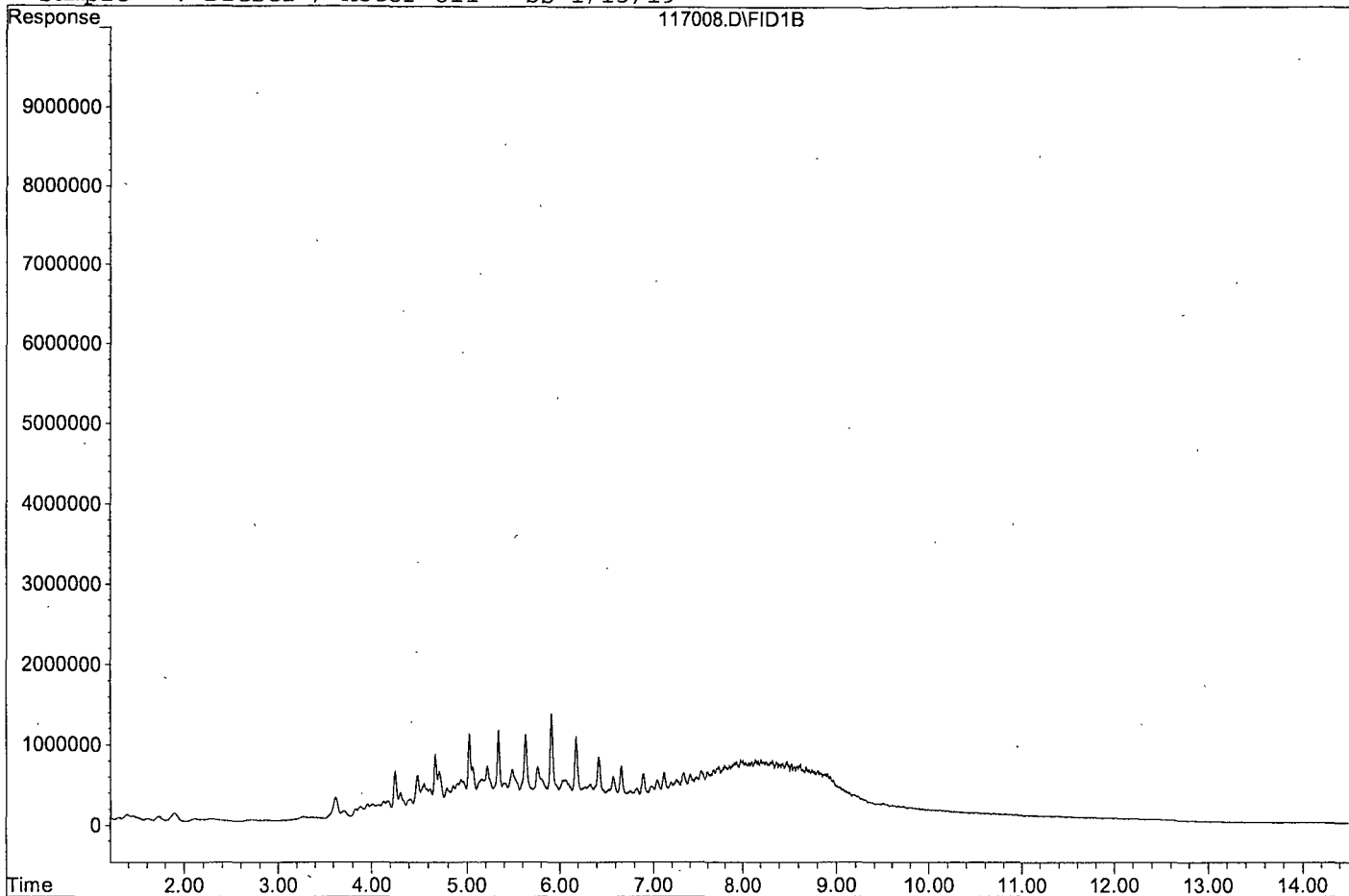
1) HATM Diesel (C10-C24)	4.71	599966004	252.534 ppb
2) HBTM Motor Oil (C24-C40)	9.23	461617841	248.288 ppb



Quantitation Report

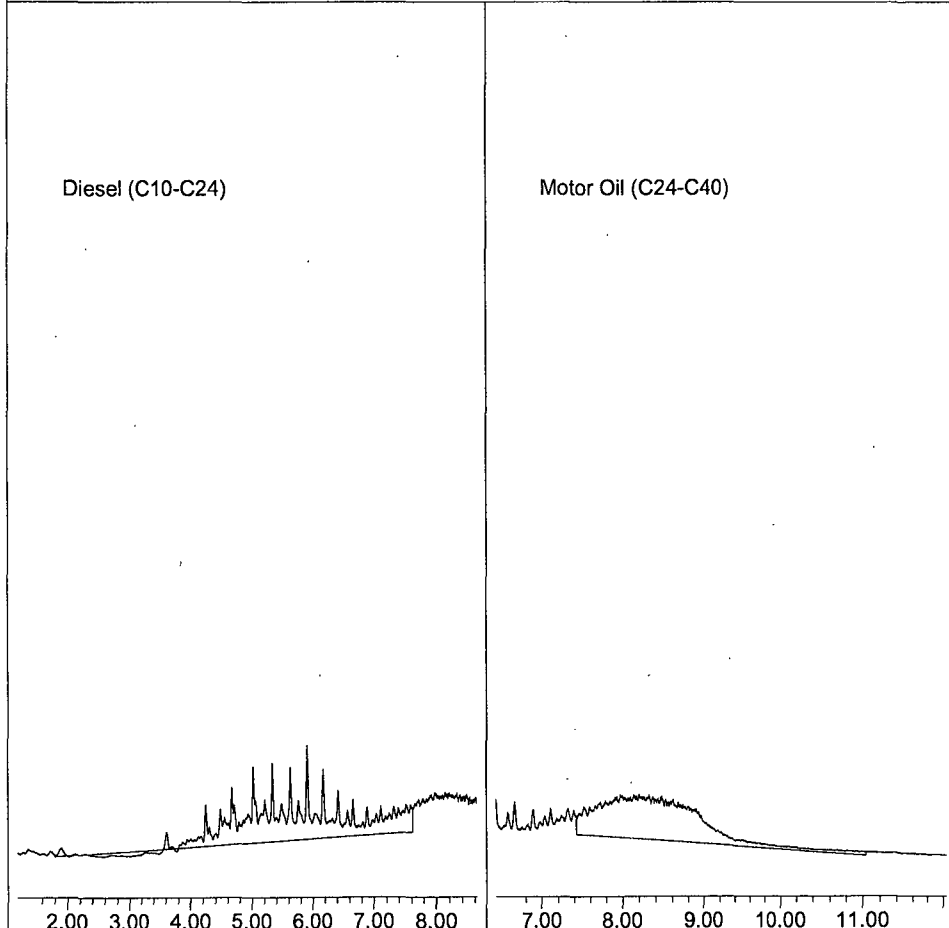
Data File: G:\APOLLO\DATA\190117\117008.D

Sample : Diesel / Motor Oil - SS 1/15/19



Diesel (C10-C24)

Motor Oil (C24-C40)



TPH Extractables  
DOC0117

Form 7

Continuing Calibration

Lab Name: APPL, Inc.

SDG No: \_\_\_\_\_

Case No: \_\_\_\_\_

Date Analyzed: 02/04/19

Matrix: Water

Instrument: Apollo

Initial Cal. Date: 01/17/19

Data File: 204002.D

	Compound	MEAN	CCRF	%D	%Drift
1	HATM Diesel (C10-C24)	1187890	1161660	2.2	HATM
2	HBTM Motor Oil (C24-C40)	929601	940980	1.2	HBTM
3	SA Ortho-Terphenyl(S)	2019470	1999460	0.99	SA
4	SA Octacosane(S)	1876370	1946540	3.7	SA
5					
6					
7					
8					
9					
10					
11					
12					
13					
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31					
32					
33					
34					
35					
36					
37					
38					
39					
40	Average			2.0	

Data File : G:\APOLLO\DATA\190204\204002.D Vial: 2  
 Acq On : 2-4-19 11:13:52 Operator: DP  
 Sample : Diesel / Motor Oil - 3 1/21/19 Inst : Apollo  
 Misc : water Multiplr: 1.00  
 IntFile : events.e  
 Quant Time: Feb 4 11:23 2019 Quant Results File: DOC0117.RES

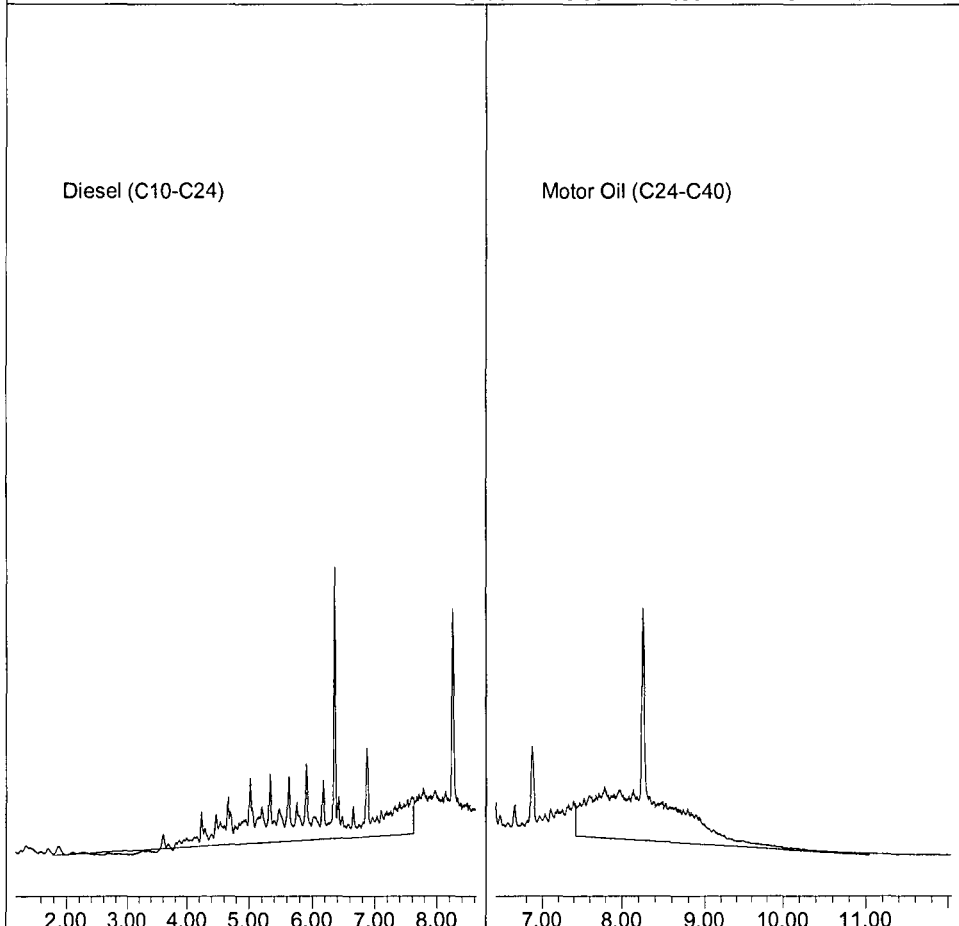
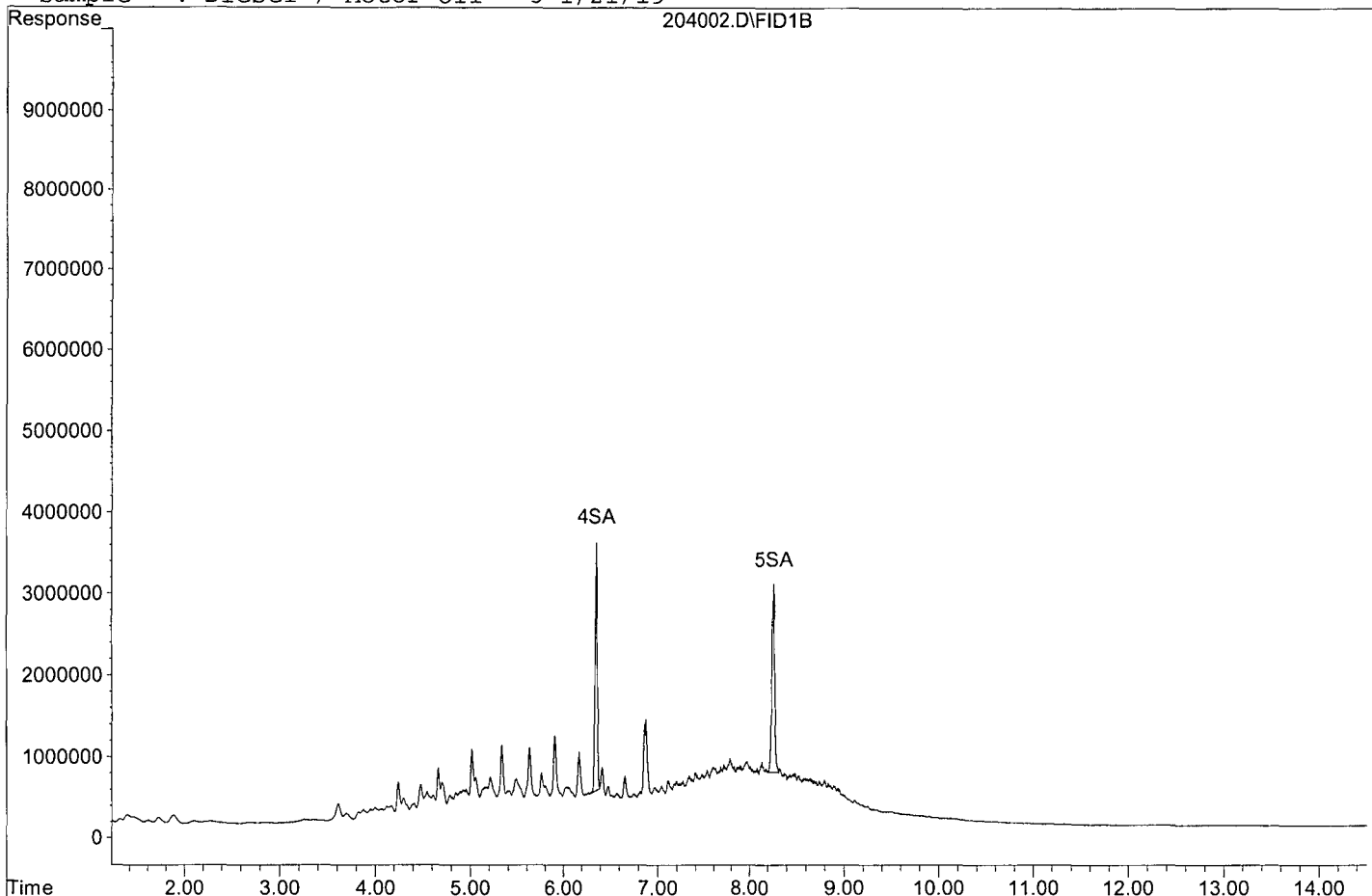
Method : G:\APOLLO\DATA\190204\DOC0117.M (Chemstation Integrator)  
 Title : 8015 B&C  
 Last Update : Thu Jan 24 14:36:29 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 2UL  
 Signal Phase : DB-5  
 Signal Info : FID02A

Compound	R.T.	Response	Conc Units
-----			
System Monitoring Compounds			
4) SA Ortho-Terphenyl(S)	6.36	49986595	12.376 ppb
Surrogate Spike 30.000		Recovery =	41.25%
5) SA Octacosane(S)	8.26	48663446	12.967 ppb
Surrogate Spike 30.000		Recovery =	43.22%
Target Compounds			
1) HATM Diesel (C10-C24)	4.71	580831934	244.481 ppb
2) HBTM Motor Oil (C24-C40)	9.23	470490176	253.060 ppb

Quantitation Report

Data File: G:\APOLLO\DATA\190204\204002.D  
Sample : Diesel / Motor Oil - 3 1/21/19



TPH Extractables  
DOC0117

Form 7

Continuing Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: Water

SDG No: \_\_\_\_\_  
Date Analyzed: 02/04/19  
Instrument: Apollo  
Initial Cal. Date: 01/17/19  
Data File: 204017.D

	Compound	MEAN	CCRF	%D	%Drift
1	HATM Diesel (C10-C24)	1187890	1196320	0.71	HATM
2	HBTM Motor Oil (C24-C40)	929601	965643	3.9	HBTM
3	SA Ortho-Terphenyl(S)	2019470	2073900	2.7	SA
4	SA Octacosane(S)	1876370	1937910	3.3	SA
5					
6					
7					
8					
9					
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29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40	Average			2.7	

Data File : G:\APOLLO\DATA\190204\204017.D Vial: 17  
 Acq On : 2-4-19 16:14:01 Operator: DP  
 Sample : Diesel / Motor Oil - 3 1/21/19 Inst : Apollo  
 Misc : water Multiplr: 1.00  
 IntFile : events.e  
 Quant Time: Feb 4 16:20 2019 Quant Results File: DOC0117.RES

Method : G:\APOLLO\DATA\190204\DOC0117.M (Chemstation Integrator)  
 Title : 8015 B&C  
 Last Update : Thu Jan 24 14:36:29 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 2UL  
 Signal Phase : DB-5  
 Signal Info : FID02A

Compound	R.T.	Response	Conc Units
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System Monitoring Compounds

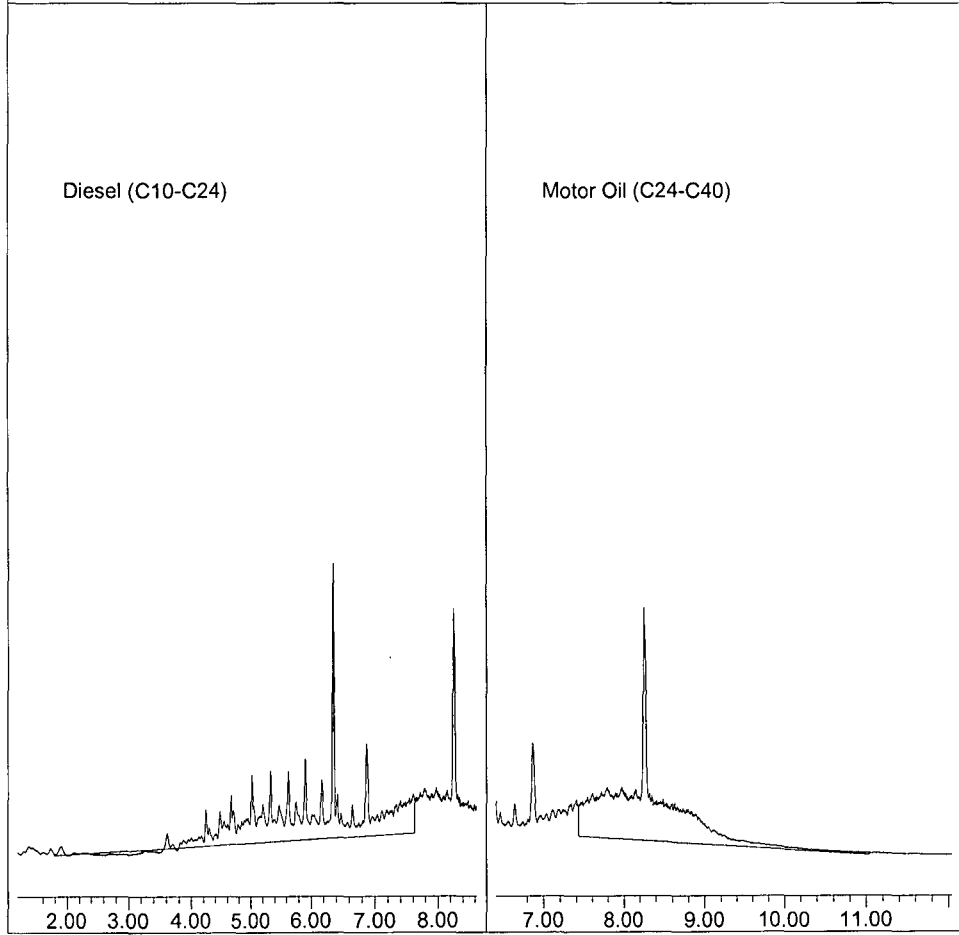
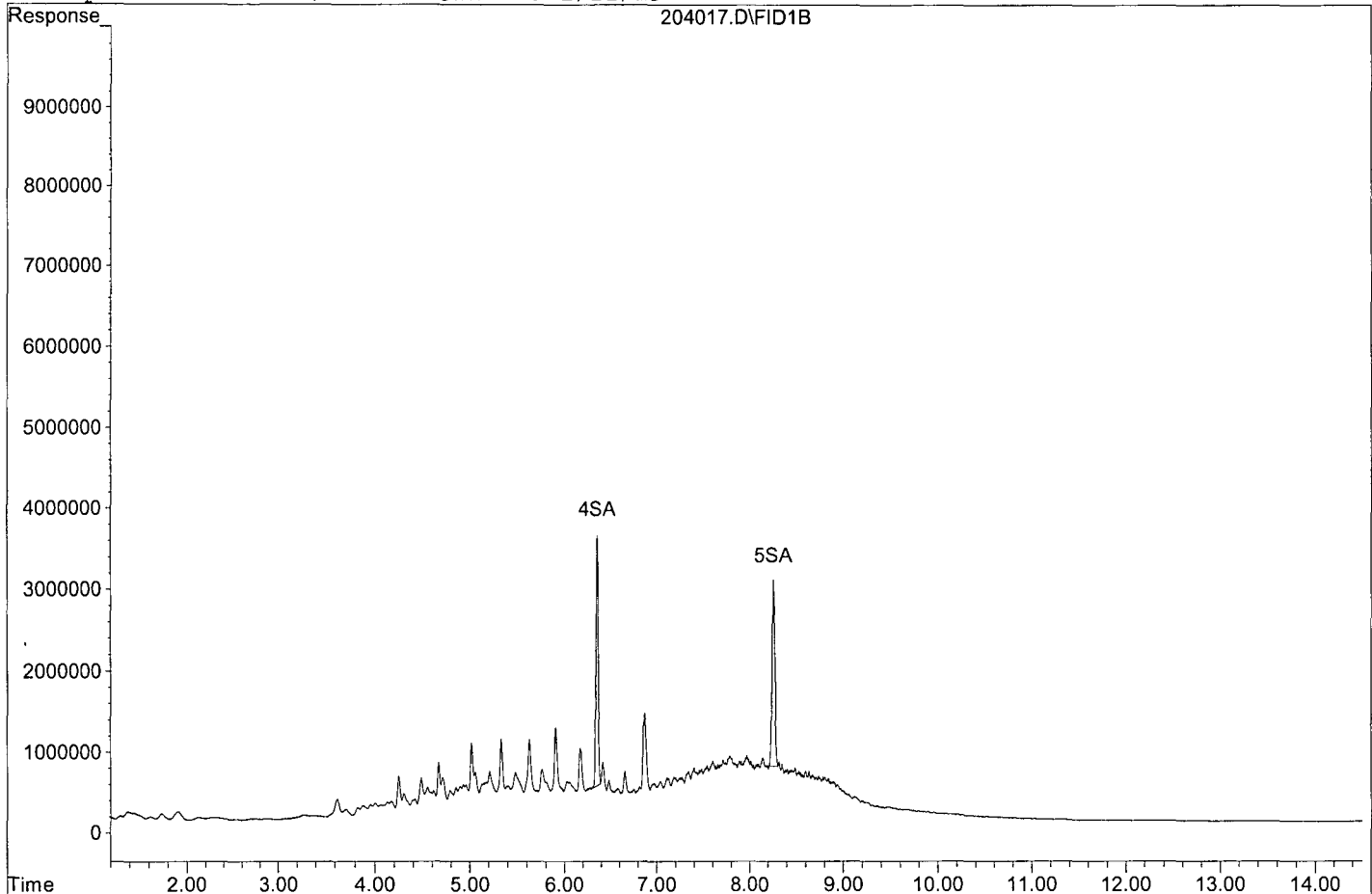
4) SA Ortho-Terphenyl(S)	6.36	51847549	12.837 ppb
Surrogate Spike 30.000		Recovery =	42.79%
5) SA Octacosane(S)	8.26	48447757	12.910 ppb
Surrogate Spike 30.000		Recovery =	43.03%

Target Compounds

1) HATM Diesel (C10-C24)	4.71	598157607	251.773 ppb
2) HBTM Motor Oil (C24-C40)	9.23	482821726	259.693 ppb

Quantitation Report

Data File: G:\APOLLO\DATA\190204\204017.D  
Sample : Diesel / Motor Oil - 3 1/21/19



**ORGANICS**  
**Raw Data**



Data File : G:\APOLLO\DATA\190204\204011.D Vial: 11  
 Acq On : 2-4-19 14:13:42 Operator: DP  
 Sample : AZ85763W09 2/800 Inst : Apollo  
 Misc : water Multiplr: 2.50  
 IntFile : events.e  
 Quant Time: Feb 4 14:30 2019 Quant Results File: DOC0117.RES

Method : G:\APOLLO\DATA\190204\DOC0117.M (Chemstation Integrator)  
 Title : 8015 B&C  
 Last Update : Thu Jan 24 14:36:29 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 2UL  
 Signal Phase : DB-5  
 Signal Info : FID02A

Compound	R.T.	Response	Conc Units
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System Monitoring Compounds

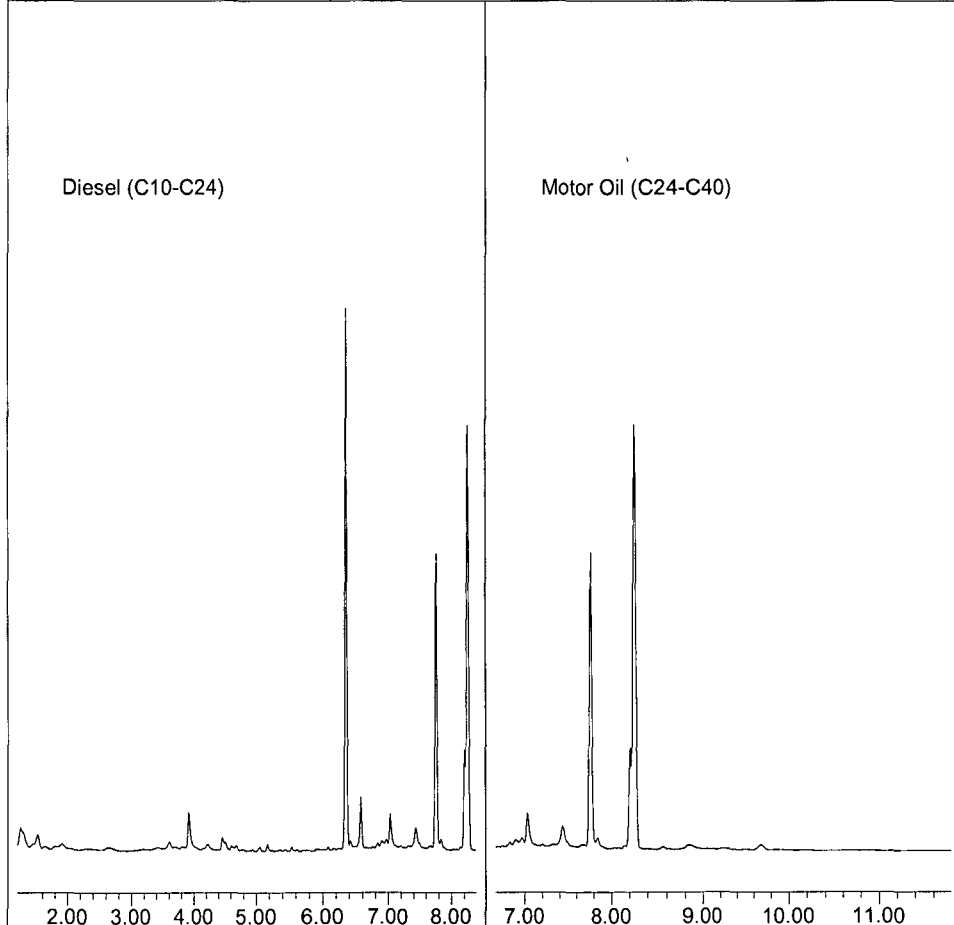
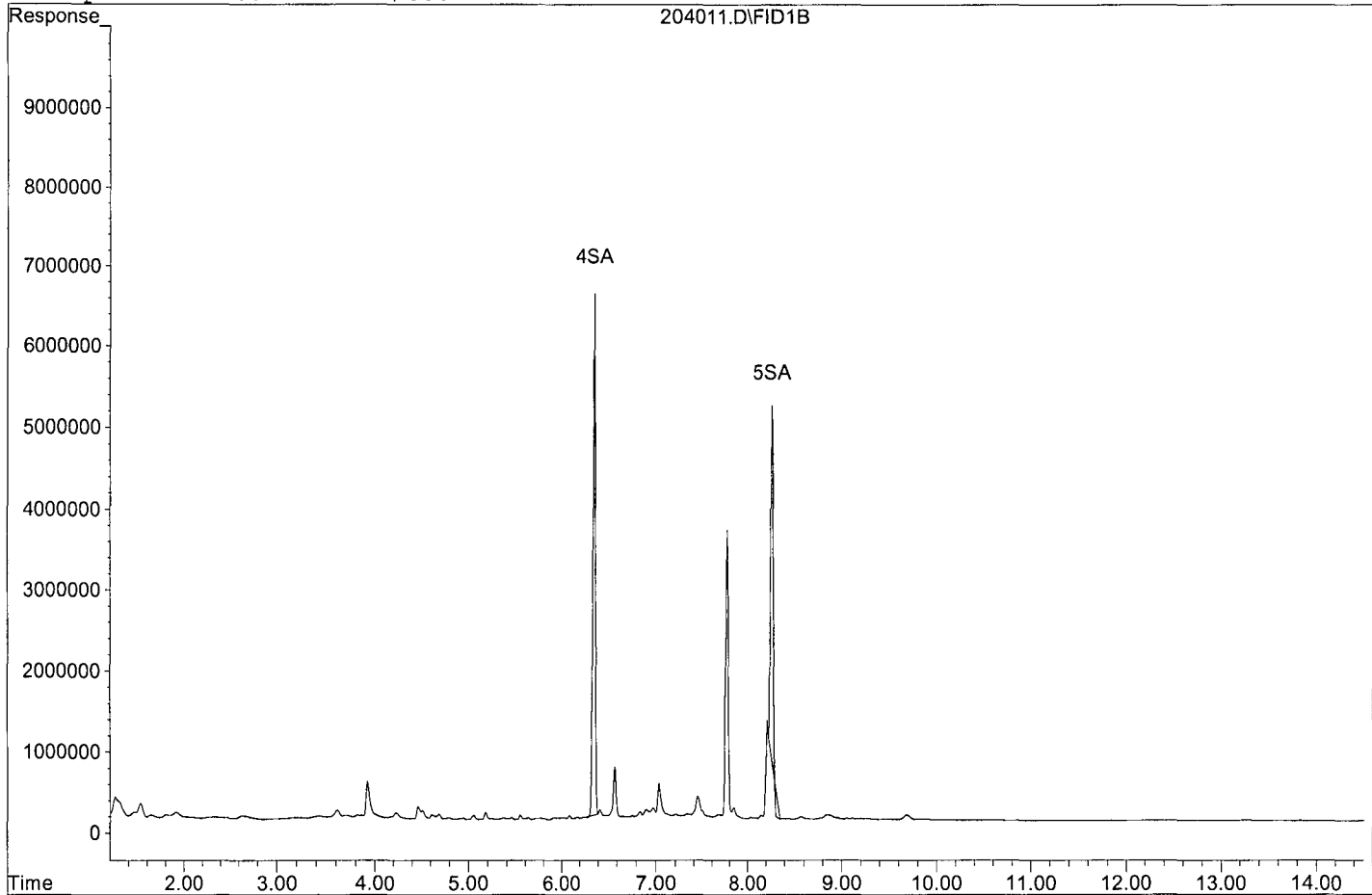
4) SA Ortho-Terphenyl(S)	6.36	114646422	70.963 ppb
Surrogate Spike 75.000		Recovery =	94.62%
5) SA Octacosane(S)	8.26	78233812	52.118 ppb
Surrogate Spike 75.000		Recovery =	69.49%

Target Compounds

Quantitation Report

Data File: G:\APOLLO\DATA\190204\204011.D

Sample : AZ85763W09 2/800



Data File : G:\APOLLO\DATA\190204\204012.D Vial: 12  
 Acq On : 2-4-19 14:33:48 Operator: DP  
 Sample : AZ85764W08 2/800 Inst : Apollo  
 Misc : water Multiplr: 2.50  
 IntFile : events.e  
 Quant Time: Feb 4 15:05 2019 Quant Results File: DOC0117.RES

Method : G:\APOLLO\DATA\190204\DOC0117.M (Chemstation Integrator)  
 Title : 8015 B&C  
 Last Update : Thu Jan 24 14:36:29 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 2UL  
 Signal Phase : DB-5  
 Signal Info : FID02A

Compound	R.T.	Response	Conc Units
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System Monitoring Compounds

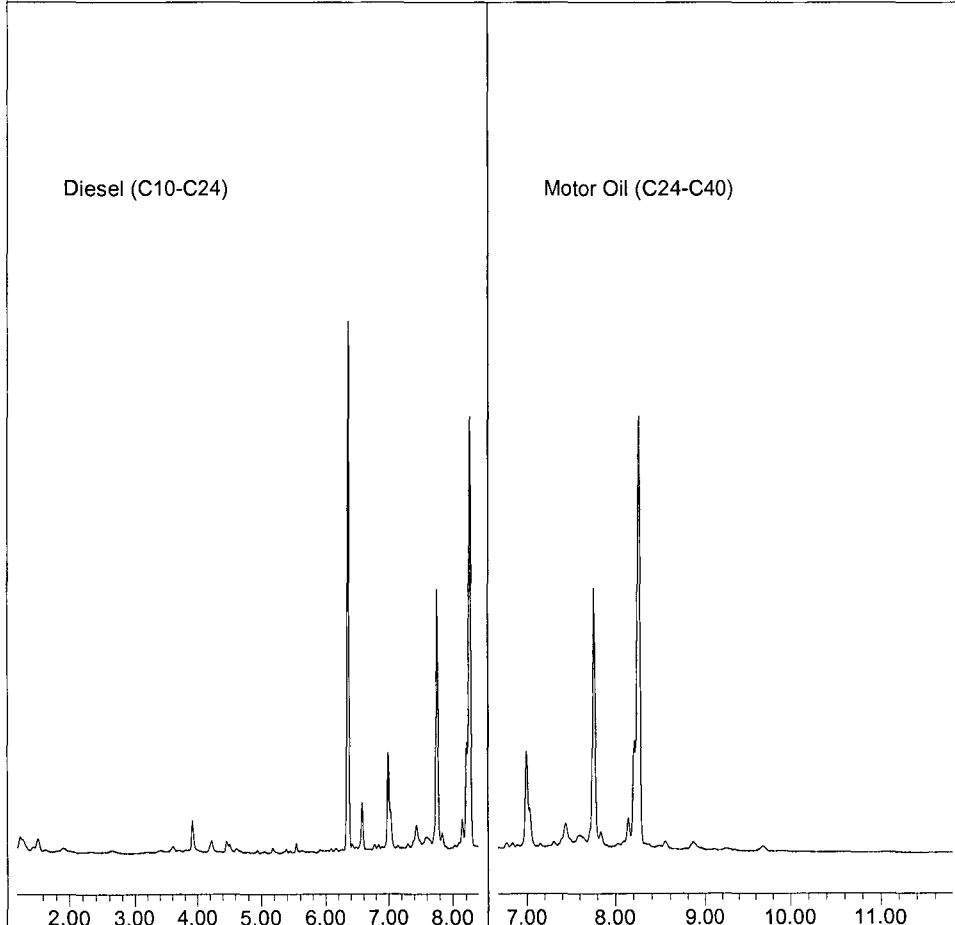
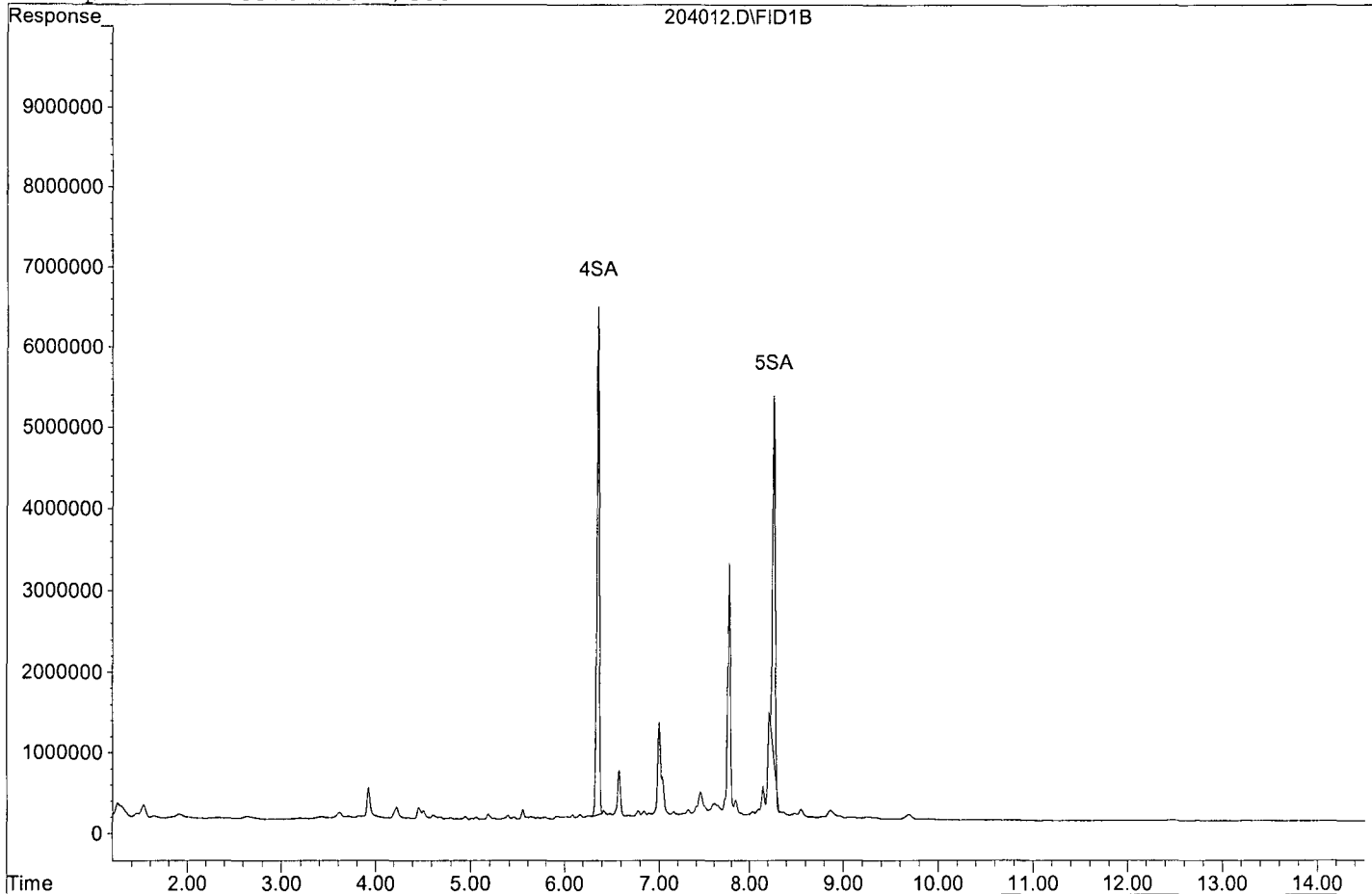
4) SA Ortho-Terphenyl(S)	6.36	114083242	70.615 ppb
Surrogate Spike 75.000		Recovery =	94.15%
5) SA Octacosane(S)	8.26	84695177	56.422 ppb
Surrogate Spike 75.000		Recovery =	75.23%

Target Compounds

Quantitation Report

Data File: G:\APOLLO\DATA\190204\204012.D

Sample : AZ85764W08 2/800



Data File : G:\APOLLO\DATA\190204\204013.D Vial: 13  
 Acq On : 2-4-19 14:53:48 Operator: DP  
 Sample : AZ85766W22 2/800 Inst : Apollo  
 Misc : water Multiplr: 2.50  
 IntFile : events.e  
 Quant Time: Feb 4 15:05 2019 Quant Results File: DOC0117.RES

Method : G:\APOLLO\DATA\190204\DOC0117.M (Chemstation Integrator)  
 Title : 8015 B&C  
 Last Update : Thu Jan 24 14:36:29 2019  
 Response via : Multiple Level Calibration

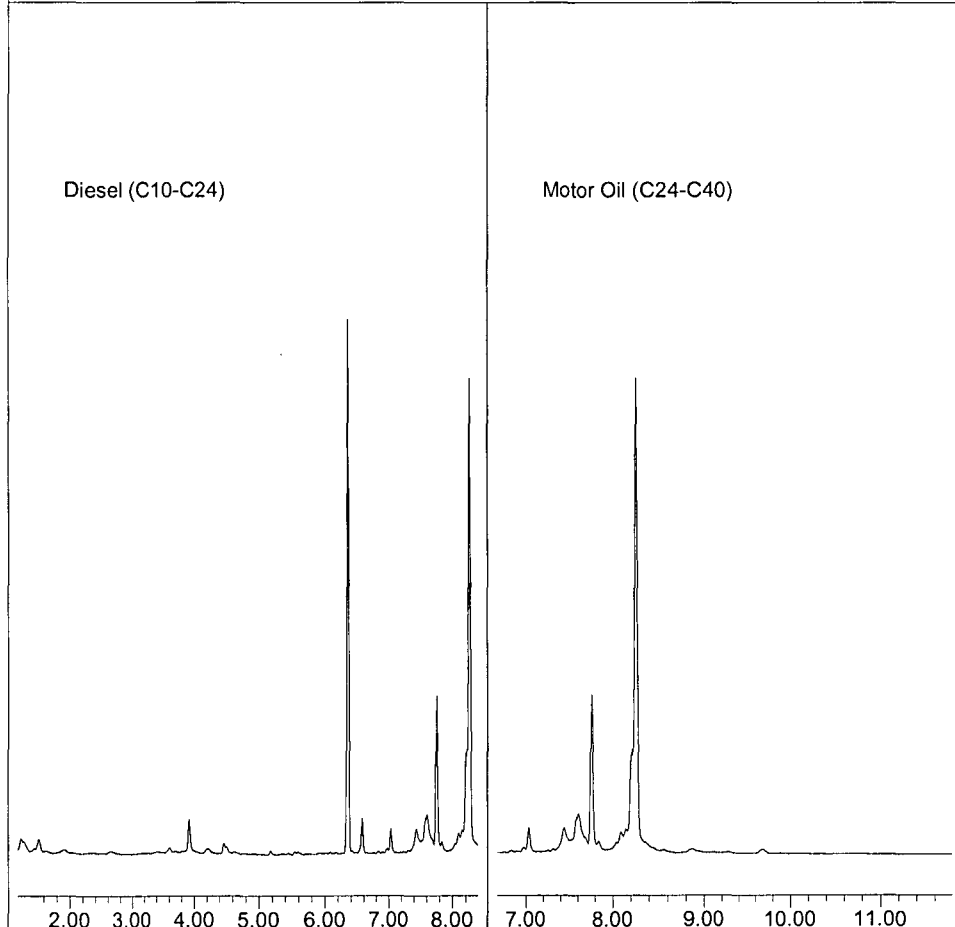
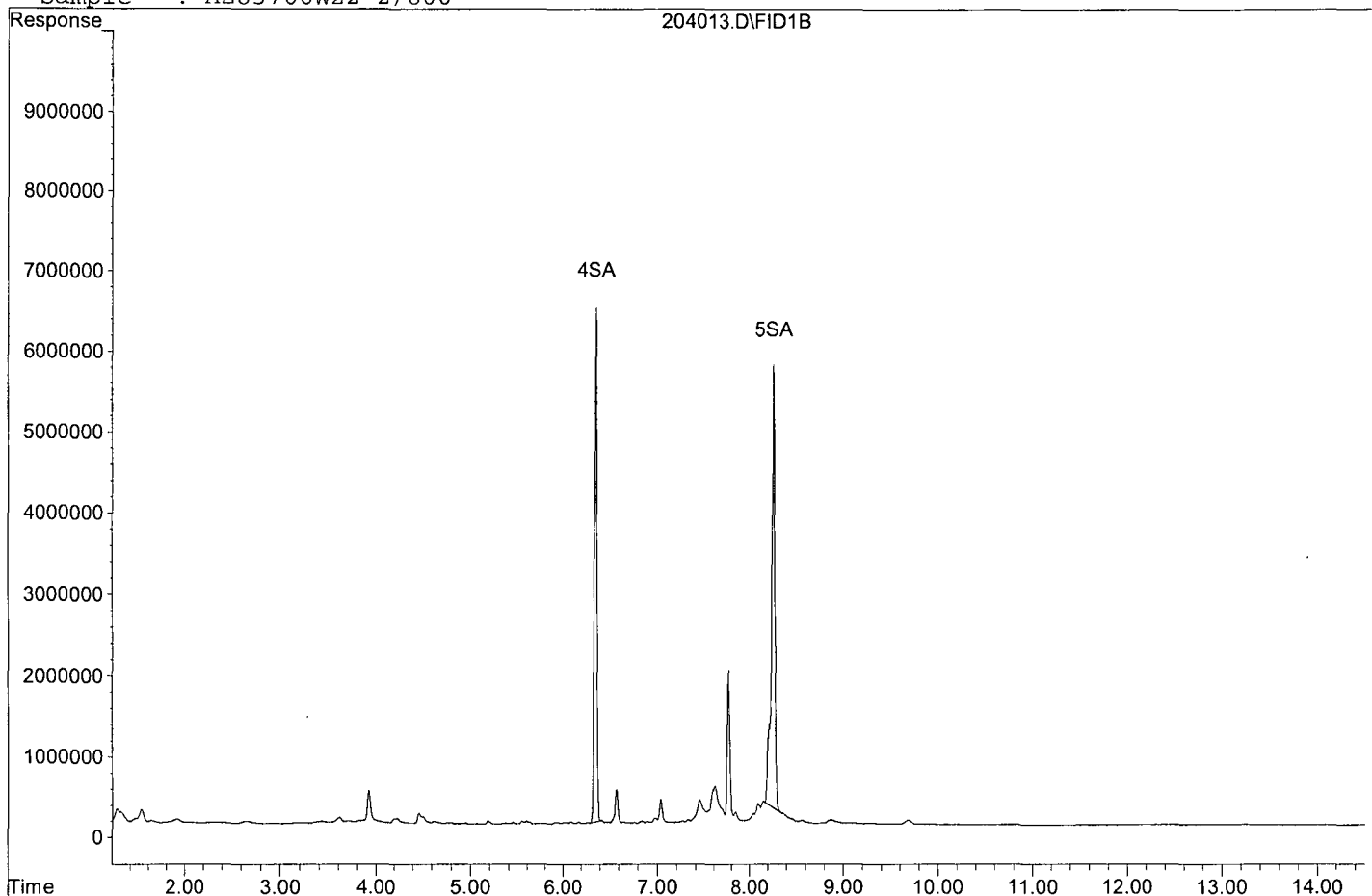
Volume Inj. : 2UL  
 Signal Phase : DB-5  
 Signal Info : FID02A

Compound	R.T.	Response	Conc Units
-----			
System Monitoring Compounds			
4) SA Ortho-Terphenyl(S)	6.36	115233524	71.327 ppb
Surrogate Spike 75.000		Recovery =	95.10%
5) SA Octacosane(S)	8.26	132490299	88.263 ppb
Surrogate Spike 75.000		Recovery =	117.68%
Target Compounds			

Quantitation Report

Data File: G:\APOLLO\DATA\190204\204013.D

Sample : AZ85766W22 2/800



Data File : G:\APOLLO\DATA\190204\204003.D Vial: 3  
 Acq On : 2-4-19 11:33:49 Operator: DP  
 Sample : 190201A BLK 2/800 Inst : Apollo  
 Misc : water Multiplr: 2.50  
 IntFile : events.e  
 Quant Time: Feb 4 12:02 2019 Quant Results File: DOC0117.RES

Method : G:\APOLLO\DATA\190204\DOC0117.M (Chemstation Integrator)  
 Title : 8015 B&C  
 Last Update : Thu Jan 24 14:36:29 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 2UL  
 Signal Phase : DB-5  
 Signal Info : FID02A

Compound	R.T.	Response	Conc Units
----------	------	----------	------------

System Monitoring Compounds

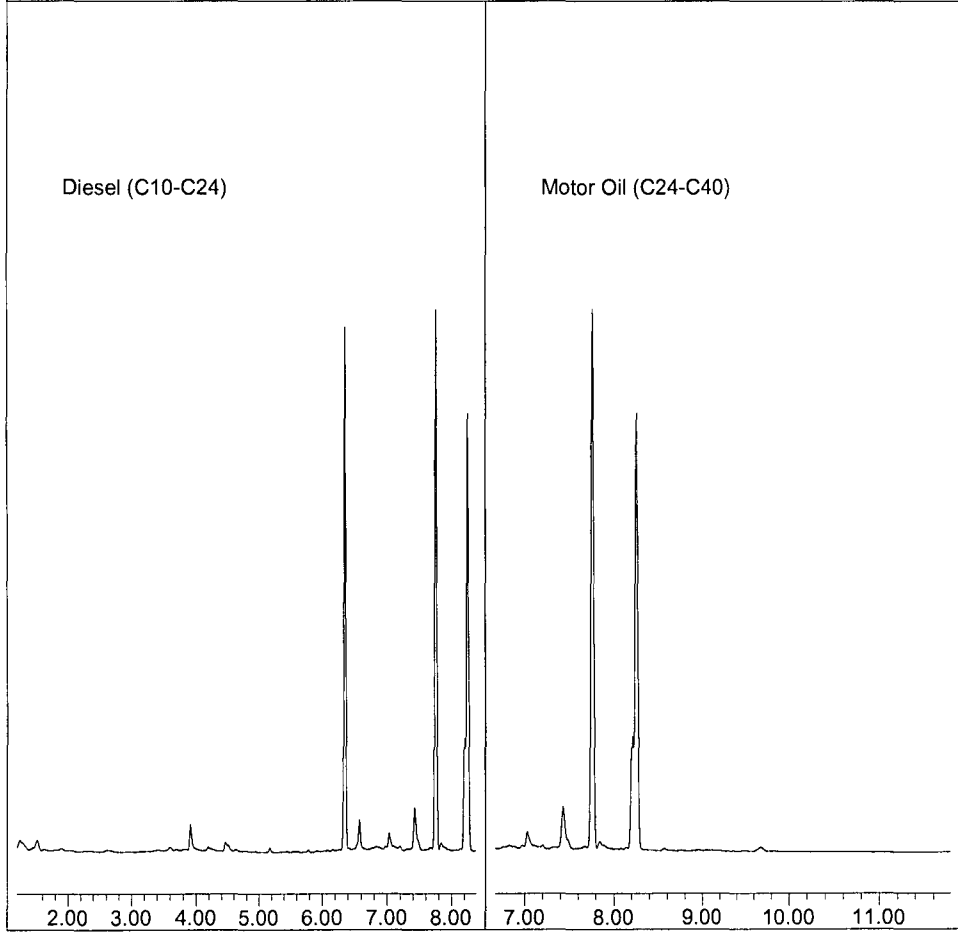
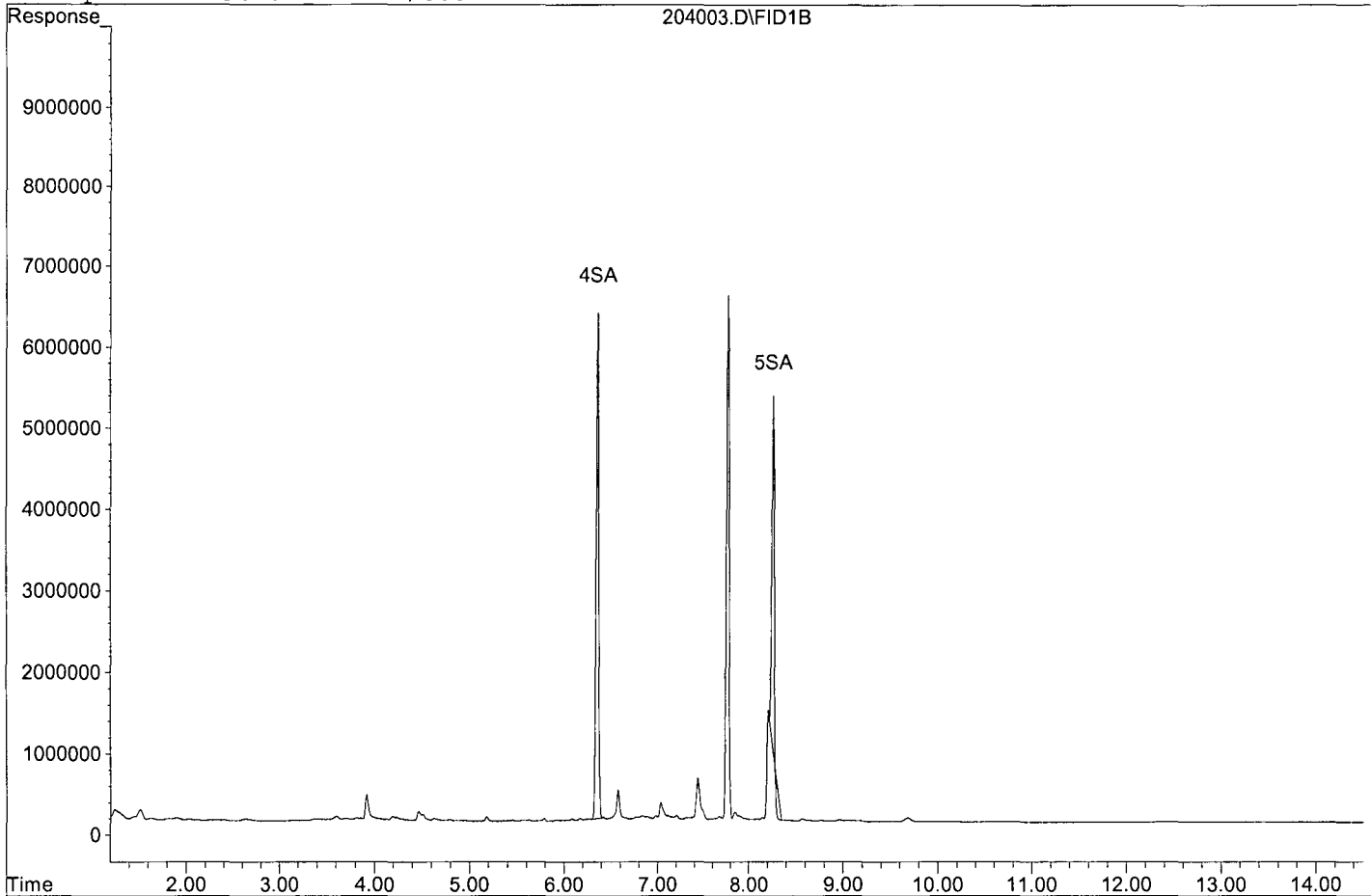
4) SA Ortho-Terphenyl(S)	6.36	114102303	70.626 ppb
Surrogate Spike 75.000		Recovery =	94.17%
5) SA Octacosane(S)	8.26	67750293	45.134 ppb
Surrogate Spike 75.000		Recovery =	60.18%

Target Compounds

Quantitation Report

Data File: G:\APOLLO\DATA\190204\204003.D

Sample : 190201A BLK 2/800





Data File : G:\APOLLO\DATA\190204\204004.D Vial: 4  
 Acq On : 2-4-19 11:53:49 Operator: DP  
 Sample : 190201A LCS-1 2/800 Inst : Apollo  
 Misc : water Multiplr: 2.50  
 IntFile : events.e  
 Quant Time: Feb 4 16:54 2019 Quant Results File: DOC0117.RES

Method : G:\APOLLO\DATA\190204\DOC0117.M (Chemstation Integrator)  
 Title : 8015 B&C  
 Last Update : Thu Jan 24 14:36:29 2019  
 Response via : Multiple Level Calibration

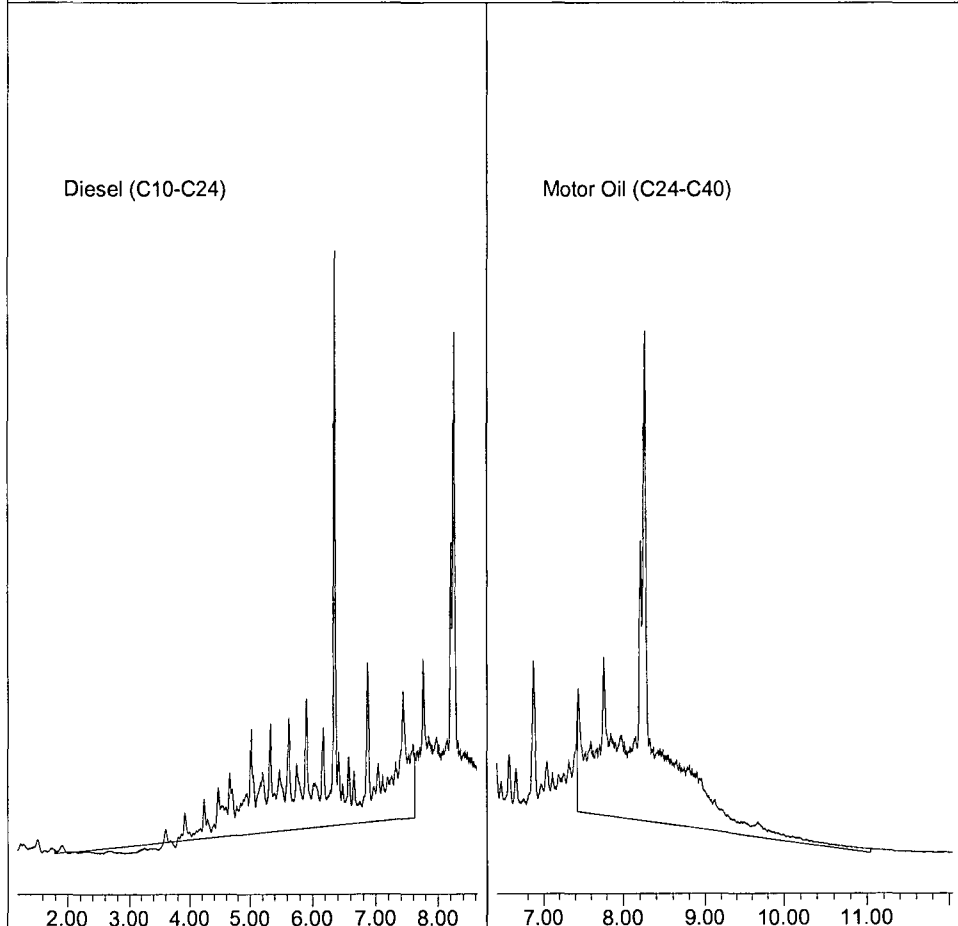
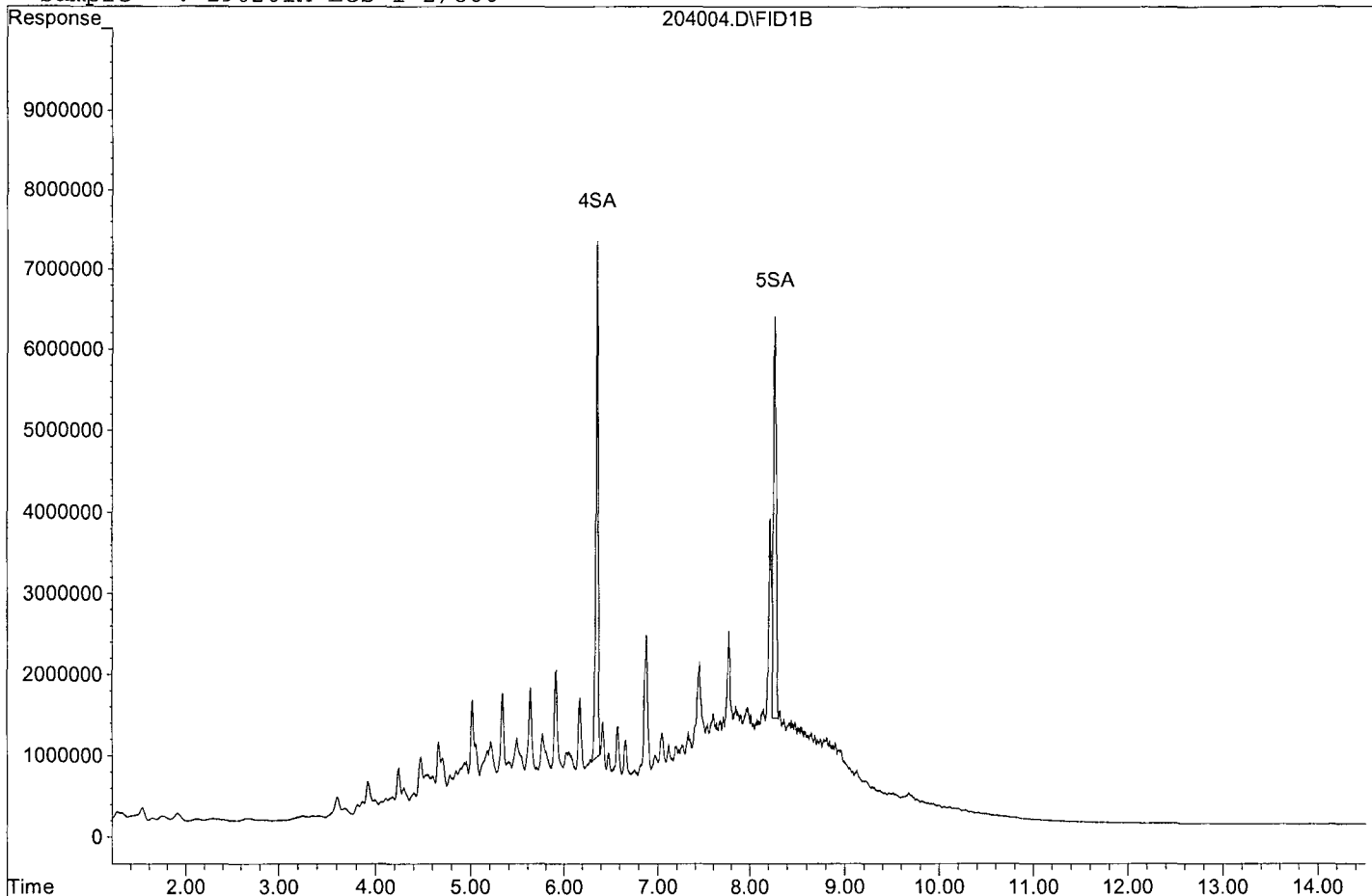
Volume Inj. : 2UL  
 Signal Phase : DB-5  
 Signal Info : FID02A

Compound	R.T.	Response	Conc Units
-----			
System Monitoring Compounds			
4) SA Ortho-Terphenyl(S)	6.36	105721576	65.439 ppb
Surrogate Spike 75.000		Recovery =	87.25%
5) SA Octacosane(S)	8.26	101077016	67.336 ppb m
Surrogate Spike 75.000		Recovery =	89.78%
Target Compounds			
1) HATM Diesel (C10-C24)	4.71	1063564616	1119.174 ppb
2) HBTM Motor Oil (C24-C40)	9.23	981875755	1320.292 ppb

Quantitation Report

Data File: G:\APOLLO\DATA\190204\204004.D

Sample : 190201A LCS-1 2/800



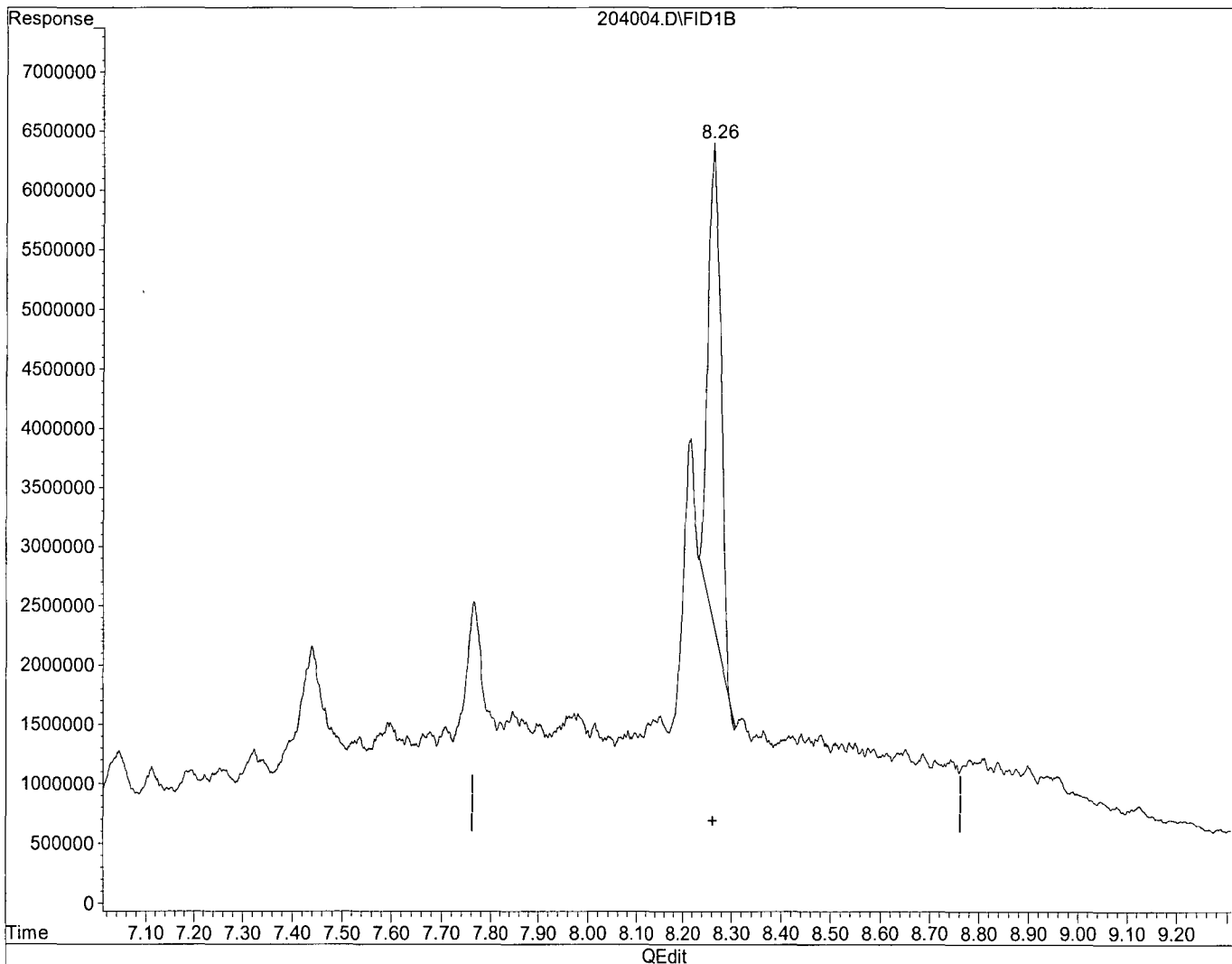
Quantitation Report

Data File : G:\APOLLO\DATA\190204\204004.D  
Acq On : 2-4-19 11:53:49  
Sample : 190201A LCS-1 2/800  
Misc : water  
IntFile : events.e  
Quant Time: Feb 4 12:02 2019

Vial: 4  
Operator: DP  
Inst : Apollo  
Multiplr: 2.50

Quant Results File: DOC0117.RES

Method : G:\APOLLO\DATA\190204\DOC0117.M (Chemstation Integrator)  
Title : 8015 B&C  
Last Update : Thu Jan 24 14:36:29 2019  
Response via : Multiple Level Calibration



(5) Octacosane(S) (SA)

8.26min 48.048ppb

response 72124156

(+) = Expected Retention Time

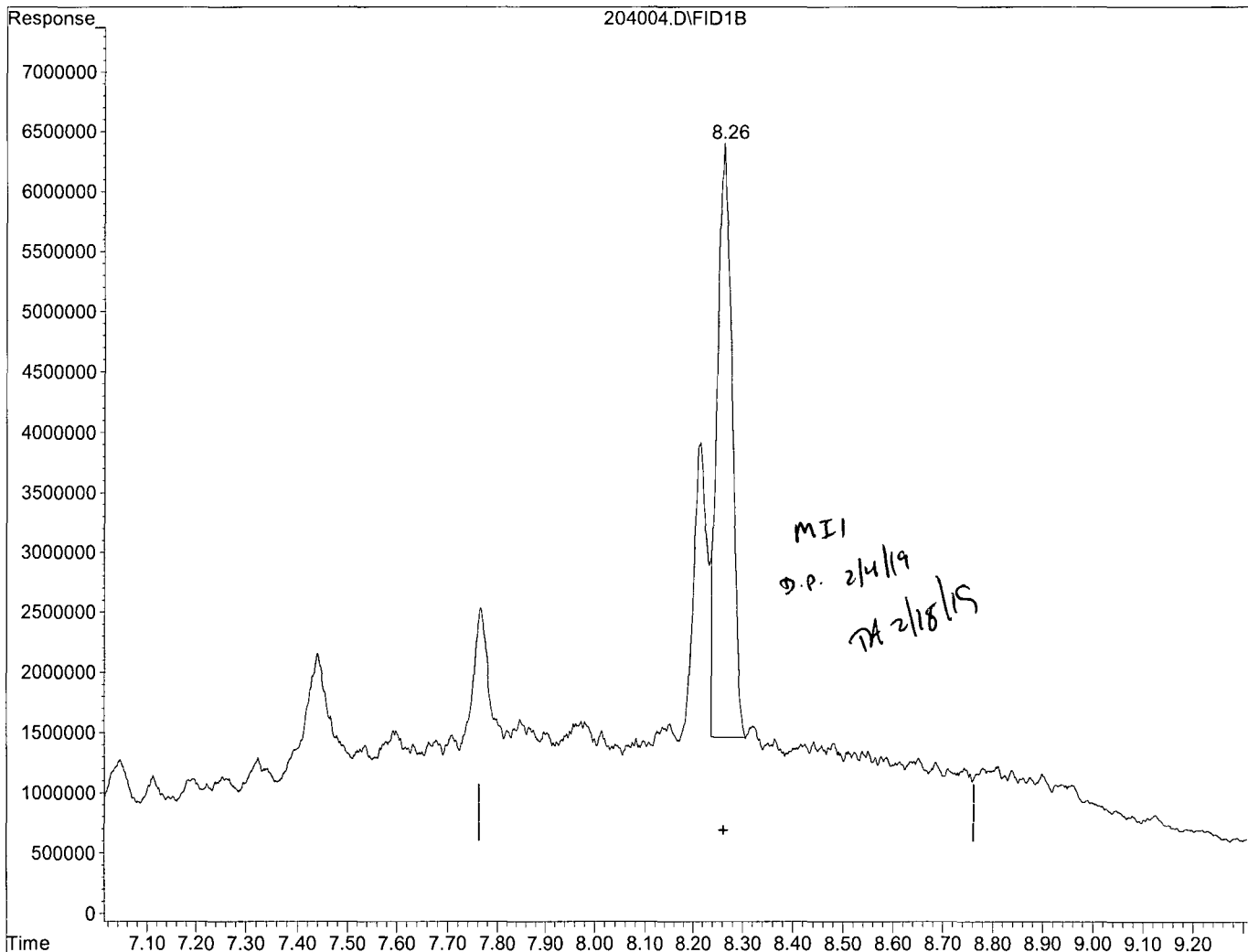
Quantitation Report

Data File : G:\APOLLO\DATA\190204\204004.D  
Acq On : 2-4-19 11:53:49  
Sample : 190201A LCS-1 2/800  
Misc : water  
IntFile : events.e  
Quant Time: Feb 4 12:02 2019

Vial: 4  
Operator: DP  
Inst : Apollo  
Multiplr: 2.50

Quant Results File: DOC0117.RES

Method : G:\APOLLO\DATA\190204\DOC0117.M (Chemstation Integrator)  
Title : 8015 B&C  
Last Update : Thu Jan 24 14:36:29 2019  
Response via : Multiple Level Calibration



Retention Time (min)	Response
8.26	101077016

(5) Octacosane(S) (SA)  
8.26min 67.336ppb m  
response 101077016

Data File : G:\APOLLO\DATA\190204\204005.D Vial: 5  
 Acq On : 2-4-19 12:13:09 Operator: DP  
 Sample : 190201A LCSD-1 2/800 Inst : Apollo  
 Misc : water Multiplr: 2.50  
 IntFile : events.e  
 Quant Time: Feb 4 16:54 2019 Quant Results File: DOC0117.RES

Method : G:\APOLLO\DATA\190204\DOC0117.M (Chemstation Integrator)  
 Title : 8015 B&C  
 Last Update : Thu Jan 24 14:36:29 2019  
 Response via : Multiple Level Calibration

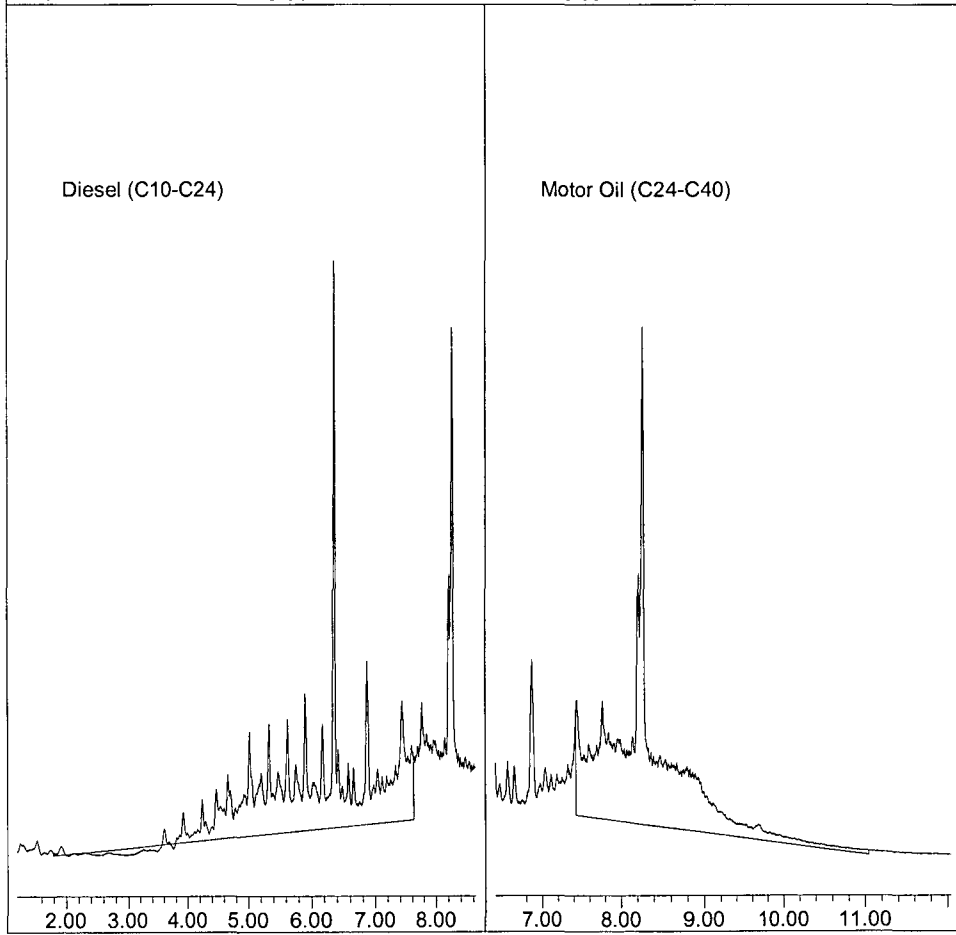
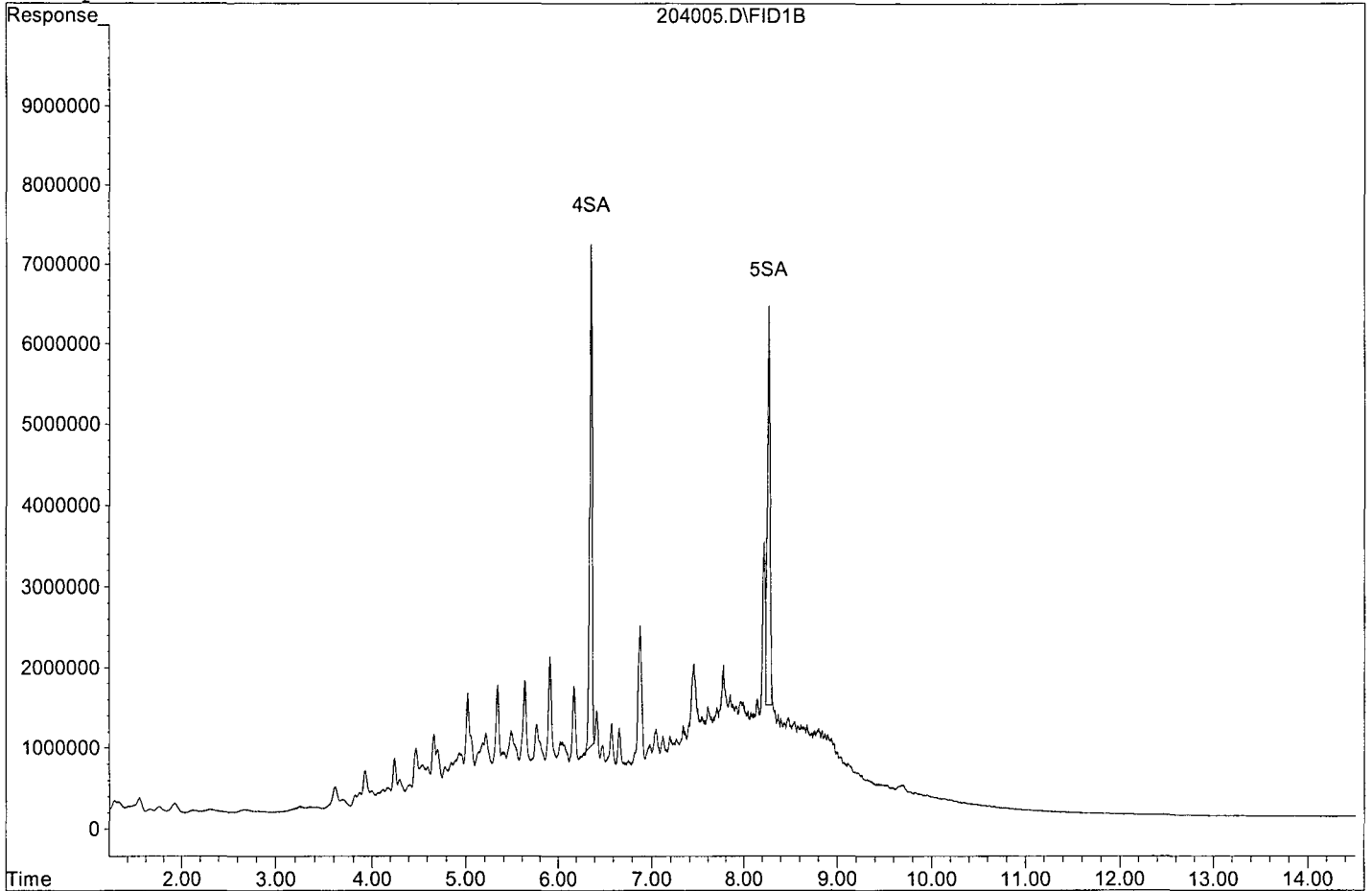
Volume Inj. : 2UL  
 Signal Phase : DB-5  
 Signal Info : FID02A

Compound	R.T.	Response	Conc Units
-----			
System Monitoring Compounds			
4) SA Ortho-Terphenyl(S)	6.36	109799326	67.963 ppb
Surrogate Spike 75.000		Recovery =	90.62%
5) SA Octacosane(S)	8.27	101828298	67.836 ppb m
Surrogate Spike 75.000		Recovery =	90.45%
Target Compounds			
1) HATM Diesel (C10-C24)	4.71	1086169994	1142.962 ppb
2) HBTM Motor Oil (C24-C40)	9.23	986747890	1326.843 ppb

Quantitation Report

Data File: G:\APOLLO\DATA\190204\204005.D

Sample : 190201A LCSD-1 2/800



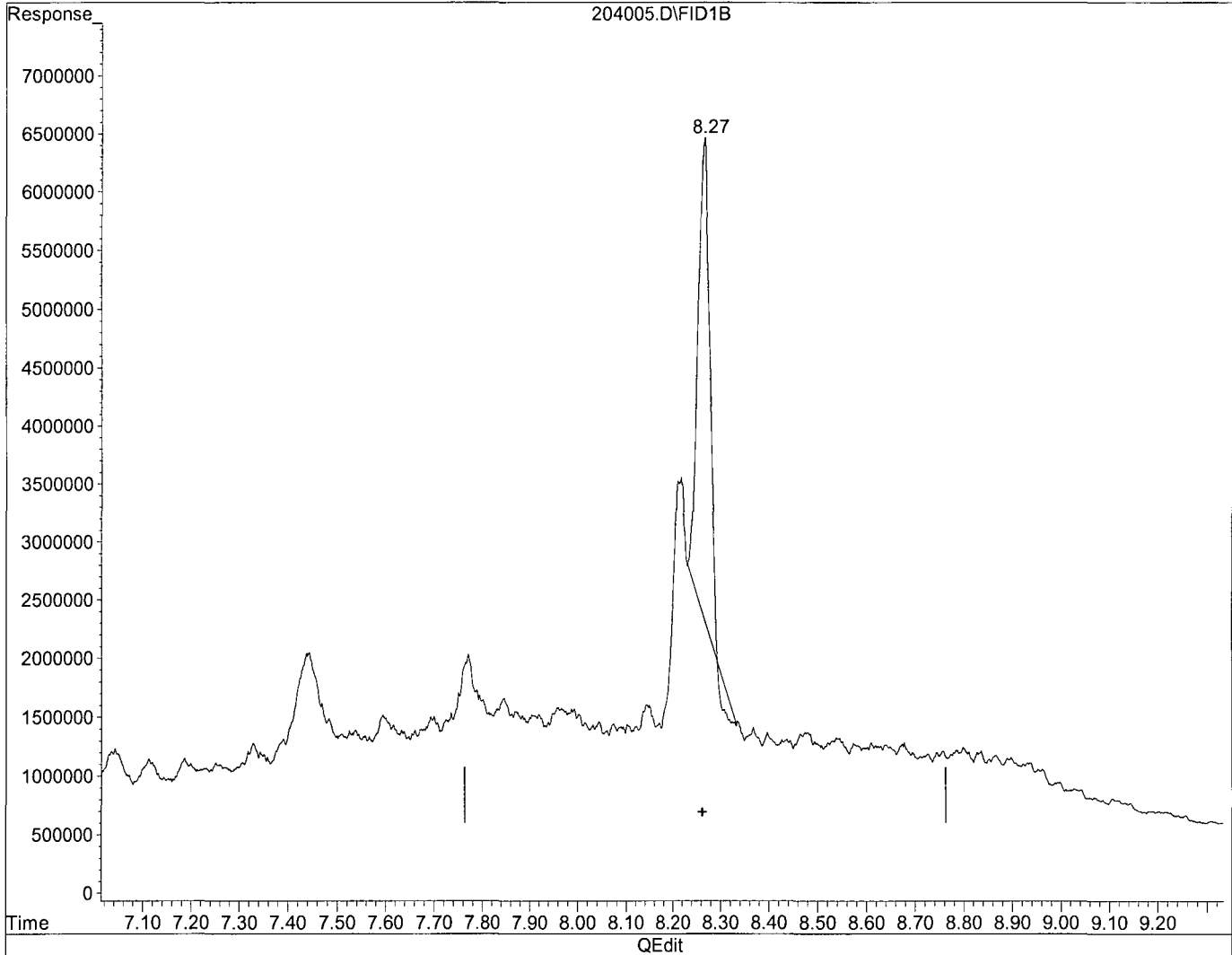
Quantitation Report

Data File : G:\APOLLO\DATA\190204\204005.D  
Acq On : 2-4-19 12:13:09  
Sample : 190201A LCSD-1 2/800  
Misc : water  
IntFile : events.e  
Quant Time: Feb 4 12:30 2019

Vial: 5  
Operator: DP  
Inst : Apollo  
Multiplr: 2.50

Quant Results File: DOC0117.RES

Method : G:\APOLLO\DATA\190204\DOC0117.M (Chemstation Integrator)  
Title : 8015 B&C  
Last Update : Thu Jan 24 14:36:29 2019  
Response via : Multiple Level Calibration



(5) Octacosane(S) (SA)  
8.26min 44.011ppb  
response 66064160

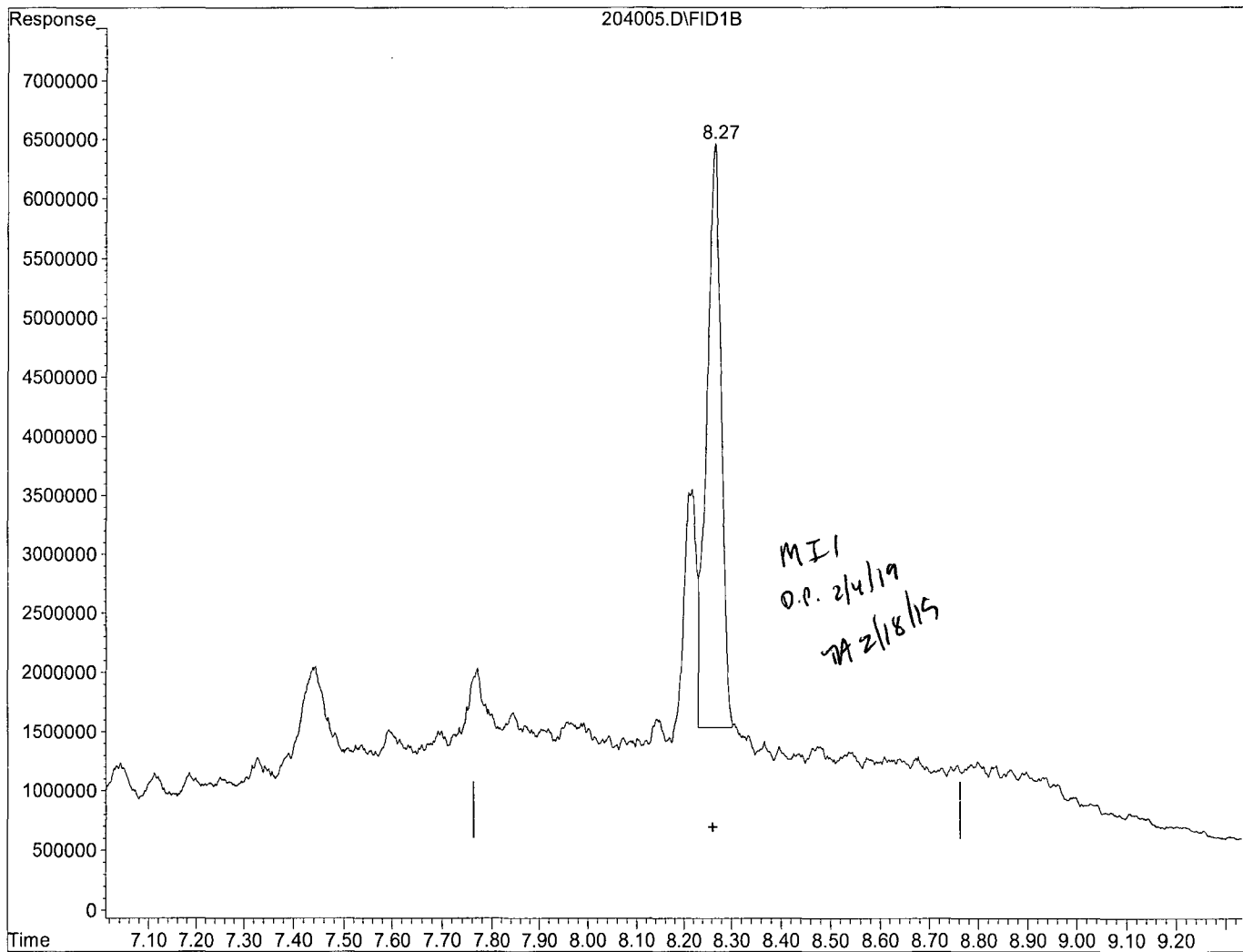
Quantitation Report

Data File : G:\APOLLO\DATA\190204\204005.D  
Acq On : 2-4-19 12:13:09  
Sample : 190201A LCSD-1 2/800  
Misc : water  
IntFile : events.e  
Quant Time: Feb 4 12:30 2019

Vial: 5  
Operator: DP  
Inst : Apollo  
Multiplr: 2.50

Quant Results File: DOC0117.RES

Method : G:\APOLLO\DATA\190204\DOC0117.M (Chemstation Integrator)  
Title : 8015 B&C  
Last Update : Thu Jan 24 14:36:29 2019  
Response via : Multiple Level Calibration



QEdit

(5) Octacosane(S) (SA)
8.27min 67.836ppb m
response 101828298



Diesel / Motor Oil Calibration Standard										
Prepared: 01/15/19						Prepared By (Initials): DP				
Expires: 01/15/20										
Methylene Chloride Lot No. 56278										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier Part No.	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr.)	Exp. Date (Manufacturer)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
Diesel Fuel #2	Restek	31258	50,000	A0135614-39409	01/15/20	03/31/25	400uL			2000
Motor Oil	Restek	31464	50,000	A0135245-39351	01/15/20	03/31/25	400uL	10mL	MC	2000
THC Surrogate	Phenova	ALO-130161	600	CL12572-39691	08/13/19	06/30/23	1666uL			100

Diesel / Motor Oil Second Source (SS)										
Prepared: 01/15/19						Prepared By (Initials): DP				
Expires: 01/15/20										
Methylene Chloride Lot No. 56278										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier Part No.	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr.)	Exp. Date (Manufacturer)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
Diesel Fuel #2 Second Source	O2SI	G34-011598-03	50,000	G34-319187-38958	08/02/19	09/29/21	50uL	10mL	MC	250
Motor Oil Second Source	O2SI	116390-02-SS	50,000	301142-37652	07/13/19	03/05/22	50uL			

Diesel / Motor Oil Calibration Curve										
Prepared: 01/17/19						Prepared By (Initials): DP				
Expires: 07/17/19										
Methylene Chloride Lot No. 56278										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference to APPL Prep Date	Exp. Date	Exp. Date (Manufacturer)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
Diesel / Motor Oil Calibration STD	APPL	Diesel / Motor Oil - 1	2,000	Prepared 01/17/19	01/15/20	N/A	5uL	1mL	MC	10
Diesel / Motor Oil Calibration STD	APPL	Diesel / Motor Oil - 2	2,000	Prepared 01/17/19	01/15/20	N/A	25uL	1mL	MC	50
Diesel / Motor Oil Calibration STD	APPL	Diesel / Motor Oil - 3	2,000	Prepared 01/17/19	01/15/20	N/A	125uL	1mL	MC	250
Diesel / Motor Oil Calibration STD	APPL	Diesel / Motor Oil - 4	2,000	Prepared 01/17/19	01/15/20	N/A	500uL	1mL	MC	1000
Diesel / Motor Oil Calibration STD	APPL	Diesel / Motor Oil - 5	2,000	Prepared 01/17/19	01/15/20	N/A	750uL	1mL	MC	1500
Diesel / Motor Oil Calibration STD	APPL	Diesel / Motor Oil - 6	2,000	Prepared 01/17/19	01/15/20	N/A	100uL	100uL	N/A	2,000

Diesel / Motor Oil CCV										
Prepared: 01/21/19						Prepared By (Initials): DP				
Expires: 07/22/19										
Methylene Chloride Lot No. 56278										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference to APPL Prep Date	Exp. Date	Exp. Date (Manufacturer)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
Diesel / Motor Oil STD	APPL	Diesel / Motor Oil CCV	2,000	Prepared 01/15/19	01/15/20	N/A	1250uL	10mL	MC	250

**Motor Oil Spike**

Prepared: 11/15/18

Prepared By (Initials): DP

Expires: 11/15/19

Initial Standard Information							Final Standard Information			
Name of Initial Standard (QAU Label)	Supplier	Supplier Part No.	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturer)	From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
Motor Oil Composite	Restek	31464	50,000	A0135245-39352	11/15/19	03/31/25	N/A	N/A	N/A	50,000

**Diesel Spike**

Prepared: 12/11/18

Prepared By (Initials): DP

Expires: 12/11/19

Initial Standard Information							Final Standard Information			
Name of Initial Standard (QAU Label)	Supplier	Supplier Part No.	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr.)	Exp. Date (Manufacturer)	From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
Diesel Fuel #2	Absolute	51046	50,000	111715-39355	12/11/19	11/17/20	N/A	N/A	N/A	50,000

<b>THC Surrogate</b>										
Prepared: 11/21/18						Prepared By (Initials): DP				
Expires: 10/18/19										
Initial Standard Information							Final Standard Information			
Name of Initial Standard (QAU Label)	Supplier	Supplier Part No.	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr.)	Exp. Date (Manufacturer)	From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
O-terphenyl / Octacosane Mix	Phenova	ALO-130161	600	CL12572-39687	10/18/19	06/30/23	N/A	N/A	N/A	600

# Organic Extraction Worksheet

<b>Method</b>	Continuous Liq/Liq TPH-Diesel/MO 3520C	<b>Extraction Set</b>	190201A	<b>Extraction Method</b>	LIQ005	<b>Units</b>	mL
Spiked ID 1	Diesel Spike 1-25-19 EXP 1-25-20	Surrogate ID 1	THC Surrogate 1-25-19 EXP 1-25-20				
Spiked ID 2	Motor Oil Spike 12-20-18 EXP 12-20-19	Surrogate ID 2					
Spiked ID 3		Surrogate ID 3					
Spiked ID 4		Surrogate ID 4					
Spiked ID 5		Surrogate ID 5					
Spiked ID 6		Sufficient Vol for Matrix QC:		NO			
Spiked ID 7		Ext. Start Time:		02/01/19 13:30			
Spiked ID 8		Ext. End Time:		02/02/19 9:00			
		GC Requires Extract By:		02/06/19 0:00			
pH1	2	02/01/19 1:25:00 PM		Water Bath Temp Criteria		35,35,35 °	
pH2							
pH3							

Spiked By: DL

Date 02/01/19

Witnessed By: CFM

Date 02/01/19

Sample	Sample Container	Spike Amount	Spike ID	Surrogate Amount	Surrogate ID	Extract Amount	Final Volume	pH	Extract Date/Time	Comments
1	190201A Blk			0.100	1	800	2	2	02/01/19 13:30	
					equip	e-hp51 E-WB1				
2	190201A LCS-1	0.020	1,2	0.100	1	800	2	2	02/01/19 13:30	
					equip	e-hp50 E-WB2				
3	190201A LCSD-1	0.020	1,2	0.100	1	800	2	2	02/01/19 13:30	
					equip	E-HP49 E-WB3				
4	AZ85565 AZ85565W23			0.100	1	800	2	2	02/01/19 13:30	87940 RX
					equip	E-HP48 E-WB1				
5	AZ85700 AZ85700W15			0.100	1	800	2	2	02/01/19 13:30	87969
					equip	E-HP47 E-WB2				
6	AZ85704 AZ85704W28			0.100	1	800	2	2	02/01/19 13:30	87969
					equip	E-HP25 E-WB3				
7	AZ85705 AZ85705W22			0.100	1	800	2	2	02/01/19 13:30	87969
					equip	E-HP26 E-WB1				
8	AZ85754 AZ85754W21			0.100	1	800	2	2	02/01/19 13:30	87981
					equip	E-HP27 E-WB2				
9	AZ85763 AZ85763W09			0.100	1	800	2	2	02/01/19 13:30	87986
					equip	E-HP28 E-WB3				
10	AZ85764 AZ85764W08			0.100	1	800	2	2	02/01/19 13:30	87986
					equip	E-HP29 E-WB1				
11	AZ85766 AZ85766W22			0.100	1	800	2	2	02/01/19 13:30	87986
					equip	E-HP30 E-WB2				
12	AZ85802 AZ85802W13			0.100	1	800	2	2	02/01/19 13:30	87995
					equip	E-HP17 E-WB3				
13	AZ85803 AZ85803W16			0.100	1	800	2	2	02/01/19 13:30	87995
					equip	E-HP16 E-WB1				
14	AZ85804 AZ85804W16			0.100	1	800	2	2	02/01/19 13:30	87995
					equip	E-HP15 E-WB2				

*Kyr 2/4/19*

Solvent and Lot#	
I+1 HCL	11-19-18
PH Strips	HC 849161
Dicholormethane (DCM)	18G194011
Filter Paper	400148
B. Sodium Sulfate	17H095210

Extraction COC Transfer	
Extraction lab employee Initials	KY
GC analyst's initials	D.P.
Date	2/4/19
Time	12:00
Refrigerator	Hobart

Technician's Initials	
Scanned By	DL
Sample Preparation	DL
Extraction	DL
Concentration	DL
Modified	02/04/19 12:15:48 PM

Reviewed By: *Kyr*

Date *2/4/19*

## Injection Log

Directory: G:\APOLLO\DATA\190117\

Vial	FileName	Multiplier	SampleName	Misc Info	Injected
2	117002.D	1	Diesel / Motor Oil - 1 1/17/19	water	1-17-19 16:38:28
3	117003.D	1	Diesel / Motor Oil - 2 1/17/19	water	1-17-19 16:58:29
4	117004.D	1	Diesel / Motor Oil - 3 1/17/19	water	1-17-19 17:17:50
5	117005.D	1	Diesel / Motor Oil - 4 1/17/19	water	1-17-19 17:37:44
6	117006.D	1	Diesel / Motor Oil - 5 1/17/19	water	1-17-19 17:57:32
7	117007.D	1	Diesel / Motor Oil - 6 1/17/19	water	1-17-19 18:17:22
8	117008.D	1	Diesel / Motor Oil - SS 1/15/19	water	1-17-19 18:37:21
2	204002.D	1	Diesel / Motor Oil - 3 1/21/19	water	2-4-19 11:13:52
3	204003.D	2.5	190201A BLK 2/800	water	2-4-19 11:33:49
4	204004.D	2.5	190201A LCS-1 2/800	water	2-4-19 11:53:49
5	204005.D	2.5	190201A LCSD-1 2/800	water	2-4-19 12:13:09
11	204011.D	2.5	AZ85763W09 2/800	water	2-4-19 14:13:42
12	204012.D	2.5	AZ85764W08 2/800	water	2-4-19 14:33:48
13	204013.D	2.5	AZ85766W22 2/800	water	2-4-19 14:53:48
17	204017.D	1	Diesel / Motor Oil - 3 1/21/19	water	2-4-19 16:14:01

**ORGANICS**  
**Calibration Data**

PAH by GCMS SIM  
EPA 8270 SIM

Form 6  
Initial Calibration

Lab Name: APPL, Inc.

SDG No: \_\_\_\_\_

Case No: \_\_\_\_\_

Initial Cal. Date: 01/22/19

Matrix: \_\_\_\_\_

Instrument: Linus

Initials: \_\_\_\_\_

0122L003.D    0122L004.D    0122L005.D    0122L006.D    0122L007.D    0122L008.D    0122L009.D    0122L010.D

	Compound	0.1	0.2	0.5	1	5	10	50	100			Avg	%RSD	Type	r <sup>2</sup>	Q	MRF
1	I Naphthalene-D8(IS)																
2	S Surrogate Recovery (NBZ)	0.5368	0.4662	0.3581	0.3806	0.4597	0.4513	0.4398	0.4353			0.44	12	S			
3	TM Naphthalene	1.501	1.326	1.089	1.286	1.383	1.355	1.095	1.039			1.3	13	TM			0.700
4	S 2-Methylnaphthalene-D10 (2M)	1.165	1.119	0.8912	1.140	1.265	1.295	1.170	1.119			1.1	11	S			
5	TM 2-Methylnaphthalene	0.8415	0.7811	0.6384	0.7893	0.8609	0.8572	0.6703	0.6454			0.76	13	TM			0.400
6	TM 1-Methylnaphthalene	0.9488	0.7945	0.6729	0.8072	0.8294	0.8268	0.6596	0.6061			0.77	15	TM			
7	I Acenaphthene-D10(IS)																
8	S Surrogate Recovery (FBP)	2.032	1.654	1.457	1.744	1.923	1.928	1.728	1.675			1.8	10	S			
9	TM Acenaphthylene	6.283	5.718	4.707	5.612	6.305	6.346	5.135	4.672			5.6	12	TM			0.900
10	*TM Acenaphthene	1.920	1.700	1.428	1.705	1.810	1.782	1.400	1.360			1.6	13	*TM			0.900
11	TM Fluorene	2.106	1.923	1.607	1.975	2.155	2.142	1.716	1.657			1.9	12	TM			0.900
12	I Phenanthrene-D10(IS)																
13	TM Phenanthrene	1.596	1.429	1.206	1.461	1.584	1.571	1.261	1.133			1.4	13	TM			0.700
14	TM Anthracene	1.546	1.378	1.157	1.401	1.639	1.579	1.259	1.212			1.4	13	TM			0.700
15	S Fluoranthene-D10 (FRT)	1.960	1.740	1.370	1.644	1.947	1.964	1.702	1.672			1.7	12	S			
16	*TM Fluoranthene	2.487	2.295	1.834	2.252	2.506	2.476	1.900	1.837			2.2	14	*TM			0.600
17	I Chrysene-D12(IS)																
18	TM Pyrene	1.754	1.558	1.296	1.539	1.745	1.699	1.421	1.348			1.5	12	TM			0.600
19	S Surrogate Recovery (TPH)	0.8778	0.8099	0.6667	0.7580	0.8727	0.8657	0.8359	0.7712			0.81	9.0	S			
20	TM Benz (a) anthracene	1.671	1.359	1.076	1.304	1.538	1.509	1.341	1.262			1.4	13	TM			0.800
21	TM Chrysene	1.479	1.472	1.188	1.390	1.453	1.388	1.153	1.067			1.3	12	TM			0.700
22	TM Indeno (1,2,3-cd) pyrene	1.529	1.415	1.156	1.393	1.490	1.490	1.274	1.181			1.4	11	TM			0.500
23	I Perylene-D12(IS)																
24	TM Benzo (b) fluoranthene	1.433	1.243	1.096	1.291	1.531	1.603	1.305	1.301			1.4	12	TM			0.700
25	TM Benzo (k) fluoranthene	1.579	1.319	1.194	1.327	1.553	1.453	1.299	1.266			1.4	10	TM			0.700
26	*TM Benzo (a) pyrene	1.308	1.224	1.092	1.285	1.456	1.489	1.256	1.223			1.3	10.0	*TM			0.700
27	TM Dibenz (a,h) anthracene	1.354	1.225	1.012	1.231	1.275	1.310	1.060	1.044			1.2	11	TM			0.400
28	TM Benzo (g,h,i) perylene	1.377	1.229	1.021	1.247	1.271	1.322	1.097	1.043			1.2	11	TM			0.500
29																	
30																	
31																	
32																	
33																	
34																	
35																	



Data File : M:\LINUS\DATA\L190122\0122L003.D  
 Acq On : 22 Jan 19 9:37  
 Sample : 0.1 SIM 01/18/19  
 Misc :

Vial: 3  
 Operator: MA  
 Inst : Linus  
 Multiplr: 1.00

Quant Time: Jan 22 11:50 2019

Quant Results File: L0122.RES

Quant Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
 Title : EPA 8270  
 Last Update : Tue Jan 22 09:56:33 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SIM\_2

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Napthalene-D8(IS)	4.03	136	15835	2.50000	ppb	-0.01
7) Acenaphthene-D10 (IS)	6.07	164	7110	2.50000	ppb	-0.01
12) Phenanthrene-D10 (IS)	7.80	188	13830	2.50000	ppb	-0.01
17) Chrysene-D12 (IS)	10.90	240	20163	2.50000	ppb	-0.02
23) Perylene-D12 (IS)	13.30	264	19644	2.50000	ppb	-0.02

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Surrogate Recovery (NBZ)	3.22	82	170	0.04555	ppb	0.00
Spiked Amount 5.000			Recovery =	0.920%		
4) 2-Methylnaphthalene-D10 (2)	4.84	152	369	0.03991	ppb	-0.01
Spiked Amount 5.000			Recovery =	0.800%		
8) Surrogate Recovery (FBP)	5.31	172	289	0.04745	ppb	-0.01
Spiked Amount 5.000			Recovery =	0.940%		
15) Fluoranthene-D10 (FRT)	9.20	212	542	0.04079	ppb	0.00
Spiked Amount 5.000			Recovery =	0.820%		
19) Surrogate Recovery (TPH)	9.67	244	354	0.04542	ppb	-0.01
Spiked Amount 5.000			Recovery =	0.900%		

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
3) Napthalene	4.06	128	951	0.12746	ppb	99
5) 2-Methylnaphthalene	4.88	142	533	0.11867	ppb	97
6) 1-Methylnaphthalene	4.99	142	601	0.13228	ppb	97
9) Acenaphthylene	5.92	152	1787	0.11640	ppb	98
10) Acenaphthene	6.11	154	546	0.12405	ppb	92
11) Fluorene	6.72	166	599	0.11841	ppb	93
13) Phenanthrene	7.83	178	883	0.11967	ppb	98
14) Anthracene	7.89	178	855	0.11674	ppb	99
16) Fluoranthene	9.22	202	1376	0.11919	ppb	98
18) Pyrene	9.48	202	1415	0.12511	ppb #	89
20) Benz (a) anthracene	10.89	228	1348	0.13332	ppb	96
21) Chrysene	10.95	228	1193	0.12015	ppb	99
22) Indeno (1,2,3-cd) pyrene	14.83	276	1233	0.11749	ppb #	82
24) Benzo (b) fluoranthene	12.66	252	1126	0.11931	ppb	98
25) Benzo (k) fluoranthene	12.71	252	1241	0.11008	ppb	96
26) Benzo (a) pyrene	13.22	252	1028	0.11184	ppb	98
27) Dibenz (a,h) anthracene	14.85	278	1064	0.12449	ppb	94
28) Benzo (g,h,i) perylene	15.18	276	1082	0.12500	ppb	96

(#) = qualifier out of range (m) = manual integration

Quantitation Report

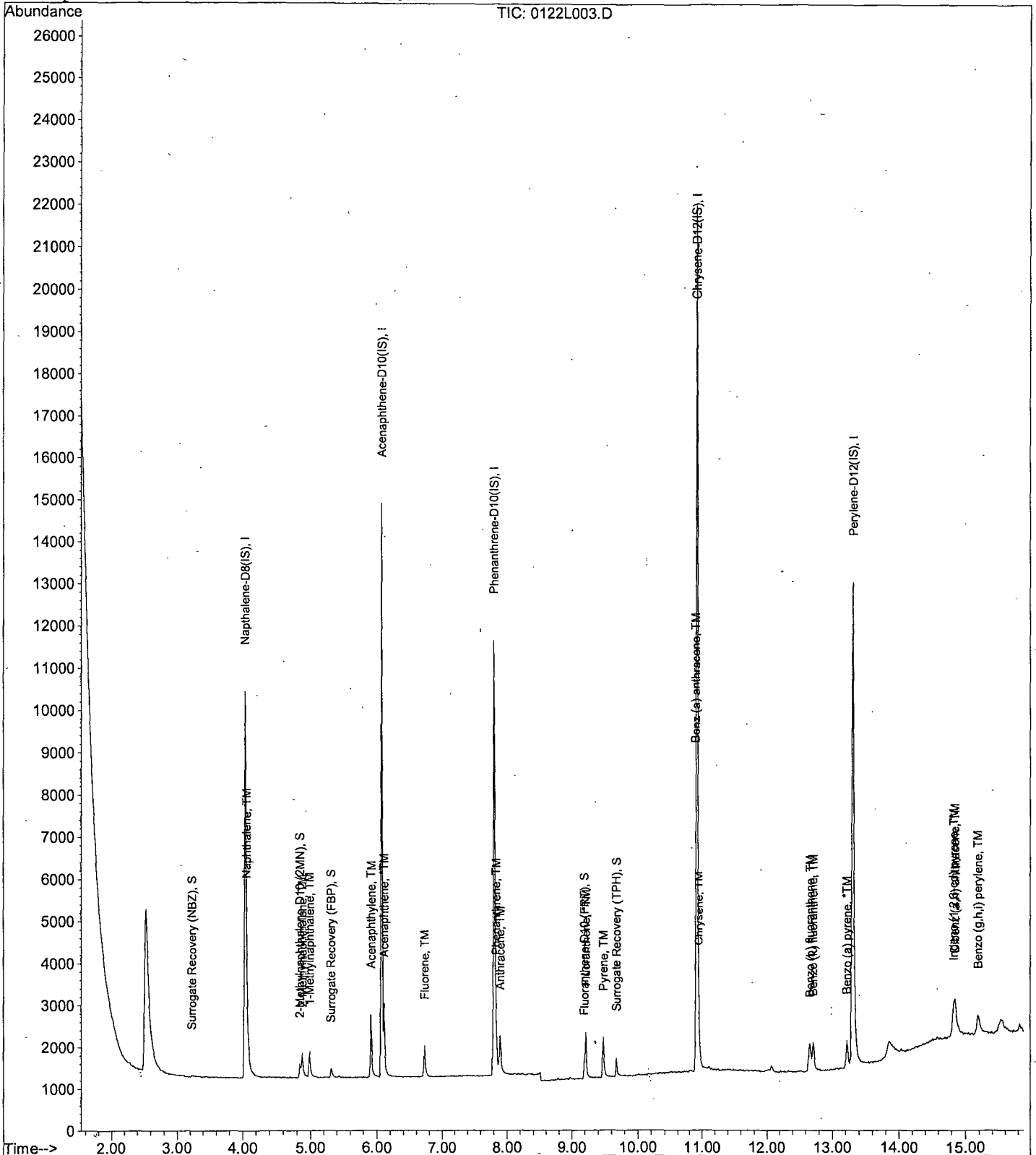
Data File : M:\LINUS\DATA\L190122\0122L003.D  
Acq On : 22 Jan 19 9:37  
Sample : 0.1 SIM 01/18/19  
Misc :

Vial: 3  
Operator: MA  
Inst : Linus  
Multiplr: 1.00

Quant Time: Jan 22 11:50 2019

Quant Results File: L0122.RES

Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
Title : EPA 8270  
Last Update : Tue Jan 22 13:02:31 2019  
Response via : Initial Calibration



Data File : M:\LINUS\DATA\L190122\0122L004.D Vial: 4  
 Acq On : 22 Jan 19 9:59 Operator: MA  
 Sample : 0.2 SIM 01/18/19 Inst : Linus  
 Misc : Multiplr: 1.00

Quant Time: Jan 22 11:50 2019 Quant Results File: L0122.RES

Quant Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
 Title : EPA 8270  
 Last Update : Tue Jan 22 11:50:13 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SIM\_2

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev (Min)
1) Naphthalene-D8 (IS)	4.03	136	18660	2.50000	ppb	-0.01
7) Acenaphthene-D10 (IS)	6.07	164	8631	2.50000	ppb	-0.01
12) Phenanthrene-D10 (IS)	7.80	188	16928	2.50000	ppb	-0.01
17) Chrysene-D12 (IS)	10.90	240	24788	2.50000	ppb	-0.02
23) Perylene-D12 (IS)	13.30	264	24016	2.50000	ppb	-0.02
System Monitoring Compounds						
2) Surrogate Recovery (NBZ)	3.24	82	348	0.07912	ppb	0.01
Spiked Amount	5.000		Recovery	=	1.580%	
4) 2-Methylnaphthalene-D10 (2)	4.84	152	835	0.07663	ppb	-0.01
Spiked Amount	5.000		Recovery	=	1.540%	
8) Surrogate Recovery (FBP)	5.31	172	571	0.07723	ppb	-0.01
Spiked Amount	5.000		Recovery	=	1.540%	
15) Fluoranthene-D10 (FRT)	9.20	212	1178	0.07243	ppb	0.00
Spiked Amount	5.000		Recovery	=	1.440%	
19) Surrogate Recovery (TPH)	9.67	244	803	0.08381	ppb	0.00
Spiked Amount	5.000		Recovery	=	1.680%	
Target Compounds						
3) Naphthalene	4.06	128	1979	0.22509	ppb	99
5) 2-Methylnaphthalene	4.88	142	1166	0.22030	ppb	99
6) 1-Methylnaphthalene	4.99	142	1186	0.22151	ppb	97
9) Acenaphthylene	5.92	152	3948	0.21185	ppb	99
10) Acenaphthene	6.11	154	1174	0.21972	ppb	98
11) Fluorene	6.72	166	1328	0.21626	ppb	100
13) Phenanthrene	7.83	178	1935	0.21425	ppb	99
14) Anthracene	7.89	178	1866	0.20815	ppb	99
16) Fluoranthene	9.22	202	3108	0.21994	ppb	97
18) Pyrene	9.47	202	3089	0.22216	ppb	99
20) Benz (a) anthracene	10.89	228	2695	0.21680	ppb	98
21) Chrysene	10.95	228	2920	0.23921	ppb	96
22) Indeno (1,2,3-cd) pyrene	14.82	276	2806	0.21749	ppb	# 86
24) Benzo (b) fluoranthene	12.65	252	2388	0.20696	ppb	# 98
25) Benzo (k) fluoranthene	12.71	252	2534	0.18385	ppb	99
26) Benzo (a) pyrene	13.22	252	2352	0.20930	ppb	97
27) Dibenz (a,h) anthracene	14.85	278	2354	0.22529	ppb	94
28) Benzo (g,h,i) perylene	15.19	276	2362	0.22319	ppb	95

Quantitation Report

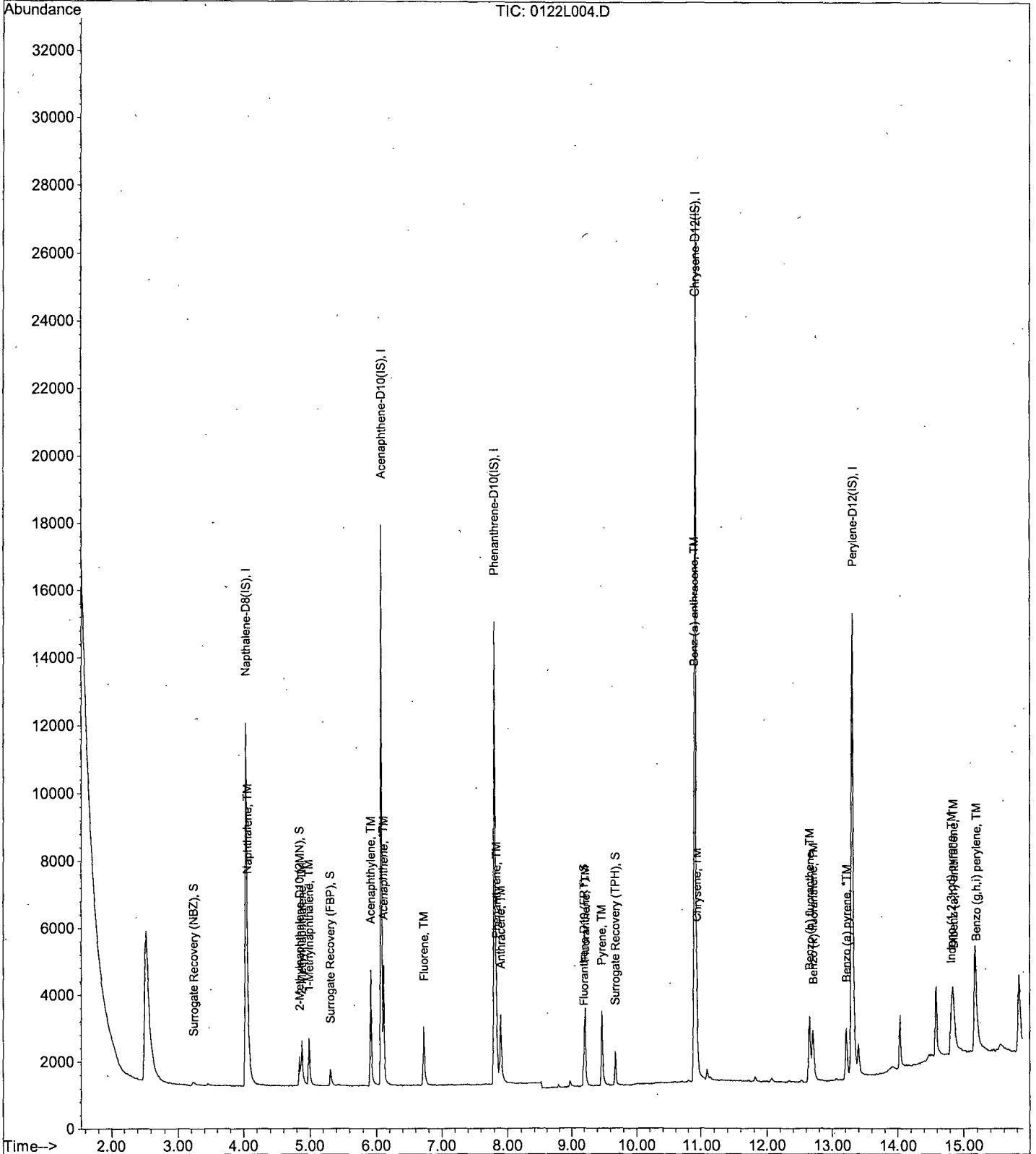
Data File : M:\LINUS\DATA\L190122\0122L004.D  
Acq On : 22 Jan 19 9:59  
Sample : 0.2 SIM 01/18/19  
Misc :

Vial: 4  
Operator: MA  
Inst : Linus  
Multiplr: 1.00

Quant Time: Jan 22 11:50 2019

Quant Results File: L0122.RES

Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
Title : EPA 8270  
Last Update : Tue Jan 22 13:02:31 2019  
Response via : Initial Calibration



Data File : M:\LINUS\DATA\L190122\0122L005.D Vial: 5  
 Acq On : 22 Jan 19 10:21 Operator: MA  
 Sample : 0.5 SIM 01/18/19 Inst : Linus  
 Misc : Multiplr: 1.00

Quant Time: Jan 22 11:50 2019 Quant Results File: L0122.RES

Quant Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
 Title : EPA 8270  
 Last Update : Tue Jan 22 11:50:13 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SIM\_2

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-D8 (IS)	4.03	136	19378	2.50000	ppb	-0.01
7) Acenaphthene-D10 (IS)	6.07	164	8194	2.50000	ppb	-0.01
12) Phenanthrene-D10 (IS)	7.80	188	15631	2.50000	ppb	-0.01
17) Chrysene-D12 (IS)	10.90	240	22574	2.50000	ppb	-0.02
23) Perylene-D12 (IS)	13.29	264	21122	2.50000	ppb	-0.03
System Monitoring Compounds						
2) Surrogate Recovery (NBZ)	3.22	82	694	0.15194	ppb	0.00
Spiked Amount	5.000		Recovery	=	3.040%	
4) 2-Methylnaphthalene-D10 (2)	4.84	152	1727	0.15263	ppb	-0.01
Spiked Amount	5.000		Recovery	=	3.060%	
8) Surrogate Recovery (FBP)	5.31	172	1194	0.17011	ppb	-0.01
Spiked Amount	5.000		Recovery	=	3.400%	
15) Fluoranthene-D10 (FRT)	9.18	212	2141	0.14256	ppb	-0.01
Spiked Amount	5.000		Recovery	=	2.860%	
19) Surrogate Recovery (TPH)	9.67	244	1505	0.17248	ppb	0.00
Spiked Amount	5.000		Recovery	=	3.440%	
Target Compounds						
3) Naphthalene	4.06	128	4220	0.46220	ppb	99
5) 2-Methylnaphthalene	4.88	142	2474	0.45012	ppb	100
6) 1-Methylnaphthalene	4.99	142	2608	0.46906	ppb	95
9) Acenaphthylene	5.92	152	7714	0.43600	ppb	98
10) Acenaphthene	6.11	154	2341	0.46149	ppb	95
11) Fluorene	6.72	166	2634	0.45181	ppb	100
13) Phenanthrene	7.83	178	3771	0.45218	ppb	98
14) Anthracene	7.89	178	3618	0.43707	ppb	99
16) Fluoranthene	9.21	202	5733	0.43937	ppb	# 89
18) Pyrene	9.47	202	5849	0.46191	ppb	93
20) Benz (a) anthracene	10.89	228	4857	0.42905	ppb	98
21) Chrysene	10.93	228	5362	0.48235	ppb	98
22) Indeno (1,2,3-cd) pyrene	14.82	276	5219	0.44419	ppb	# 86
24) Benzo (b) fluoranthene	12.65	252	4632	0.45644	ppb	98
25) Benzo (k) fluoranthene	12.70	252	5045	0.41618	ppb	98
26) Benzo (a) pyrene	13.22	252	4615	0.46695	ppb	99
27) Dibenz (a,h) anthracene	14.84	278	4275	0.46520	ppb	95
28) Benzo (g,h,i) perylene	15.17	276	4311	0.46317	ppb	96

(#) = qualifier out of range (m) = manual integration

Quantitation Report

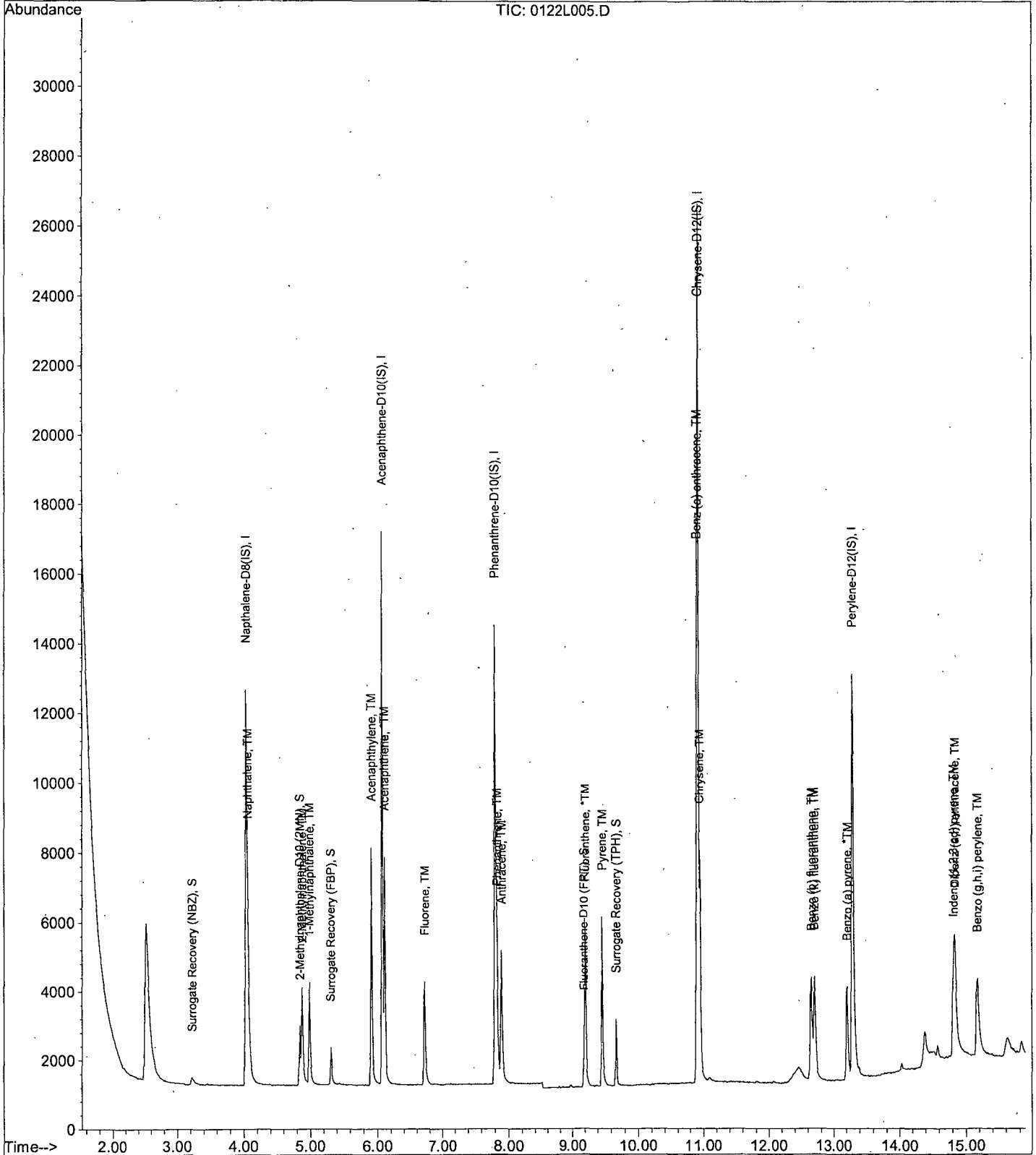
Data File : M:\LINUS\DATA\L190122\0122L005.D  
 Acq On : 22 Jan 19 10:21  
 Sample : 0.5 SIM 01/18/19  
 Misc :

Vial: 5  
 Operator: MA  
 Inst : Linus  
 Multiplr: 1.00

Quant Time: Jan 22 11:50 2019

Quant Results File: L0122.RES

Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
 Title : EPA 8270  
 Last Update : Tue Jan 22 13:02:31 2019  
 Response via : Initial Calibration



Data File : M:\LINUS\DATA\L190122\0122L006.D Vial: 6  
 Acq On : 22 Jan 19 10:43 Operator: MA  
 Sample : 1 SIM 01/18/19 Inst : Linus  
 Misc : Multiplr: 1.00

Quant Time: Jan 22 11:50 2019 Quant Results File: L0122.RES

Quant Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
 Title : EPA 8270  
 Last Update : Tue Jan 22 11:50:13 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SIM\_2

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-D8 (IS)	4.03	136	17997	2.50000	ppb	-0.01
7) Acenaphthene-D10 (IS)	6.07	164	8238	2.50000	ppb	-0.01
12) Phenanthrene-D10 (IS)	7.80	188	16224	2.50000	ppb	-0.01
17) Chrysene-D12 (IS)	10.90	240	23806	2.50000	ppb	-0.02
23) Perylene-D12 (IS)	13.29	264	22387	2.50000	ppb	-0.03

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Surrogate Recovery (NBZ)	3.22	82	1370	0.32296	ppb	0.00
Spiked Amount	5.000		Recovery	=	6.460%	
4) 2-Methylnaphthalene-D10 (2)	4.84	152	4102	0.39034	ppb	-0.01
Spiked Amount	5.000		Recovery	=	7.800%	
8) Surrogate Recovery (FBP)	5.31	172	2874	0.40727	ppb	-0.01
Spiked Amount	5.000		Recovery	=	8.140%	
15) Fluoranthene-D10 (FRT)	9.18	212	5335	0.34225	ppb	-0.01
Spiked Amount	5.000		Recovery	=	6.840%	
19) Surrogate Recovery (TPH)	9.67	244	3609	0.39220	ppb	0.00
Spiked Amount	5.000		Recovery	=	7.840%	

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
3) Naphthalene	4.06	128	9261	1.09215	ppb	99
5) 2-Methylnaphthalene	4.88	142	5682	1.11310	ppb	97
6) 1-Methylnaphthalene	4.99	142	5811	1.12533	ppb	96
9) Acenaphthylene	5.92	152	18493	1.03965	ppb	99
10) Acenaphthene	6.11	154	5619	1.10178	ppb	98
11) Fluorene	6.71	166	6507	1.11018	ppb	96
13) Phenanthrene	7.83	178	9481	1.09531	ppb	97
14) Anthracene	7.89	178	9094	1.05845	ppb	99
16) Fluoranthene	9.21	202	14616	1.07921	ppb	# 93
18) Pyrene	9.47	202	14652	1.09722	ppb	90
20) Benz (a) anthracene	10.89	228	12417	1.04011	ppb	99
21) Chrysene	10.93	228	13234	1.12887	ppb	99
22) Indeno (1,2,3-cd) pyrene	14.80	276	13263	1.07040	ppb	# 88
24) Benzo (b) fluoranthene	12.64	252	11564	1.07514	ppb	# 98
25) Benzo (k) fluoranthene	12.70	252	11886	0.92512	ppb	98
26) Benzo (a) pyrene	13.21	252	11511	1.09889	ppb	99
27) Dibenz (a,h) anthracene	14.83	278	11022	1.13162	ppb	99
28) Benzo (g,h,i) perylene	15.16	276	11170	1.13229	ppb	95

Quantitation Report

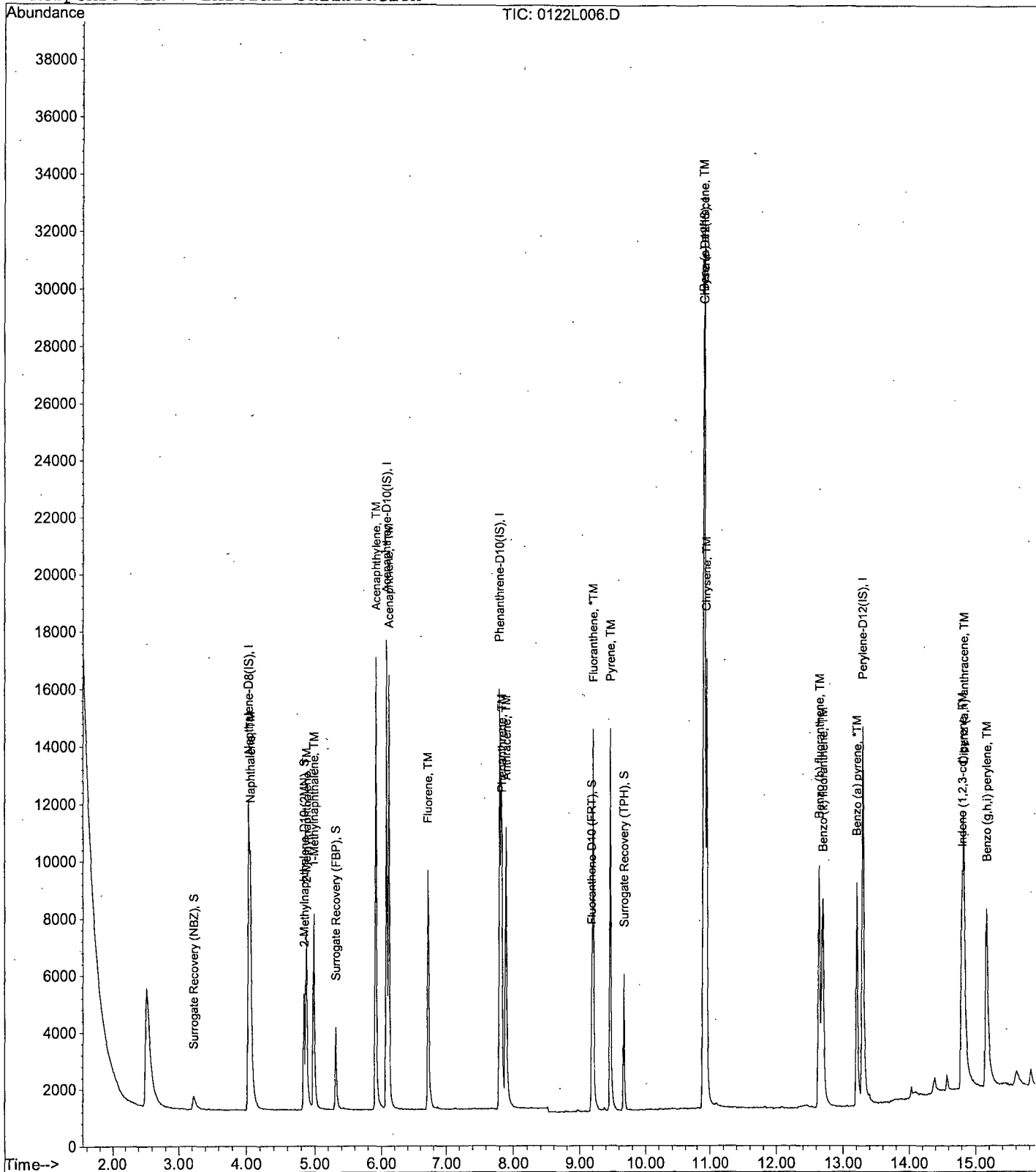
Data File : M:\LINUS\DATA\L190122\0122L006.D  
Acq On : 22 Jan 19 10:43  
Sample : 1 SIM 01/18/19  
Misc :

Vial: 6  
Operator: MA  
Inst : Linus  
Multiplr: 1.00

Quant Time: Jan 22 11:50 2019

Quant Results File: L0122.RES

Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
Title : EPA 8270  
Last Update : Tue Jan 22 13:02:31 2019  
Response via : Initial Calibration





Data File : M:\LINUS\DATA\L190122\0122L007.D Vial: 7  
 Acq On : 22 Jan 19 11:30 Operator: MA  
 Sample : 5 SIM 01/18/19 Inst : Linus  
 Misc : Multiplr: 1.00

Quant Time: Jan 22 12:47 2019 Quant Results File: L0122.RES

Quant Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
 Title : EPA 8270  
 Last Update : Tue Jan 22 12:47:16 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SIM\_2

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-D8 (IS)	4.03	136	16548	2.50000	ppb	-0.01
7) Acenaphthene-D10 (IS)	6.07	164	7268	2.50000	ppb	-0.01
12) Phenanthrene-D10 (IS)	7.80	188	13995	2.50000	ppb	-0.01
17) Chrysene-D12 (IS)	10.90	240	19950	2.50000	ppb	-0.02
23) Perylene-D12 (IS)	13.30	264	19225	2.50000	ppb	-0.02

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Surrogate Recovery (NBZ)	3.21	82	7607	2.60121	ppb	-0.01
Spiked Amount	5.000		Recovery	=	52.020%	
4) 2-Methylnaphthalene-D10 (2)	4.83	152	20941	2.75267	ppb	-0.02
Spiked Amount	5.000		Recovery	=	55.060%	
8) Surrogate Recovery (FBP)	5.31	172	13978	2.69964	ppb	-0.01
Spiked Amount	5.000		Recovery	=	54.000%	
15) Fluoranthene-D10 (FRT)	9.18	212	27245	2.76398	ppb	-0.01
Spiked Amount	5.000		Recovery	=	55.280%	
19) Surrogate Recovery (TPH)	9.67	244	17410	2.68552	ppb	-0.01
Spiked Amount	5.000		Recovery	=	53.720%	

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
3) Naphthalene	4.06	128	45784	5.47796	ppb	100
5) 2-Methylnaphthalene	4.87	142	28493	5.66542	ppb	100
6) 1-Methylnaphthalene	4.97	142	27451	5.39862	ppb	100
9) Acenaphthylene	5.90	152	91655	5.61140	ppb	100
10) Acenaphthene	6.11	154	26309	5.54466	ppb	100
11) Fluorene	6.71	166	31330	5.66322	ppb	100
13) Phenanthrene	7.82	178	44335	5.57391	ppb	100
14) Anthracene	7.88	178	45862	5.88051	ppb	100
16) Fluoranthene	9.21	202	70142	5.71546	ppb	100
18) Pyrene	9.46	202	69644	5.66416	ppb	100
20) Benz (a) anthracene	10.89	228	61372	5.59012	ppb	100
21) Chrysene	10.93	228	57972	5.50231	ppb	100
22) Indeno (1,2,3-cd) pyrene	14.79	276	59462	5.44362	ppb	100
24) Benzo (b) fluoranthene	12.64	252	58876	5.66105	ppb	100
25) Benzo (k) fluoranthene	12.68	252	59717	5.64321	ppb	100
26) Benzo (a) pyrene	13.21	252	55980	5.65364	ppb	100
27) Dibenz (a,h) anthracene	14.82	278	49007	5.37458	ppb	100
28) Benzo (g,h,i) perylene	15.15	276	48865	5.30011	ppb	100

(#) = qualifier out of range (m) = manual integration

Quantitation Report

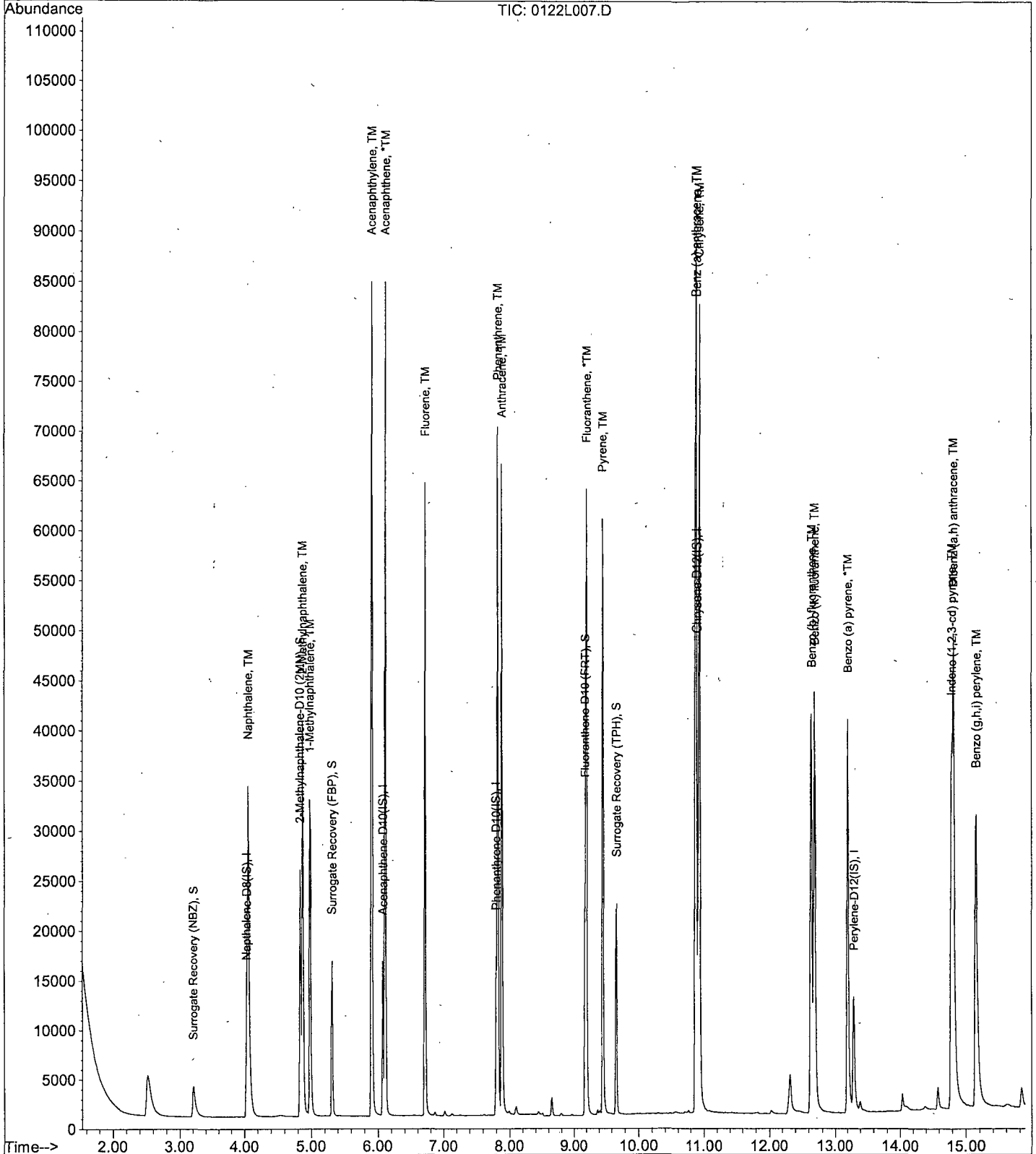
Data File : M:\LINUS\DATA\L190122\0122L007.D  
 Acq On : 22 Jan 19 11:30  
 Sample : 5 SIM 01/18/19  
 Misc :

Vial: 7  
 Operator: MA  
 Inst : Linus  
 Multiplr: 1.00

Quant Time: Jan 22 12:47 2019

Quant Results File: L0122.RES

Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
 Title : EPA 8270  
 Last Update : Tue Jan 22 13:02:31 2019  
 Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : M:\LINUS\DATA\L190122\0122L008.D  
 Acq On : 22 Jan 19 11:53  
 Sample : 10 SIM 01/18/19  
 Misc :

Vial: 8  
 Operator: MA  
 Inst : Linus  
 Multiplr: 1.00

Quant Time: Feb 5 11:09 2019

Quant Results File: L0122.RES

Quant Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
 Title : EPA 8270  
 Last Update : Tue Jan 22 12:47:40 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SIM\_2

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-D8 (IS)	4.03	136	16401	2.50000	ppb	-0.01
7) Acenaphthene-D10 (IS)	6.07	164	7199	2.50000	ppb	-0.01
12) Phenanthrene-D10 (IS)	7.80	188	13870	2.50000	ppb	-0.01
17) Chrysene-D12 (IS)	10.90	240	20037	2.50000	ppb	-0.02
23) Perylene-D12 (IS)	13.29	264	18684	2.50000	ppb	-0.03

System Monitoring Compounds

2) Surrogate Recovery (NBZ)	3.20	82	14805	5.85339	ppb	-0.02
Spiked Amount	5.000					
Recovery					= 117.060%	
4) 2-Methylnaphthalene-D10 (2)	4.83	152	42463	6.47148	ppb	-0.02
Spiked Amount	5.000					
Recovery					= 129.420%	
8) Surrogate Recovery (FBP)	5.31	172	27763	6.17375	ppb	-0.01
Spiked Amount	5.000					
Recovery					= 123.480%	
15) Fluoranthene-D10 (FRT)	9.18	212	54468	6.35262	ppb	-0.01
Spiked Amount	5.000					
Recovery					= 127.060%	
19) Surrogate Recovery (TPH)	9.66	244	34694	6.13619	ppb	-0.02
Spiked Amount	5.000					
Recovery					= 122.720%	

Target Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
3) Naphthalene	4.06	128	88896	11.85448	ppb	100
5) 2-Methylnaphthalene	4.87	142	56236	12.48160	ppb	100
6) 1-Methylnaphthalene	4.97	142	54242	11.87753	ppb	100
9) Acenaphthylene	5.90	152	182742	12.55338	ppb	99
10) Acenaphthene	6.11	154	51321	12.04426	ppb	98
11) Fluorene	6.71	166	61684	12.48808	ppb	99
13) Phenanthrene	7.82	178	87145	12.24258	ppb	100
14) Anthracene	7.88	178	87619	12.57174	ppb	100
16) Fluoranthene	9.21	202	137396	12.46906	ppb	97
18) Pyrene	9.46	202	136155	12.26524	ppb	96
20) Benz (a) anthracene	10.89	228	120980	12.29858	ppb	100
21) Chrysene	10.93	228	111248	11.62149	ppb	99
22) Indeno (1,2,3-cd) pyrene	14.78	276	119439	12.13320	ppb	# 84
24) Benzo (b) fluoranthene	12.63	252	119776	13.26251	ppb	# 97
25) Benzo (k) fluoranthene	12.68	252	108622m	11.78686	ppb	99
26) Benzo (a) pyrene	13.20	252	111267	12.95931	ppb	# 97
27) Dibenz (a,h) anthracene	14.82	278	97893	12.25147	ppb	98
28) Benzo (g,h,i) perylene	15.14	276	98835	12.27085	ppb	# 94

(#) = qualifier out of range (m) = manual integration

Quantitation Report

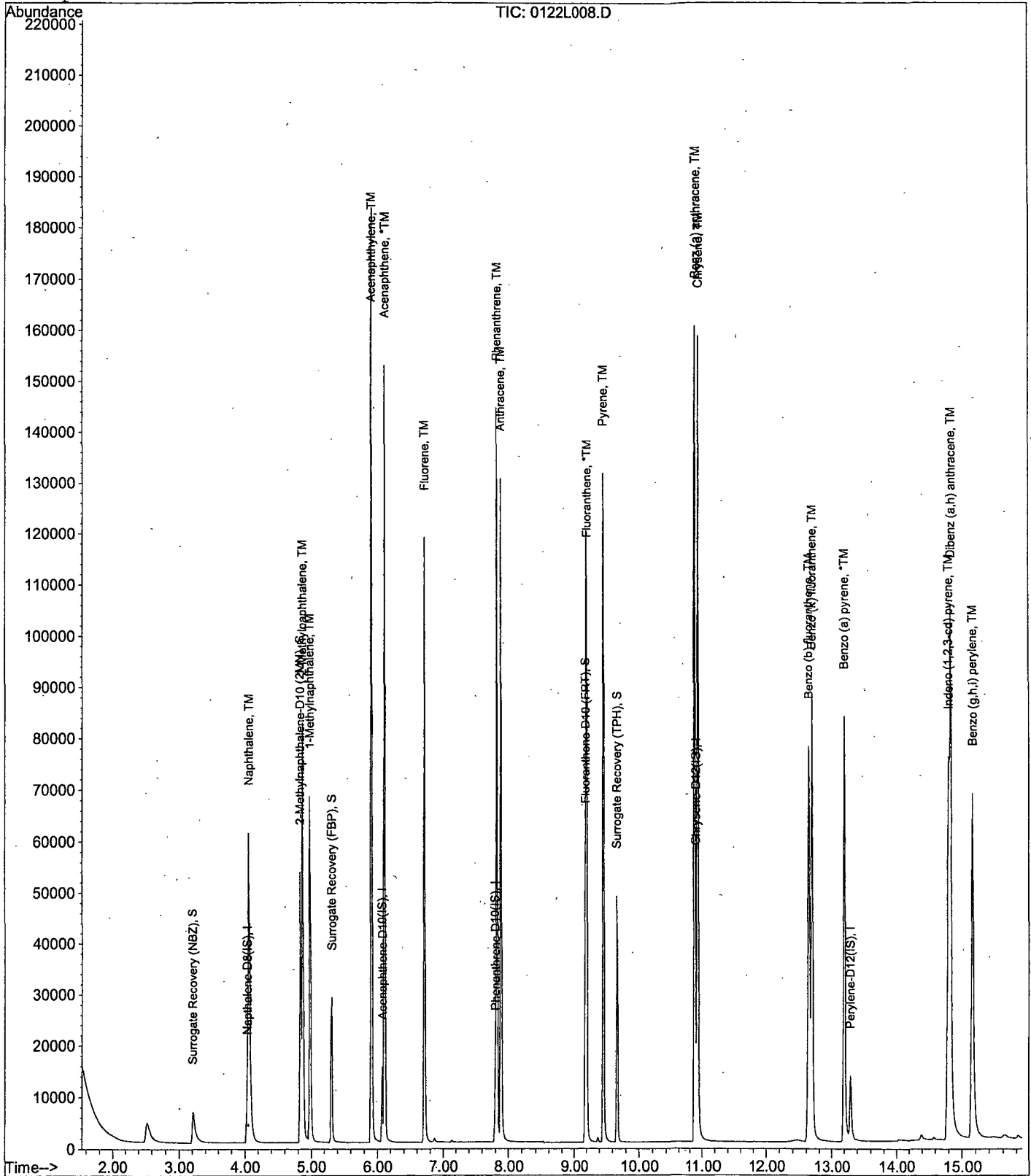
Data File : M:\LINUS\DATA\L190122\0122L008.D  
Acq On : 22 Jan 19 11:53  
Sample : 10 SIM 01/18/19  
Misc :

Vial: 8  
Operator: MA  
Inst : Linus  
Multiplr: 1.00

Quant Time: Feb 5 11:09 2019

Quant Results File: L0122.RES

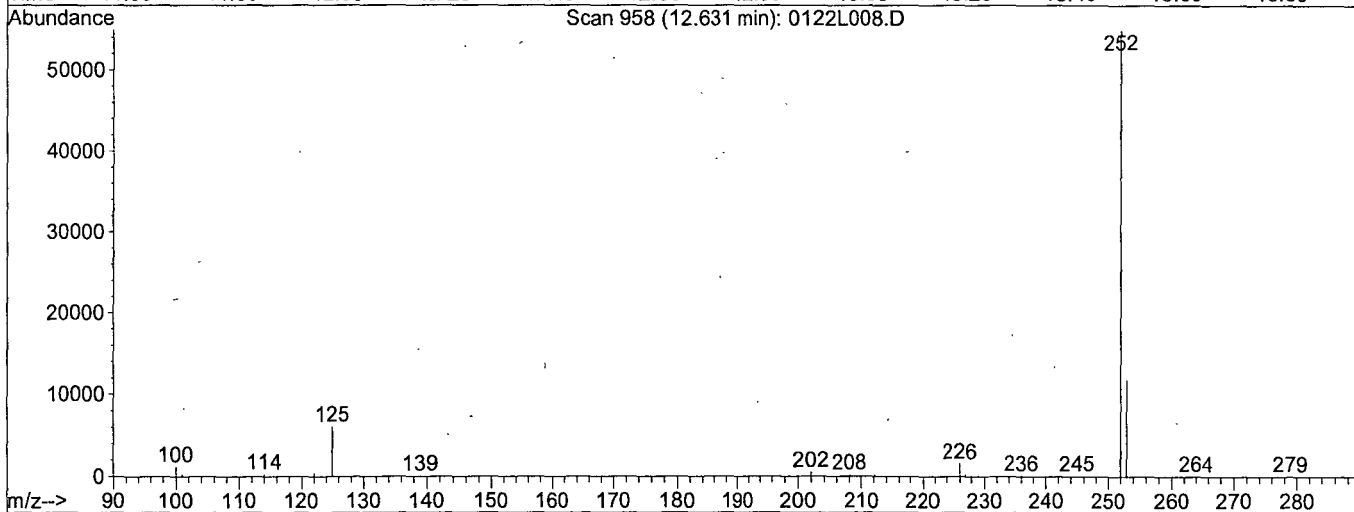
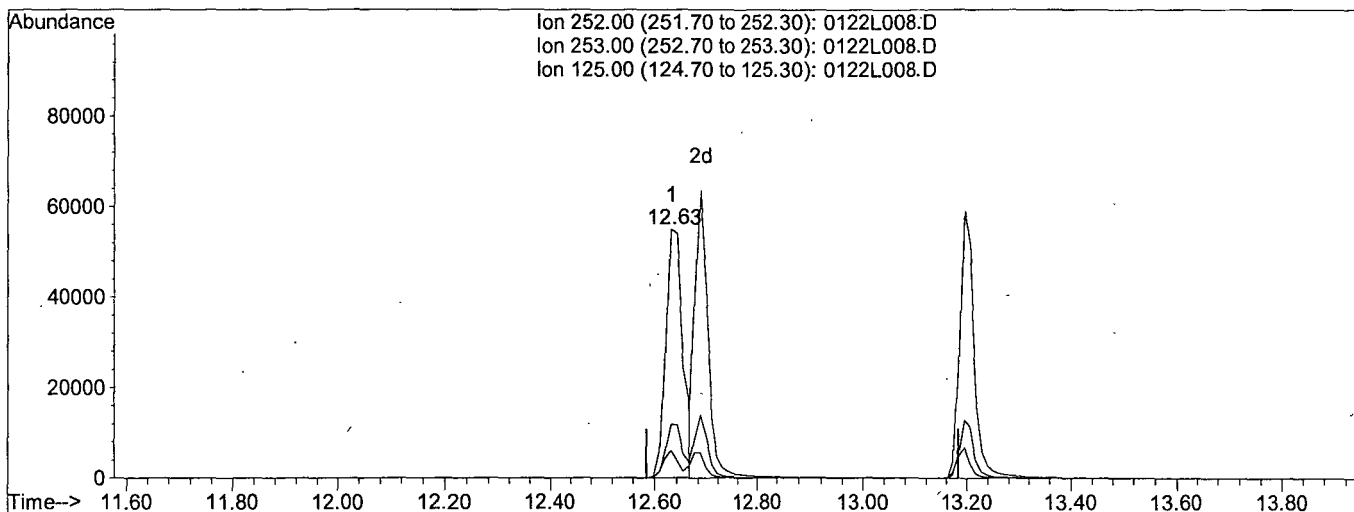
Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
Title : EPA 8270  
Last Update : Tue Jan 22 13:02:31 2019  
Response via : Initial Calibration



Quantitation Report

Data File : M:\LINUS\DATA\L190122\0122L008.D Vial: 8  
 Acq On : 22 Jan 19 11:53 Operator: MA  
 Sample : 10 SIM 01/18/19 Inst : Linus  
 Misc : Multiplr: 1.00  
 Quant Time: Jan 22 12:48 2019 Quant Results File: temp.res

Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
 Title : EPA 8270  
 Last Update : Tue Jan 22 13:02:31 2019  
 Response via : Multiple Level Calibration



TIC: 0122L008.D

(25) Benzo (k) fluoranthene (TM)

12.63min 12.9969ppb

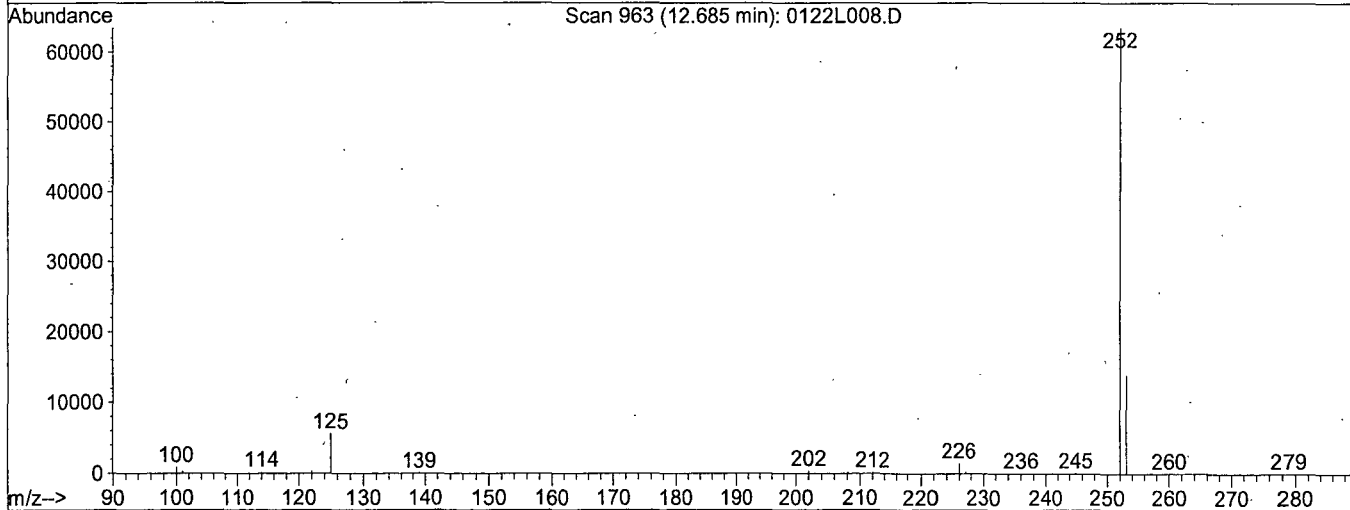
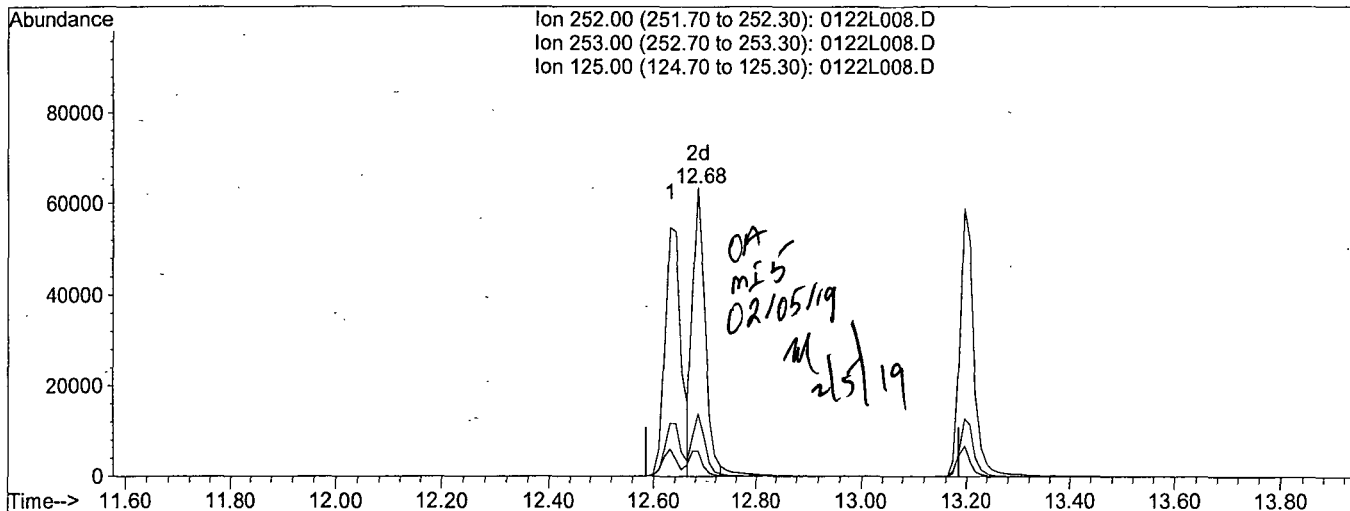
response 119773

Ion	Exp%	Act%
252.00	100	100
253.00	21.60	21.45
125.00	9.60	10.98
0.00	0.00	0.00

Quantitation Report

Data File : M:\LINUS\DATA\L190122\0122L008.D Vial: 8  
 Acq On : 22 Jan 19 11:53 Operator: MA  
 Sample : 10 SIM 01/18/19 Inst : Linus  
 Misc : Multiplr: 1.00  
 Quant Time: Feb 5 11:09 2019 Quant Results File: temp.res

Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
 Title : EPA 8270  
 Last Update : Tue Jan 22 13:02:31 2019  
 Response via : Multiple Level Calibration



TIC: 0122L008.D

(25) Benzo (k) fluoranthene (TM)

12.68min 11.7869ppb m

response 108622

Ion	Exp%	Act%
252.00	100	100
253.00	21.60	21.90
125.00	9.60	8.79
0.00	0.00	0.00

Data File : M:\LINUS\DATA\L190122\0122L009.D Vial: 9  
 Acq On : 22 Jan 19 12:15 Operator: MA  
 Sample : 50 SIM 01/18/19 Inst : Linus  
 Misc : Multiplr: 1.00

Quant Time: Jan 22 12:49 2019 Quant Results File: L0122.RES

Quant Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
 Title : EPA 8270  
 Last Update : Tue Jan 22 12:48:57 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SIM\_2

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-D8 (IS)	4.03	136	16882	2.50000	ppb	-0.01
7) Acenaphthene-D10 (IS)	6.07	164	7435	2.50000	ppb	-0.01
12) Phenanthrene-D10 (IS)	7.80	188	14943	2.50000	ppb	-0.01
17) Chrysene-D12 (IS)	10.91	240	19605	2.50000	ppb	-0.01
23) Perylene-D12 (IS)	13.29	264	18780	2.50000	ppb	-0.03

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Surrogate Recovery (NBZ)	3.20	82	74252	28.52027	ppb	-0.02
Spiked Amount	5.000		Recovery	= 570.400%		
4) 2-Methylnaphthalene-D10 (2)	4.83	152	197601	29.25691	ppb	-0.02
Spiked Amount	5.000		Recovery	= 585.140%		
8) Surrogate Recovery (FBP)	5.31	172	128459	27.65911	ppb	-0.01
Spiked Amount	5.000		Recovery	= 553.180%		
15) Fluoranthene-D10 (FRT)	9.18	212	254396	27.53979	ppb	-0.01
Spiked Amount	5.000		Recovery	= 550.800%		
19) Surrogate Recovery (TPH)	9.67	244	163882	29.62386	ppb	-0.01
Spiked Amount	5.000		Recovery	= 592.480%		

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
3) Naphthalene	4.06	128	369785	47.90669	ppb	100
5) 2-Methylnaphthalene	4.87	142	226326	48.80191	ppb	99
6) 1-Methylnaphthalene	4.99	142	222700	47.37585	ppb	94
9) Acenaphthylene	5.92	152	763610	50.79081	ppb	97
10) Acenaphthene	6.11	154	208204	47.31133	ppb	95
11) Fluorene	6.71	166	255227	50.03119	ppb	97
13) Phenanthrene	7.83	178	376921	49.14954	ppb	98
14) Anthracene	7.89	178	376399	50.12843	ppb	99
16) Fluoranthene	9.21	202	567787	47.82815	ppb	# 84
18) Pyrene	9.47	202	556994	51.28126	ppb	99
20) Benz (a) anthracene	10.90	228	525902	54.64017	ppb	100
21) Chrysene	10.95	228	451974	48.25575	ppb	# 98
22) Indeno (1,2,3-cd) pyrene	14.82	276	499473	51.85698	ppb	# 90
24) Benzo (b) fluoranthene	12.65	252	490265	54.00836	ppb	100
25) Benzo (k) fluoranthene	12.72	252	488050	50.37199	ppb	100
26) Benzo (a) pyrene	13.22	252	471645	54.65189	ppb	99
27) Dibenz (a,h) anthracene	14.85	278	398222	49.58336	ppb	# 94
28) Benzo (g,h,i) perylene	15.17	276	411886	50.87625	ppb	99

Quantitation Report

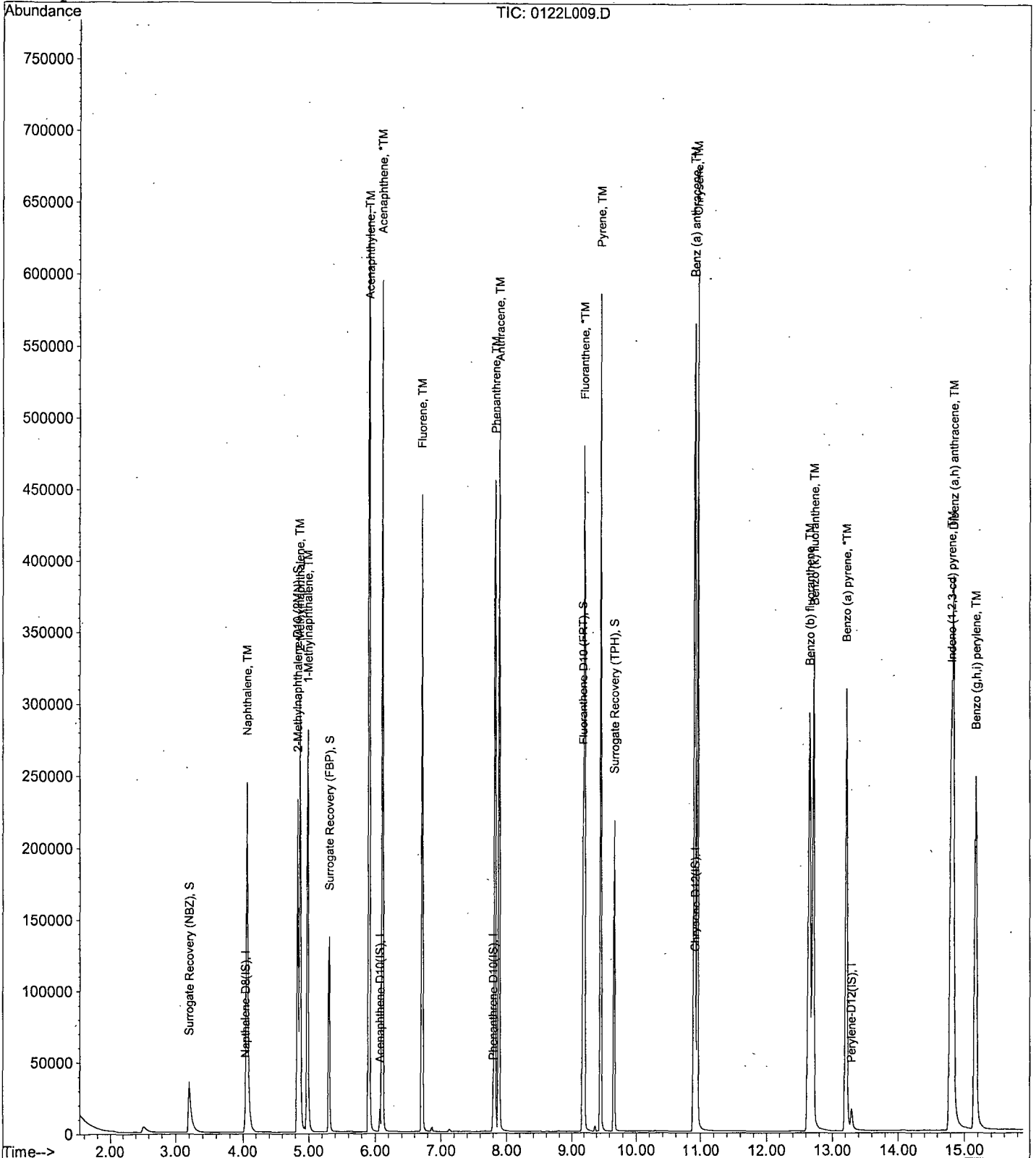
Data File : M:\LINUS\DATA\L190122\0122L009.D  
 Acq On : 22 Jan 19 12:15  
 Sample : 50 SIM 01/18/19  
 Misc :

Vial: 9  
 Operator: MA  
 Inst : Linus  
 Multiplr: 1.00

Quant Time: Jan 22 12:49 2019

Quant Results File: L0122.RES

Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
 Title : EPA 8270  
 Last Update : Tue Jan 22 13:02:31 2019  
 Response via : Initial Calibration





Data File : M:\LINUS\DATA\L190122\0122L010.D Vial: 10  
 Acq On : 22 Jan 19 12:37 Operator: MA  
 Sample : 100 SIM 01/18/19 Inst : Linus  
 Misc : Multiplr: 1.00

Quant Time: Jan 22 13:02 2019 Quant Results File: L0122.RES

Quant Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
 Title : EPA 8270  
 Last Update : Tue Jan 22 13:02:31 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SIM\_2

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-D8 (IS)	4.03	136	16509	2.50000	ppb	-0.01
7) Acenaphthene-D10 (IS)	6.07	164	7340	2.50000	ppb	-0.01
12) Phenanthrene-D10 (IS)	7.80	188	14625	2.50000	ppb	-0.01
17) Chrysene-D12 (IS)	10.92	240	19570	2.50000	ppb	0.00
23) Perylene-D12 (IS)	13.30	264	18015	2.50000	ppb	-0.02
System Monitoring Compounds						
2) Surrogate Recovery (NBZ)	3.20	82	143716	49.35106	ppb	-0.02
Spiked Amount	5.000		Recovery	=	987.020%	
4) 2-Methylnaphthalene-D10 (2)	4.83	152	369507	48.84651	ppb	-0.02
Spiked Amount	5.000		Recovery	=	976.940%	
8) Surrogate Recovery (FBP)	5.31	172	245947	47.38619	ppb	-0.01
Spiked Amount	5.000		Recovery	=	947.720%	
15) Fluoranthene-D10 (FRT)	9.20	212	489050	47.77794	ppb	0.00
Spiked Amount	5.000		Recovery	=	955.560%	
19) Surrogate Recovery (TPH)	9.67	244	301836	47.76577	ppb	-0.01
Spiked Amount	5.000		Recovery	=	955.320%	
Target Compounds						
3) Naphthalene	4.06	128	686154	82.50506	ppb	99
5) 2-Methylnaphthalene	4.88	142	426189	84.86301	ppb	97
6) 1-Methylnaphthalene	4.99	142	400215	78.89615	ppb	96
9) Acenaphthylene	5.92	152	1371750	83.47032	ppb	99
10) Acenaphthene	6.12	154	399394	83.03305	ppb	99
11) Fluorene	6.72	166	486427	86.73013	ppb	99
13) Phenanthrene	7.83	178	662559	80.60560	ppb	99
14) Anthracene	7.91	178	708940	86.78483	ppb	98
16) Fluoranthene	9.23	202	1074355	83.53801	ppb	# 93
18) Pyrene	9.48	202	1055051	87.24305	ppb	94
20) Benz (a) anthracene	10.91	228	987627	91.25364	ppb	99
21) Chrysene	10.97	228	835356	80.61549	ppb	98
22) Indeno (1,2,3-cd) pyrene	14.86	276	924286	86.44058	ppb	# 71
24) Benzo (b) fluoranthene	12.67	252	937424	96.32808	ppb	# 97
25) Benzo (k) fluoranthene	12.74	252	912491	92.99727	ppb	100
26) Benzo (a) pyrene	13.25	252	880967	94.64847	ppb	# 96
27) Dibenz (a,h) anthracene	14.88	278	752245	87.80959	ppb	# 88
28) Benzo (g,h,i) perylene	15.21	276	751231	86.81489	ppb	# 92

(#) = qualifier out of range (m) = manual integration

Quantitation Report

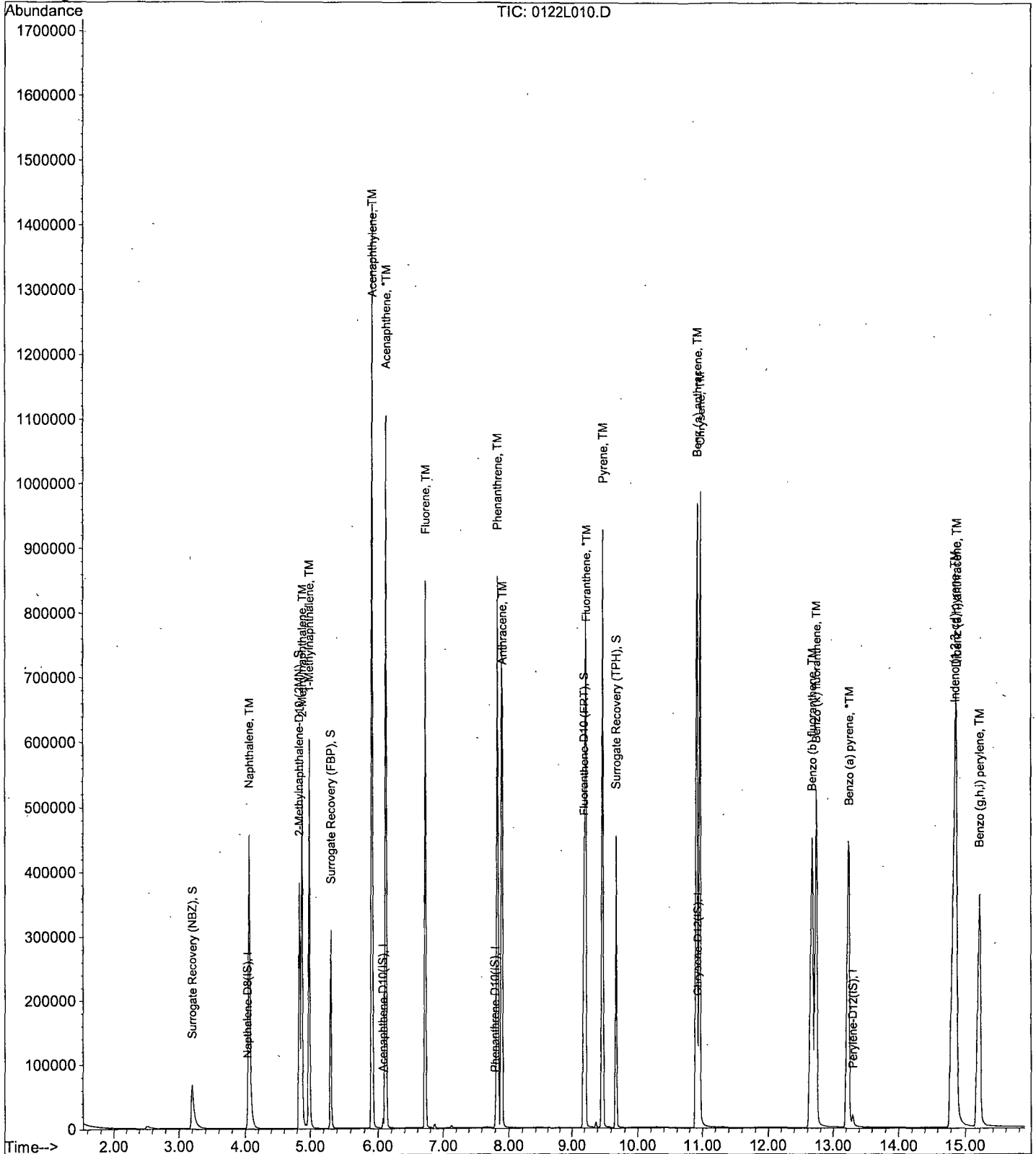
Data File : M:\LINUS\DATA\L190122\0122L010.D  
Acq On : 22 Jan 19 12:37  
Sample : 100 SIM 01/18/19  
Misc :

Vial: 10  
Operator: MA  
Inst : Linus  
Multiplr: 1.00

Quant Time: Jan 22 13:02 2019

Quant Results File: L0122.RES

Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
Title : EPA 8270  
Last Update : Tue Jan 22 13:02:31 2019  
Response via : Initial Calibration



PAH by GCMS SIM  
EPA 8270 SIM

Form 7

Second Source Calibration

Lab Name: APPL, Inc.

SDG No: \_\_\_\_\_

Case No: \_\_\_\_\_

Date Analyzed: 01/22/19

Matrix: \_\_\_\_\_

Instrument: Linus

Initial Cal. Date: 01/22/19

Data File: 0122L011.D

		Compound	MEAN	CCRF	%D	%Drift
1	TM	Naphthalene	1.259	1.319	4.7	TM
2	TM	2-Methylnaphthalene	0.7605	0.8383	10	TM
3	TM	1-Methylnaphthalene	0.7682	0.8611	12	TM
4	TM	Acenaphthylene	5.597	6.034	7.8	TM
5	*TM	Acenaphthene	1.638	1.715	4.7	*TM
6	TM	Fluorene	1.910	2.087	9.2	TM
7	TM	Phenanthrene	1.405	1.525	8.5	TM
8	TM	Anthracene	1.396	1.436	2.8	TM
9	*TM	Fluoranthene	2.198	2.322	5.6	*TM
10	TM	Pyrene	1.545	1.638	6.0	TM
11	TM	Benz (a) anthracene	1.383	1.444	4.5	TM
12	TM	Chrysene	1.324	1.416	6.9	TM
13	TM	Indeno (1,2,3-cd) pyrene	1.366	1.426	4.4	TM
14	TM	Benzo (b) fluoranthene	1.350	1.445	7.0	TM
15	TM	Benzo (k) fluoranthene	1.374	1.606	17	TM
16	*TM	Benzo (a) pyrene	1.292	1.370	6.1	*TM
17	TM	Dibenz (a,h) anthracene	1.189	1.313	10	TM
18	TM	Benzo (g,h,i) perylene	1.201	1.300	8.3	TM
19						
20						
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22						
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37						
38						
39						
40						

Average

7.5

Data File : M:\LINUS\DATA\L190122\0122L011.D  
 Acq On : 22 Jan 19 12:59  
 Sample : SS SIM 01/18/19  
 Misc :

Vial: 11  
 Operator: MA  
 Inst : Linus  
 Multiplr: 1.00

Quant Time: Feb 5 14:36 2019

Quant Results File: L0122.RES

Quant Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
 Title : EPA 8270  
 Last Update : Tue Jan 22 13:02:31 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SIM\_2

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-D8(IS)	4.03	136	15442	2.50	ppb	-0.01
7) Acenaphthene-D10(IS)	6.07	164	6948	2.50	ppb	-0.01
12) Phenanthrene-D10(IS)	7.80	188	13744	2.50	ppb	-0.01
17) Chrysene-D12(IS)	10.90	240	19942	2.50	ppb	-0.02
23) Perylene-D12(IS)	13.29	264	18334	2.50	ppb	-0.03

System Monitoring Compounds

2) Surrogate Recovery (NBZ)	0.00	82	0d	0.00	ppb	
Spiked Amount	5.000		Recovery	=	0.000%	
4) 2-Methylnaphthalene-D10 (2)	0.00	152	0d	0.00	ppb	
Spiked Amount	5.000		Recovery	=	0.000%	
8) Surrogate Recovery (FBP)	0.00	172	0d	0.00	ppb	
Spiked Amount	5.000		Recovery	=	0.000%	
15) Fluoranthene-D10 (FRT)	0.00	212	0d	0.00	ppb	
Spiked Amount	5.000		Recovery	=	0.000%	
19) Surrogate Recovery (TPH)	0.00	244	0d	0.00	ppb	
Spiked Amount	5.000		Recovery	=	0.000%	

Target Compounds

	R.T.	QIon	Response	Conc	Units	Qvalue
3) Naphthalene	4.06	128	40738	5.24	ppb	100
5) 2-Methylnaphthalene	4.87	142	25890	5.51	ppb	97
6) 1-Methylnaphthalene	4.99	142	26593	5.60	ppb	94
9) Acenaphthylene	5.90	152	83849	5.39	ppb	100
10) Acenaphthene	6.11	154	23838	5.24	ppb	100
11) Fluorene	6.71	166	28998	5.46	ppb	99
13) Phenanthrene	7.82	178	41914	5.43	ppb	99
14) Anthracene	7.88	178	39465	5.14	ppb	99
16) Fluoranthene	9.21	202	63819	5.28	ppb	100
18) Pyrene	9.46	202	65311	5.30	ppb	97
20) Benz (a) anthracene	10.88	228	57608	5.22	ppb	96
21) Chrysene	10.93	228	56462	5.35	ppb	98
22) Indeno (1,2,3-cd) pyrene	14.78	276	56868	5.22	ppb	# 91
24) Benzo (b) fluoranthene	12.63	252	52976	5.35	ppb	99
25) Benzo (k) fluoranthene	12.68	252	58877	5.84	ppb	# 96
26) Benzo (a) pyrene	13.20	252	50232	5.30	ppb	98
27) Dibenz (a,h) anthracene	14.82	278	48137	5.52	ppb	98
28) Benzo (g,h,i) perylene	15.14	276	47680	5.41	ppb	95

(#) = qualifier out of range (m) = manual integration

Quantitation Report

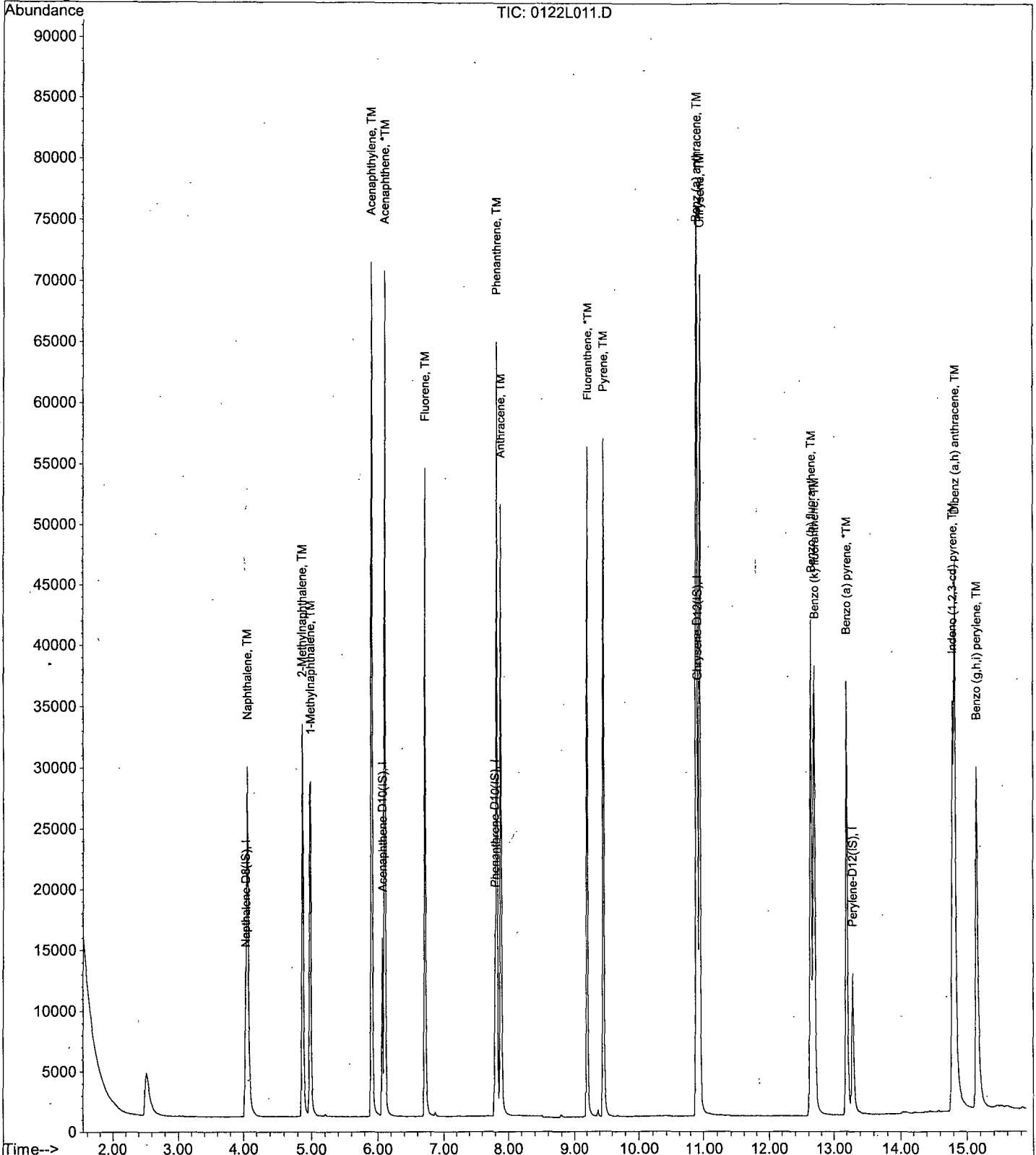
Data File : M:\LINUS\DATA\L190122\0122L011.D  
Acq On : 22 Jan 19 12:59  
Sample : SS SIM 01/18/19  
Misc :

Vial: 11  
Operator: MA  
Inst : Linus  
Multiplr: 1.00

Quant Time: Feb 5 14:36 2019

Quant Results File: L0122.RES

Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
Title : EPA 8270  
Last Update : Tue Jan 22 13:02:31 2019  
Response via : Initial Calibration



PAH by GCMS SIM  
EPA 8270 SIM

Form 7

Continuing Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: \_\_\_\_\_

SDG No: \_\_\_\_\_  
Date Analyzed: 1 Feb 19 8:27  
Instrument: Linus  
Initial Cal. Date: 01/22/19  
Data File: 0122L081.D

		Compound	MEAN	CCRF	%D	%Drift
1	I	Napthalene-D8(IS)	ISTD			I
2	S	Surrogate Recovery (NBZ)	0.4410	0.4573	3.7	S
3	TM	Naphthalene	1.259	1.291	2.5	TM
4	S	2-Methylnaphthalene-D10 (2MN)	1.146	1.315	15	S
5	TM	2-Methylnaphthalene	0.7605	0.8228	8.2	TM
6	TM	1-Methylnaphthalene	0.7682	0.7912	3.0	TM
7	I	Acenaphthene-D10(IS)	ISTD			I
8	S	Surrogate Recovery (FBP)	1.768	1.931	9.2	S
9	TM	Acenaphthylene	5.597	5.943	6.2	TM
10	*TM	Acenaphthene	1.638	1.698	3.7	*TM
11	TM	Fluorene	1.910	2.027	6.1	TM
12	I	Phenanthrene-D10(IS)	ISTD			I
13	TM	Phenanthrene	1.405	1.418	0.92	TM
14	TM	Anthracene	1.396	1.511	8.2	TM
15	S	Fluoranthene-D10 (FRT)	1.750	1.994	14	S
16	*TM	Fluoranthene	2.198	2.303	4.8	*TM
17	I	Chrysene-D12(IS)	ISTD			I
18	TM	Pyrene	1.545	1.597	3.3	TM
19	S	Surrogate Recovery (TPH)	0.8072	0.9075	12	S
20	TM	Benz (a) anthracene	1.383	1.436	3.9	TM
21	TM	Chrysene	1.324	1.370	3.5	TM
22	TM	Indeno (1,2,3-cd) pyrene	1.366	1.482	8.5	TM
23	I	Perylene-D12(IS)	ISTD			I
24	TM	Benzo (b) fluoranthene	1.350	1.426	5.6	TM
25	TM	Benzo (k) fluoranthene	1.393	1.322	5.1	TM
26	*TM	Benzo (a) pyrene	1.292	1.321	2.2	*TM
27	TM	Dibenz (a,h) anthracene	1.189	1.239	4.2	TM
28	TM	Benzo (g,h,i) perylene	1.201	1.219	1.5	TM
29						
30						
31						
32						
33						
34						
35						
36						
37						
38						
39						
40						

Average

5.9

Data File : M:\LINUS\DATA\L190122\0122L081.D  
 Acq On : 1 Feb 19 8:27  
 Sample : 5 SIM 01/18/19  
 Misc :

Vial: 81  
 Operator: MA  
 Inst : Linus  
 Multiplr: 1.00

Quant Time: Feb 1 8:49 2019

Quant Results File: L0122.RES

Quant Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
 Title : EPA 8270  
 Last Update : Tue Jan 22 13:02:31 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SIM\_2

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-D8 (IS)	4.03	136	20177	2.50000	ppb	-0.01
7) Acenaphthene-D10 (IS)	6.06	164	9030	2.50000	ppb	-0.02
12) Phenanthrene-D10 (IS)	7.79	188	17612	2.50000	ppb	-0.02
17) Chrysene-D12 (IS)	10.89	240	25878	2.50000	ppb	-0.03
23) Perylene-D12 (IS)	13.28	264	25566	2.50000	ppb	-0.04

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Surrogate Recovery (NBZ)	3.22	82	9226	2.59220	ppb	0.00
Spiked Amount	5.000		Recovery	=	51.840%	
4) 2-Methylnaphthalene-D10 (2)	4.83	152	26528	2.86932	ppb	-0.02
Spiked Amount	5.000		Recovery	=	57.380%	
8) Surrogate Recovery (FBP)	5.30	172	17433	2.73018	ppb	-0.02
Spiked Amount	5.000		Recovery	=	54.600%	
15) Fluoranthene-D10 (FRT)	9.17	212	35111	2.84842	ppb	-0.02
Spiked Amount	5.000		Recovery	=	56.960%	
19) Surrogate Recovery (TPH)	9.66	244	23485	2.81058	ppb	-0.02
Spiked Amount	5.000		Recovery	=	56.220%	

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
3) Naphthalene	4.06	128	52106	5.12638	ppb	100
5) 2-Methylnaphthalene	4.87	142	33205	5.40983	ppb	98
6) 1-Methylnaphthalene	4.97	142	31928	5.14989	ppb	97
9) Acenaphthylene	5.90	152	107329	5.30863	ppb	98
10) Acenaphthene	6.10	154	30673	5.18339	ppb	96
11) Fluorene	6.70	166	36613	5.30635	ppb	98
13) Phenanthrene	7.81	178	49948	5.04598	ppb	100
14) Anthracene	7.87	178	53216	5.40958	ppb	99
16) Fluoranthene	9.20	202	81124	5.23809	ppb	97
18) Pyrene	9.46	202	82634	5.16745	ppb	# 87
20) Benz (a) anthracene	10.88	228	74323	5.19327	ppb	99
21) Chrysene	10.92	228	70892	5.17374	ppb	99
22) Indeno (1,2,3-cd) pyrene	14.78	276	76692	5.42402	ppb	93
24) Benzo (b) fluoranthene	12.62	252	72896	5.27827	ppb	# 97
25) Benzo (k) fluoranthene	12.67	252	67599	4.74649	ppb	98
26) Benzo (a) pyrene	13.18	252	67523	5.11184	ppb	# 95
27) Dibenz (a,h) anthracene	14.82	278	63351	5.21084	ppb	95
28) Benzo (g,h,i) perylene	15.14	276	62311	5.07408	ppb	95

Quantitation Report

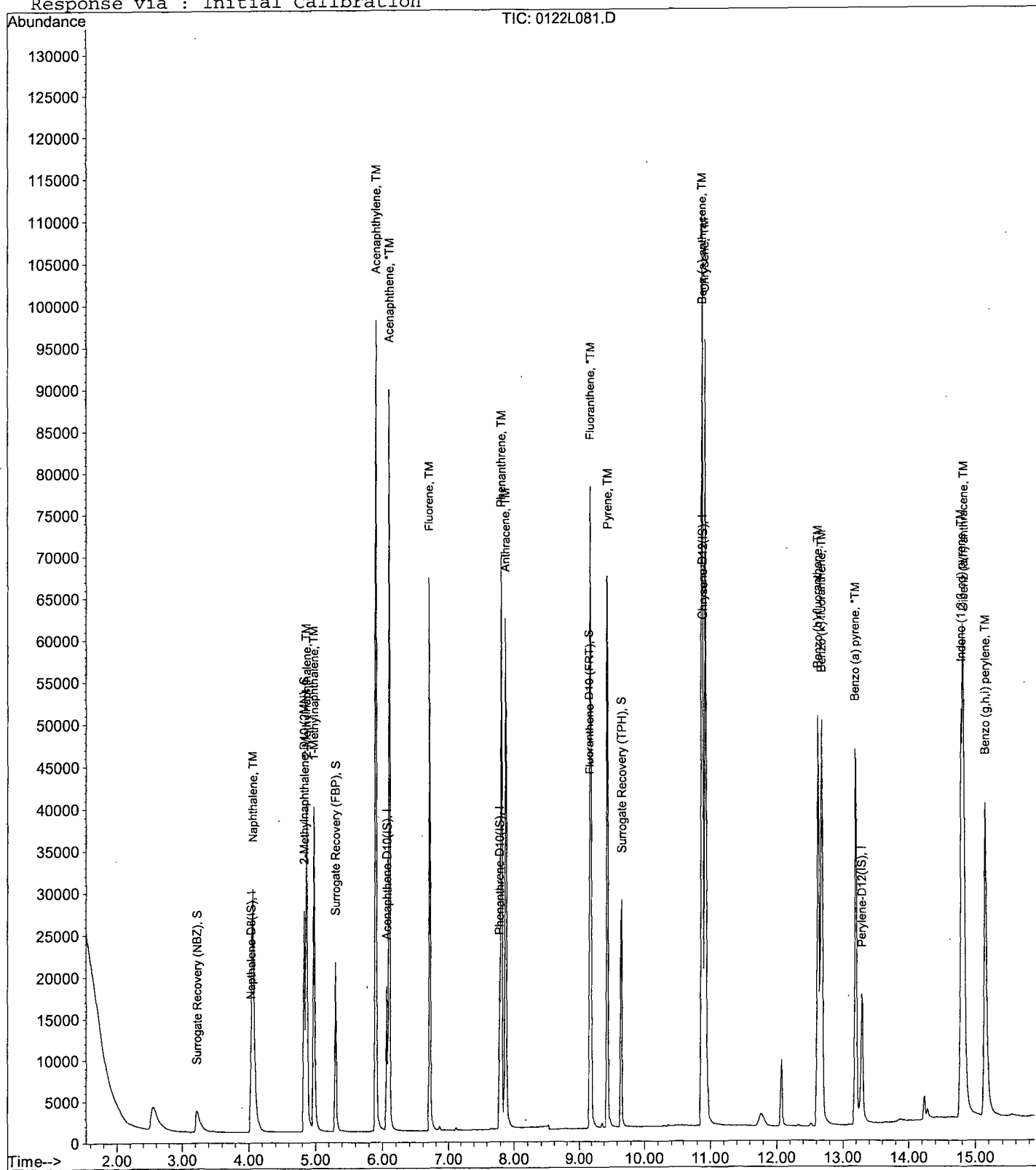
Data File : M:\LINUS\DATA\L190122\0122L081.D  
Acq On : 1 Feb 19 8:27  
Sample : 5 SIM 01/18/19  
Misc :

Vial: 81  
Operator: MA  
Inst : Linus  
Multiplr: 1.00

Quant Time: Feb 1 8:49 2019

Quant Results File: L0122.RES

Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
Title : EPA 8270  
Last Update : Tue Jan 22 13:02:31 2019  
Response via : Initial Calibration





PAH by GCMS SIM  
EPA 8270 SIM

Form 7

Continuing Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: \_\_\_\_\_

SDG No: \_\_\_\_\_  
Date Analyzed: 1 Feb 19 15:32  
Instrument: Linus  
Initial Cal. Date: 01/22/19  
Data File: 0122L088.D

		Compound	MEAN	CCRF	%D	%Drift
1	I	Napthalene-D8(IS)	ISTD			I
2	S	Surrogate Recovery (NBZ)	0.4410	0.4542	3.0	S
3	TM	Naphthalene	1.259	1.289	2.4	TM
4	S	2-Methylnaphthalene-D10 (2MN)	1.146	1.290	13	S
5	TM	2-Methylnaphthalene	0.7605	0.8008	5.3	TM
6	TM	1-Methylnaphthalene	0.7682	0.7962	3.7	TM
7	I	Acenaphthene-D10(IS)	ISTD			I
8	S	Surrogate Recovery (FBP)	1.768	1.882	6.5	S
9	TM	Acenaphthylene	5.597	5.686	1.6	TM
10	*TM	Acenaphthene	1.638	1.668	1.8	*TM
11	TM	Fluorene	1.910	2.015	5.5	TM
12	I	Phenanthrene-D10(IS)	ISTD			I
13	TM	Phenanthrene	1.405	1.449	3.1	TM
14	TM	Anthracene	1.396	1.475	5.6	TM
15	S	Fluoranthene-D10 (FRT)	1.750	1.942	11	S
16	*TM	Fluoranthene	2.198	2.313	5.2	*TM
17	I	Chrysene-D12(IS)	ISTD			I
18	TM	Pyrene	1.545	1.573	1.8	TM
19	S	Surrogate Recovery (TPH)	0.8072	0.8808	9.1	S
20	TM	Benz (a) anthracene	1.383	1.375	0.56	TM
21	TM	Chrysene	1.324	1.361	2.8	TM
22	TM	Indeno (1,2,3-cd) pyrene	1.366	1.392	1.9	TM
23	I	Perylene-D12(IS)	ISTD			I
24	TM	Benzo (b) fluoranthene	1.350	1.523	13	TM
25	TM	Benzo (k) fluoranthene	1.393	1.530	9.9	TM
26	*TM	Benzo (a) pyrene	1.292	1.447	12	*TM
27	TM	Dibenz (a,h) anthracene	1.189	1.288	8.4	TM
28	TM	Benzo (g,h,i) perylene	1.201	1.278	6.4	TM
29						
30						
31						
32						
33						
34						
35						
36						
37						
38						
39						
40						

Average

5.8

Data File : M:\LINUS\DATA\L190122\0122L088.D  
 Acq On : 1 Feb 19 15:32  
 Sample : 5 SIM 01/18/19  
 Misc :

Vial: 88  
 Operator: MA  
 Inst : Linus  
 Multiplr: 1.00

Quant Time: Feb 4 7:44 2019

Quant Results File: L0122.RES

Quant Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
 Title : EPA 8270  
 Last Update : Tue Jan 22 13:02:31 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SIM\_2

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-D8 (IS)	4.03	136	21775	2.50000	ppb	-0.01
7) Acenaphthene-D10 (IS)	6.06	164	9726	2.50000	ppb	-0.02
12) Phenanthrene-D10 (IS)	7.79	188	19119	2.50000	ppb	-0.02
17) Chrysene-D12 (IS)	10.89	240	28633	2.50000	ppb	-0.03
23) Perylene-D12 (IS)	13.29	264	25493	2.50000	ppb	-0.03
System Monitoring Compounds						
2) Surrogate Recovery (NBZ)	3.22	82	9891	2.57510	ppb	0.00
Spiked Amount	5.000		Recovery	=	51.500%	
4) 2-Methylnaphthalene-D10 (2)	4.83	152	28096	2.81590	ppb	-0.02
Spiked Amount	5.000		Recovery	=	56.320%	
8) Surrogate Recovery (FBP)	5.30	172	18308	2.66203	ppb	-0.02
Spiked Amount	5.000		Recovery	=	53.240%	
15) Fluoranthene-D10 (FRT)	9.17	212	37127	2.77456	ppb	-0.02
Spiked Amount	5.000		Recovery	=	55.500%	
19) Surrogate Recovery (TPH)	9.66	244	25220	2.72781	ppb	-0.02
Spiked Amount	5.000		Recovery	=	54.560%	
Target Compounds						
3) Naphthalene	4.06	128	56145	5.11838	ppb	99
5) 2-Methylnaphthalene	4.87	142	34877	5.26524	ppb	99
6) 1-Methylnaphthalene	4.97	142	34676	5.18268	ppb	98
9) Acenaphthylene	5.90	152	110599	5.07891	ppb	98
10) Acenaphthene	6.10	154	32437	5.08923	ppb	94
11) Fluorene	6.70	166	39186	5.27285	ppb	95
13) Phenanthrene	7.81	178	55414	5.15693	ppb	99
14) Anthracene	7.88	178	56392	5.28059	ppb	98
16) Fluoranthene	9.20	202	88448	5.26084	ppb	94
18) Pyrene	9.46	202	90091	5.09170	ppb	# 90
20) Benz (a) anthracene	10.88	228	78735	4.97221	ppb	100
21) Chrysene	10.92	228	77950	5.14147	ppb	99
22) Indeno (1,2,3-cd) pyrene	14.78	276	79693	5.09396	ppb	# 83
24) Benzo (b) fluoranthene	12.62	252	77665	5.63969	ppb	# 97
25) Benzo (k) fluoranthene	12.67	252	78025	5.49425	ppb	98
26) Benzo (a) pyrene	13.20	252	73793	5.60251	ppb	98
27) Dibenz (a,h) anthracene	14.82	278	65681	5.41796	ppb	98
28) Benzo (g,h,i) perylene	15.14	276	65153	5.32070	ppb	# 92

(#) = qualifier out of range (m) = manual integration

Quantitation Report

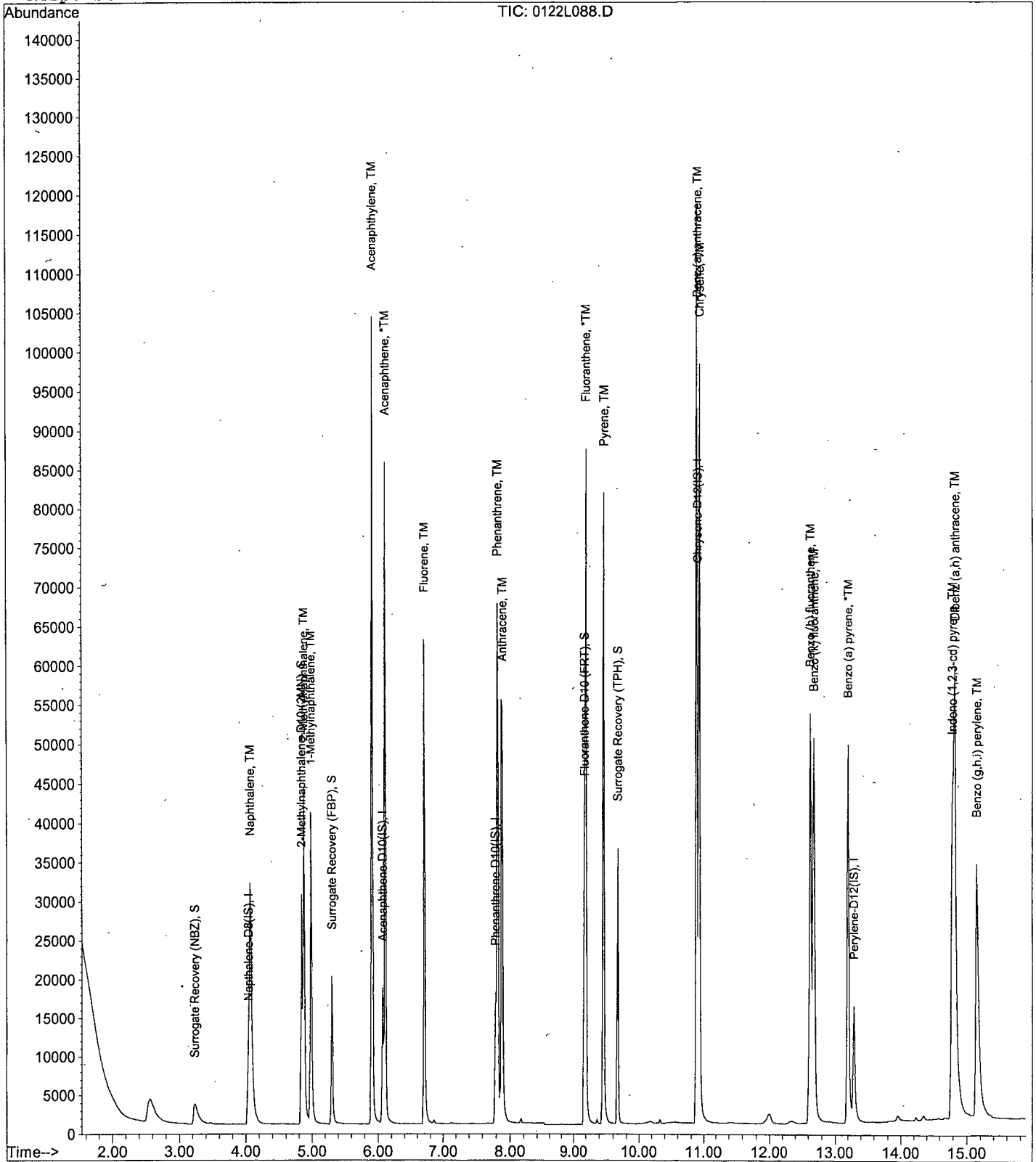
Data File : M:\LINUS\DATA\L190122\0122L088.D  
Acq On : 1 Feb 19 15:32  
Sample : 5 SIM 01/18/19  
Misc :

Vial: 88  
Operator: MA  
Inst : Linus  
Multiplr: 1.00

Quant Time: Feb 4 7:44 2019

Quant Results File: L0122.RES

Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
Title : EPA 8270  
Last Update : Tue Jan 22 13:02:31 2019  
Response via : Initial Calibration



PAH by GCMS SIM  
EPA 8270 SIM

Form 7

Ending Continuing Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: \_\_\_\_\_

SDG No: \_\_\_\_\_  
Date Analyzed: 1 Feb 19 21:52  
Instrument: Linus  
Initial Cal. Date: 01/22/19  
Data File: 0122L103.D

		Compound	MEAN	CCRF	%D	%Drift
1	I	Napthalene-D8(IS)	ISTD			I
2	S	Surrogate Recovery (NBZ)	0.4410	0.4879	11	S
3	TM	Napthalene	1.259	1.388	10	TM
4	S	2-Methylnapthalene-D10 (2MN)	1.146	1.311	14	S
5	TM	2-Methylnapthalene	0.7605	0.8733	15	TM
6	TM	1-Methylnapthalene	0.7682	0.8473	10	TM
7	I	Acenaphthene-D10(IS)	ISTD			I
8	S	Surrogate Recovery (FBP)	1.768	1.961	11	S
9	TM	Acenaphthylene	5.597	6.443	15	TM
10	*TM	Acenaphthene	1.638	1.807	10	*TM
11	TM	Fluorene	1.910	2.234	17	TM
12	I	Phenanthrene-D10(IS)	ISTD			I
13	TM	Phenanthrene	1.405	1.577	12	TM
14	TM	Anthracene	1.396	1.666	19	TM
15	S	Fluoranthene-D10 (FRT)	1.750	2.004	15	S
16	*TM	Fluoranthene	2.198	2.496	14	*TM
17	I	Chrysene-D12(IS)	ISTD			I
18	TM	Pyrene	1.545	1.769	15	TM
19	S	Surrogate Recovery (TPH)	0.8072	0.9048	12	S
20	TM	Benz (a) anthracene	1.383	1.543	12	TM
21	TM	Chrysene	1.324	1.471	11	TM
22	TM	Indeno (1,2,3-cd) pyrene	1.366	1.488	8.9	TM
23	I	Perylene-D12(IS)	ISTD			I
24	TM	Benzo (b) fluoranthene	1.350	1.644	22	TM
25	TM	Benzo (k) fluoranthene	1.393	1.529	9.8	TM
26	*TM	Benzo (a) pyrene	1.292	1.518	18	*TM
27	TM	Dibenz (a,h) anthracene	1.189	1.290	8.5	TM
28	TM	Benzo (g,h,i) perylene	1.201	1.264	5.3	TM
29						
30						
31						
32						
33						
34						
35						
36						
37						
38						
39						
40						

Average

12.8

Quantitation Report (Not Reviewed)

Data File : M:\LINUS\DATA\L190122\0122L103.D Vial: 3  
 Acq On : 1 Feb 19 21:52 Operator: MA  
 Sample : 5 SIM 01/18/19 (1) Inst : Linus  
 Misc : Multiplr: 1.00

Quant Time: Feb 4 7:45 2019 Quant Results File: L0122.RES

Quant Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
 Title : EPA 8270  
 Last Update : Tue Jan 22 13:02:31 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SIM\_2

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Napthalene-D8 (IS)	4.05	136	38045	2.50000	ppb	0.00
7) Acenaphthene-D10 (IS)	6.06	164	16950	2.50000	ppb	-0.02
12) Phenanthrene-D10 (IS)	7.79	188	33136	2.50000	ppb	-0.02
17) Chrysene-D12 (IS)	10.89	240	47162	2.50000	ppb	-0.03
23) Perylene-D12 (IS)	13.28	264	45173	2.50000	ppb	-0.04
System Monitoring Compounds						
2) Surrogate Recovery (NBZ)	3.24	82	18563	2.76607	ppb	0.01
Spiked Amount	5.000		Recovery	=	55.320%	
4) 2-Methylnaphthalene-D10 (2)	4.83	152	49889	2.86180	ppb	-0.02
Spiked Amount	5.000		Recovery	=	57.240%	
8) Surrogate Recovery (FBP)	5.30	172	33232	2.77264	ppb	-0.02
Spiked Amount	5.000		Recovery	=	55.460%	
15) Fluoranthene-D10 (FRT)	9.17	212	66402	2.86320	ppb	-0.02
Spiked Amount	5.000		Recovery	=	57.260%	
19) Surrogate Recovery (TPH)	9.66	244	42674	2.80226	ppb	-0.02
Spiked Amount	5.000		Recovery	=	56.040%	
Target Compounds						
3) Naphthalene	4.06	128	105598	5.50983	ppb	Qvalue 100
5) 2-Methylnaphthalene	4.87	142	66449	5.74153	ppb	100
6) 1-Methylnaphthalene	4.97	142	64469	5.51489	ppb	98
9) Acenaphthylene	5.90	152	218428	5.75562	ppb	98
10) Acenaphthene	6.10	154	61253	5.51446	ppb	95
11) Fluorene	6.70	166	75735	5.84757	ppb	97
13) Phenanthrene	7.81	178	104524	5.61245	ppb	99
14) Anthracene	7.87	178	110387	5.96414	ppb	99
16) Fluoranthene	9.20	202	165412	5.67674	ppb	97
18) Pyrene	9.46	202	166878	5.72605	ppb	# 87
20) Benz (a) anthracene	10.88	228	145497	5.57840	ppb	100
21) Chrysene	10.92	228	138783	5.55753	ppb	99
22) Indeno (1,2,3-cd) pyrene	14.78	276	140367	5.44722	ppb	91
24) Benzo (b) fluoranthene	12.62	252	148498	6.08545	ppb	# 97
25) Benzo (k) fluoranthene	12.67	252	138144	5.48970	ppb	98
26) Benzo (a) pyrene	13.20	252	137146	5.87614	ppb	100
27) Dibenz (a,h) anthracene	14.82	278	116521	5.42428	ppb	94
28) Benzo (g,h,i) perylene	15.14	276	114213	5.26371	ppb	96

Quantitation Report

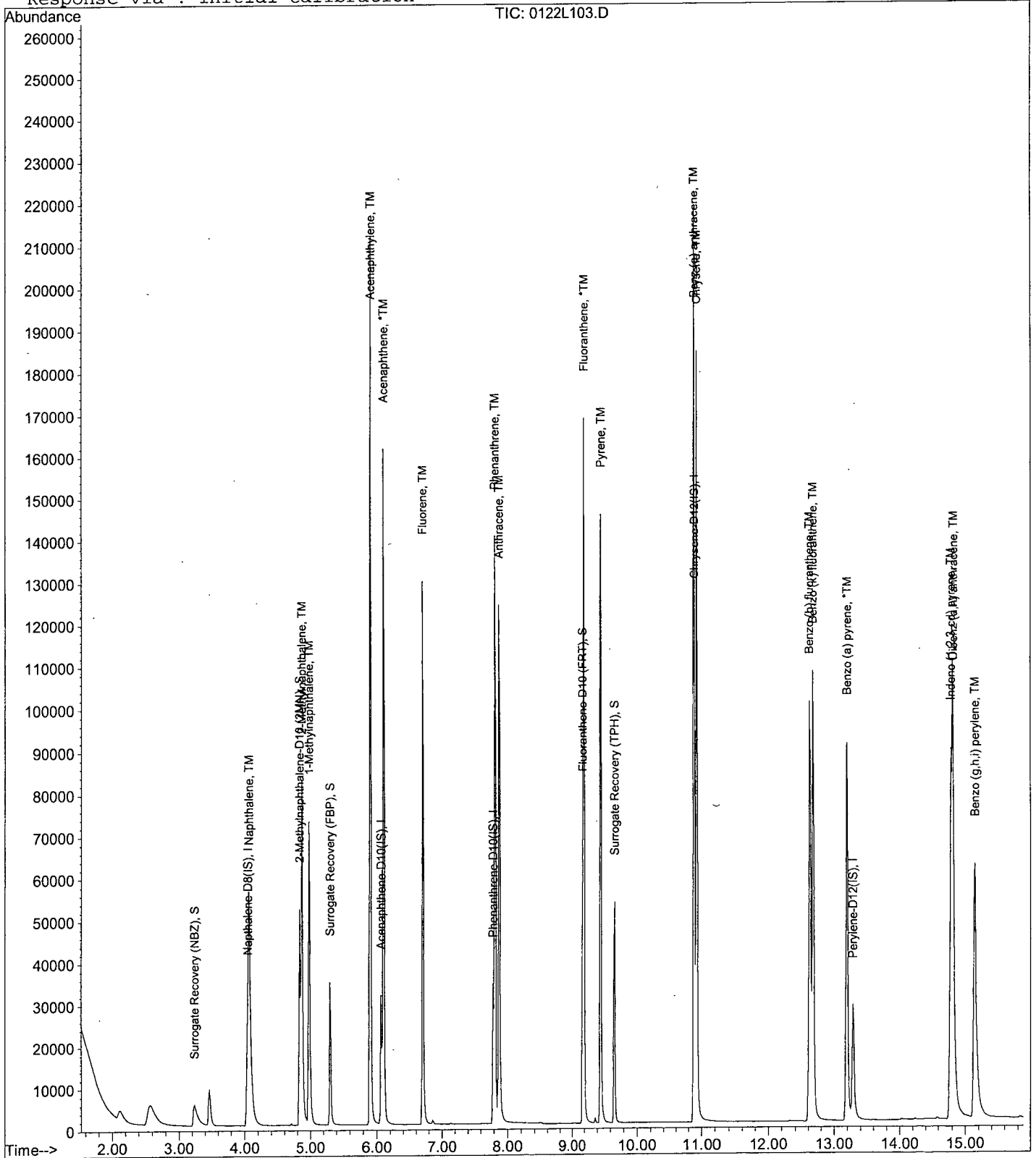
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 Acq On : 1 Feb 19 21:52  
 Sample : 5 SIM 01/18/19 (1)  
 Misc :-

Vial: 3  
 Operator: MA  
 Inst : Linus  
 Multiplr: 1.00

Quant Time: Feb 4 7:45 2019

Quant Results File: L0122.RES

Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
 Title : EPA 8270  
 Last Update : Tue Jan 22 13:02:31 2019  
 Response via : Initial Calibration



**ORGANICS**  
**Raw Data**

Data File : M:\LINUS\DATA\L190122\0122L100.D Vial: 100  
 Acq On : 1 Feb 19 20:45 Operator: MA  
 Sample : AZ85763W10 1/800 Inst : Linus  
 Misc : Multiplr: 1.25

Quant Time: Feb 4 11:57 2019 Quant Results File: L0122.RES

Quant Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
 Title : EPA 8270  
 Last Update : Tue Jan 22 13:02:31 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SIM\_2

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Napthalene-D8 (IS)	4.05	136	20213	2.5000	ppb	0.00
7) Acenaphthene-D10 (IS)	6.06	164	9122	2.5000	ppb	-0.02
12) Phenanthrene-D10 (IS)	7.80	188	18692	2.5000	ppb	-0.01
17) Chrysene-D12 (IS)	10.90	240	26373	2.5000	ppb	-0.02
23) Perylene-D12 (IS)	13.30	264	13275	2.5000	ppb	-0.02

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Surrogate Recovery (NBZ)	3.22	82	344495	120.7742	ppb	0.00
Spiked Amount	6.250					
					Recovery = 1932.384%	
4) 2-Methylnaphthalene-D10 (2)	4.83	152	48785	6.5841	ppb	-0.02
Spiked Amount	6.250					
					Recovery = 105.344%	
8) Surrogate Recovery (FBP)	5.31	172	604750	117.1931	ppb	-0.01
Spiked Amount	6.250					
					Recovery = 1875.088%	
15) Fluoranthene-D10 (FRT)	9.17	212	65202	6.2300	ppb	-0.02
Spiked Amount	6.250					
					Recovery = 99.680%	
19) Surrogate Recovery (TPH)	9.67	244	729496	107.0804	ppb	0.00
Spiked Amount	6.250					
					Recovery = 1713.280%	

Target Compounds Qvalue



Quantitation Report

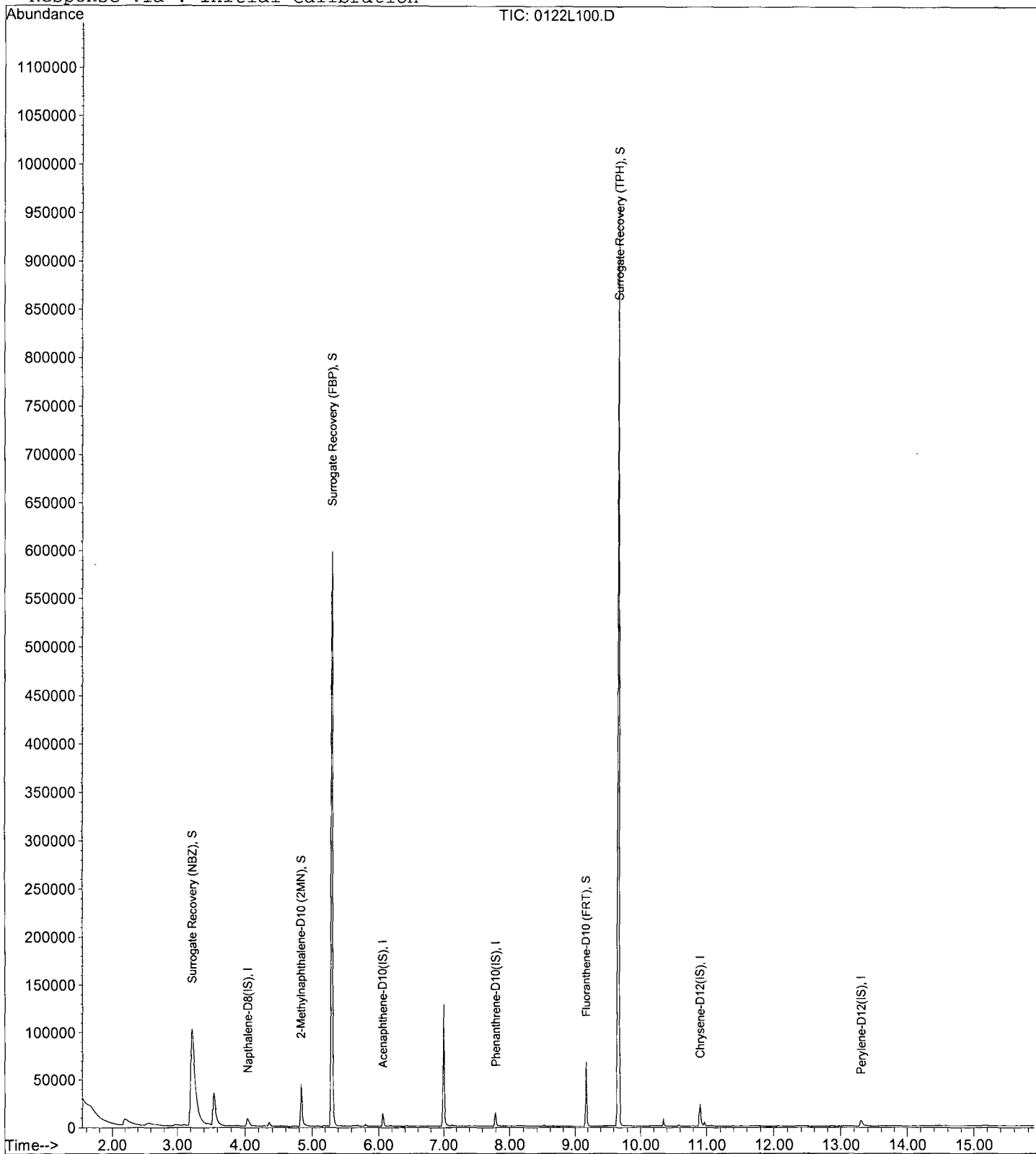
Data File : M:\LINUS\DATA\L190122\0122L100.D  
Acq On : 1 Feb 19 20:45  
Sample : AZ85763W10 1/800  
Misc :

Vial: 100  
Operator: MA  
Inst : Linus  
Multiplr: 1.25

Quant Time: Feb 4 11:57 2019

Quant Results File: L0122.RES

Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
Title : EPA 8270  
Last Update : Tue Jan 22 13:02:31 2019  
Response via : Initial Calibration



Data File : M:\LINUS\DATA\L190122\0122L101.D Vial: 1  
 Acq On : 1 Feb 19 21:08 Operator: MA  
 Sample : AZ85764W10 1/800 Inst : Linus  
 Misc : Multiplr: 1.25

Quant Time: Feb 4 11:58 2019 Quant Results File: L0122.RES

Quant Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
 Title : EPA 8270  
 Last Update : Tue Jan 22 13:02:31 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SIM\_2

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Napthalene-D8 (IS)	4.05	136	22712	2.5000	ppb	0.00
7) Acenaphthene-D10 (IS)	6.06	164	11217	2.5000	ppb	-0.02
12) Phenanthrene-D10 (IS)	7.80	188	21586	2.5000	ppb	-0.01
17) Chrysene-D12 (IS)	10.90	240	30663	2.5000	ppb	-0.02
23) Perylene-D12 (IS)	13.29	264	28943	2.5000	ppb	-0.03

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Surrogate Recovery (NBZ)	3.22	82	357738	111.6174	ppb	0.00
Spiked Amount	6.250		Recovery	= 1785.872%		
4) 2-Methylnaphthalene-D10 (2)	4.83	152	48796	5.8610	ppb	-0.02
Spiked Amount	6.250		Recovery	= 93.776%		
8) Surrogate Recovery (FBP)	5.31	172	615466	96.9937	ppb	-0.01
Spiked Amount	6.250		Recovery	= 1551.904%		
15) Fluoranthene-D10 (FRT)	9.17	212	70794	5.8574	ppb	-0.02
Spiked Amount	6.250		Recovery	= 93.712%		
19) Surrogate Recovery (TPH)	9.67	244	758127	95.7137	ppb	-0.01
Spiked Amount	6.250		Recovery	= 1531.424%		

Target Compounds Qvalue

(#) = qualifier out of range (m) = manual integration

Quantitation Report

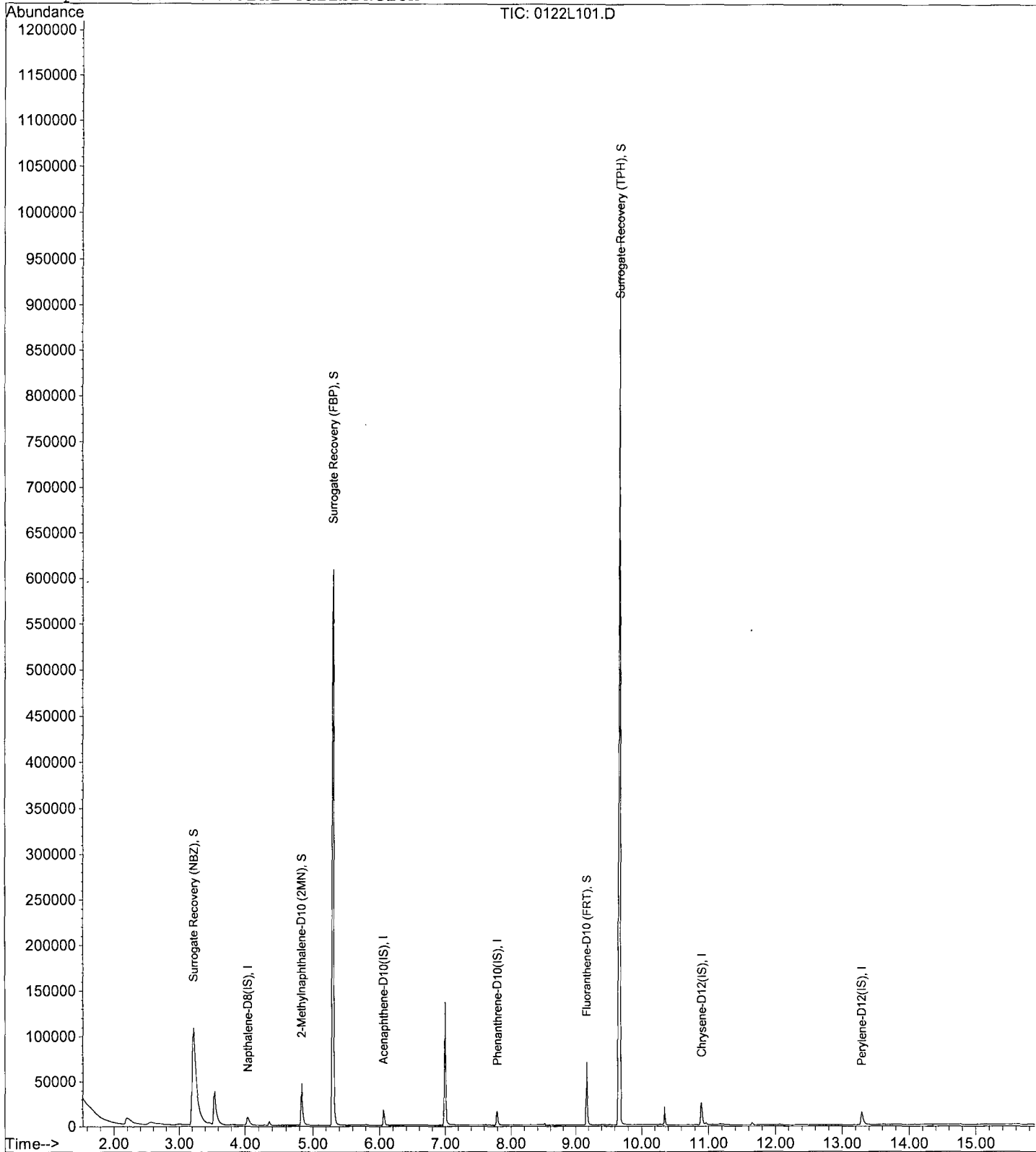
Data File : M:\LINUS\DATA\L190122\0122L101.D  
Acq On : 1 Feb 19 21:08  
Sample : AZ85764W10 1/800  
Misc :

Vial: 1  
Operator: MA  
Inst : Linus  
Multiplr: 1.25

Quant Time: Feb 4 11:58 2019

Quant Results File: L0122.RES

Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
Title : EPA 8270  
Last Update : Tue Jan 22 13:02:31 2019  
Response via : Initial Calibration



Data File : M:\LINUS\DATA\L190122\0122L102.D Vial: 2  
 Acq On : 1 Feb 19 21:30 Operator: MA  
 Sample : AZ85766W24 1/800 Inst : Linus  
 Misc : Multiplr: 1.25

Quant Time: Feb 4 11:58 2019 Quant Results File: L0122.RES

Quant Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
 Title : EPA 8270  
 Last Update : Tue Jan 22 13:02:31 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SIM\_2

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Napthalene-D8 (IS)	4.05	136	21676	2.5000	ppb	0.00
7) Acenaphthene-D10 (IS)	6.06	164	10114	2.5000	ppb	-0.02
12) Phenanthrene-D10 (IS)	7.79	188	19192	2.5000	ppb	-0.02
17) Chrysene-D12 (IS)	10.89	240	28193	2.5000	ppb	-0.03
23) Perylene-D12 (IS)	13.29	264	27499	2.5000	ppb	-0.03
System Monitoring Compounds						
2) Surrogate Recovery (NBZ)	3.22	82	339150	110.8753	ppb	0.00
Spiked Amount	6.250		Recovery	=	1774.000%	
4) 2-Methylnaphthalene-D10 (2)	4.83	152	47975	6.0378	ppb	-0.02
Spiked Amount	6.250		Recovery	=	96.608%	
8) Surrogate Recovery (FBP)	5.30	172	552965	96.6476	ppb	-0.02
Spiked Amount	6.250		Recovery	=	1546.368%	
15) Fluoranthene-D10 (FRT)	9.17	212	64352	5.9886	ppb	-0.02
Spiked Amount	6.250		Recovery	=	95.824%	
19) Surrogate Recovery (TPH)	9.67	244	696210	95.5973	ppb	0.00
Spiked Amount	6.250		Recovery	=	1529.552%	

Target Compounds Qvalue

Quantitation Report

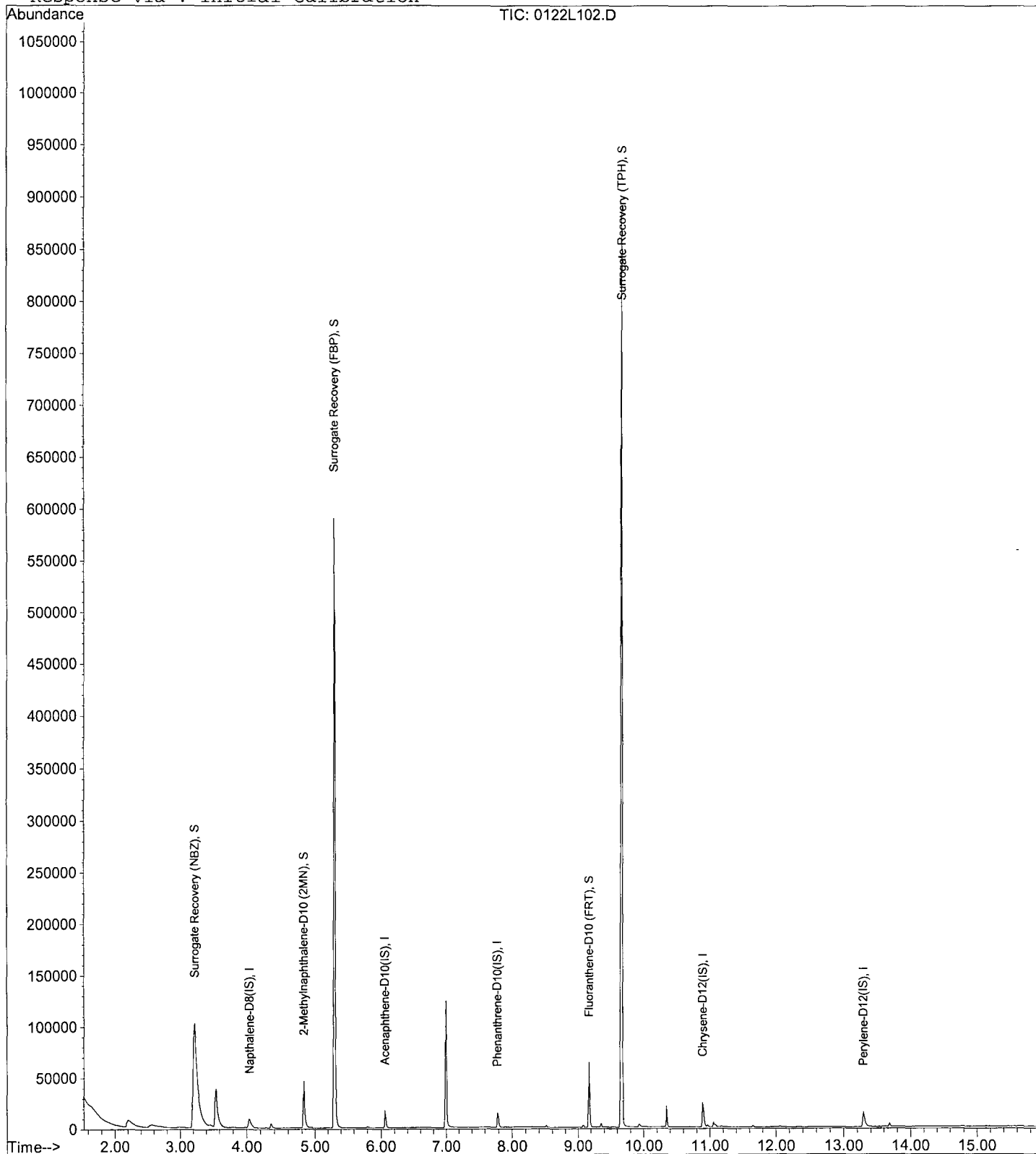
Data File : M:\LINUS\DATA\L190122\0122L102.D  
Acq On : 1 Feb 19 21:30  
Sample : AZ85766W24 1/800  
Misc :

Vial: 2  
Operator: MA  
Inst : Linus  
Multiplr: 1.25

Quant Time: Feb 4 11:58 2019

Quant Results File: L0122.RES

Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
Title : EPA 8270  
Last Update : Tue Jan 22 13:02:31 2019  
Response via : Initial Calibration



Data File : M:\LINUS\DATA\L190122\0122L084.D Vial: 84  
 Acq On : 1 Feb 19 12:51 Operator: MA  
 Sample : 190130A Blk 1/800 Inst : Linus  
 Misc : Multiplr: 1.25

Quant Time: Feb 4 11:42 2019 Quant Results File: L0122.RES

Quant Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
 Title : EPA 8270  
 Last Update : Tue Jan 22 13:02:31 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SIM\_2

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Napthalene-D8(IS)	4.03	136	17323	2.5000	ppb	-0.01
7) Acenaphthene-D10(IS)	6.06	164	8262	2.5000	ppb	-0.02
12) Phenanthrene-D10(IS)	7.79	188	17139	2.5000	ppb	-0.02
17) Chrysene-D12(IS)	10.90	240	25466	2.5000	ppb	-0.02
23) Perylene-D12(IS)	13.29	264	25914	2.5000	ppb	-0.03

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Surrogate Recovery (NBZ)	3.21	82	312855	127.9800	ppb	-0.01
Spiked Amount	6.250					
					Recovery = 2047.680%	
4) 2-Methylnaphthalene-D10 (2)	4.83	152	40076	6.3111	ppb	-0.02
Spiked Amount	6.250					
					Recovery = 100.976%	
8) Surrogate Recovery (FBP)	5.30	172	489127	104.6533	ppb	-0.02
Spiked Amount	6.250					
					Recovery = 1674.448%	
15) Fluoranthene-D10 (FRT)	9.17	212	57927	6.0364	ppb	-0.02
Spiked Amount	6.250					
					Recovery = 96.576%	
19) Surrogate Recovery (TPH)	9.67	244	642238	97.6297	ppb	-0.01
Spiked Amount	6.250					
					Recovery = 1562.080%	

Target Compounds Qvalue

Quantitation Report

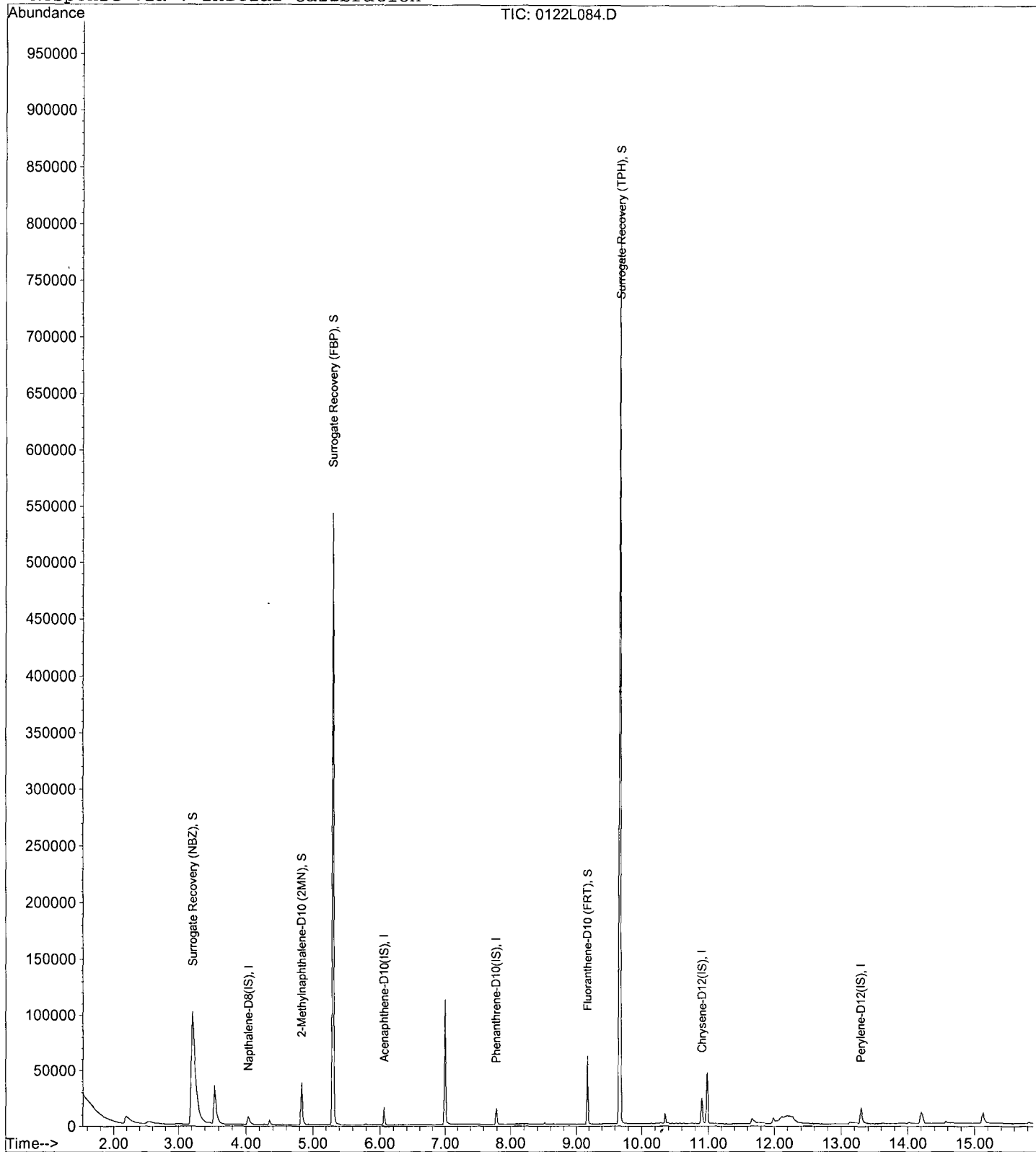
Data File : M:\LINUS\DATA\L190122\0122L084.D  
Acq On : 1 Feb 19 12:51  
Sample : 190130A Blk 1/800  
Misc :

Vial: 84  
Operator: MA  
Inst : Linus  
Multiplr: 1.25

Quant Time: Feb 4 11:42 2019

Quant Results File: L0122.RES

Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
Title : EPA 8270  
Last Update : Tue Jan 22 13:02:31 2019  
Response via : Initial Calibration



Data File : M:\LINUS\DATA\L190122\0122L085.D Vial: 85  
 Acq On : 1 Feb 19 13:13 Operator: MA  
 Sample : 190130A LCS-1 1/800 Inst : Linus  
 Misc : Multiplr: 1.25

Quant Time: Feb 4 7:51 2019 Quant Results File: L0122.RES

Quant Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
 Title : EPA 8270  
 Last Update : Tue Jan 22 13:02:31 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SIM\_2

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Napthalene-D8 (IS)	4.03	136	16459	2.5000	ppb	-0.01
7) Acenaphthene-D10 (IS)	6.06	164	8259	2.5000	ppb	-0.02
12) Phenanthrene-D10 (IS)	7.79	188	17794	2.5000	ppb	-0.02
17) Chrysene-D12 (IS)	10.89	240	24439	2.5000	ppb	-0.03
23) Perylene-D12 (IS)	13.28	264	25760	2.5000	ppb	-0.04

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Surrogate Recovery (NBZ)	3.26	82	1778	0.7655	ppb	0.04
Spiked Amount	6.250		Recovery	=	12.256%	
4) 2-Methylnaphthalene-D10 (2)	4.83	152	41327	6.8497	ppb	-0.02
Spiked Amount	6.250		Recovery	=	109.600%	
8) Surrogate Recovery (FBP)	5.30	172	2375	0.5083	ppb	-0.02
Spiked Amount	6.250		Recovery	=	8.128%	
15) Fluoranthene-D10 (FRT)	9.17	212	58272	5.8488	ppb	-0.02
Spiked Amount	6.250		Recovery	=	93.584%	
19) Surrogate Recovery (TPH)	9.66	244	4144	0.6564	ppb	-0.02
Spiked Amount	6.250		Recovery	=	10.496%	

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
3) Naphthalene	4.06	128	39797	5.9998	ppb	100
5) 2-Methylnaphthalene	4.87	142	25160	6.2814	ppb	99
6) 1-Methylnaphthalene	4.97	142	25642	6.3378	ppb	98
9) Acenaphthylene	5.90	152	81066	5.4799	ppb	98
10) Acenaphthene	6.10	154	24708	5.7064	ppb	97
11) Fluorene	6.70	166	30752	6.0912	ppb	99
13) Phenanthrene	7.81	178	43853	5.4812	ppb	100
14) Anthracene	7.87	178	40981	5.1541	ppb	99
16) Fluoranthene	9.20	202	66502	5.3126	ppb	98
18) Pyrene	9.46	202	67214	5.5633	ppb	# 88
20) Benz (a) anthracene	10.88	228	55062	5.0924	ppb	99
21) Chrysene	10.92	228	56489	5.4567	ppb	99
22) Indeno (1,2,3-cd) pyrene	14.78	276	60946	5.7052	ppb	# 88
24) Benzo (b) fluoranthene	12.62	252	53557	4.8110	ppb	# 98
25) Benzo (k) fluoranthene	12.67	252	60543	5.2738	ppb	97
26) Benzo (a) pyrene	13.20	252	49207	4.6215	ppb	99
27) Dibenz (a,h) anthracene	14.82	278	51432	5.2482	ppb	96
28) Benzo (g,h,i) perylene	15.14	276	47649	4.8136	ppb	# 93

(#) = qualifier out of range (m) = manual integration



Quantitation Report

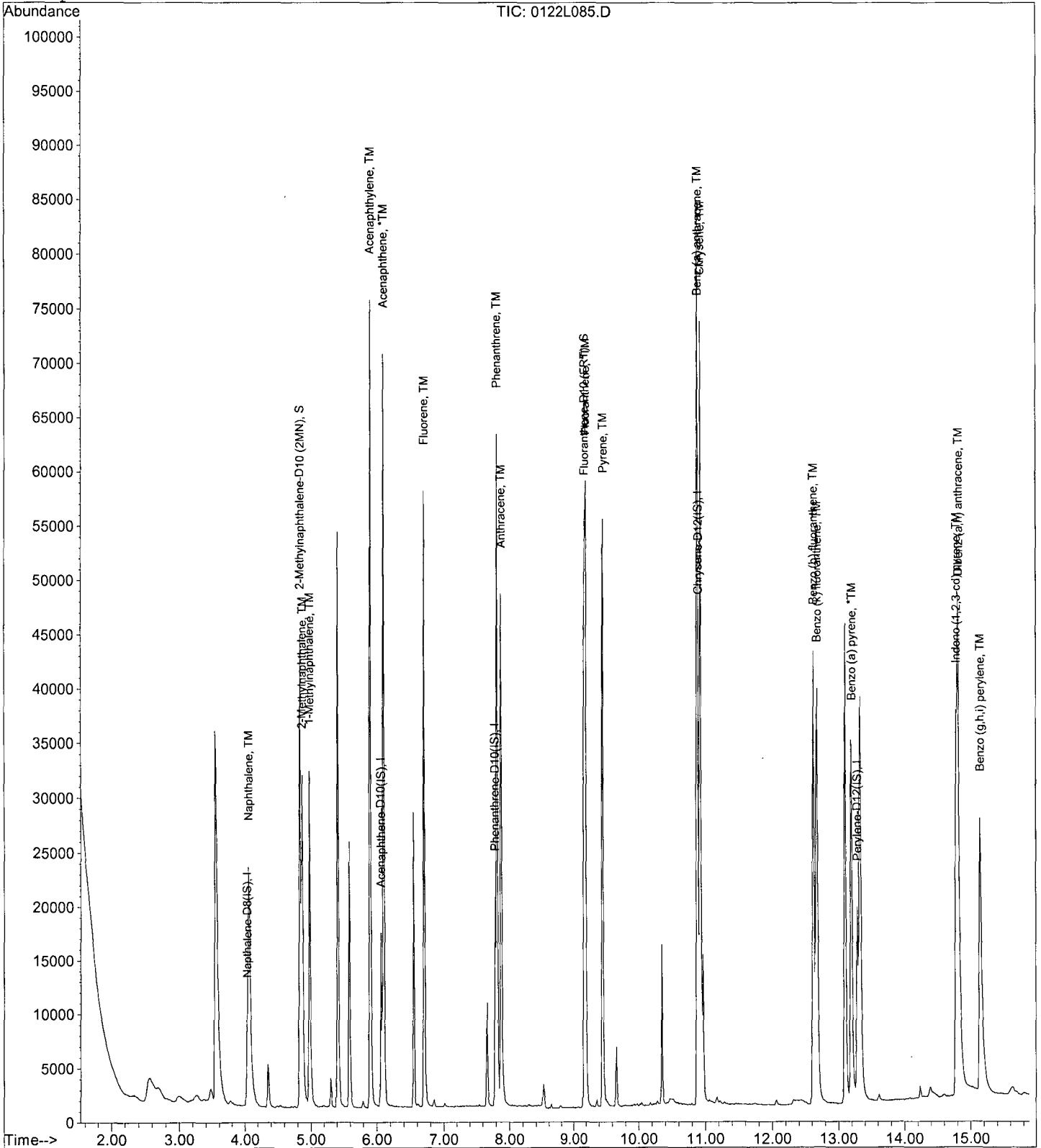
Data File : M:\LINUS\DATA\L190122\0122L085.D  
 Acq On : 1 Feb 19 13:13  
 Sample : 190130A LCS-1 1/800  
 Misc :

Vial: 85  
 Operator: MA  
 Inst : Linus  
 Multiplr: 1.25

Quant Time: Feb 4 7:51 2019

Quant Results File: L0122.RES

Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
 Title : EPA 8270  
 Last Update : Tue Jan 22 13:02:31 2019  
 Response via : Initial Calibration



Data File : M:\LINUS\DATA\L190122\0122L086.D  
 Acq On : 1 Feb 19 13:35  
 Sample : 190130A LCSD-1 1/800  
 Misc :

Vial: 86  
 Operator: MA  
 Inst : Linus  
 Multiplr: 1.25

Quant Time: Feb 4 7:51 2019

Quant Results File: L0122.RES

Quant Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
 Title : EPA 8270  
 Last Update : Tue Jan 22 13:02:31 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SIM\_2

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
-----						
1) Napthalene-D8 (IS)	4.03	136	15802	2.5000	ppb	-0.01
7) Acenaphthene-D10 (IS)	6.06	164	7807	2.5000	ppb	-0.02
12) Phenanthrene-D10 (IS)	7.79	188	18324	2.5000	ppb	-0.02
17) Chrysene-D12 (IS)	10.89	240	27968	2.5000	ppb	-0.03
23) Perylene-D12 (IS)	13.28	264	18922	2.5000	ppb	-0.04
System Monitoring Compounds						
2) Surrogate Recovery (NBZ)	3.18	82	83	0.0372	ppb	-0.05
Spiked Amount	6.250		Recovery	=	0.592%	
4) 2-Methylnaphthalene-D10 (2)	4.83	152	40405	6.9753	ppb	-0.02
Spiked Amount	6.250		Recovery	=	111.600%	
8) Surrogate Recovery (FBP)	5.31	172	161	0.0365	ppb	-0.01
Spiked Amount	6.250		Recovery	=	0.576%	
15) Fluoranthene-D10 (FRT)	9.17	212	62606	6.1020	ppb	-0.02
Spiked Amount	6.250		Recovery	=	97.632%	
19) Surrogate Recovery (TPH)	9.66	244	466	0.0645	ppb	-0.02
Spiked Amount	6.250		Recovery	=	1.040%	
Target Compounds						Qvalue
3) Naphthalene	4.06	128	39274	6.1671	ppb	99
5) 2-Methylnaphthalene	4.87	142	24821	6.4544	ppb	99
6) 1-Methylnaphthalene	4.97	142	24419	6.2865	ppb	99
9) Acenaphthylene	5.90	152	63800	4.5625	ppb	98
10) Acenaphthene	6.10	154	23273	5.6862	ppb	96
11) Fluorene	6.70	166	28225	5.9144	ppb	97
13) Phenanthrene	7.81	178	43609	5.2930	ppb	100
14) Anthracene	7.88	178	35694	4.3593	ppb	98
16) Fluoranthene	9.20	202	71790	5.5691	ppb	96
18) Pyrene	9.46	202	68927	4.9852	ppb	# 88
20) Benz (a) anthracene	10.88	228	59490	4.8077	ppb	100
21) Chrysene	10.92	228	63547	5.3639	ppb	99
22) Indeno (1,2,3-cd) pyrene	14.78	276	61599	5.0388	ppb	89
24) Benzo (b) fluoranthene	12.62	252	57204	6.9955	ppb	# 98
25) Benzo (k) fluoranthene	12.67	252	65278	7.7411	ppb	97
26) Benzo (a) pyrene	13.20	252	45046	5.7595	ppb	99
27) Dibenz (a,h) anthracene	14.82	278	51947	7.2164	ppb	97
28) Benzo (g,h,i) perylene	15.14	276	48450	6.6633	ppb	# 92

(#) = qualifier out of range (m) = manual integration  
 0122L086.D L0122.M Wed Feb 06 11:56:59 2019

Quantitation Report

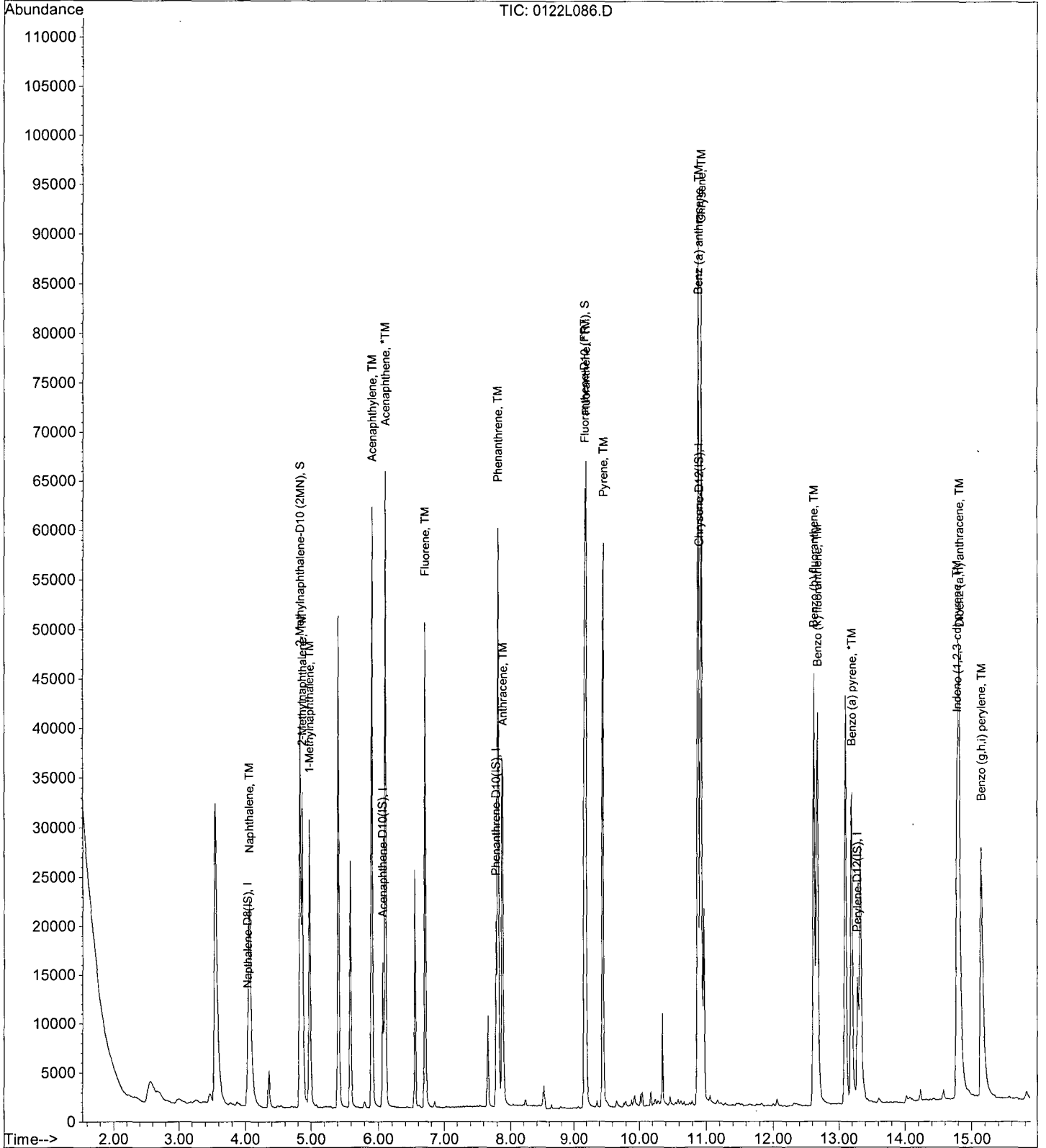
Data File : M:\LINUS\DATA\L190122\0122L086.D  
Acq On : 1 Feb 19 13:35  
Sample : 190130A LCSD-1 1/800  
Misc :

Vial: 86  
Operator: MA  
Inst : Linus  
Multiplr: 1.25

Quant Time: Feb 4 7:51 2019

Quant Results File: L0122.RES

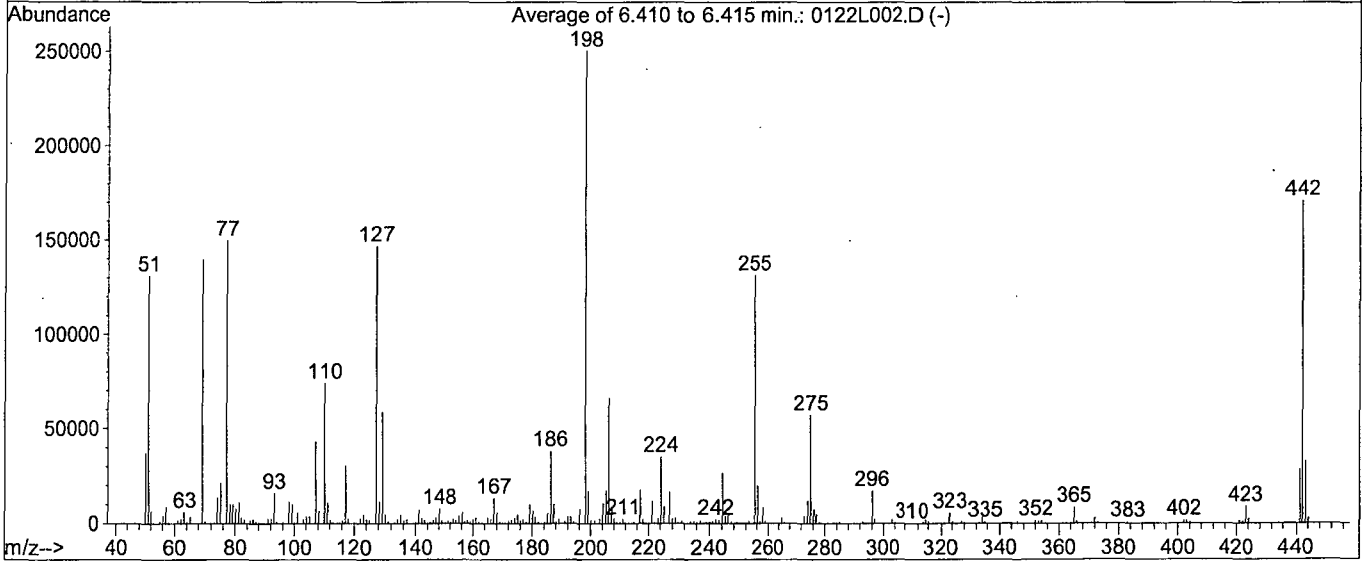
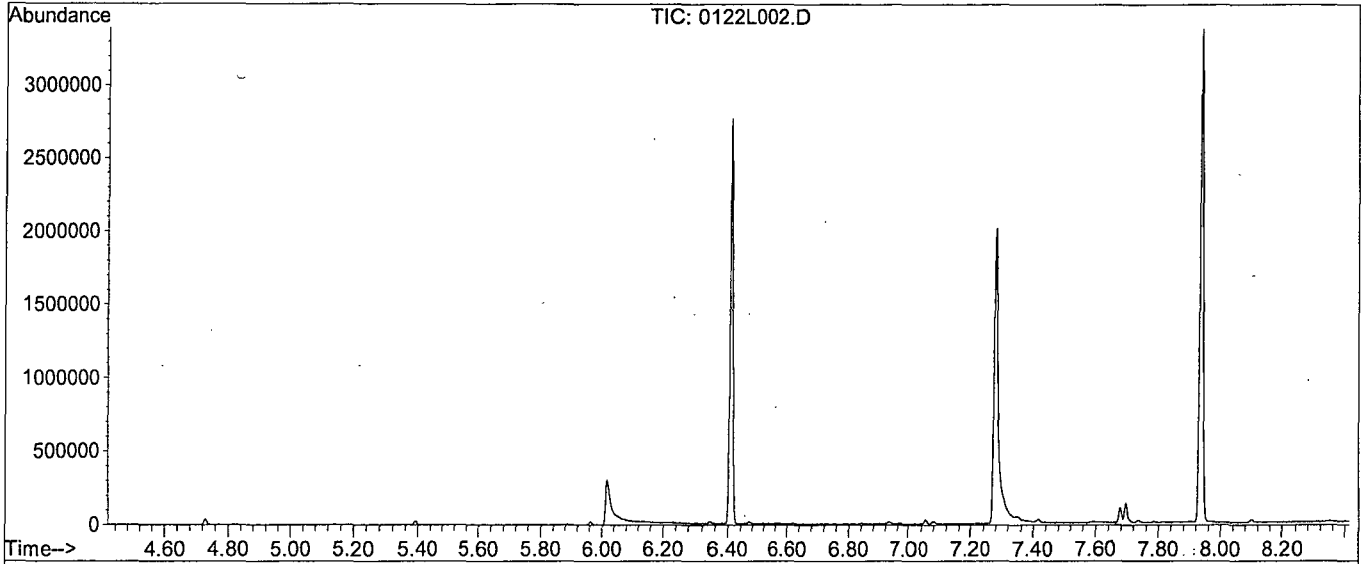
Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
Title : EPA 8270  
Last Update : Tue Jan 22 13:02:31 2019  
Response via : Initial Calibration



Data File : M:\LINUS\DATA\L190122\0122L002.D  
 Acq On : 22 Jan 19 9:21  
 Sample : SV Tune 10/11/18  
 Misc :

Vial: 2  
 Operator: MA  
 Inst : Linus  
 Multiplr: 1.00

Method : M:\LINUS\DATA\L190122\L0115.M (RTE Integrator)  
 Title : EPA 8270



AutoFind: Scans 1536, 1537, 1538; Background Corrected with Scan 1526

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	52.3	131012	PASS
68	69	0.00	2	0.0	0	PASS
70	69	0.00	2	0.8	1098	PASS
127	198	10	80	58.6	146811	PASS
197	198	0.00	2	0.0	0	PASS
198	198	100	100	100.0	250517	PASS
199	198	5	9	6.7	16904	PASS
275	198	10	60	22.8	57021	PASS
365	198	1	100	3.3	8323	PASS
441	442	0.01	24	16.7	28459	PASS
442	198	50	150	68.2	170773	PASS
443	442	15	24	19.2	32747	PASS

Data File Name: 0122L002.D  
Data File Path: M:\LINUS\DATA\L190122\  
Operator: MA  
Date Acquired: 22 Jan 2019 09:21  
Method File: DFTPP2.M  
Sample Name: SV Tune 10/11/18  
Vial Number: 2  
Instrument Name: Linus

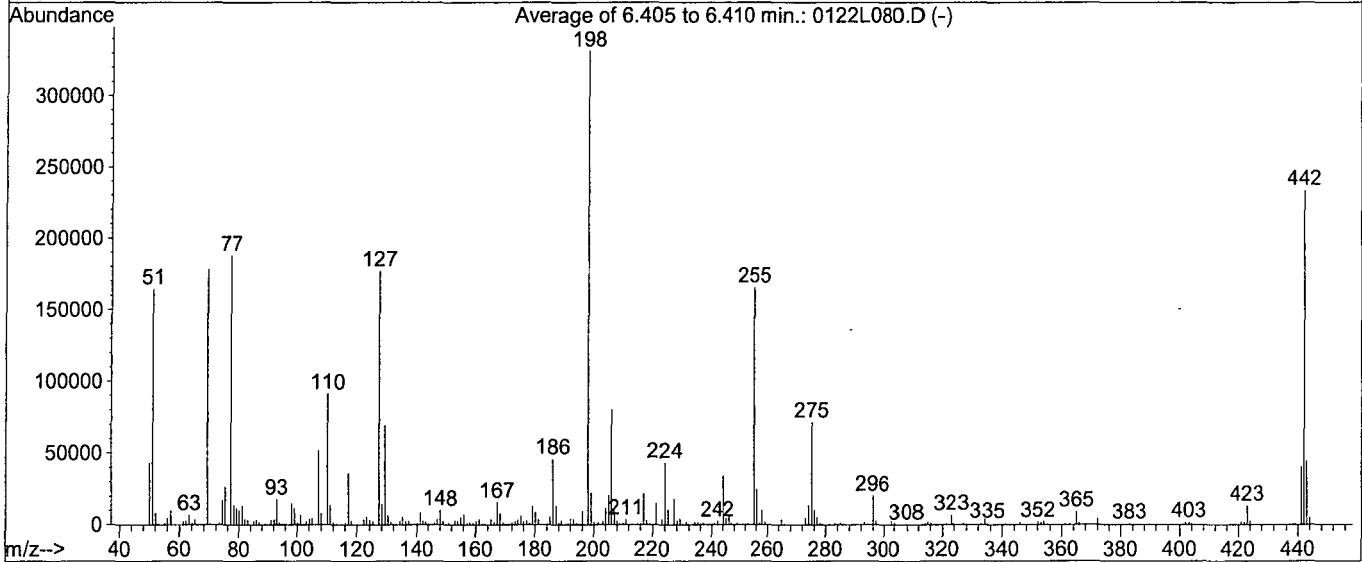
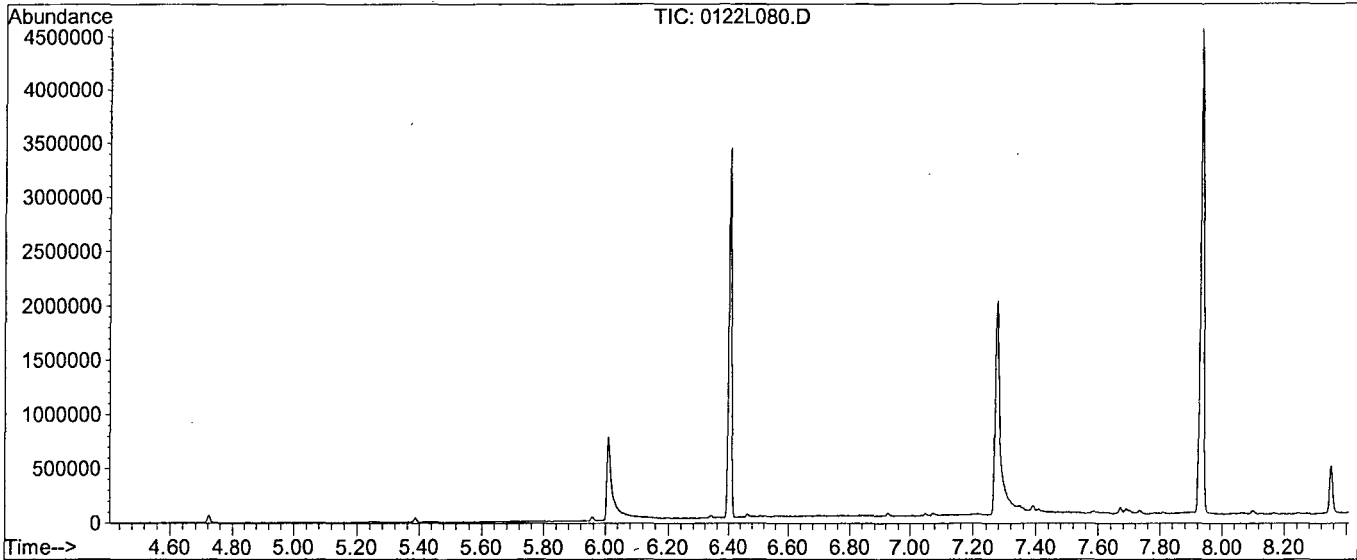
#	Name	Ret Time	Target Response
1)	DDT	7.95	23063100
2)	DDD	7.71	1029070
3)	DDE	7.88	0

Breakdown 4.27

Data File : M:\LINUS\DATA\L190122\0122L080.D  
 Acq On : 1 Feb 19 8:11  
 Sample : SV TUNE 11/10/18  
 Misc :

Vial: 80  
 Operator: MA  
 Inst : Linus  
 Multiplr: 1.00

Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
 Title : EPA 8270



AutoFind: Scans 1534, 1535, 1536; Background Corrected with Scan 1524

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	49.6	164376	PASS
68	69	0.00	2	0.0	0	PASS
70	69	0.00	2	0.6	1000	PASS
127	198	10	80	53.4	176853	PASS
197	198	0.00	2	0.0	0	PASS
198	198	100	100	100.0	331477	PASS
199	198	5	9	6.8	22400	PASS
275	198	10	60	21.5	71360	PASS
365	198	1	100	2.7	9004	PASS
441	442	0.01	24	17.2	40272	PASS
442	198	50	150	70.5	233792	PASS
443	442	15	24	19.0	44421	PASS

Data File Name: 0122L080.D  
Data File Path: M:\LINUS\DATA\190122\  
Operator: MA  
Date Acquired: 1 Feb 19 8:11  
Method File: DFTPP2.M  
Sample Name: SV TUNE 11/10/18  
Vial Number: 80  
Instrument Name: Linus

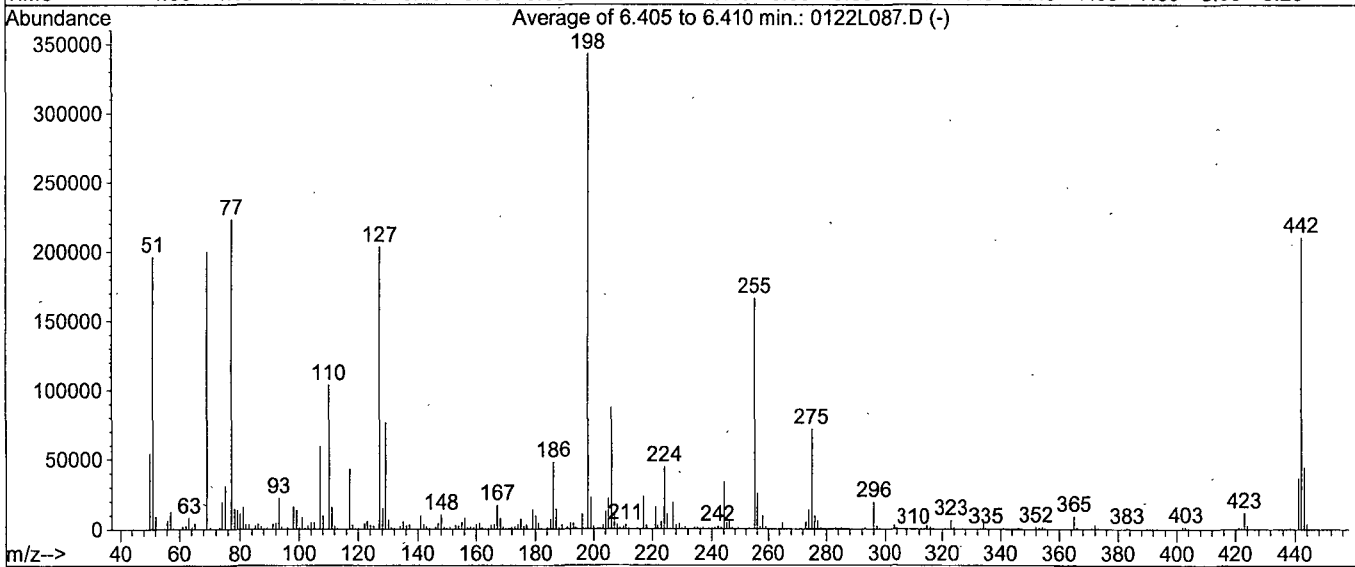
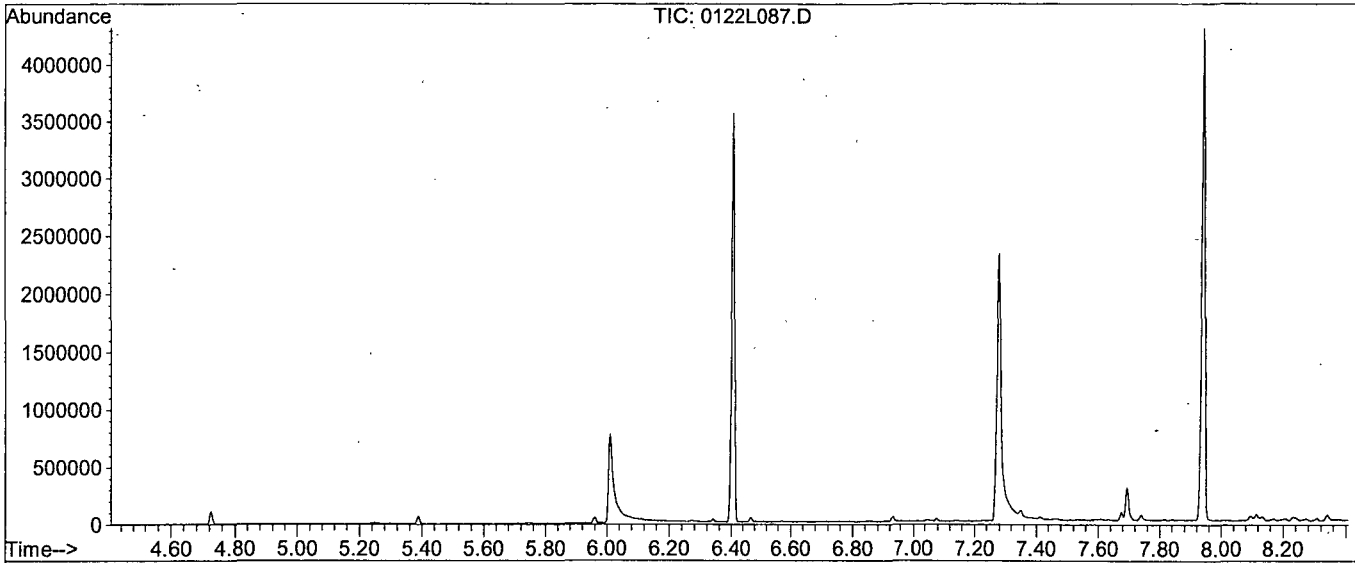
#	Name	Ret Time	Target Response
1)	DDT	7.95	32986500
2)	DDD	7.71	332068
3)	DDE	7.88	0

Breakdown 1.00

Data File : M:\LINUS\DATA\L190122\0122L087.D  
 Acq On : 1 Feb 19 15:16  
 Sample : SV TUNE 11/10/18  
 Misc :

Vial: 87  
 Operator: MA  
 Inst : Linus  
 Multiplr: 1.00

Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
 Title : EPA 8270



AutoFind: Scans 1534, 1535, 1536; Background Corrected with Scan 1525

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	57.2	196269	PASS
68	69	0.00	2	0.0	0	PASS
70	69	0.00	2	0.6	1294	PASS
127	198	10	80	59.3	203264	PASS
197	198	0.00	2	0.0	0	PASS
198	198	100	100	100.0	342976	PASS
199	198	5	9	6.6	22656	PASS
275	198	10	60	20.9	71704	PASS
365	198	1	100	2.7	9369	PASS
441	442	0.01	24	17.4	36651	PASS
442	198	50	150	61.4	210624	PASS
443	442	15	24	21.1	44469	PASS



Data File Name: 0122L087.D  
Data File Path: M:\LINUS\DATA\190122\  
Operator: MA  
Date Acquired: 1 Feb 19 15:16  
Method File: DFTPP2.M  
Sample Name: SV TUNE 11/10/18  
Vial Number: 87  
Instrument Name: Linus

#	Name	Ret Time	Target Response
1)	DDT	7.95	31175900
2)	DDD	7.71	2186160
3)	DDE	7.88	0

Breakdown 6.55

Name of Final Standard SIM Curve Prep'd By (Initials) GA  
 Prep Date 01/18/19  
 Exp Date 06/01/19

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc.(range)
1.0 ug/mL SIM	APPL	1.0 ug/mL SIM	1.0 ug/mL	01/18/19	06/01/19	10 uL	100uL	MC 56258 90uL	0.1 ug/mL
SIM Internal Standard	APPL	SIM Internal Standard	125 ug/mL	11/06/18	11/06/19	2 uL			2.5ug/mL
1.0 ug/mL SIM	APPL	1.0 ug/mL SIM	1.0 ug/mL	01/18/19	06/01/19	20 uL	100uL	MC 56258 80uL	0.2 ug/mL
SIM Internal Standard	APPL	SIM Internal Standard	125 ug/mL	11/06/18	11/06/19	2 uL			2.5ug/mL
5.0 ug/mL SIM	APPL	5.0 ug/mL SIM	5.0 ug/mL	01/18/19	06/01/19	10 uL	100uL	MC 56258 90uL	0.5 ug/mL
SIM Internal Standard	APPL	SIM Internal Standard	125 ug/mL	11/06/18	11/06/19	2 uL			2.5ug/mL
5.0 ug/mL SIM	APPL	5.0 ug/mL SIM	5.0 ug/mL	01/18/19	06/01/19	20 uL	100uL	MC 56258 80 uL	1.0 ug/mL
SIM Internal Standard	APPL	SIM Internal Standard	125 ug/mL	11/06/18	11/06/19	2 uL			2.5ug/mL
PAH SIM STOCK	APPL	PAH SIM STOCK	200 ug/mL	CL13117-40078	12/28/19	5 uL	200uL	MC 56258 190 uL	5.0 ug/mL
SIM 2S SURROGATE	APPL	SIM 2S SURR	100 ug/mL	06/07/18	06/01/19	5 uL			
SIM Internal Standard	APPL	SIM Internal Standard	125 ug/mL	11/06/18	11/06/19	4 uL			2.5ug/mL
PAH SIM STOCK	APPL	PAH SIM STOCK	200 ug/mL	CL13117-40078	12/28/19	5 uL	100 uL	MC 56258 90 uL	10 ug/mL
SIM 2S SURROGATE	APPL	SIM 2S SURROGATE	100 ug/mL	06/07/18	06/01/19	5 uL			
SIM Internal Standard	APPL	SIM Internal Standard	125 ug/mL	11/06/18	11/06/19	2 uL			2.5ug/mL
PAH SIM STOCK	APPL	PAH SIM STOCK	200	CL13117-40078	12/28/19	25 uL	100uL	MC 56258 50 uL	50 ug/mL
SIM 2S SURROGATE	APPL	SIM 2S SURROGATE	100 ug/mL	06/07/18	06/01/19	25 uL			
SIM Internal Standard	APPL	SIM Internal Standard	125 ug/mL	11/06/18	11/06/19	2 uL			2.5ug/mL
PAH SIM STOCK	APPL	PAH SIM STOCK	200 ug/mL	CL13117-40078	12/28/19	50 uL	100uL	na	100 ug/mL
SIM 2S SURROGATE	APPL	SIM 2S SURROGATE	100 ug/mL	06/07/18	06/01/19	50 uL			
SIM Internal Standard	APPL	SIM Internal Standard	125 ug/mL	11/06/18	11/06/19	2 uL			2.5ug/mL

Name of Final Standard 8270 PAH SIM Second Source Prep'd By (Initials) GA  
 Prep Date 01/18/19  
 Exp Date 06/01/19

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc.(range)
PAH SIM SS Stock	Phenova	AL0-130490	200 ug/mL	CL13121-40082	12/28/19	5 uL	200uL	MC 56258 195uL	5 ug/mL
SIM Internal Standard	APPL	SIM Internal Standard	125 ug/mL	11/06/18	11/06/19	4 uL			2.5ug/mL

Name of Final Standard 8270 SIM PAH Internal Standard  
 Prep Date 11/06/18  
 Exp Date 11/06/19

Prep'd By (Initials) GA

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
SV Internal Standard	Restek	31206	2000 ug/mL	A0130603-38560	11/06/19	350 uL	5,600 uL	MC 56258 5,250 uL	125 ug/mL

Name of Final Standard PAH SIM Spike (Ampules)  
 Prep Date 12/17/18  
 Exp Date 12/17/19

Prep'd By (Initials) OA

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
8270D PAH SIM	O2SI	110780-01	200 ug/mL	353450-39730	12/17/19	1 mL	1 mL	NA	200ug/mL

Name of  
Final  
Standard

**SIM Surrogate**

Prep'd By (Initials)

**GA**

Prep Date **01/24/19**

Exp Date **06/07/19**

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc. (range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
Sim Surrogate Deuterated	Restek	33913	2000 ug/mL	A0131716 - 38554 A0137718 - 39318	06/07/19 01/24/20	1250 uL	25 mL	Acetone #1017171	100 ug/mL

# Organic Extraction Worksheet

<b>Method</b>	Continuous Liquid/Liquid SVOC 3520C	<b>Extraction Set</b>	190130A	<b>Extraction Method</b>	LIQ003	<b>Units</b>	mL
Spiked ID 1	8270T Spike 1-30-19 EXP 10-30-19	Surrogate ID 1	8270 Surrogate 12-6-18 EXP 10-17-19				
Spiked ID 2	Sim Spike 1-30-19 EXP 1-30-20	Surrogate ID 2	SIM Surrogate 1-24-19 EXP 6-7-19				
Spiked ID 3		Surrogate ID 3					
Spiked ID 4		Surrogate ID 4					
Spiked ID 5		Surrogate ID 5					
Spiked ID 6		Sufficient Vol for Matrix QC: yes					
Spiked ID 7		Ext. Start Time: 01/30/19 16:15 <i>01/31/19 13:00</i>					
Spiked ID 8		Ext. End Time: 01/31/19 10:30 <i>01/31/19 07:05, 02/01/19 11:20</i>					
		GC Requires Extract By: 01/31/19 0:00					
		pH1	2	01/30/19 1:40:00 PM	Water Bath Temp Criteria	73,75 °C	
		pH2	14	01/31/19 12:30:00 PM			
		pH3					

Spiked By: DL

Date 01/30/19

Witnessed By: CFM

Date 01/30/19

Sample	Sample Container	Spike Amount	Spike ID	Surrogate Amount	Surrogate ID	Extract Amount	Final Volume	pH	Extract Date/Time	Comments	
1	190130A Bk			1,0.050	1,2	800		2/1	01/30/19 13:30		
					equip	e-wb5 E-HP51					
2	190130A LCS-1	0.250	1	1	1	800		2/1	01/30/19 13:30		
					equip	e-wb5 E-HP50					
3	190130A LCS-2	0.0250	2	0.050	2	800		2/1	01/30/19 13:30		
					equip	e-wb5 E-HP49					
4	190130A LCSD-1	0.250	1	1	1	800		2/1	01/30/19 13:30		
					equip	e-wb5 E-HP48					
5	190130A LCSD-2	0.0250	2	0.050	2	800		2/1	01/30/19 13:30		
					equip	e-wb5 E-HP47					
6	AZ85562 MS-1	AZ85562W31	0.250	1	1	1	800		2/1	01/30/19 13:30	87940
					equip	e-wb5 E-HP25					
7	AZ85562 MSD-1	AZ85562W33	0.250	1	1	1	800		2/1	01/30/19 13:30	87940
					equip	e-wb5 E-HP26					
8	AZ85562 MS-2	AZ85562W37	0.0250	2	0.050	2	800		2/1	01/30/19 13:30	87940
					equip	e-wb5 E-HP27					
9	AZ85562 MSD-2	AZ85562W38	0.0250	2	0.050	2	800		2/1	01/30/19 13:30	87940
					equip	E-WB5 E-HP28					
10	AZ85562	AZ85562W36		1,0.050	1,2	800		2/1	01/30/19 13:30	87940	
					equip	e-wb5 E-HP29					
11	AZ85563	AZ85563W10		1,0.050	1,2	800		2/1	01/30/19 13:30	87940	
					equip	E-WB5 E-HP30					
12	AZ85569	AZ85569W22		1,0.050	1,2	800		2/1	01/30/19 13:30	87940	
					equip	E-WB5 E-HP17					
13	AZ85643 MS-1	AZ85643W33	0.250	1	1	1	800		2/1	01/30/19 13:30	87956
					equip	E-WB6 E-HP16					
14	AZ85643 MSD-1	AZ85643W34	0.250	1	1	1	800		2/1	01/30/19 13:30	87956
					equip	E-WB6 E-HP15					
15	AZ85643 MS-2	AZ85643W35	0.0250	2	0.050	2	800		2/1	01/30/19 13:30	87956
					equip	E-WB6 E-HP14					
16	AZ85643 MSD-2	AZ85643W30	0.0250	2	0.050	2	800		2/1	01/30/19 13:30	87956
					equip	E-WB6 E-HP13					

Solvent and Lot#	
PH Strips	HC 849161
Dichloromethane (DCM)	18G194011
1+1 H2SO4	11-28-18
10N NaOH	1-8-19
Filter Paper	400148
Acidified Na2SO4	11-27-18
B. Na2SO4	2018110573

Extraction COC Transfer	
Extraction lab employee Initials	KY
GC analyst's initials	OA
Date	02/01/19
Time	11:31
Refrigerator	GC-C

Technician's Initials	
Scanned By	DL
Sample Preparation	DL
Extraction	DL
Concentration	DL

Modified 02/01/19 4:47:57 PM

Reviewed By: *KY* Page 216 of 703 Date *2/1/19*

# Organic Extraction Worksheet








<b>Method</b>	Continuous Liquid/Liquid SVOC 3520C	<b>Extraction Set</b>	190130A	<b>Extraction Method</b>	LIQ003	<b>Units</b>	mL
Spiked ID 1	8270T Spike 1-30-19 EXP 10-30-19	Surrogate ID 1	8270 Surrogate 12-6-18 EXP 10-17-19				
Spiked ID 2	Sim Spike 1-30-19 EXP 1-30-20	Surrogate ID 2	SIM Surrogate 1-24-19 EXP 6-7-19				
Spiked ID 3		Surrogate ID 3					
Spiked ID 4		Surrogate ID 4					
Spiked ID 5		Surrogate ID 5					
Spiked ID 6		Sufficient Vol for Matrix QC: yes					
Spiked ID 7		Ext. Start Time:	01/30/19 16:15	01/31/19 13:00			
Spiked ID 8		Ext. End Time:	01/31/19 10:30	01/31/19 07:05, 01/31/19 11:20			
		GC Requires Extract By:	01/31/19 0:00				
pH1	2	01/30/19 1:40:00 PM	Water Bath Temp Criteria		73,75 °C		
pH2	14	01/31/19 12:30:00 PM					
pH3							

Spiked By: DL

Date 01/30/19

Witnessed By: CFM

Date 01/30/19

Sample	Sample Container	Spike Amount	Spike ID	Surrogate Amount	Surrogate ID	Extract Amount	Final Volume	pH	Extract Date/Time	Comments
17	AZ85643 	AZ85643W32		1,0.050	1,2	800	1	2/1	01/30/19 13:30	87956
					equip	E-WB6 E-HP12				
18	AZ85644 	AZ85644W07		1,0.050	1,2	800	1	2/1	01/30/19 13:30	87956
					equip	E-WB6 E-HP11				
19	AZ85646 	AZ85646W21		1,0.050	1,2	800	1	2/1	01/30/19 13:30	87956
					equip	E-WB6 E-HP10				
20	AZ85653 	AZ85653W20		1,0.050	1,2	800	1	2/1	01/30/19 13:30	87956
					equip	E-WB6 E-HP9				
21	AZ85763 	AZ85763W10		1,0.050	1,2	800	1	2/1	01/30/19 15:55	87986
					equip	E-WB6 E-HP7				
22	AZ85764 	AZ85764W10		1,0.050	1,2	800	1	2/1	01/30/19 15:55	87986
					equip	E-WB6 E-HP6				
23	AZ85766 	AZ85766W24		1,0.050	1,2	800	1	2/1	01/30/19 15:55	87986
					equip	E-WB6 E-HP4				

Kys 2/4/19

Solvent and Lot#	
PH Strips	HC 849161
Dichloromethane (DCM)	18G194011
1+1 H2SO4	11-28-18
10N NaOH	1-8-19
Filter Paper	400148
Acidified Na2SO4	11-27-18
B. Na2SO4	2018110573

Extraction COC Transfer	
Extraction lab employee Initials	KY
GC analyst's initials	
Date	
Time	
Refrigerator	

Technician's Initials	
Scanned By	DL
Sample Preparation	DL
Extraction	DL
Concentration	DL
Modified	02/01/19 4:47:57 PM

Reviewed By:  Date 2/4/19

## Injection Log

Directory: M:\LINUS\DATA\L190122\

Vial	FileName	Multiplier	SampleName	Misc Info	Injected
2	0122L002.D	1	SV Tune 10/11/18		22 Jan 19 9:21
3	0122L003.D	1	0.1 SIM 01/18/19		22 Jan 19 9:37
4	0122L004.D	1	0.2 SIM 01/18/19		22 Jan 19 9:59
5	0122L005.D	1	0.5 SIM 01/18/19		22 Jan 19 10:21
6	0122L006.D	1	1 SIM 01/18/19		22 Jan 19 10:43
7	0122L007.D	1	5 SIM 01/18/19		22 Jan 19 11:30
8	0122L008.D	1	10 SIM 01/18/19		22 Jan 19 11:53
9	0122L009.D	1	50 SIM 01/18/19		22 Jan 19 12:15
10	0122L010.D	1	100 SIM 01/18/19		22 Jan 19 12:37
11	0122L011.D	1	SS SIM 01/18/19		22 Jan 19 12:59
80	0122L080.D	1	SV TUNE 11/10/18		1 Feb 19 8:11
81	0122L081.D	1	5 SIM 01/18/19		1 Feb 19 8:27
84	0122L084.D	1.25	190130A Bik 1/800		1 Feb 19 12:51
85	0122L085.D	1.25	190130A LCS-1 1/800		1 Feb 19 13:13
86	0122L086.D	1.25	190130A LCSD-1 1/800		1 Feb 19 13:35
87	0122L087.D	1.25	SV TUNE 11/10/18		1 Feb 19 15:16
88	0122L088.D	1.25	5 SIM 01/18/19		1 Feb 19 15:32
100	0122L100.D	1.25	AZ85763W10 1/800		1 Feb 19 20:45
1	0122L101.D	1.25	AZ85764W10 1/800		1 Feb 19 21:08
2	0122L102.D	1.25	AZ85766W24 1/800		1 Feb 19 21:30
3	0122L103.D	1.25	5 SIM 01/18/19 (1)		1 Feb 19 21:52

**ORGANICS**  
**Calibration Data**



Semi-Volatile Analysis by GC-MS  
EPA 8270

Form 6  
Initial Calibration

Lab Name: APPL, Inc.

Case No: \_\_\_\_\_

Matrix: \_\_\_\_\_

SDG No: \_\_\_\_\_

Initial Cal. Date: 01/25/19

Instrument: Yoda

Initials: \_\_\_\_\_

0124Y016.D 0124Y017.D 0124Y018.D 0124Y033.D 0124Y020.D 0124Y015.D 0124Y021.D 0124Y022.D 0124Y023.D

	Compound	4	5	10	20	40	50	60	80	100		Avg	%RSD	Type	r <sup>2</sup>	Q	MRF
1	I 1,4-dichlorobenzene-D4(ISTD)	ISTD															
2	1,4-Dioxane		0.2010	0.2484	0.1994	0.2178	0.2503	0.2439	0.1987	0.2300		0.22	10				
3	TM n-Nitrosodimethylamine		0.3036	0.3464	0.3472	0.3686	0.3760	0.3802	0.3692	0.4098		0.36	8.6	TM			
4	TM Pyridine		0.6226	0.9649	0.9041	0.8601	0.9985	0.9071	0.8936	0.9876		0.89	13	TM			
5	S 2-Fluorophenol (S)		1.464	1.647	1.696	1.931	1.714	1.935	1.978	1.907		1.8	10	S			
6	S Phenol-D6 (S)		1.955	2.290	2.260	2.539	2.267	2.507	2.532	2.442		2.3	8.5	S			
7	*TM Phenol		2.309	3.261	3.084	3.089	3.172	3.085	3.021	3.188		3.0	9.9	*TM			0.800
8	TM Aniline		2.291	3.413	3.293	3.218	3.311	3.249	3.188	3.375		3.2	11	TM			
9	TM Bis (2-chloroethyl) ether		1.107	1.513	1.402	1.404	1.463	1.392	1.379	1.490		1.4	9.0	TM			0.700
10	TM 2-Chlorophenol		1.663	2.317	2.143	2.142	2.214	2.152	2.142	2.311		2.1	9.6	TM			0.800
11	TM 1,3-DCB		1.862	2.463	2.257	2.276	2.341	2.265	2.278	2.432		2.3	8.1	TM			
12	*TM 1,4-DCB		1.940	2.591	2.299	2.299	2.379	2.314	2.289	2.459		2.3	8.0	*TM			
13	TM Benzyl alcohol		0.9641	1.383	1.344	1.346	1.411	1.369	1.373	1.455		1.3	11	TM			
14	TM 1,2-DCB		1.768	2.340	2.165	2.152	2.212	2.150	2.136	2.280		2.2	7.9	TM			
15	TM 2-Methylphenol		1.393	1.915	1.834	1.841	1.908	1.859	1.837	1.986		1.8	9.9	TM			0.700
16	TM Bis (2-chloroisopropyl) ether		1.751	2.355	2.130	2.076	2.164	2.068	2.037	2.161		2.1	8.1	TM			0.010
17	TM Acetophenone		2.287	3.133	2.851	2.790	2.854	2.733	2.701	2.853		2.8	8.5	TM			0.010
18	TM 3&4-Methylphenol		1.687	2.384	2.207	2.169	2.236	2.161	2.120	2.247		2.2	9.5	TM			0.600
19	**TM n-Nitrosodi-n-propylamine		1.290	1.739	1.600	1.552	1.616	1.548	1.528	1.628		1.6	8.2	**TM			0.500
20	TM Hexachloroethane		0.6787	0.9014	0.8397	0.8456	0.8839	0.8545	0.8606	0.9193		0.85	8.7	TM			0.300
21	I Naphthalene-D8(ISTD)	ISTD															
22	S Nitrobenzene-D5(S)		0.4172	0.4561	0.4585	0.5041	0.4742	0.4998	0.5077	0.4929		0.48	6.5	S			
23	TM Nitrobenzene		0.4469	0.5751	0.5371	0.5310	0.5810	0.5343	0.5232	0.5564		0.54	7.8	TM			0.200
24	TM Isophorone		0.7599	0.9777	0.9504	0.9246	1.023	0.9350	0.9196	0.9841		0.93	8.4	TM			0.400
25	*TM 2-Nitrophenol		0.1948	0.2706	0.2673	0.2678	0.2879	0.2720	0.2649	0.2844		0.26	11	*TM			0.100
26	TM 2,4-Dimethylphenol		0.3309	0.4574	0.4473	0.4439	0.4880	0.4322	0.4209	0.4700		0.44	11	TM			0.200
27	TM Benzoic acid			0.2515	0.3383	0.3387	0.3922	0.3729	0.3299	0.3663		0.34	13	TM			
28	TM Bis (2-chloroethoxy) methane		0.4805	0.6305	0.5898	0.5703	0.6237	0.5769	0.5647	0.5992		0.58	8.0	TM			0.300
29	*TM 2,4-Dichlorophenol		0.2454	0.3924	0.3797	0.3834	0.4214	0.3911	0.3838	0.4066		0.38	14	*TM			0.200
30	TM 1,2,4-Trichlorobenzene		0.3572	0.4552	0.4197	0.4116	0.4453	0.4123	0.4080	0.4301		0.42	7.1	TM			
31	TM 3,4-Dimethylphenol		0.4569	0.6144	0.5866	0.5901	0.6511	0.6054	0.5866	0.6284		0.59	9.9	TM			
32	TM Naphthalene		1.224	1.541	1.429	1.405	1.534	1.409	1.372	1.442		1.4	7.0	TM			0.700
33	TM 4-Chloroaniline		0.4196	0.5900	0.5787	0.5395	0.5729	0.5252	0.4856	0.4901		0.53	11	TM			0.010
34	TM 2,6-Dichlorophenol		0.2964	0.3976	0.3779	0.3724	0.4050	0.3739	0.3662	0.3853		0.37	8.9	TM			
35	TM Hexachloropropene		0.1833	0.2513	0.2596	0.2564	0.2830	0.2654	0.2601	0.2772		0.25	12	TM			

Semi-Volatile Analysis by GC-MS  
EPA 8270

Form 6  
Initial Calibration

Lab Name: APPL, Inc.

SDG No: \_\_\_\_\_

Case No: \_\_\_\_\_

Initial Cal. Date: 01/25/19

Matrix: \_\_\_\_\_

Instrument: Yoda

Initials: \_\_\_\_\_

		Compound	4	5	10	20	40	50	60	80	100	Avg	%RSD	Type		Q
36	*TM	Hexachlorobutadiene		0.1855	0.2329	0.2183	0.2157	0.2306	0.2159	0.2133	0.2276	0.22	6.9	*TM		0.010
37	TM	Caprolactum			0.1761	0.1918	0.1813	0.2044	0.1887	0.1842	0.1967	0.19	5.1	TM		0.010
38	*TM	4-Chloro-3-methylphenol		0.3189	0.4315	0.4287	0.4246	0.4671	0.4341	0.4259	0.4540	0.42	11	*TM		0.200
39	TM	2-Methylnaphthalene		0.7750	0.9767	0.9344	0.9063	0.9850	0.9230	0.8855	0.9371	0.92	7.2	TM		0.400
40	TM	1-Methylnaphthalene		0.7978	0.9910	0.9253	0.9071	0.9825	0.9103	0.8816	0.9236	0.91	6.6	TM		
41	I	Acenaphthene-D10(IS)	ISTD													
42	**TML	Hexachlorocyclopentadiene		0.0268	0.0999	0.2275	0.2530	0.3014	0.2855	0.2979		0.21	51	**TML	0.996	0.050
43	TM	1,2,4,5-Tetrachlorobenzene		0.5955	0.6952	0.6554	0.6773	0.7402	0.6738	0.6303	0.7074	0.67	6.7	TM		0.010
44	*TM	2,4,6-Trichlorophenol		0.3002	0.4102	0.4294	0.4630	0.5087	0.4583	0.4386	0.5003	0.44	15	*TM		0.200
45	TM	2,4,5-Trichlorophenol		0.4330	0.5116	0.4827	0.4976	0.5457	0.4923	0.4709	0.5287	0.50	7.1	TM		0.200
46	S	2-Fluorobiphenyl(S)		1.625	1.611	1.507	1.734	1.604	1.650	1.614	1.613	1.6	3.8	S		
47	TM	1,1'-Biphenyl		1.781	2.065	1.968	2.025	2.175	1.951	1.867	2.049	2.0	6.2	TM		0.010
48	TM	2-Chloronaphthalene		1.378	1.590	1.494	1.548	1.646	1.481	1.423	1.571	1.5	5.9	TM		0.800
49	TM	2-Nitroaniline		0.3769	0.4826	0.4917	0.5116	0.5641	0.4985	0.4806	0.5374	0.49	11	TM		0.010
50	TM	Dimethyl phthalate		1.529	1.833	1.788	1.826	1.980	1.784	1.703	1.879	1.8	7.4	TM		0.010
51	TM	2,6-DNT		0.2877	0.3968	0.4059	0.4128	0.4512	0.4131	0.3984	0.4457	0.40	13	TM		0.200
52	TM	Acenaphthylene		2.072	2.461	2.402	2.474	2.659	2.394	2.275	2.504	2.4	7.2	TM		0.900
53	TM	3-Nitroaniline		0.3376	0.4515	0.4701	0.4800	0.5102	0.4646	0.4380	0.4849	0.45	11	TM		0.010
54	*TM	Acenaphthene		1.424	1.620	1.539	1.584	1.710	1.526	1.442	1.616	1.6	6.1	*TM		0.900
55	**TML	2,4-Dinitrophenol			0.0858	0.1951	0.1966	0.2219	0.2297	0.2173		0.19	28	**TML	0.993	0.010
56	**TM	4-Nitrophenol			0.2666	0.2169	0.2453	0.3062	0.2859	0.2836	0.3294	0.28	14	**TM		0.010
57	TM	Dibenzofuran		2.016	2.307	2.196	2.232	2.383	2.132	2.013	2.186	2.2	5.9	TM		0.800
58	TM	2,4-DNT		0.3898	0.5315	0.5442	0.5489	0.5964	0.5400	0.5147	0.5706	0.53	12	TM		0.200
59	TM	2,3,4,6-Tetrachlorophenol		0.2834	0.3521	0.3620	0.3746	0.4076	0.3725	0.3622	0.4018	0.36	10	TM		0.010
60	TM	Diethyl phthalate		1.482	1.741	1.704	1.730	1.874	1.675	1.580	1.784	1.7	7.1	TM		0.010
61	TM	4-Chlorophenyl phenyl ether		0.7891	0.9079	0.8509	0.8738	0.9244	0.8287	0.7845	0.8542	0.85	5.9	TM		0.400
62	TM	Fluorene		1.610	1.844	1.765	1.800	1.920	1.706	1.609	1.746	1.7	6.2	TM		0.900
63	TM	4-Nitroaniline		0.3704	0.4711	0.4796	0.4923	0.5304	0.4469	0.4228	0.4690	0.46	10	TM		0.010
64	S	2,4,6-Tribromophenol(S)		0.1476	0.1571	0.1526	0.1804	0.1668	0.1735	0.1716	0.1759	0.17	7.2	S		
65	I	Phenanthrene-D10(IS)	ISTD													
66	TM	4,6-Dinitro-2-methylphenol			0.1285	0.1724	0.1795	0.1979	0.1866	0.1812	0.2048	0.18	14	TM		0.010
67	TM	Diphenyl amine		0.6436	0.7341	0.6998	0.7210	0.7785	0.7053	0.6471	0.7161	0.71	6.3	TM		
68	*TM	n-Nitrosodiphenylamine		0.6436	0.7341	0.6998	0.7210	0.7785	0.7053	0.6471	0.7161	0.71	6.3	*TM		0.010
69	TM	1,2-Diphenylhydrazine		0.8393	0.9626	0.9494	0.9785	1.077	0.9618	1.037	1.152	0.99	9.5	TM		
70	TM	4-Bromophenyl phenyl ether		0.2070	0.2339	0.2359	0.2466	0.2634	0.2451	0.2263	0.2537	0.24	7.3	TM		0.100

Semi-Volatile Analysis by GC-MS  
EPA 8270

Form 6  
Initial Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: \_\_\_\_\_

SDG No: \_\_\_\_\_  
Initial Cal. Date: 01/25/19  
Instrument: Yoda

Initials: \_\_\_\_\_

		Compound	4	5	10	20	40	50	60	80	100	Avg	%RSD	Type	Q
71	TM	Hexachlorobenzene		0.1973	0.2291	0.2190	0.2309	0.2483	0.2277	0.2140	0.2412	0.23	7.1	TM	0.100
72	TM	Atrazine		0.1931	0.2446	0.2396	0.2514	0.2738	0.2448	0.2302	0.2596	0.24	9.8	TM	0.010
73	*TM	Pentachlorophenol			0.1082	0.1268	0.1398	0.1629	0.1475	0.1404	0.1642	0.14	14	*TM	0.050
74	TM	Phenanthrene		1.216	1.392	1.334	1.397	1.499	1.346	1.245	1.387	1.4	6.7	TM	0.700
75	TM	Anthracene		1.230	1.425	1.366	1.438	1.535	1.381	1.283	1.421	1.4	6.8	TM	0.700
76	TM	Carbazol		1.112	1.272	1.251	1.292	1.398	1.257	1.168	1.316	1.3	7.0	TM	0.010
77	TM	Di-n-butylphthalate		1.241	1.480	1.498	1.545	1.690	1.484	1.399	1.543	1.5	8.7	TM	0.010
78	*TM	Fluoranthene		1.277	1.487	1.454	1.489	1.613	1.457	1.344	1.491	1.5	7.0	*TM	0.600
79	I	Chrysene-D12(IS)	ISTD												
80	TM	Benzidine		0.3273	0.5090	0.5365	0.5127	0.5486	0.5087	0.4832	0.5314	0.49	14	TM	
81	TM	Pyrene		1.510	1.711	1.686	1.730	1.876	1.674	1.614	1.782	1.7	6.4	TM	0.600
82	S	Terphenyl-D14(S)		0.9724	0.9816	0.9517	1.100	1.010	1.044	1.040	1.063	1.0	4.9	S	
83	TM	Butyl benzylphthalate		0.5931	0.7238	0.7708	0.7869	0.8621	0.7758	0.7515	0.8250	0.76	11	TM	0.010
84	TM	3,3'-Dichlorobenzidine		0.3876	0.5178	0.5500	0.5455	0.5955	0.5299	0.4962	0.5426	0.52	12	TM	0.010
85	TM	Benz (a) anthracene		1.338	1.486	1.435	1.485	1.664	1.484	1.400	1.553	1.5	6.6	TM	0.800
86	TM	Bis (2-ethylhexyl) phthalate		0.9337	1.069	1.068	1.077	1.217	1.043	0.9862	1.080	1.1	7.7	TM	0.010
87	TM	Chrysene		1.282	1.463	1.453	1.480	1.548	1.436	1.382	1.540	1.4	6.0	TM	0.700
88	*TM	Di-n-octylphthalate		1.339	1.676	1.828	1.873	2.078	1.835	1.774	1.976	1.8	12	*TM	0.010
89	I	Perylene-D12(IS)	ISTD												
90	TM	Benzo (b) fluoranthene		1.259	1.442	1.425	1.498	1.752	1.503	1.399	1.733	1.5	11	TM	0.700
91	TM	Benzo (k) fluoranthene		1.297	1.493	1.470	1.545	1.505	1.401	1.398	1.435	1.4	5.4	TM	0.700
92	*TM	Benzo (a) pyrene	1.270	1.120	1.343	1.345	1.434	1.536	1.372	1.315	1.496	1.4	9.1	*TM	0.700
93	TM	Indeno (1,2,3-cd) pyrene		1.143	1.345	1.386	1.461	1.580	1.400	1.349	1.536	1.4	9.6	TM	0.500
94	TM	Dibenz (a,h) anthracene	1.164	1.060	1.244	1.258	1.335	1.437	1.271	1.222	1.399	1.3	9.2	TM	0.400
95	TM	Benzo (g,h,i) perylene		1.023	1.195	1.224	1.286	1.399	1.232	1.201	1.362	1.2	9.3	TM	0.500
96															
97															
98															
99															
100															
101															
102															
103															
104															
105															

Data File : M:\YODA\DATA\Y190124\0124Y016.D Vial: 16  
 Acq On, : 25 Jan 19 9:53 Operator: MA  
 Sample : 4ug/mL 8270 01/24/19 Inst : Yoda  
 Misc : Multiplr: 1.00

Quant Time: Jan 25 10:15 2019 Quant Results File: Y0125NC.RES

Quant Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Fri Jan 25 10:13:14 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.46	152	441679	40.00000	ppb	0.00
21) Napthalene-D8 (IS)	6.90	136	1882270	40.00000	ppb	0.00
41) Acenaphthene-D10 (IS)	8.92	164	1025541	40.00000	ppb	0.00
65) Phenanthrene-D10 (IS)	10.66	188	1966994	40.00000	ppb	0.00
79) Chrysene-D12 (IS)	13.75	240	1763281	40.00000	ppb	-0.01
89) Perylene-D12 (IS)	15.63	264	1696541	40.00000	ppb	0.00

System Monitoring Compounds

5) 2-Fluorophenol (S)	0.00	112	0d	0.00000	ppb	
Spiked Amount 200.000			Recovery =	0.000%		
6) Phenol-D6 (S)	0.00	99	0d	0.00000	ppb	
Spiked Amount 200.000			Recovery =	0.000%		
22) Nitrobenzene-D5 (S)	0.00	82	0d	0.00000	ppb	
Spiked Amount 100.000			Recovery =	0.000%		
46) 2-Fluorobiphenyl (S)	0.00	172	0d	0.00000	ppb	
Spiked Amount 100.000			Recovery =	0.000%		
64) 2,4,6-Tribromophenol (S)	0.00	330	0d	0.00000	ppb	
Spiked Amount 200.000			Recovery =	0.000%		
82) Terphenyl-D14 (S)	0.00	244	0d	0.00000	ppb	
Spiked Amount 100.000			Recovery =	0.000%		

Target Compounds

	R.T.	QIon	Response	Conc	Units	Qvalue
92) Benzo (a) pyrene	15.55	252	215402	4.01854	ppb	99
94) Dibenz (a,h) anthracene	17.63	278	197436	3.98872	ppb	99

Quantitation Report

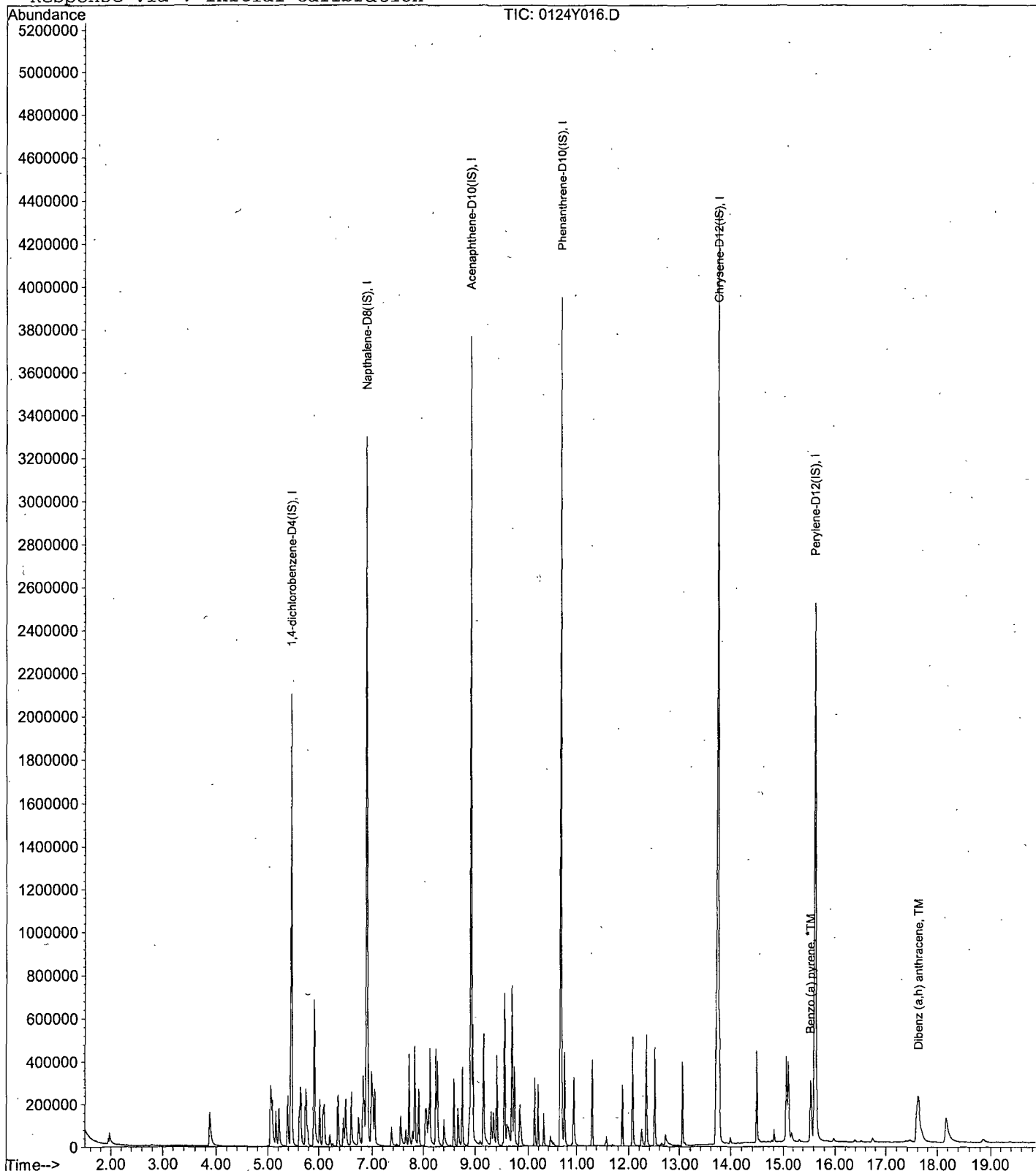
Data File : M:\YODA\DATA\Y190124\0124Y016.D  
Acq On : 25 Jan 19 9:53  
Sample : 4ug/mL 8270 01/24/19  
Misc :

Vial: 16  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Jan 25 10:15 2019

Quant Results File: Y0125NC.RES

Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Mon Jan 28 14:58:58 2019  
Response via : Initial Calibration



Data File : M:\YODA\DATA\Y190124\0124Y017.D  
 Acq On : 25 Jan 19 10:21  
 Sample : 5ug/mL 8270 01/24/19  
 Misc :

Vial: 17  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Quant Time: Jan 25 11:06 2019

Quant Results File: Y0125NC.RES

Quant Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Fri Jan 25 10:13:14 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.46	152	433806	40.00000	ppb	0.00
21) Napthalene-D8 (IS)	6.90	136	1862853	40.00000	ppb	0.00
41) Acenaphthene-D10 (IS)	8.92	164	1024206	40.00000	ppb	0.00
65) Phenanthrene-D10 (IS)	10.66	188	1955322	40.00000	ppb	0.00
79) Chrysene-D12 (IS)	13.75	240	1777036	40.00000	ppb	0.00
89) Perylene-D12 (IS)	15.63	264	1697848	40.00000	ppb	0.00

System Monitoring Compounds

5) 2-Fluorophenol (S)	3.88	112	158780	9.11528	ppb	0.01
Spiked Amount 200.000			Recovery =	4.558%		
6) Phenol-D6 (S)	5.05	99	211993	9.21070	ppb	0.00
Spiked Amount 200.000			Recovery =	4.606%		
22) Nitrobenzene-D5 (S)	6.09	82	97141	4.70950	ppb	0.00
Spiked Amount 100.000			Recovery =	4.710%		
46) 2-Fluorobiphenyl (S)	8.13	172	208026	4.99771	ppb	0.00
Spiked Amount 100.000			Recovery =	4.998%		
64) 2,4,6-Tribromophenol (S)	9.85	330	37804	8.79031	ppb	0.00
Spiked Amount 200.000			Recovery =	4.395%		
82) Terphenyl-D14 (S)	12.52	244	215993	4.65872	ppb	0.00
Spiked Amount 100.000			Recovery =	4.659%		

Target Compounds

	R.T.	QIon	Response	Conc	Units	Qvalue
2) 1,4-Dioxane	1.72	58	1090	0.57680		91
3) n-Nitrosodimethylamine	1.95	42	16461	5.13857	ppb	94
4) Pyridine	1.98	79	33762	4.24827	ppb	96
7) Phenol	5.07	94	125184	4.49703	ppb	97
8) Aniline	5.09	93	124237	6.74291	ppb	94
9) Bis (2-chloroethyl) ether	5.16	63	60048	4.34169	ppb	97
10) 2-Chlorophenol	5.23	128	90184	4.67937	ppb	94
11) 1,3-DCB	5.40	146	100957	5.05261	ppb	99
12) 1,4-DCB	5.48	146	105192	5.19009	ppb	99
13) Benzyl alcohol	5.63	108	52278	4.28441	ppb	96
14) 1,2-DCB	5.65	146	95867	5.05812	ppb	99
15) 2-Methylphenol	5.75	107	75528	4.80831	ppb	98
16) Bis (2-chloroisopropyl) et	5.77	45	94938	4.14003	ppb	97
17) Acetophenone	5.91	105	124039	4.96640	ppb	91
18) 3&4-Methylphenol	5.92	107	182967	9.37874	ppb	99
19) n-Nitrosodi-n-propylamine	5.91	70	69974	4.72570	ppb	99
20) Hexachloroethane	6.03	117	36804	4.73413	ppb	96
23) Nitrobenzene	6.11	77	104065	4.95234	ppb	96
24) Isophorone	6.37	82	176946	4.71645	ppb	95
25) 2-Nitrophenol	6.47	139	45356	4.84831	ppb	99
26) 2,4-Dimethylphenol	6.51	122	77050	4.47597	ppb	99
27) Benzoic acid	6.62	105	28927	2.75298	ppb	92
28) Bis (2-chloroethoxy) metha	6.62	93	111881	4.76503	ppb	99
29) 2,4-Dichlorophenol	6.75	162	57137	3.93210	ppb	96
30) 1,2,4-Trichlorobenzene	6.83	180	83169	5.27706	ppb	96
31) 3,4-Dimethylphenol	6.85	107	106384	4.64367	ppb	97
32) Napthalene	6.93	128	285107	5.16052	ppb	99
33) 4-Chloroaniline	6.99	127	97717	4.63173	ppb	99
34) 2,6-Dichlorophenol	7.00	162	69020	4.84772	ppb	95
35) Hexachloropropene	7.02	213	42691	4.62772	ppb	97
36) Hexachlorobutadiene	7.05	225	43193	5.21952	ppb	97
37) Caprolactum	7.47	55	1195	0.15005	ppb #	36

(#) = qualifier out of range (m) = manual integration  
 0124Y017.D Y0125NC.M Tue Jan 29 08:16:33 2019

Data File : M:\YODA\DATA\Y190124\0124Y017.D  
 Acq On : 25 Jan 19 10:21  
 Sample : 5ug/mL 8270 01/24/19  
 Misc :

Vial: 17  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Quant Time: Jan 25 11:06 2019

Quant Results File: Y0125NC.RES

Quant Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Fri Jan 25 10:13:14 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
38) 4-Chloro-3-methylphenol	7.55	107	74252	4.55952	ppb	97
39) 2-Methylnaphthalene	7.72	142	180460	5.14530	ppb	99
40) 1-Methylnaphthalene	7.83	142	185768	5.28579	ppb	99
42) Hexachlorocyclopentadiene	7.88	237	3428	5.53579	ppb	88
43) 1,2,4,5-Tetrachlorobenzene	7.90	216	76235	4.71955	ppb	98
44) 2,4,6-Trichlorophenol	8.04	196	38434	3.61995	ppb	99
45) 2,4,5-Trichlorophenol	8.10	196	55433	4.84840	ppb	97
47) 1,1'-Biphenyl	8.25	154	227953	4.84265	ppb	98
48) 2-Chloronaphthalene	8.28	162	176377	4.92611	ppb	94
49) 2-Nitroaniline	8.40	65	48257	4.02083	ppb	95
50) Dimethyl phthalate	8.60	163	195702	4.76078	ppb	100
51) 2,6-DNT	8.68	165	36830	4.30328	ppb	91
52) Acenaphthylene	8.76	152	265238	4.76003	ppb	97
53) 3-Nitroaniline	8.89	138	43223	4.19099	ppb	97
54) Acenaphthene	8.96	154	182254	4.96067	ppb	99
55) 2,4-Dinitrophenol	9.06	184	658	8.05478	ppb	# 33
56) 4-Nitrophenol	9.15	65	23069	3.17827	ppb	80
57) Dibenzofuran	9.16	168	258059	5.10906	ppb	97
58) 2,4-DNT	9.15	165	49898	4.40819	ppb	93
59) 2,3,4,6-Tetrachlorophenol	9.31	232	36282	4.29569	ppb	96
60) Diethyl phthalate	9.41	149	189707	4.80021	ppb	99
61) 4-Chlorophenyl phenyl ethe	9.55	204	101023	5.14228	ppb	91
62) Fluorene	9.56	166	206121	5.05430	ppb	100
63) 4-Nitroaniline	9.61	138	47426	4.61367	ppb	99
66) 4,6-Dinitro-2-methylphenol	9.64	198	17537	2.42073	ppb	96
67) Diphenyl amine	9.69	169	314635	9.52215	ppb	100
68) n-Nitrosodiphenylamine	9.69	169	314635	9.52215	ppb	100
69) 1,2-Diphenylhydrazine	9.74	77	205129	4.13217	ppb	97
70) 4-Bromophenyl phenyl ether	10.13	248	50606	4.40498	ppb	89
71) Hexachlorobenzene	10.19	284	48221	4.39067	ppb	91
72) Atrazine	10.32	200	23603	2.09887	ppb	99
73) Pentachlorophenol	10.45	266	16395	2.42031	ppb	95
74) Phenanthrene	10.69	178	297175	4.81234	ppb	100
75) Anthracene	10.74	178	300675	4.74183	ppb	99
76) Carbazol	10.94	167	271825	4.72407	ppb	98
77) Di-n-butylphthalate	11.32	149	303348	4.49966	ppb	99
78) Fluoranthene	12.08	202	312240	4.72269	ppb	98
80) Benzidine	12.25	184	72705	5.45225	ppb	97
81) Pyrene	12.35	202	335405	4.91780	ppb	98
83) Butyl benzylphthalate	13.07	149	131736	4.51371	ppb	90
84) 3,3'-Dichlorobenzidine	13.71	252	86100	4.42832	ppb	98
85) Benz (a) anthracene	13.74	228	297279	5.01836	ppb	98
86) Bis (2-ethylhexyl) phthala	13.72	149	207396	5.26210	ppb	# 95
87) Chrysene	13.78	228	284704	4.80830	ppb	99
88) Di-n-octylphthalate	14.48	149	297371	4.40999	ppb	98
90) Benzo (b) fluoranthene	15.07	252	267244	4.53531	ppb	99
91) Benzo (k) fluoranthene	15.11	252	275294	4.84812	ppb	99
92) Benzo (a) pyrene	15.55	252	237730	4.44308	ppb	98
93) Indeno (1,2,3-cd) pyrene	17.59	276	242506	4.50565	ppb	96
94) Dibenz (a,h) anthracene	17.61	278	224895	4.56524	ppb	99
95) Benzo (g,h,i) perylene	18.18	276	217110	4.50340	ppb	97

Quantitation Report

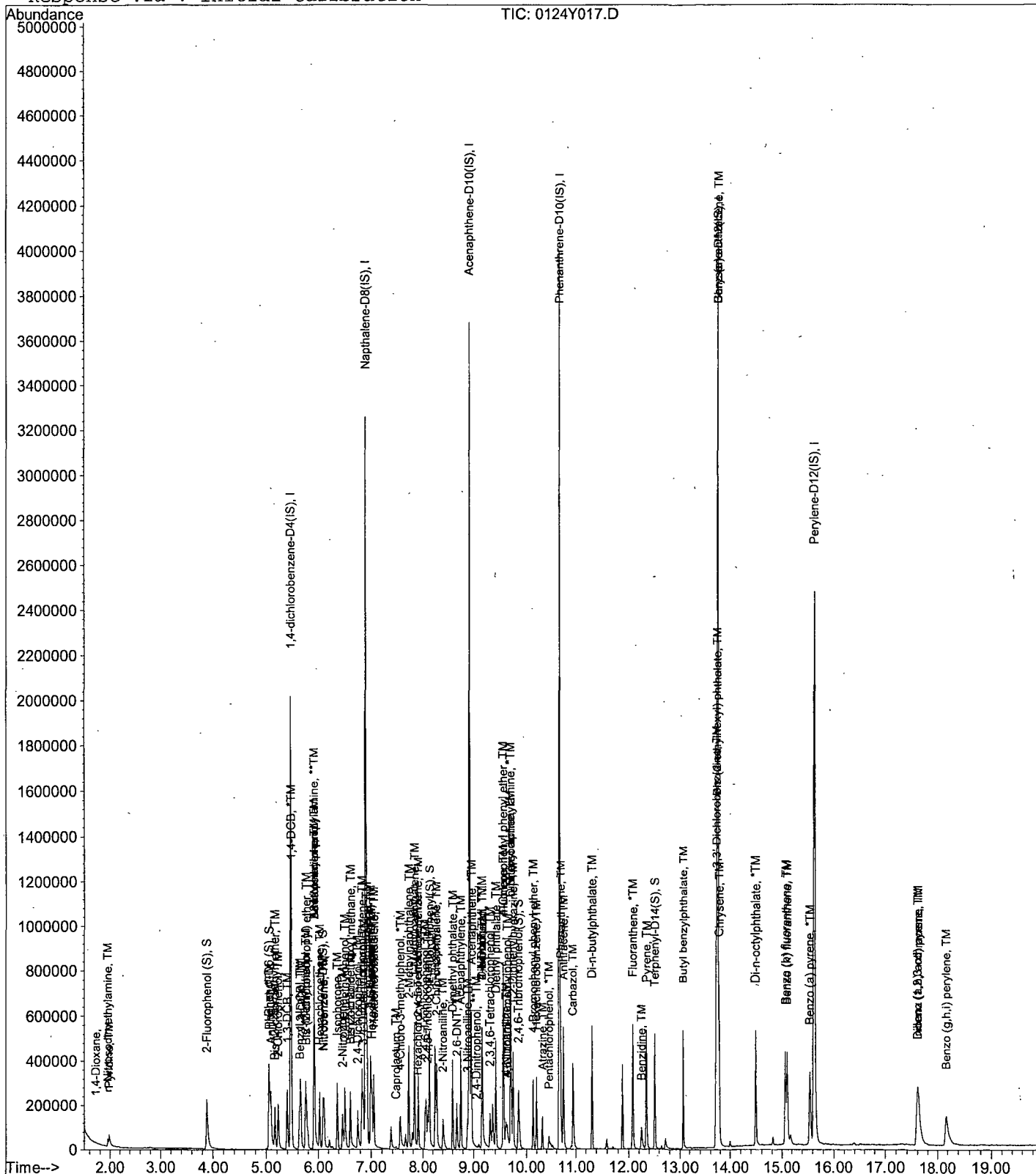
Data File : M:\YODA\DATA\Y190124\0124Y017.D  
Acq On : 25 Jan 19 10:21  
Sample : 5ug/mL 8270 01/24/19  
Misc :

Vial: 17  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Jan 25 11:06 2019

Quant Results File: Y0125NC.RES

Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Mon Jan 28 14:58:58 2019  
Response via : Initial Calibration





Data File : M:\YODA\DATA\Y190124\0124Y018.D  
 Acq On : 25 Jan 19 10:49  
 Sample : 10ug/mL 8270 01/24/19  
 Misc :

Vial: 18  
 Operator: MA  
 Inst. : Yoda  
 Multiplr: 1.00

Quant Time: Jan 25 11:06 2019

Quant Results File: Y0125NC.RES

Quant Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Fri Jan 25 10:13:14 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev (Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.46	152	384341	40.00000	ppb	0.00
21) Napthalene-D8 (IS)	6.90	136	1739801	40.00000	ppb	0.00
41) Acenaphthene-D10 (IS)	8.92	164	1039183	40.00000	ppb	0.00
65) Phenanthrene-D10 (IS)	10.66	188	2028761	40.00000	ppb	0.00
79) Chrysene-D12 (IS)	13.75	240	1850112	40.00000	ppb	-0.01
89) Perylene-D12 (IS)	15.63	264	1783876	40.00000	ppb	0.00

System Monitoring Compounds

5) 2-Fluorophenol (S)	3.88	112	316592	20.53949	ppb	0.00
Spiked Amount 200.000			Recovery =	10.270%		
6) Phenol-D6 (S)	5.05	99	440013	21.66685	ppb	0.00
Spiked Amount 200.000			Recovery =	10.834%		
22) Nitrobenzene-D5 (S)	6.09	82	198391	10.26779	ppb	0.00
Spiked Amount 100.000			Recovery =	10.268%		
46) 2-Fluorobiphenyl (S)	8.13	172	418518	9.97848	ppb	0.00
Spiked Amount 100.000			Recovery =	9.978%		
64) 2,4,6-Tribromophenol (S)	9.85	330	81639	18.82269	ppb	0.00
Spiked Amount 200.000			Recovery =	9.412%		
82) Terphenyl-D14 (S)	12.51	244	454030	9.47395	ppb	0.00
Spiked Amount 100.000			Recovery =	9.474%		

Target Compounds

	R.T.	QIon	Response	Conc	Units	Qvalue
2) 1,4-Dioxane	1.72	58	2387	1.43229		93
3) n-Nitrosodimethylamine	1.95	42	33282	11.82047	ppb	93
4) Pyridine	1.97	79	92711	13.48027	ppb	95
7) Phenol	5.06	94	313314	12.97943	ppb	100
8) Aniline	5.09	93	327926	17.05779	ppb	98
9) Bis (2-chloroethyl) ether	5.16	63	145392	12.15860	ppb	96
10) 2-Chlorophenol	5.22	128	222632	13.20506	ppb	99
11) 1,3-DCB	5.39	146	236649	13.46726	ppb	99
12) 1,4-DCB	5.48	146	248996	13.95093	ppb	98
13) Benzyl alcohol	5.62	108	132840	12.48051	ppb	95
14) 1,2-DCB	5.65	146	224867	13.49664	ppb	96
15) 2-Methylphenol	5.75	107	183959	13.32530	ppb	97
16) Bis (2-chloroisopropyl) et	5.76	45	226279	11.57309	ppb	99
17) Acetophenone	5.92	105	301056	13.80954	ppb	87
18) 3&4-Methylphenol	5.91	107	458174	26.98121	ppb	95
19) n-Nitrosodi-n-propylamine	5.91	70	167080	12.97727	ppb	99
20) Hexachloroethane	6.02	117	86615	12.72916	ppb	96
23) Nitrobenzene	6.11	77	250149	12.87562	ppb	94
24) Isophorone	6.38	82	425236	12.32322	ppb	99
25) 2-Nitrophenol	6.47	139	117688	13.32620	ppb	99
26) 2,4-Dimethylphenol	6.51	122	198936	12.56466	ppb	99
27) Benzoic acid	6.63	105	109400	11.81149	ppb	95
28) Bis (2-chloroethoxy) metha	6.62	93	274235	12.76702	ppb	99
29) 2,4-Dichlorophenol	6.75	162	170664	12.99975	ppb	98
30) 1,2,4-Trichlorobenzene	6.83	180	197991	13.52465	ppb	100
31) 3,4-Dimethylphenol	6.85	107	267251	12.69235	ppb	98
32) Naphthalene	6.92	128	670423	13.15159	ppb	99
33) 4-Chloroaniline	6.99	127	256609	13.35270	ppb	98
34) 2,6-Dichlorophenol	7.00	162	172928	13.15852	ppb	99
35) Hexachloropropene	7.02	213	109295	12.68217	ppb	99
36) Hexachlorobutadiene	7.05	225	101284	13.21557	ppb	99
37) Caprolactum	7.38	55	76598	11.82877	ppb	96

Data File : M:\YODA\DATA\Y190124\0124Y018.D  
 Acq On : 25 Jan 19 10:49  
 Sample : 10ug/mL 8270 01/24/19  
 Misc :

Vial: 18  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Quant Time: Jan 25 11:06 2019

Quant Results File: Y0125NC.RES

Quant Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Fri Jan 25 10:13:14 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
38) 4-Chloro-3-methylphenol	7.55	107	187678	12.50412	ppb	99
39) 2-Methylnaphthalene	7.71	142	424829	13.07207	ppb	100
40) 1-Methylnaphthalene	7.82	142	431022	13.18742	ppb	99
42) Hexachlorocyclopentadiene	7.88	237	25947	8.64993	ppb	95
43) 1,2,4,5-Trichlorobenzene	7.91	216	180614	11.32970	ppb	100
44) 2,4,6-Trichlorophenol	8.04	196	106564	10.25727	ppb	98
45) 2,4,5-Trichlorophenol	8.09	196	132923	11.57256	ppb	94
47) 1,1'-Biphenyl	8.25	154	536521	11.49396	ppb	99
48) 2-Chloronaphthalene	8.28	162	413165	11.62515	ppb	98
49) 2-Nitroaniline	8.40	65	125367	10.51312	ppb	96
50) Dimethyl phthalate	8.60	163	476215	11.65010	ppb	99
51) 2,6-DNT	8.68	165	103086	11.85231	ppb	85
52) Acenaphthylene	8.76	152	639384	11.52284	ppb	100
53) 3-Nitroaniline	8.88	138	117306	11.40934	ppb	90
54) Acenaphthene	8.96	154	420910	11.54206	ppb	100
55) 2,4-Dinitrophenol	9.02	184	22288	11.33622	ppb	96
56) 4-Nitrophenol	9.15	65	69255	9.85262	ppb	81
57) Dibenzofuran	9.16	168	599251	11.90622	ppb	99
58) 2,4-DNT	9.15	165	138090	11.98503	ppb	92
59) 2,3,4,6-Tetrachlorophenol	9.31	232	91483	10.74912	ppb	99
60) Diethyl phthalate	9.41	149	452309	11.51698	ppb	99
61) 4-Chlorophenyl phenyl ethe	9.55	204	235880	12.01438	ppb	96
62) Fluorene	9.56	166	479043	11.78218	ppb	100
63) 4-Nitroaniline	9.60	138	122396	11.95160	ppb	97
66) 4,6-Dinitro-2-methylphenol	9.63	198	65167	9.35947	ppb	97
67) Diphenyl amine	9.69	169	744703	22.27867	ppb	99
68) n-Nitrosodiphenylamine	9.69	169	744703	22.27867	ppb	99
69) 1,2-Diphenylhydrazine	9.74	77	488203	9.83872	ppb	92
70) 4-Bromophenyl phenyl ether	10.13	248	118641	10.25921	ppb	97
71) Hexachlorobenzene	10.19	284	116191	10.54252	ppb	# 85
72) Atrazine	10.31	200	62029	5.43603	ppb	98
73) Pentachlorophenol	10.44	266	54861	8.42679	ppb	94
74) Phenanthrene	10.68	178	705975	11.26347	ppb	98
75) Anthracene	10.75	178	722528	11.20099	ppb	99
76) Carbazol	10.93	167	645327	11.02334	ppb	98
77) Di-n-butylphthalate	11.32	149	750554	10.93554	ppb	99
78) Fluoranthene	12.08	202	754194	11.20916	ppb	99
80) Benzidine	12.24	184	235410	13.07671	ppb	99
81) Pyrene	12.35	202	791563	11.29349	ppb	100
83) Butyl benzylphthalate	13.08	149	334771	11.08547	ppb	94
84) 3,3'-Dichlorobenzidine	13.71	252	239496	12.05618	ppb	99
85) Benz (a) anthracene	13.74	228	687210	11.28964	ppb	99
86) Bis (2-ethylhexyl) phthala	13.73	149	494589	11.99644	ppb	99
87) Chrysene	13.78	228	676758	11.17616	ppb	99
88) Di-n-octylphthalate	14.48	149	775210	11.06033	ppb	95
90) Benzo (b) fluoranthene	15.07	252	643284	10.74979	ppb	100
91) Benzo (k) fluoranthene	15.10	252	665843	11.43139	ppb	98
92) Benzo (a) pyrene	15.55	252	599150	10.90497	ppb	98
93) Indeno (1,2,3-cd) pyrene	17.57	276	599788	10.86003	ppb	99
94) Dibenz (a,h) anthracene	17.60	278	554735	10.91790	ppb	97
95) Benzo (g,h,i) perylene	18.16	276	532716	10.75641	ppb	99

Quantitation Report

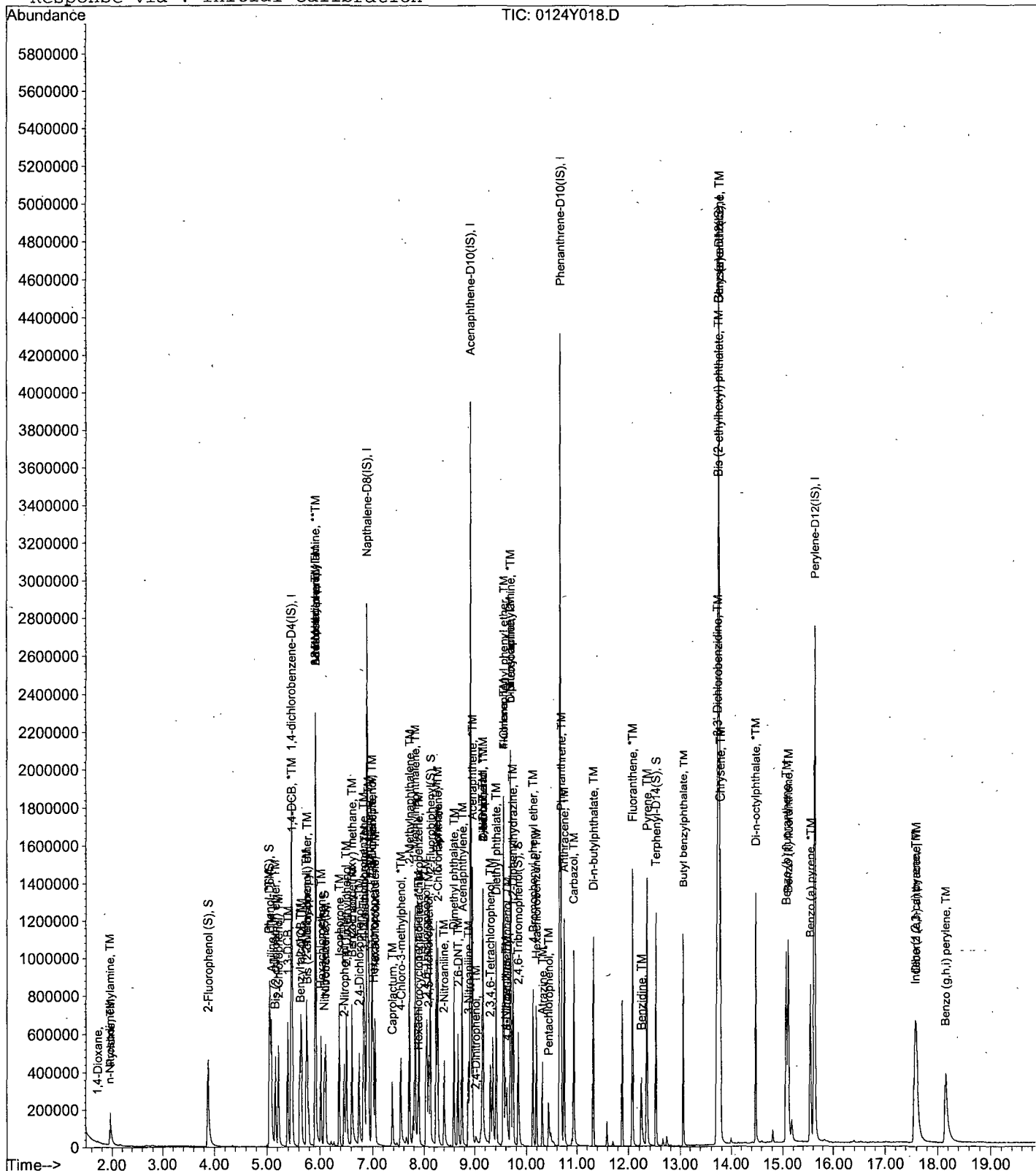
Data File : M:\YODA\DATA\Y190124\0124Y018.D  
Acq On : 25 Jan 19 10:49  
Sample : 10ug/mL 8270 01/24/19  
Misc :

Vial: 18  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Jan 25 11:06 2019

Quant Results File: Y0125NC.RES

Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Mon Jan 28 14:58:58 2019  
Response via : Initial Calibration



Data File : M:\YODA\DATA\Y190124\0124Y033.D  
 Acq On : 28 Jan 19 13:36  
 Sample : 20ug/mL 8270 01/24/19  
 Misc :

Vial: 33  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Quant Time: Jan 28 13:50 2019

Quant Results File: Y0125NC.RES

Quant Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Mon Jan 28 12:35:34 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.47	152	636350	40.00000	ppb	0.00
21) Naphthalene-D8 (IS)	6.91	136	2822233	40.00000	ppb	0.00
41) Acenaphthene-D10 (IS)	8.92	164	1682401	40.00000	ppb	0.00
65) Phenanthrene-D10 (IS)	10.66	188	3270571	40.00000	ppb	0.00
79) Chrysene-D12 (IS)	13.76	240	2912554	40.00000	ppb	0.00
89) Perylene-D12 (IS)	15.64	264	2895614	40.00000	ppb	0.00

System Monitoring Compounds

5) 2-Fluorophenol (S)	3.89	112	1079558	38.19181	ppb	0.02
Spiked Amount 200.000			Recovery =	19.096%		
6) Phenol-D6 (S)	5.06	99	1438233	38.70168	ppb	0.00
Spiked Amount 200.000			Recovery =	19.351%		
22) Nitrobenzene-D5 (S)	6.10	82	647018	19.21156	ppb	0.00
Spiked Amount 100.000			Recovery =	19.212%		
46) 2-Fluorobiphenyl (S)	8.13	172	1267437	18.31256	ppb	0.00
Spiked Amount 100.000			Recovery =	18.313%		
64) 2,4,6-Tribromophenol (S)	9.85	330	256663	36.47674	ppb	0.00
Spiked Amount 200.000			Recovery =	18.239%		
82) Terphenyl-D14 (S)	12.51	244	1385929	18.53138	ppb	0.00
Spiked Amount 100.000			Recovery =	18.531%		

Target Compounds

	R.T.	QIon	Response	Conc	Units	Qvalue #
2) 1,4-Dioxane	1.74	58	6343	1.78753		40
3) n-Nitrosodimethylamine	1.97	42	110467	19.65117	ppb	99
4) Pyridine	1.99	79	287660	20.82293	ppb	98
7) Phenol	5.07	94	981147	21.01690	ppb	96
8) Aniline	5.10	93	1047674	21.82394	ppb	98
9) Bis (2-chloroethyl) ether	5.17	63	446038	20.68812	ppb	94
10) 2-Chlorophenol	5.23	128	681991	20.66769	ppb	97
11) 1,3-DCB	5.39	146	718229	20.40878	ppb	98
12) 1,4-DCB	5.49	146	731607	20.35996	ppb	98
13) Benzyl alcohol	5.62	108	427502	20.86251	ppb	100
14) 1,2-DCB	5.65	146	688805	20.68155	ppb	98
15) 2-Methylphenol	5.75	107	583589	20.77993	ppb	99
16) Bis (2-chloroisopropyl) et	5.76	45	677853	20.93213	ppb	98
17) Acetophenone	5.92	105	907012	21.16813	ppb	96
18) 3&4-Methylphenol	5.92	107	1404575	42.32633	ppb	100
19) n-Nitrosodi-n-propylamine	5.91	70	508956	21.09969	ppb	96
20) Hexachloroethane	6.02	117	267187	20.37551	ppb	91
23) Nitrobenzene	6.12	77	757965	20.48330	ppb	100
24) Isophorone	6.38	82	1341118	20.81504	ppb	96
25) 2-Nitrophenol	6.47	139	377174	20.80099	ppb	97
26) 2,4-Dimethylphenol	6.52	122	631247	21.01422	ppb	97
27) Benzoic acid	6.64	105	477365	20.56102	ppb	99
28) Bis (2-chloroethoxy) metha	6.62	93	832246	20.80697	ppb	99
29) 2,4-Dichlorophenol	6.75	162	535793	20.69550	ppb	99
30) 1,2,4-Trichlorobenzene	6.83	180	592289	20.55579	ppb	99
31) 3,4-Dimethylphenol	6.85	107	827785	20.40945	ppb	99
32) Naphthalene	6.92	128	2017143	20.57394	ppb	100
33) 4-Chloroaniline	6.99	127	816613	23.12180	ppb	99
34) 2,6-Dichlorophenol	7.00	162	533260	20.81659	ppb	99
35) Hexachloropropene	7.02	213	366301	20.91040	ppb	100
36) Hexachlorobutadiene	7.05	225	307988	20.51106	ppb	99
37) Caprolactum	7.40	55	270633	20.95717	ppb	97

(#) = qualifier out of range (m) = manual integration

Data File : M:\YODA\DATA\Y190124\0124Y033.D  
 Acq On : 28 Jan 19 13:36  
 Sample : 20ug/mL 8270 01/24/19  
 Misc :

Vial: 33  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Quant Time: Jan 28 13:50 2019

Quant Results File: Y0125NC.RES

Quant Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Mon Jan 28 12:35:34 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
38) 4-Chloro-3-methylphenol	7.55	107	605008	20.75534	ppb	99
39) 2-Methylnaphthalene	7.71	142	1318606	20.92289	ppb	99
40) 1-Methylnaphthalene	7.83	142	1305773	20.69797	ppb	100
42) Hexachlorocyclopentadiene	7.88	237	191376	21.57080	ppb	98
43) 1,2,4,5-Tetrachlorobenzene	7.91	216	551349	19.64363	ppb	100
44) 2,4,6-Trichlorophenol	8.04	196	361209	19.89672	ppb	99
45) 2,4,5-Trichlorophenol	8.09	196	406036	19.63299	ppb	96
47) 1,1'-Biphenyl	8.25	154	1655511	19.99468	ppb	99
48) 2-Chloronaphthalene	8.28	162	1256537	19.88748	ppb	98
49) 2-Nitroaniline	8.40	65	413623	20.12430	ppb	94
50) Dimethyl phthalate	8.60	163	1504216	20.21148	ppb	100
51) 2,6-DNT	8.68	165	341441	20.51423	ppb	# 80
52) Acenaphthylene	8.76	152	2020333	20.16825	ppb	100
53) 3-Nitroaniline	8.88	138	395406	21.11807	ppb	90
54) Acenaphthene	8.96	154	1294988	19.94266	ppb	99
55) 2,4-Dinitrophenol	9.01	184	164125	22.39567	ppb	93
56) 4-Nitrophenol	9.09	65	182439	16.32491	ppb	99
57) Dibenzofuran	9.16	168	1847609	20.28865	ppb	99
58) 2,4-DNT	9.15	165	457778	20.84223	ppb	94
59) 2,3,4,6-Tetrachlorophenol	9.31	232	304485	20.10263	ppb	97
60) Diethyl phthalate	9.42	149	1433219	20.26618	ppb	99
61) 4-Chlorophenyl phenyl ethe	9.55	204	715742	20.13953	ppb	98
62) Fluorene	9.56	166	1484736	20.34866	ppb	99
63) 4-Nitroaniline	9.60	138	403406	21.13706	ppb	99
66) 4,6-Dinitro-2-methylphenol	9.63	198	281851	19.79880	ppb	90
67) Diphenyl amine	9.70	169	2288686	39.99363	ppb	100
68) n-Nitrosodiphenylamine	9.70	169	2288686	39.99363	ppb	100
69) 1,2-Diphenylhydrazine	9.74	77	1552599	19.28814	ppb	90
70) 4-Bromophenyl phenyl ether	10.13	248	385777	20.00697	ppb	96
71) Hexachlorobenzene	10.19	284	358181	19.60977	ppb	# 82
72) Atrazine	10.31	200	195866	10.00458	ppb	98
73) Pentachlorophenol	10.43	266	207382	18.32753	ppb	99
74) Phenanthrene	10.68	178	2181956	19.92184	ppb	99
75) Anthracene	10.75	178	2233354	19.89161	ppb	100
76) Carbazol	10.94	167	2046080	20.08647	ppb	97
77) Di-n-butylphthalate	11.32	149	2449042	20.43049	ppb	100
78) Fluoranthene	12.08	202	2378299	20.22733	ppb	99
80) Benzidine	12.23	184	781270	23.13756	ppb	99
81) Pyrene	12.35	202	2455450	20.10623	ppb	100
83) Butyl benzylphthalate	13.07	149	1122474	20.60463	ppb	86
84) 3,3'-Dichlorobenzidine	13.70	252	800909	22.00303	ppb	# 96
85) Benz (a) anthracene	13.74	228	2089802	19.61471	ppb	100
86) Bis (2-ethylhexyl) phthala	13.72	149	1554697	20.44048	ppb	# 94
87) Chrysene	13.79	228	2116115	20.36358	ppb	99
88) Di-n-octylphthalate	14.48	149	2662183	20.67607	ppb	95
90) Benzo (b) fluoranthene	15.07	252	2063545	19.14984	ppb	99
91) Benzo (k) fluoranthene	15.10	252	2127884	20.66410	ppb	99
92) Benzo (a) pyrene	15.55	252	1946711	20.00326	ppb	98
93) Indeno (1,2,3-cd) pyrene	17.57	276	2006323	20.06100	ppb	99
94) Dibenz (a,h) anthracene	17.60	278	1821992	20.10773	ppb	99
95) Benzo (g,h,i) perylene	18.16	276	1772162	20.01866	ppb	100

Quantitation Report

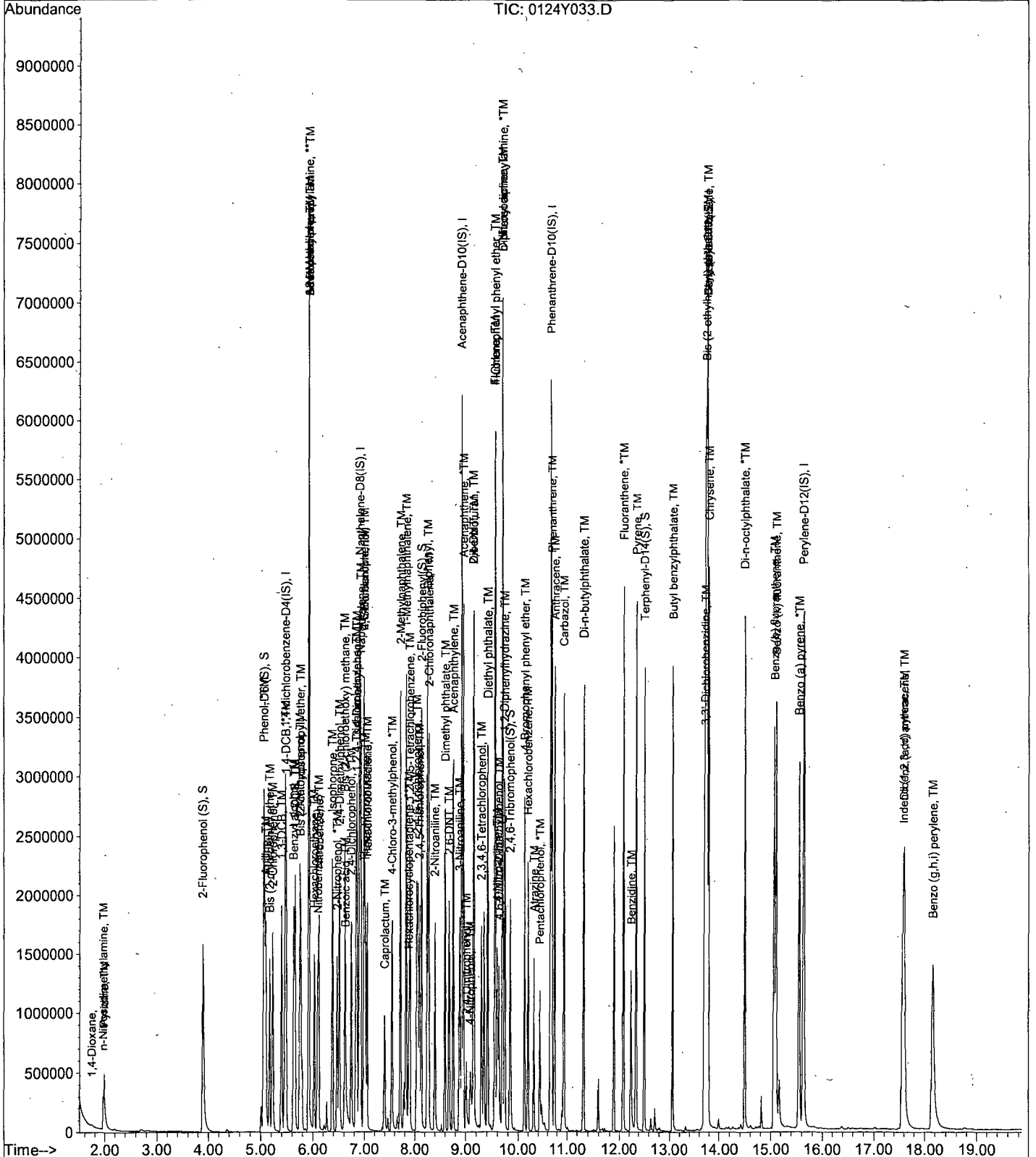
Data File : M:\YODA\DATA\Y190124\0124Y033.D  
Acq On : 28 Jan 19 13:36  
Sample : 20ug/mL 8270 01/24/19  
Misc :

Vial: 33  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Jan 28 13:50 2019

Quant Results File: Y0125NC.RES

Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Mon Jan 28 14:58:58 2019  
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : M:\YODA\DATA\Y190124\0124Y020.D  
 Acq On : 25 Jan 19 11:44  
 Sample : 40ug/mL 8270 01/24/19  
 Misc :

Vial: 20  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Quant Time: Jan 25 11:57 2019

Quant Results File: Y0125NC.RES

Quant Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Fri Jan 25 10:13:14 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.46	152	408392	40.00000	ppb	0.00
21) Napthalene-D8 (IS)	6.90	136	1826097	40.00000	ppb	0.00
41) Acenaphthene-D10 (IS)	8.92	164	1029111	40.00000	ppb	0.00
65) Phenanthrene-D10 (IS)	10.66	188	1952804	40.00000	ppb	0.00
79) Chrysene-D12 (IS)	13.75	240	1752683	40.00000	ppb	0.00
89) Perylene-D12 (IS)	15.63	264	1690710	40.00000	ppb	0.00

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
5) 2-Fluorophenol (S)	3.87	112	1576988	96.03480	ppb	0.00
Spiked Amount 200.000			Recovery =	48.018%		
6) Phenol-D6 (S)	5.05	99	2074169	95.72002	ppb	0.00
Spiked Amount 200.000			Recovery =	47.860%		
22) Nitrobenzene-D5 (S)	6.09	82	920567	45.10467	ppb	0.00
Spiked Amount 100.000			Recovery =	45.105%		
46) 2-Fluorobiphenyl (S)	8.13	172	1784780	43.52172	ppb	0.00
Spiked Amount 100.000			Recovery =	43.522%		
64) 2,4,6-Tribromophenol (S)	9.85	330	371290	88.61400	ppb	0.00
Spiked Amount 200.000			Recovery =	44.307%		
82) Terphenyl-D14 (S)	12.51	244	1928566	43.95301	ppb	0.00
Spiked Amount 100.000			Recovery =	43.953%		

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) 1,4-Dioxane	1.71	58	8893	4.60032		85
3) n-Nitrosodimethylamine	1.94	42	150528	46.74232	ppb	96
4) Pyridine	1.96	79	351271	44.18707	ppb	100
7) Phenol	5.07	94	1261343	46.82655	ppb	96
8) Aniline	5.09	93	1314100	62.04190	ppb	100
9) Bis (2-chloroethyl) ether	5.16	63	573382	43.98308	ppb	99
10) 2-Chlorophenol	5.22	128	874660	46.11987	ppb	100
11) 1,3-DCB	5.39	146	929323	46.62662	ppb	99
12) 1,4-DCB	5.48	146	938789	46.00154	ppb	99
13) Benzyl alcohol	5.63	108	549797	46.45135	ppb	96
14) 1,2-DCB	5.64	146	878821	46.40937	ppb	99
15) 2-Methylphenol	5.75	107	751943	47.78444	ppb	99
16) Bis (2-chloroisopropyl) et	5.77	45	847848	41.05298	ppb	100
17) Acetophenone	5.92	105	1139391	46.49578	ppb	97
18) 3&4-Methylphenol	5.92	107	1771636	93.15009	ppb	99
19) n-Nitrosodi-n-propylamine	5.92	70	633950	44.61799	ppb	99
20) Hexachloroethane	6.03	117	345343	45.34081	ppb	97
23) Nitrobenzene	6.12	77	969667	44.81490	ppb	99
24) Isophorone	6.38	82	1688334	44.66263	ppb	96
25) 2-Nitrophenol	6.47	139	489091	48.03698	ppb	100
26) 2,4-Dimethylphenol	6.52	122	810674	46.22740	ppb	98
27) Benzoic acid	6.65	105	618515	56.35463	ppb	99
28) Bis (2-chloroethoxy) metha	6.62	93	1041352	44.18621	ppb	99
29) 2,4-Dichlorophenol	6.75	162	700142	47.67577	ppb	100
30) 1,2,4-Trichlorobenzene	6.83	180	751549	45.52085	ppb	98
31) 3,4-Dimethylphenol	6.85	107	1077521	46.09716	ppb	98
32) Naphthalene	6.93	128	2565227	45.16039	ppb	100
33) 4-Chloroaniline	6.99	127	985263	45.18327	ppb	99
34) 2,6-Dichlorophenol	7.00	162	680077	46.24222	ppb	99
35) Hexachloropropene	7.02	213	468255	47.83385	ppb	99
36) Hexachlorobutadiene	7.06	225	393866	45.81648	ppb	98
37) Caprolactum	7.42	55	331158	48.21368	ppb	99

(#) = qualifier out of range (m) = manual integration

Data File : M:\YODA\DATA\Y190124\0124Y020.D  
 Acq On : 25 Jan 19 11:44  
 Sample : 40ug/mL 8270 01/24/19  
 Misc :

Vial: 20  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Quant Time: Jan 25 11:57 2019

Quant Results File: Y0125NC.RES

Quant Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Fri Jan 25 10:13:14 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
38) 4-Chloro-3-methylphenol	7.55	107	775271	46.64409	ppb	99
39) 2-Methylnaphthalene	7.71	142	1654926	45.58868	ppb	100
40) 1-Methylnaphthalene	7.83	142	1656365	45.28050	ppb	100
42) Hexachlorocyclopentadiene	7.88	237	260385	37.52819	ppb	99
43) 1,2,4,5-Tetrachlorobenzene	7.91	216	697052	43.25958	ppb	99
44) 2,4,6-Trichlorophenol	8.04	196	476510	46.12089	ppb	100
45) 2,4,5-Trichlorophenol	8.10	196	512115	43.18820	ppb	98
47) 1,1'-Biphenyl	8.25	154	2083441	44.06097	ppb	99
48) 2-Chloronaphthalene	8.28	162	1593407	44.06701	ppb	98
49) 2-Nitroaniline	8.40	65	526512	44.12615	ppb	97
50) Dimethyl phthalate	8.61	163	1878647	44.85122	ppb	100
51) 2,6-DNT	8.69	165	424850	46.29368	ppb	96
52) Acenaphthylene	8.76	152	2546320	45.04805	ppb	100
53) 3-Nitroaniline	8.88	138	493983	46.59969	ppb	93
54) Acenaphthene	8.96	154	1629656	44.02788	ppb	100
55) 2,4-Dinitrophenol	9.01	184	202328	49.83992	ppb	94
56) 4-Nitrophenol	9.09	65	252473	37.36787	ppb	99
57) Dibenzofuran	9.16	168	2296507	44.72552	ppb	99
58) 2,4-DNT	9.15	165	564838	46.45799	ppb	96
59) 2,3,4,6-Tetrachlorophenol	9.31	232	385457	44.53544	ppb	97
60) Diethyl phthalate	9.42	149	1780276	44.67228	ppb	100
61) 4-Chlorophenyl phenyl ethe	9.55	204	899275	44.93476	ppb	95
62) Fluorene	9.56	166	1851974	44.77181	ppb	100
63) 4-Nitroaniline	9.60	138	506599	47.29416	ppb	95
66) 4,6-Dinitro-2-methylphenol	9.64	198	350459	51.16538	ppb	92
67) Diphenyl amine	9.70	169	2815867	86.66649	ppb	100
68) n-Nitrosodiphenylamine	9.70	169	2815867	86.66649	ppb	100
69) 1,2-Diphenylhydrazine	9.74	77	1910724	40.62544	ppb	90
70) 4-Bromophenyl phenyl ether	10.13	248	481519	43.40023	ppb	96
71) Hexachlorobenzene	10.20	284	450841	42.81056	ppb	97
72) Atrazine	10.31	200	245469	21.89136	ppb	98
73) Pentachlorophenol	10.43	266	273044	44.84102	ppb	99
74) Phenanthrene	10.69	178	2727361	44.43391	ppb	99
75) Anthracene	10.75	178	2807769	44.55359	ppb	100
76) Carbazol	10.94	167	2523384	44.09131	ppb	97
77) Di-n-butylphthalate	11.33	149	3017620	44.85844	ppb	100
78) Fluoranthene	12.08	202	2906835	43.98185	ppb	100
80) Benzidine	12.24	184	898587	45.75595	ppb	99
81) Pyrene	12.35	202	3031839	44.58907	ppb	100
83) Butyl benzylphthalate	13.08	149	1379263	46.39175	ppb	97
84) 3,3'-Dichlorobenzidine	13.70	252	956135	47.45949	ppb	# 98
85) Benz (a) anthracene	13.74	228	2602250	44.02477	ppb	99
86) Bis (2-ethylhexyl) phtala	13.72	149	1887612	45.82238	ppb	# 95
87) Chrysene	13.79	228	2593818	44.52277	ppb	100
88) Di-n-octylphthalate	14.48	149	3283408	47.07623	ppb	# 94
90) Benzo (b) fluoranthene	15.07	252	2532432	43.64482	ppb	98
91) Benzo (k) fluoranthene	15.10	252	2611986	46.58763	ppb	98
92) Benzo (a) pyrene	15.55	252	2424047	45.72107	ppb	99
93) Indeno (1,2,3-cd) pyrene	17.57	276	2469600	46.03273	ppb	99
94) Dibenz (a,h) anthracene	17.60	278	2257333	45.81781	ppb	100
95) Benzo (g,h,i) perylene	18.17	276	2175059	45.42992	ppb	99



Quantitation Report

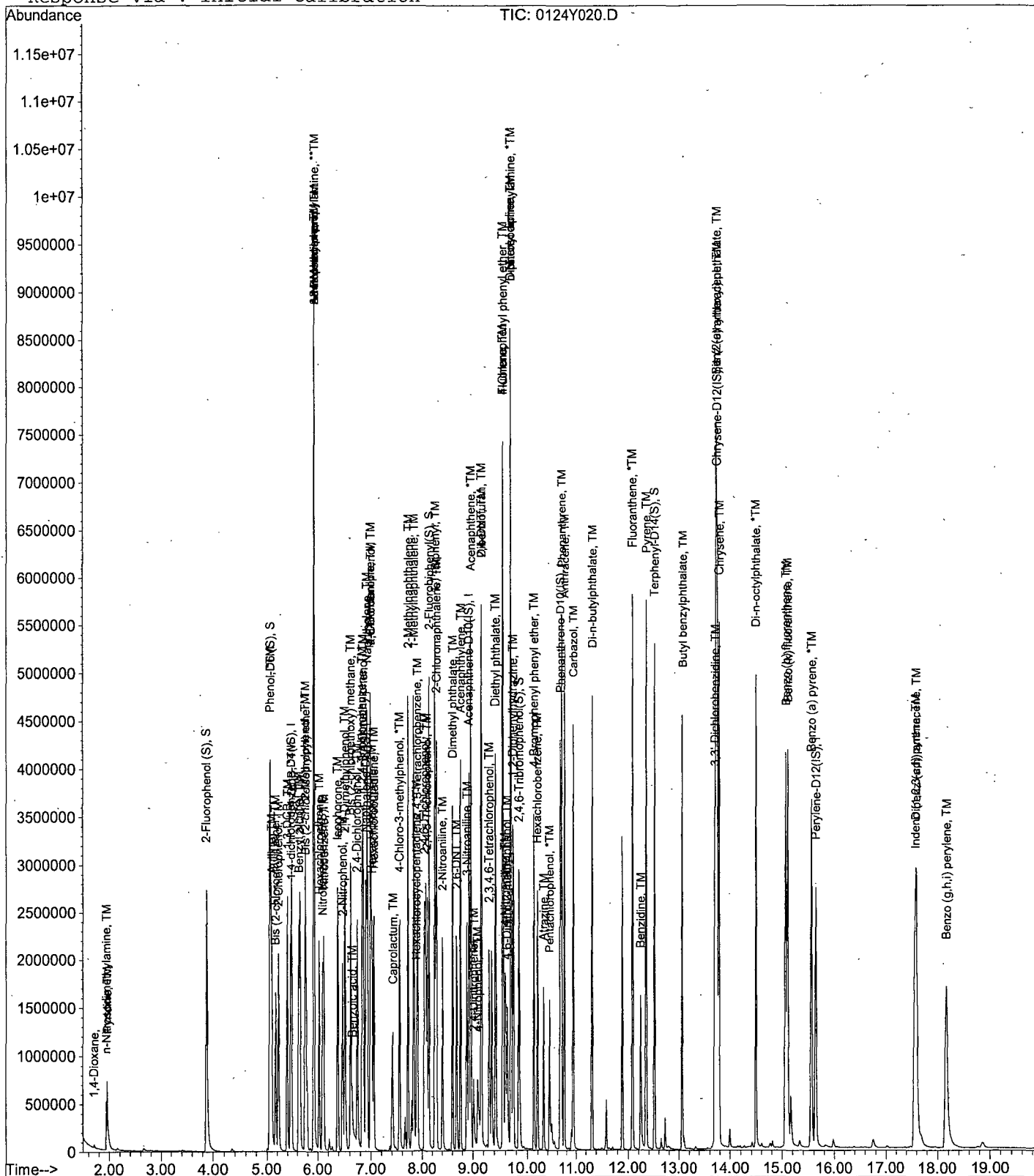
Data File : M:\YODA\DATA\Y190124\0124Y020.D  
 Acq On : 25 Jan 19 11:44  
 Sample : 40ug/mL 8270 01/24/19  
 Misc :

Vial: 20  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Quant Time: Jan 25 11:57 2019

Quant Results File: Y0125NC.RES

Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Mon Jan 28 14:58:58 2019  
 Response via : Initial Calibration



Data File : M:\YODA\DATA\Y190124\0124Y015.D  
 Acq On : 25 Jan 19 7:20  
 Sample : 50ug/mL 8270 01/24/19  
 Misc :

Vial: 15  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Quant Time: Jan 25 10:13 2019

Quant Results File: Y0125NC.RES

Quant Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Fri Jan 25 10:12:36 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.46	152	414061	40.00000	ppb	0.00
21) Napthalene-D8 (IS)	6.90	136	1774388	40.00000	ppb	0.00
41) Acenaphthene-D10 (IS)	8.92	164	1005371	40.00000	ppb	0.00
65) Phenanthrene-D10 (IS)	10.66	188	1908764	40.00000	ppb	0.00
79) Chrysene-D12 (IS)	13.76	240	1698051	40.00000	ppb	0.00
89) Perylene-D12 (IS)	15.63	264	1677536	40.00000	ppb	0.00

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
5) 2-Fluorophenol (S)	3.87	112	1774474	106.72722	ppb	0.00
Spiked Amount 200.000			Recovery =	53.363%		
6) Phenol-D6 (S)	5.05	99	2346261	106.80179	ppb	0.00
Spiked Amount 200.000			Recovery =	53.401%		
22) Nitrobenzene-D5 (S)	6.09	82	1051841	53.53683	ppb	0.00
Spiked Amount 100.000			Recovery =	53.537%		
46) 2-Fluorobiphenyl (S)	8.13	172	2016382	49.35001	ppb	0.00
Spiked Amount 100.000			Recovery =	49.350%		
64) 2,4,6-Tribromophenol (S)	9.85	330	419249	99.31143	ppb	0.00
Spiked Amount 200.000			Recovery =	49.656%		
82) Terphenyl-D14 (S)	12.51	244	2143936	48.39314	ppb	0.00
Spiked Amount 100.000			Recovery =	48.393%		

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) 1,4-Dioxane	1.71	58	12955	7.18240		100
3) n-Nitrosodimethylamine	1.94	42	194605	63.64599	ppb	100
4) Pyridine	1.96	79	516800	68.12982	ppb	100
7) Phenol	5.07	94	1641696	61.78760	ppb	100
8) Aniline	5.09	93	1713521	82.39935	ppb	100
9) Bis (2-chloroethyl) ether	5.16	63	757200	57.35908	ppb	100
10) 2-Chlorophenol	5.22	128	1145751	62.28435	ppb	100
11) 1,3-DCB	5.39	146	1211613	63.52942	ppb	100
12) 1,4-DCB	5.48	146	1231153	63.64076	ppb	100
13) Benzyl alcohol	5.63	108	730277	62.70332	ppb	100
14) 1,2-DCB	5.64	146	1145010	63.29364	ppb	100
15) 2-Methylphenol	5.75	107	987729	65.88002	ppb	100
16) Bis (2-chloroisopropyl) et	5.77	45	1119934	51.16664	ppb	100
17) Acetophenone	5.92	105	1477135	61.96329	ppb	100
18) 3&4-Methylphenol	5.92	107	2314803	124.31319	ppb	100
19) n-Nitrosodi-n-propylamine	5.92	70	836205	59.16615	ppb	100
20) Hexachloroethane	6.03	117	457500	61.65493	ppb	100
23) Nitrobenzene	6.12	77	1288575	64.37919	ppb	100
24) Isophorone	6.39	82	2269915	63.52050	ppb	100
25) 2-Nitrophenol	6.47	139	638487	71.65350	ppb	100
26) 2,4-Dimethylphenol	6.52	122	1082343	66.00996	ppb	100
27) Benzoic acid	6.66	105	869869	86.91271	ppb	100
28) Bis (2-chloroethoxy) metha	6.62	93	1383448	61.85884	ppb	100
29) 2,4-Dichlorophenol	6.75	162	934592	67.52420	ppb	100
30) 1,2,4-Trichlorobenzene	6.83	180	987733	65.79606	ppb	100
31) 3,4-Dimethylphenol	6.85	107	1444182	66.18149	ppb	100
32) Napthalene	6.93	128	3403361	64.67306	ppb	100
33) 4-Chloroaniline	6.99	127	1270710	63.23385	ppb	100
34) 2,6-Dichlorophenol	7.00	162	898322	66.24065	ppb	100
35) Hexachloropropene	7.02	213	627626	71.42681	ppb	100
36) Hexachlorobutadiene	7.06	225	511358	64.87426	ppb	100
37) Caprolactum	7.43	55	453404	59.77045	ppb	100

Data File : M:\YODA\DATA\Y190124\0124Y015.D  
 Acq On : 25 Jan 19 7:20  
 Sample : 50ug/mL 8270 01/24/19  
 Misc :

Vial: 15  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Quant Time: Jan 25 10:13 2019

Quant Results File: Y0125NC.RES

Quant Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Fri Jan 25 10:12:36 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
38) 4-Chloro-3-methylphenol	7.55	107	1035975	66.78669	ppb	100
39) 2-Methylnaphthalene	7.71	142	2184777	65.39842	ppb	100
40) 1-Methylnaphthalene	7.83	142	2179083	65.09430	ppb	100
42) Hexachlorocyclopentadiene	7.88	237	378734	51.68775	ppb	100
43) 1,2,4,5-Tetrachlorobenzene	7.91	216	930158	58.66291	ppb	100
44) 2,4,6-Trichlorophenol	8.04	196	639238	61.33524	ppb	100
45) 2,4,5-Trichlorophenol	8.10	196	685751	61.10232	ppb	100
47) 1,1'-Biphenyl	8.25	154	2732730	59.14192	ppb	100
48) 2-Chloronaphthalene	8.28	162	2068546	58.85563	ppb	100
49) 2-Nitroaniline	8.40	65	708868	60.17019	ppb	100
50) Dimethyl phthalate	8.61	163	2488618	61.67396	ppb	100
51) 2,6-DNT	8.69	165	567043	67.49549	ppb	100
52) Acenaphthylene	8.76	152	3341916	61.09854	ppb	100
53) 3-Nitroaniline	8.88	138	641142	63.33110	ppb	100
54) Acenaphthene	8.96	154	2149307	59.59678	ppb	100
55) 2,4-Dinitrophenol	9.01	184	278852	68.71932	ppb	100
56) 4-Nitrophenol	9.09	65	384761	54.00246	ppb	100
57) Dibenzofuran	9.16	168	2994672	60.39932	ppb	100
58) 2,4-DNT	9.15	165	749501	67.45448	ppb	100
59) 2,3,4,6-Tetrachlorophenol	9.31	232	512262	61.78663	ppb	100
60) Diethyl phthalate	9.42	149	2355039	60.70661	ppb	100
61) 4-Chlorophenyl phenyl ethe	9.55	204	1161750	60.24333	ppb	100
62) Fluorene	9.56	166	2412535	60.26614	ppb	100
63) 4-Nitroaniline	9.61	138	666535	66.05633	ppb	100
66) 4,6-Dinitro-2-methylphenol	9.64	198	472238	66.77560	ppb	100
67) Diphenyl amine	9.70	169	3715091	115.17640	ppb	100
68) n-Nitrosodiphenylamine	9.70	169	3715091	115.17640	ppb	100
69) 1,2-Diphenylhydrazine	9.75	77	2569030	53.01351	ppb	100
70) 4-Bromophenyl phenyl ether	10.13	248	628479	56.04009	ppb	100
71) Hexachlorobenzene	10.20	284	592346	55.25050	ppb	100
72) Atrazine	10.32	200	326684	29.75859	ppb	100
73) Pentachlorophenol	10.43	266	388571	58.76203	ppb	100
74) Phenanthrene	10.69	178	3576095	59.32245	ppb	100
75) Anthracene	10.75	178	3661605	59.15429	ppb	100
76) Carbazol	10.95	167	3335622	59.38406	ppb	100
77) Di-n-butylphthalate	11.33	149	4032317	61.27161	ppb	100
78) Fluoranthene	12.08	202	3849484	59.64433	ppb	100
80) Benzidine	12.24	184	1164345	61.38179	ppb	100
81) Pyrene	12.35	202	3982978	61.11597	ppb	100
83) Butyl benzylphthalate	13.08	149	1829888	65.61444	ppb	100
84) 3,3'-Dichlorobenzidine	13.71	252	1264021	68.03546	ppb	100
85) Benz (a) anthracene	13.74	228	3532562	62.40700	ppb	100
86) Bis (2-ethylhexyl) phtala	13.73	149	2582639	68.57527	ppb	100
87) Chrysene	13.79	228	3286756	58.09122	ppb	100
88) Di-n-octylphthalate	14.49	149	4410272	68.44635	ppb	100
90) Benzo (b) fluoranthene	15.08	252	3673387	63.09472	ppb	100
91) Benzo (k) fluoranthene	15.11	252	3156080	56.25376	ppb	100
92) Benzo (a) pyrene	15.55	252	3221278	60.77698	ppb	100
93) Indeno (1,2,3-cd) pyrene	17.58	276	3312285	62.28582	ppb	100
94) Dibenz (a,h) anthracene	17.61	278	3013495	61.57009	ppb	100
95) Benzo (g,h,i) perylene	18.17	276	2934416	61.60401	ppb	100

Quantitation Report

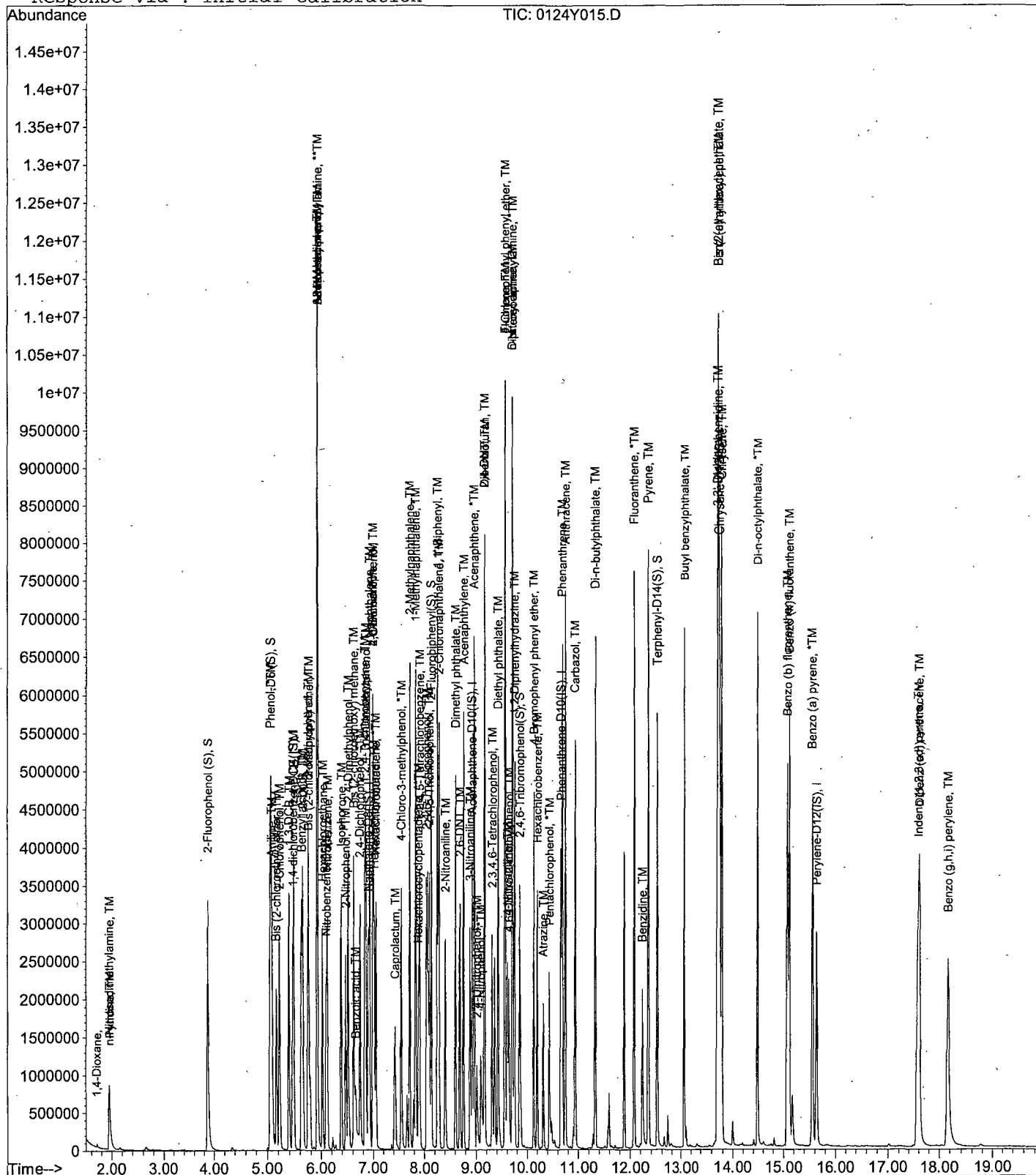
Data File : M:\YODA\DATA\Y190124\0124Y015.D  
Acq On : 25 Jan 19 7:20  
Sample : 50ug/mL 8270 01/24/19  
Misc :

Vial: 15  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Jan 25 10:13 2019

Quant Results File: Y0125NC.RES

Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Mon Jan 28 14:58:58 2019  
Response via : Initial Calibration



Data File : M:\YODA\DATA\Y190124\0124Y021.D  
 Acq On : 25 Jan 19 12:11  
 Sample : 60ug/mL 8270 01/24/19  
 Misc :

Vial: 21  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Quant Time: Jan 25 12:29 2019

Quant Results File: Y0125NC.RES

Quant Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Fri Jan 25 10:13:14 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev (Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.46	152	411492	40.00000	ppb	0.00
21) Napthalene-D8 (IS)	6.91	136	1847622	40.00000	ppb	0.00
41) Acenaphthene-D10 (IS)	8.92	164	1087788	40.00000	ppb	0.00
65) Phenanthrene-D10 (IS)	10.67	188	2043698	40.00000	ppb	0.00
79) Chrysene-D12 (IS)	13.76	240	1825170	40.00000	ppb	0.00
89) Perylene-D12 (IS)	15.63	264	1822854	40.00000	ppb	0.00

System Monitoring Compounds

5) 2-Fluorophenol (S)	3.88	112	2388786	139.91173	ppb	0.00
Spiked Amount 200.000			Recovery =	69.956%		
6) Phenol-D6 (S)	5.06	99	3094929	137.28392	ppb	0.00
Spiked Amount 200.000			Recovery =	68.642%		
22) Nitrobenzene-D5 (S)	6.10	82	1385267	65.82130	ppb	0.00
Spiked Amount 100.000			Recovery =	65.821%		
46) 2-Fluorobiphenyl (S)	8.14	172	2691759	61.53111	ppb	0.00
Spiked Amount 100.000			Recovery =	61.531%		
64) 2,4,6-Tribromophenol (S)	9.86	330	566249	127.04869	ppb	0.00
Spiked Amount 200.000			Recovery =	63.525%		
82) Terphenyl-D14 (S)	12.51	244	2859499	61.98232	ppb	0.00
Spiked Amount 100.000			Recovery =	61.982%		

Target Compounds

	R.T.	QIon	Response	Conc	Units	Qvalue
2) 1,4-Dioxane	1.71	58	15055	7.35395		98
3) n-Nitrosodimethylamine	1.94	42	234687	69.57953	ppb	92
4) Pyridine	1.96	79	559879	67.49718	ppb	99
7) Phenol	5.08	94	1903943	67.69059	ppb	90
8) Aniline	5.09	93	2005258	97.05679	ppb	93
9) Bis (2-chloroethyl) ether	5.17	63	859457	63.95748	ppb	96
10) 2-Chlorophenol	5.23	128	1328278	67.03092	ppb	95
11) 1,3-DCB	5.39	146	1398342	66.86645	ppb	99
12) 1,4-DCB	5.48	146	1428123	66.71691	ppb	99
13) Benzyl alcohol	5.62	108	844806	68.44766	ppb	99
14) 1,2-DCB	5.65	146	1327093	66.81074	ppb	97
15) 2-Methylphenol	5.75	107	1147188	69.20556	ppb	98
16) Bis (2-chloroisopropyl) et	5.76	45	1276374	60.79362	ppb	# 93
17) Acetophenone	5.92	105	1686876	65.70510	ppb	96
18) 3&4-Methylphenol	5.93	107	2667787	134.04591	ppb	98
19) n-Nitrosodi-n-propylamine	5.92	70	955387	64.70552	ppb	97
20) Hexachloroethane	6.02	117	527414	66.49643	ppb	92
23) Nitrobenzene	6.12	77	1480669	65.69034	ppb	96
24) Isophorone	6.39	82	2591162	65.95824	ppb	97
25) 2-Nitrophenol	6.47	139	753885	70.14750	ppb	95
26) 2,4-Dimethylphenol	6.52	122	1197903	65.32117	ppb	99
27) Benzoic acid	6.67	105	1033459	86.56029	ppb	99
28) Bis (2-chloroethoxy) metha	6.62	93	1598772	65.35066	ppb	99
29) 2,4-Dichlorophenol	6.75	162	1084013	70.36616	ppb	98
30) 1,2,4-Trichlorobenzene	6.83	180	1142665	66.06580	ppb	99
31) 3,4-Dimethylphenol	6.86	107	1677901	68.69908	ppb	97
32) Napthalene	6.92	128	3904346	65.86913	ppb	100
33) 4-Chloroaniline	7.00	127	1455527	64.54043	ppb	97
34) 2,6-Dichlorophenol	7.00	162	1036115	67.19592	ppb	98
35) Hexachloropropene	7.02	213	735631	71.37657	ppb	99
36) Hexachlorobutadiene	7.05	225	598218	66.49856	ppb	99
37) Caprolactum	7.43	55	523076	73.96100	ppb	99

Data File : M:\YODA\DATA\Y190124\0124Y021.D  
 Acq On : 25 Jan 19 12:11  
 Sample : 60ug/mL 8270 01/24/19  
 Misc :

Vial: 21  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Quant Time: Jan 25 12:29 2019

Quant Results File: Y0125NC.RES

Quant Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Fri Jan 25 10:13:14 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
38) 4-Chloro-3-methylphenol	7.55	107	1202951	69.24052	ppb	95
39) 2-Methylnaphthalene	7.71	142	2558030	67.41383	ppb	99
40) 1-Methylnaphthalene	7.83	142	2522812	65.98369	ppb	100
42) Hexachlorocyclopentadiene	7.89	237	465849	58.92991	ppb	98
43) 1,2,4,5-Tetrachlorobenzene	7.91	216	1099351	63.54491	ppb	99
44) 2,4,6-Trichlorophenol	8.05	196	747759	67.19329	ppb	98
45) 2,4,5-Trichlorophenol	8.10	196	803269	63.02165	ppb	94
47) 1,1'-Biphenyl	8.25	154	3182683	62.55468	ppb	99
48) 2-Chloronaphthalene	8.28	162	2416128	62.03380	ppb	99
49) 2-Nitroaniline	8.41	65	813392	63.67971	ppb	88
50) Dimethyl phthalate	8.60	163	2911438	64.28604	ppb	99
51) 2,6-DNT	8.69	165	674079	67.65007	ppb	89
52) Acenaphthylene	8.76	152	3906723	63.98517	ppb	100
53) 3-Nitroaniline	8.89	138	758104	66.12012	ppb	90
54) Acenaphthene	8.97	154	2490018	62.43796	ppb	100
55) 2,4-Dinitrophenol	9.02	184	374823	82.05906	ppb	89
56) 4-Nitrophenol	9.09	65	466498	66.71350	ppb	98
57) Dibenzofuran	9.16	168	3479456	62.68371	ppb	98
58) 2,4-DNT	9.16	165	881163	66.74748	ppb	93
59) 2,3,4,6-Tetrachlorophenol	9.31	232	607779	65.40593	ppb	96
60) Diethyl phthalate	9.43	149	2733586	63.51185	ppb	98
61) 4-Chlorophenyl phenyl ethe	9.56	204	1352119	62.49603	ppb	90
62) Fluorene	9.57	166	2782910	62.35255	ppb	100
63) 4-Nitroaniline	9.62	138	729227	62.72259	ppb	94
66) 4,6-Dinitro-2-methylphenol	9.64	198	571889	76.48129	ppb	91
67) Diphenyl amine	9.71	169	4324107	125.43365	ppb	100
68) n-Nitrosodiphenylamine	9.71	169	4324107	125.43365	ppb	100
69) 1,2-Diphenylhydrazine	9.75	77	2948425	59.57822	ppb	96
70) 4-Bromophenyl phenyl ether	10.13	248	751419	64.07488	ppb	96
71) Hexachlorobenzene	10.20	284	698037	62.77685	ppb	93
72) Atrazine	10.32	200	375225	31.55538	ppb	99
73) Pentachlorophenol	10.43	266	452076	70.41952	ppb	98
74) Phenanthrene	10.69	178	4126819	63.01664	ppb	100
75) Anthracene	10.75	178	4232567	62.94612	ppb	100
76) Carbazol	10.94	167	3854357	63.29312	ppb	98
77) Di-n-butylphthalate	11.32	149	4548380	63.48597	ppb	99
78) Fluoranthene	12.08	202	4467332	63.49679	ppb	98
80) Benzidine	12.24	184	1392654	66.15707	ppb	97
81) Pyrene	12.35	202	4582066	63.30843	ppb	100
83) Butyl benzylphthalate	13.08	149	2123881	66.71496	ppb	97
84) 3,3'-Dichlorobenzidine	13.71	252	1450726	67.29146	ppb	99
85) Benz (a) anthracene	13.74	228	4063341	64.69439	ppb	99
86) Bis (2-ethylhexyl) phthala	13.73	149	2855356	64.56887	ppb	98
87) Chrysene	13.78	228	3930215	63.46061	ppb	100
88) Di-n-octylphthalate	14.49	149	5023122	67.13574	ppb	98
90) Benzo (b) fluoranthene	15.08	252	4110006	64.78398	ppb	99
91) Benzo (k) fluoranthene	15.11	252	3831221	62.41409	ppb	98
92) Benzo (a) pyrene	15.56	252	3751562	64.72168	ppb	98
93) Indeno (1,2,3-cd) pyrene	17.58	276	3829234	65.10334	ppb	99
94) Dibenz (a,h) anthracene	17.62	278	3476233	64.50384	ppb	98
95) Benzo (g,h,i) perylene	18.18	276	3368865	64.36887	ppb	99

Quantitation Report

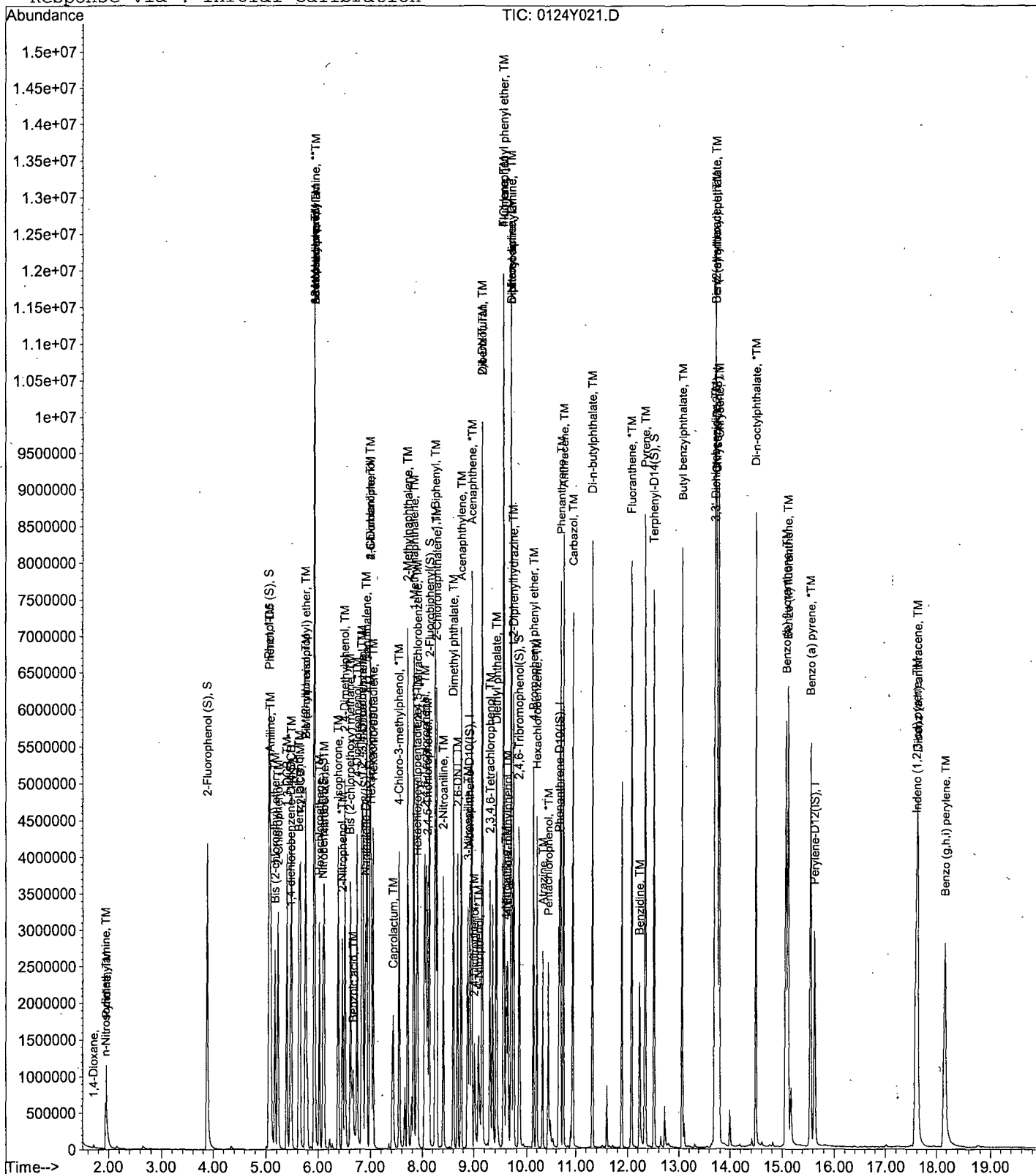
Data File : M:\YODA\DATA\Y190124\0124Y021.D  
Acq On : 25 Jan 19 12:11  
Sample : 60ug/mL 8270 01/24/19  
Misc :

Vial: 21  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Jan 25 12:29 2019

Quant Results File: Y0125NC.RES

Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Mon Jan 28 14:58:58 2019  
Response via : Initial Calibration



Data File : M:\YODA\DATA\Y190124\0124Y022.D Vial: 22  
 Acq On : 25 Jan 19 12:39 Operator: MA  
 Sample : 80ug/mL 8270 01/24/19 Inst : Yoda  
 Misc : Multiplr: 1.00

Quant Time: Jan 25 13:02 2019 Quant Results File: Y0125NC.RES

Quant Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Fri Jan 25 10:13:14 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev (Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.46	152	390377	40.00000	ppb	0.00
21) Napthalene-D8 (IS)	6.91	136	1776812	40.00000	ppb	0.00
41) Acenaphthene-D10 (IS)	8.92	164	1059625	40.00000	ppb	0.00
65) Phenanthrene-D10 (IS)	10.67	188	2046360	40.00000	ppb	0.00
79) Chrysene-D12 (IS)	13.76	240	1763849	40.00000	ppb	0.00
89) Perylene-D12 (IS)	15.64	264	1771022	40.00000	ppb	0.00

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev (Min)
5) 2-Fluorophenol (S)	3.88	112	3088976	185.47310	ppb	0.00
Spiked Amount 200.000			Recovery =	92.737%		
6) Phenol-D6 (S)	5.06	99	3953802	179.89705	ppb	0.00
Spiked Amount 200.000			Recovery =	89.949%		
22) Nitrobenzene-D5 (S)	6.10	82	1804113	87.68532	ppb	0.00
Spiked Amount 100.000			Recovery =	87.685%		
46) 2-Fluorobiphenyl (S)	8.14	172	3420176	79.89967	ppb	0.00
Spiked Amount 100.000			Recovery =	79.900%		
64) 2,4,6-Tribromophenol (S)	9.86	330	727255	167.25732	ppb	0.00
Spiked Amount 200.000			Recovery =	83.629%		
82) Terphenyl-D14 (S)	12.52	244	3667120	82.00033	ppb	0.00
Spiked Amount 100.000			Recovery =	82.000%		

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) 1,4-Dioxane	1.71	58	15511	7.51444		72
3) n-Nitrosodimethylamine	1.94	42	288229	86.04170	ppb	89
4) Pyridine	1.96	79	697679	84.73709	ppb	100
7) Phenol	5.08	94	2358274	85.23173	ppb	91
8) Aniline	5.10	93	2489180	119.40676	ppb	98
9) Bis (2-chloroethyl) ether	5.17	63	1076644	82.53804	ppb	95
10) 2-Chlorophenol	5.23	128	1672258	85.80938	ppb	97
11) 1,3-DCB	5.39	146	1778320	86.15822	ppb	98
12) 1,4-DCB	5.49	146	1787289	84.50692	ppb	98
13) Benzyl alcohol	5.63	108	1072292	88.46892	ppb	94
14) 1,2-DCB	5.65	146	1667744	85.09298	ppb	97
15) 2-Methylphenol	5.75	107	1433948	87.27826	ppb	99
16) Bis (2-chloroisopropyl) et	5.76	45	1590546	79.05994	ppb	# 86
17) Acetophenone	5.93	105	2108764	83.42297	ppb	97
18) 3&4-Methylphenol	5.93	107	3310187	168.84789	ppb	100
19) n-Nitrosodi-n-propylamine	5.93	70	1192858	82.57022	ppb	99
20) Hexachloroethane	6.02	117	671891	86.23765	ppb	90
23) Nitrobenzene	6.13	77	1859324	83.03849	ppb	97
24) Isophorone	6.39	82	3268065	83.85452	ppb	99
25) 2-Nitrophenol	6.48	139	941527	87.24439	ppb	94
26) 2,4-Dimethylphenol	6.52	122	1495864	82.27582	ppb	98
27) Benzoic acid	6.69	105	1172491	94.71906	ppb	98
28) Bis (2-chloroethoxy) metha	6.63	93	2006734	82.81745	ppb	100
29) 2,4-Dichlorophenol	6.75	162	1363953	88.32544	ppb	97
30) 1,2,4-Trichlorobenzene	6.84	180	1449991	84.05610	ppb	97
31) 3,4-Dimethylphenol	6.86	107	2084631	85.46152	ppb	98
32) Naphthalene	6.93	128	4875097	82.59448	ppb	100
33) 4-Chloroaniline	7.00	127	1725667	77.69143	ppb	97
34) 2,6-Dichlorophenol	7.00	162	1301355	84.49556	ppb	98
35) Hexachloropropene	7.02	213	924461	89.22651	ppb	99
36) Hexachlorobutadiene	7.05	225	757876	84.43582	ppb	98
37) Caprolactum	7.44	55	654459	93.87552	ppb	100



Data File : M:\YODA\DATA\Y190124\0124Y022.D  
 Acq On : 25 Jan 19 12:39  
 Sample : 80ug/mL 8270 01/24/19  
 Misc :

Vial: 22  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Quant Time: Jan 25 13:02 2019

Quant Results File: Y0125NC.RES

Quant Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Fri Jan 25 10:13:14 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
38) 4-Chloro-3-methylphenol	7.56	107	1513654	87.06098	ppb	100
39) 2-Methylnaphthalene	7.71	142	3146756	82.97836	ppb	99
40) 1-Methylnaphthalene	7.83	142	3133044	82.22878	ppb	99
42) Hexachlorocyclopentadiene	7.89	237	631254	78.79714	ppb	98
43) 1,2,4,5-Tetrachlorobenzene	7.91	216	1335660	77.68918	ppb	99
44) 2,4,6-Trichlorophenol	8.05	196	929432	83.85905	ppb	97
45) 2,4,5-Trichlorophenol	8.10	196	997882	78.83150	ppb	97
47) 1,1'-Biphenyl	8.26	154	3955801	78.21989	ppb	98
48) 2-Chloronaphthalene	8.29	162	3015805	77.95661	ppb	98
49) 2-Nitroaniline	8.41	65	1018616	80.87427	ppb	92
50) Dimethyl phthalate	8.61	163	3609843	79.88493	ppb	99
51) 2,6-DNT	8.70	165	844260	84.43330	ppb	91
52) Acenaphthylene	8.76	152	4822141	79.16164	ppb	100
53) 3-Nitroaniline	8.89	138	928189	81.28531	ppb	94
54) Acenaphthene	8.97	154	3056253	77.17140	ppb	100
55) 2,4-Dinitrophenol	9.02	184	460548	96.14185	ppb	91
56) 4-Nitrophenol	9.10	65	601091	88.48440	ppb	95
57) Dibenzofuran	9.16	168	4265758	77.08443	ppb	97
58) 2,4-DNT	9.16	165	1090701	82.46328	ppb	97
59) 2,3,4,6-Tetrachlorophenol	9.31	232	767671	83.24367	ppb	95
60) Diethyl phthalate	9.43	149	3348639	78.15623	ppb	100
61) 4-Chlorophenyl phenyl ethe	9.56	204	1662617	77.15444	ppb	93
62) Fluorene	9.57	166	3410866	76.86824	ppb	100
63) 4-Nitroaniline	9.62	138	896039	77.75631	ppb	99
66) 4,6-Dinitro-2-methylphenol	9.64	198	741553	95.23484	ppb	99
67) Diphenyl amine	9.71	169	5296492	150.79364	ppb	100
68) n-Nitrosodiphenylamine	9.71	169	5296492	150.79364	ppb	100
69) 1,2-Diphenylhydrazine	9.75	77	4242116	84.81525	ppb	94
70) 4-Bromophenyl phenyl ether	10.14	248	926151	77.57348	ppb	88
71) Hexachlorobenzene	10.20	284	875905	77.71894	ppb	91
72) Atrazine	10.32	200	471083	38.93444	ppb	98
73) Pentachlorophenol	10.44	266	574673	88.00062	ppb	97
74) Phenanthrene	10.69	178	5093537	76.13277	ppb	100
75) Anthracene	10.75	178	5251660	76.54085	ppb	100
76) Carbazol	10.94	167	4781015	76.94485	ppb	98
77) Di-n-butylphthalate	11.32	149	5725493	78.34953	ppb	99
78) Fluoranthene	12.09	202	5499034	76.51468	ppb	97
80) Benzidine	12.24	184	1704671	73.49542	ppb	97
81) Pyrene	12.35	202	5693688	79.55389	ppb	99
83) Butyl benzylphthalate	13.08	149	2651101	83.69807	ppb	94
84) 3,3'-Dichlorobenzidine	13.71	252	1750394	81.51398	ppb	98
85) Benz (a) anthracene	13.75	228	4939935	79.29669	ppb	99
86) Bis (2-ethylhexyl) phthala	13.73	149	3478919	78.91435	ppb	98
87) Chrysene	13.79	228	4874253	79.65689	ppb	99
88) Di-n-octylphthalate	14.49	149	6257268	83.98293	ppb	97
90) Benzo (b) fluoranthene	15.07	252	4954951	78.33436	ppb	99
91) Benzo (k) fluoranthene	15.12	252	4952396	81.94906	ppb	99
92) Benzo (a) pyrene	15.56	252	4659102	81.23823	ppb	99
93) Indeno (1,2,3-cd) pyrene	17.59	276	4779081	81.77579	ppb	99
94) Dibenz (a,h) anthracene	17.62	278	4328036	81.09588	ppb	99
95) Benzo (g,h,i) perylene	18.18	276	4252951	81.97289	ppb	99

Quantitation Report

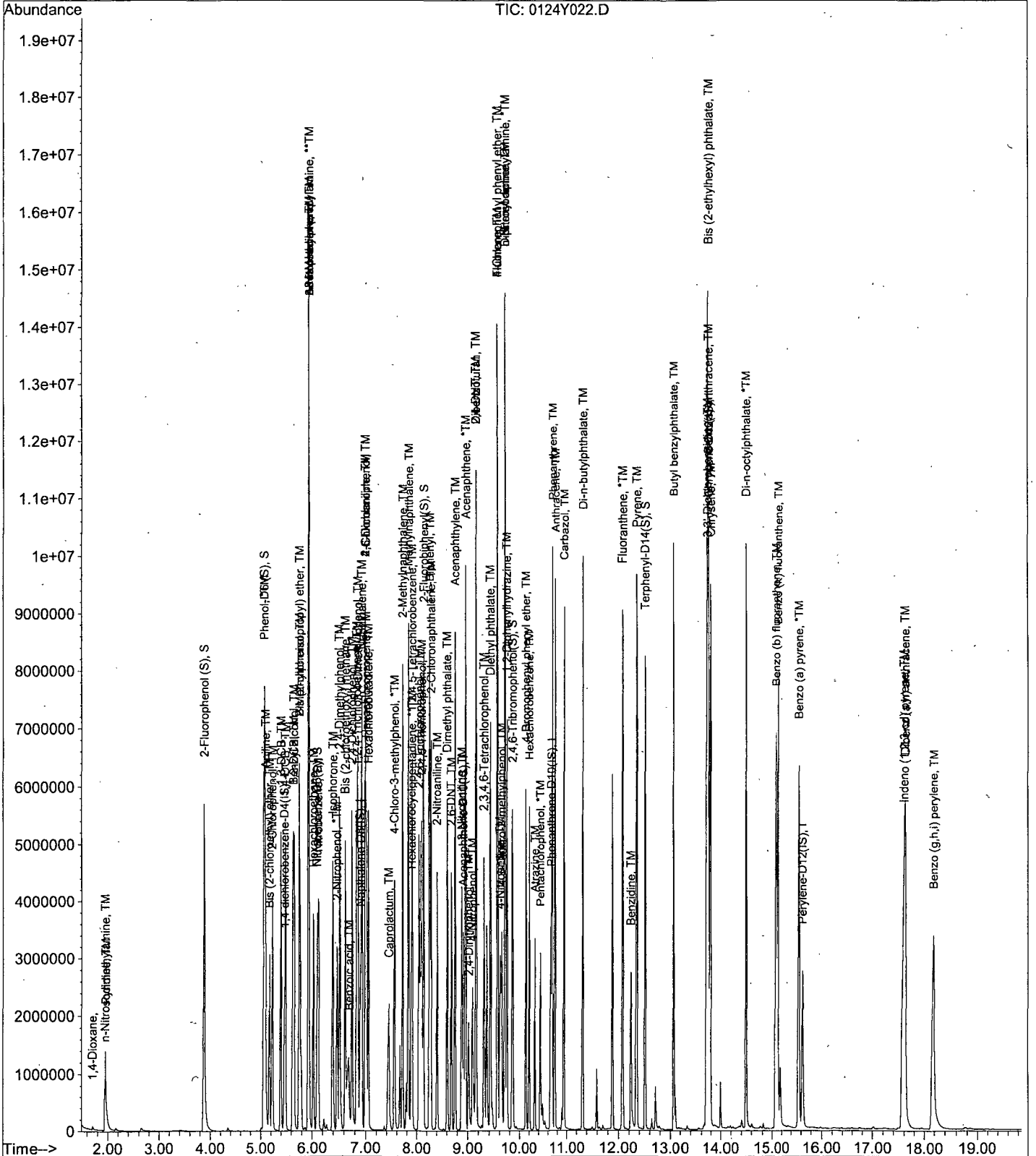
Data File : M:\YODA\DATA\Y190124\0124Y022.D  
Acq On : 25 Jan 19 12:39  
Sample : 80ug/mL 8270 01/24/19  
Misc :

Vial: 22  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Jan 25 13:02 2019

Quant Results File: Y0125NC.RES

Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Mon Jan 28 14:58:58 2019  
Response via : Initial Calibration



Data File : M:\YODA\DATA\Y190124\0124Y023.D Vial: 23  
 Acq On : 25 Jan 19 13:07 Operator: MA  
 Sample : 100ug/mL 8270 01/24/19 Inst : Yoda  
 Misc : Multiplr: 1.00

Quant Time: Jan 25 13:25 2019 Quant Results File: Y0125NC.RES

Quant Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Fri Jan 25 10:13:14 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.47	152	369028	40.00000	ppb	0.00
21) Napthalene-D8 (IS)	6.91	136	1684122	40.00000	ppb	0.00
41) Acenaphthene-D10 (IS)	8.93	164	958383	40.00000	ppb	0.00
65) Phenanthrene-D10 (IS)	10.67	188	1833191	40.00000	ppb	0.00
79) Chrysene-D12 (IS)	13.76	240	1593355	40.00000	ppb	0.00
89) Perylene-D12 (IS)	15.64	264	1574038	40.00000	ppb	0.00

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
5) 2-Fluorophenol (S)	3.88	112	3517772	218.05743	ppb	0.00
Spiked Amount						
						Recovery = 109.029%
6) Phenol-D6 (S)	5.07	99	4506620	212.13191	ppb	0.02
Spiked Amount						Recovery = 106.066%
22) Nitrobenzene-D5 (S)	6.10	82	2075102	104.76853	ppb	0.00
Spiked Amount						Recovery = 104.769%
46) 2-Fluorobiphenyl (S)	8.14	172	3864993	99.49368	ppb	0.00
Spiked Amount						Recovery = 99.494%
64) 2,4,6-Tribromophenol (S)	9.86	330	843089	213.66568	ppb	0.00
Spiked Amount						Recovery = 106.833%
82) Terphenyl-D14 (S)	12.52	244	4235562	104.75775	ppb	0.00
Spiked Amount						Recovery = 104.758%

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) 1,4-Dioxane	1.71	58	21223	10.61042		85
3) n-Nitrosodimethylamine	1.95	42	378062	115.37176	ppb	78
4) Pyridine	1.96	79	911139	113.60957	ppb	98
7) Phenol	5.09	94	2940939	109.44414	ppb	# 75
8) Aniline	5.10	93	3113942	135.46800	ppb	96
9) Bis (2-chloroethyl) ether	5.17	63	1375041	109.91033	ppb	98
10) 2-Chlorophenol	5.23	128	2131761	112.54263	ppb	98
11) 1,3-DCB	5.39	146	2244057	111.37429	ppb	98
12) 1,4-DCB	5.49	146	2268718	110.04841	ppb	98
13) Benzyl alcohol	5.63	108	1342620	113.91313	ppb	99
14) 1,2-DCB	5.65	146	2103625	110.13676	ppb	98
15) 2-Methylphenol	5.75	107	1832669	113.94939	ppb	99
16) Bis (2-chloroisopropyl) et	5.76	45	1993329	104.61607	ppb	# 76
17) Acetophenone	5.93	105	2632203	106.93049	ppb	90
18) 3&4-Methylphenol	5.94	107	4146604	217.27081	ppb	97
19) n-Nitrosodi-n-propylamine	5.93	70	1501508	107.49302	ppb	98
20) Hexachloroethane	6.02	117	848109	112.09751	ppb	89
23) Nitrobenzene	6.13	77	2342621	107.56140	ppb	100
24) Isophorone	6.40	82	4143509	109.37870	ppb	97
25) 2-Nitrophenol	6.48	139	1197455	113.03844	ppb	96
26) 2,4-Dimethylphenol	6.53	122	1978968	112.13683	ppb	99
27) Benzoic acid	6.70	105	1542045	125.57459	ppb	99
28) Bis (2-chloroethoxy) metha	6.63	93	2522989	107.22198	ppb	100
29) 2,4-Dichlorophenol	6.75	162	1711713	112.94899	ppb	94
30) 1,2,4-Trichlorobenzene	6.84	180	1811029	107.19704	ppb	98
31) 3,4-Dimethylphenol	6.86	107	2645726	110.94561	ppb	100
32) Naphthalene	6.93	128	6069171	105.32980	ppb	100
33) 4-Chloroaniline	7.00	127	2063322	96.10560	ppb	99
34) 2,6-Dichlorophenol	7.01	162	1622155	107.64178	ppb	99
35) Hexachloropropene	7.02	213	1167286	114.53420	ppb	100
36) Hexachlorobutadiene	7.05	225	958401	109.07716	ppb	98
37) Caprolactum	7.45	55	828168	123.09343	ppb	99

Data File : M:\YODA\DATA\Y190124\0124Y023.D  
 Acq On : 25 Jan 19 13:07  
 Sample : 100ug/mL 8270 01/24/19  
 Misc :

Vial: 23  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Quant Time: Jan 25 13:25 2019

Quant Results File: Y0125NC.RES

Quant Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Fri Jan 25 10:13:14 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
38) 4-Chloro-3-methylphenol	7.56	107	1911489	112.23315	ppb	98
39) 2-Methylnaphthalene	7.72	142	3945297	106.48229	ppb	99
40) 1-Methylnaphthalene	7.83	142	3888604	104.67399	ppb	100
42) Hexachlorocyclopentadiene	7.89	237	861901	114.64271	ppb	97
43) 1,2,4,5-Tetrachlorobenzene	7.91	216	1694943	107.65840	ppb	98
44) 2,4,6-Trichlorophenol	8.05	196	1198737	117.92398	ppb	99
45) 2,4,5-Trichlorophenol	8.10	196	1266846	108.97004	ppb	98
47) 1,1'-Biphenyl	8.26	154	4909140	105.71606	ppb	98
48) 2-Chloronaphthalene	8.29	162	3763364	106.06503	ppb	99
49) 2-Nitroaniline	8.41	65	1287497	111.93280	ppb	96
50) Dimethyl phthalate	8.61	163	4502449	108.28243	ppb	100
51) 2,6-DNT	8.70	165	1067927	115.60401	ppb	100
52) Acenaphthylene	8.76	152	6000220	107.15505	ppb	100
53) 3-Nitroaniline	8.89	138	1161704	110.46197	ppb	96
54) Acenaphthene	8.97	154	3871991	106.71414	ppb	100
55) 2,4-Dinitrophenol	9.02	184	628043	130.63629	ppb	97
56) 4-Nitrophenol	9.10	65	789110	129.35218	ppb	99
57) Dibenzofuran	9.17	168	5237511	103.01684	ppb	99
58) 2,4-DNT	9.17	165	1367064	111.91777	ppb	85
59) 2,3,4,6-Tetrachlorophenol	9.31	232	962675	113.66677	ppb	94
60) Diethyl phthalate	9.43	149	4275410	108.65157	ppb	99
61) 4-Chlorophenyl phenyl ethe	9.56	204	2046659	103.16033	ppb	94
62) Fluorene	9.57	166	4183100	102.50265	ppb	100
63) 4-Nitroaniline	9.63	138	1123718	105.55637	ppb	98
66) 4,6-Dinitro-2-methylphenol	9.65	198	938503	131.25620	ppb	94
67) Diphenyl amine	9.72	169	6563877	207.51246	ppb	99
68) n-Nitrosodiphenylamine	9.72	169	6563877	207.51246	ppb	99
69) 1,2-Diphenylhydrazine	9.75	77	5281854	118.32410	ppb	91
70) 4-Bromophenyl phenyl ether	10.14	248	1162593	108.52969	ppb	93
71) Hexachlorobenzene	10.20	284	1105478	109.26263	ppb	# 85
72) Atrazine	10.33	200	594812	54.68055	ppb	99
73) Pentachlorophenol	10.44	266	752725	128.44553	ppb	98
74) Phenanthrene	10.69	178	6357117	105.02352	ppb	100
75) Anthracene	10.76	178	6513717	105.00530	ppb	99
76) Carbazol	10.94	167	6031129	107.43352	ppb	97
77) Di-n-butylphthalate	11.32	149	7069564	106.85870	ppb	98
78) Fluoranthene	12.09	202	6831981	105.11853	ppb	99
80) Benzidine	12.24	184	2116848	105.65380	ppb	98
81) Pyrene	12.36	202	7097992	108.08786	ppb	100
83) Butyl benzylphthalate	13.08	149	3286296	112.53736	ppb	91
84) 3,3'-Dichlorobenzidine	13.71	252	2161447	108.82542	ppb	# 97
85) Benz (a) anthracene	13.75	228	6187037	108.12217	ppb	100
86) Bis (2-ethylhexyl) phtala	13.73	149	4303302	105.70566	ppb	97
87) Chrysene	13.79	228	6136199	109.64013	ppb	99
88) Di-n-octylphthalate	14.49	149	7872322	114.69387	ppb	96
90) Benzo (b) fluoranthene	15.08	252	6819800	120.21812	ppb	99
91) Benzo (k) fluoranthene	15.12	252	5648056	102.19151	ppb	99
92) Benzo (a) pyrene	15.57	252	5887626	113.66648	ppb	97
93) Indeno (1,2,3-cd) pyrene	17.59	276	6044154	114.14032	ppb	99
94) Dibenz (a,h) anthracene	17.63	278	5506458	114.28713	ppb	100
95) Benzo (g,h,i) perylene	18.19	276	5357774	114.13819	ppb	100

Quantitation Report

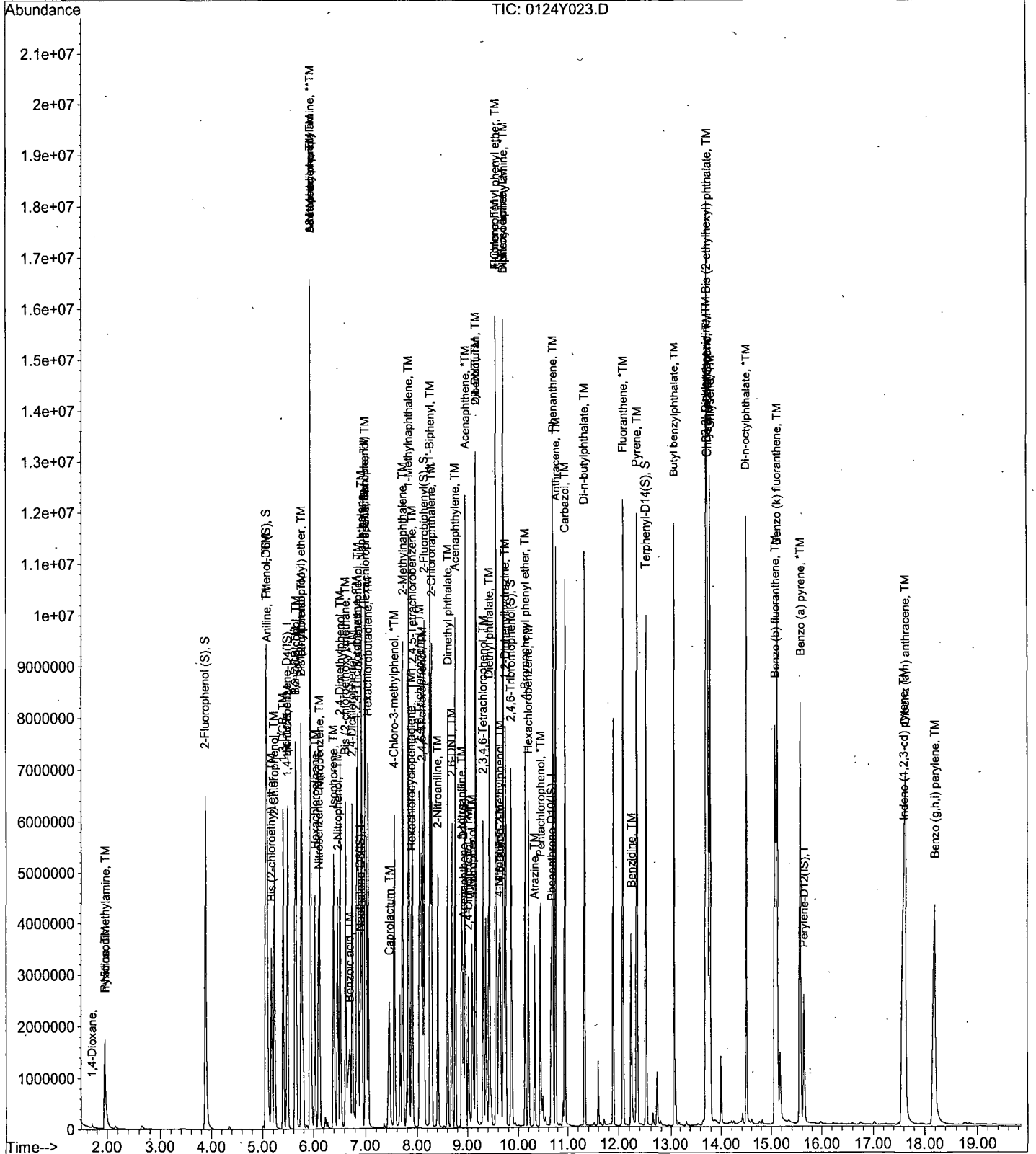
Data File : M:\YODA\DATA\Y190124\0124Y023.D  
Acq On : 25 Jan 19 13:07  
Sample : 100ug/mL 8270 01/24/19  
Misc :

Vial: 23  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Jan 25 13:25 2019

Quant Results File: Y0125NC.RES

Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Mon Jan 28 14:58:58 2019  
Response via : Initial Calibration



Semi-Volatile Analysis by GC-MS  
EPA 8270

Form 7

Second Source Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: \_\_\_\_\_

SDG No: \_\_\_\_\_  
Date Analyzed: 01/28/19  
Instrument: Yoda  
Initial Cal. Date: 01/25/19  
Data File: 0124Y034.D

	Compound	MEAN	CCRF	%D	%Drift
1	1,4-Dioxane	0.2237	0.2222	0.68	
2 TM	n-Nitrosodimethylamine	0.3626	0.3593	0.90	TM
3 TM	Pyridine	0.8923	0.9235	3.5	TM
4 *TM	Phenol	3.026	2.969	1.9	*TM
5 TM	Aniline	3.167	3.000	5.3	TM
6 TM	Bis (2-chloroethyl) ether	1.394	1.327	4.8	TM
7 TM	2-Chlorophenol	2.135	2.080	2.6	TM
8 TM	1,3-DCB	2.272	2.228	1.9	TM
9 *TM	1,4-DCB	2.321	2.241	3.5	*TM
10 TM	Benzyl alcohol	1.331	1.255	5.7	TM
11 TM	1,2-DCB	2.150	2.089	2.9	TM
12 TM	2-Methylphenol	1.822	1.746	4.2	TM
13 TM	Bis (2-chloroisopropyl) ether	2.093	1.968	6.0	TM
14 TM	Acetophenone	2.775	2.579	7.1	TM
15 TM	3&4-Methylphenol	2.152	2.049	4.8	TM
16 **TM	n-Nitrosodi-n-propylamine	1.563	1.452	7.1	**TM
17 TM	Hexachloroethane	0.8480	0.8171	3.6	TM
18 TM	Nitrobenzene	0.5356	0.5518	3.0	TM
19 TM	Isophorone	0.9343	0.9637	3.1	TM
20 *TM	2-Nitrophenol	0.2637	0.2706	2.6	*TM
21 TM	2,4-Dimethylphenol	0.4363	0.4511	3.4	TM
22 TM	Benzoic acid	0.3414	0.3692	8.2	TM
23 TM	Bis (2-chloroethoxy) methane	0.5794	0.5715	1.4	TM
24 *TM	2,4-Dichlorophenol	0.3755	0.3920	4.4	*TM
25 TM	1,2,4-Trichlorobenzene	0.4174	0.4207	0.78	TM
26 TM	3,4-Dimethylphenol	0.5899	0.6009	1.9	TM
27 TM	Naphthalene	1.420	1.398	1.5	TM
28 TM	4-Chloroaniline	0.5252	0.5196	1.1	TM
29 TM	2,6-Dichlorophenol	0.3718	0.3779	1.6	TM
30 TM	Hexachloropropene	0.2546	0.2632	3.4	TM
31 *TM	Hexachlorobutadiene	0.2175	0.2221	2.1	*TM
32 TM	Caprolactum	0.1890	0.1906	0.85	TM
33 *TM	4-Chloro-3-methylphenol	0.4231	0.4348	2.8	*TM
34 TM	2-Methylnaphthalene	0.9154	0.8857	3.2	TM
35 TM	1-Methylnaphthalene	0.9149	0.9061	0.96	TM
36 **TML	Hexachlorocyclopentadiene	0.2131	0.3252	53	**TML 13
37 TM	1,2,4,5-Tetrachlorobenzene	0.6719	0.7344	9.3	TM
38 *TM	2,4,6-Trichlorophenol	0.4386	0.5022	15	*TM
39 TM	2,4,5-Trichlorophenol	0.4953	0.5390	8.8	TM
40 TM	1,1'-Biphenyl	1.985	2.208	11	TM

Average

5.2

Semi-Volatile Analysis by GC-MS  
EPA 8270

Form 7

Second Source Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: 0

SDG No: \_\_\_\_\_  
Date Analyzed: 01/28/19  
Instrument: Yoda  
Cal. Date: 01/25/19  
Data File: 0124Y034.D

		Compound	MEAN	CCRF	%D	%Drift
41	TM	2-Chloronaphthalene	1.516	1.702	12	TM
42	TM	2-Nitroaniline	0.4929	0.5434	10	TM
43	TM	Dimethyl phthalate	1.790	1.944	8.6	TM
44	TM	2,6-DNT	0.4015	0.4696	17	TM
45	TM	Acenaphthylene	2.405	2.664	11	TM
46	TM	3-Nitroaniline	0.4546	0.4922	8.3	TM
47	*TM	Acenaphthene	1.558	1.693	8.7	*TM
48	**TML	2,4-Dinitrophenol	0.1911	0.2391	25	**TML 10
49	**TM	4-Nitrophenol	0.2763	0.2845	3.0	**TM
50	TM	Dibenzofuran	2.183	2.306	5.6	TM
51	TM	2,4-DNT	0.5295	0.6234	18	TM
52	TM	2,3,4,6-Tetrachlorophenol	0.3645	0.4330	19	TM
53	TM	Diethyl phthalate	1.696	1.855	9.4	TM
54	TM	4-Chlorophenyl phenyl ether	0.8517	0.9262	8.7	TM
55	TM	Fluorene	1.750	1.915	9.4	TM
56	TM	4-Nitroaniline	0.4603	0.5193	13	TM
57	TM	4,6-Dinitro-2-methylphenol	0.1787	0.2120	19	TM
58	TM	Diphenyl amine	0.7057	0.7914	12	TM
59	*TM	n-Nitrosodiphenylamine	0.7057	0.7914	12	*TM
60	TM	1,2-Diphenylhydrazine	0.9947	1.099	10	TM
61	TM	4-Bromophenyl phenyl ether	0.2390	0.2673	12	TM
62	TM	Hexachlorobenzene	0.2259	0.2560	13	TM
63	TM	Atrazine	0.2421	0.2663	10.0	TM
64	*TM	Pentachlorophenol	0.1414	0.1559	10	*TM
65	TM	Phenanthrene	1.352	1.515	12	TM
66	TM	Anthracene	1.385	1.525	10	TM
67	TM	Carbazol	1.258	1.450	15	TM
68	TM	Di-n-butylphthalate	1.485	1.684	13	TM
69	*TM	Fluoranthene	1.452	1.629	12	*TM
70	TM	Benzidine	0.4947	0.5317	7.5	TM
71	TM	Pyrene	1.698	1.882	11	TM
72	TM	Butyl benzylphthalate	0.7611	0.8756	15	TM
73	TM	3,3'-Dichlorobenzidine	0.5206	0.6069	17	TM
74	TM	Benz (a) anthracene	1.481	1.633	10	TM
75	TM	Bis (2-ethylhexyl) phthalate	1.059	1.175	11	TM
76	TM	Chrysene	1.448	1.604	11	TM
77	*TM	Di-n-octylphthalate	1.797	2.065	15	*TM
78	TM	Benzo (b) fluoranthene	1.501	1.609	7.2	TM
79	TM	Benzo (k) fluoranthene	1.443	1.462	1.3	TM
80	*TM	Benzo (a) pyrene	1.359	1.566	15	*TM

Average

11.7

Semi-Volatile Analysis by GC-MS  
EPA 8270

Form 7

Second Source Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: 0

SDG No: \_\_\_\_\_  
Date Analyzed: 01/28/19  
Instrument: Yoda  
Cal. Date: 01/25/19  
Data File: 0124Y034.D

		Compound	MEAN	CCRF	%D	%Drift
81	TM	Indeno (1,2,3-cd) pyrene	1.400	1.669	19	TM
82	TM	Dibenz (a,h) anthracene	1.266	1.452	15	TM
83	TM	Benzo (g,h,i) perylene	1.240	1.331	7.4	TM
84						
85						
86						
87						
88						
89						
90						
91						
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116						
117						
118						
119						
120		Average			13.8	

Average

13.8



Data File : M:\YODA\DATA\Y190124\0124Y034.D  
 Acq On : 28 Jan 19 14:11  
 Sample : SS-8270 01/24/19  
 Misc :

Vial: 34  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Quant Time: Jan 28 15:00 2019

Quant Results File: Y0125NC.RES

Quant Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Mon Jan 28 14:58:58 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.46	152	458368	40.00000	ppb	0.00
21) Napthalene-D8 (IS)	6.90	136	1938809	40.00000	ppb	0.00
41) Acenaphthene-D10 (IS)	8.92	164	1014849	40.00000	ppb	0.00
65) Phenanthrene-D10 (IS)	10.66	188	1912266	40.00000	ppb	0.00
79) Chrysene-D12 (IS)	13.75	240	1708227	40.00000	ppb	0.00
89) Perylene-D12 (IS)	15.64	264	1674833	40.00000	ppb	0.00

System Monitoring Compounds

5) 2-Fluorophenol (S)	0.00	112	0	0.00000	ppb	
Spiked Amount 200.000			Recovery	=	0.000%	
6) Phenol-D6 (S)	0.00	99	0	0.00000	ppb	
Spiked Amount 200.000			Recovery	=	0.000%	
22) Nitrobenzene-D5 (S)	6.03	82	108224	4.68761	ppb	-0.06
Spiked Amount 100.000			Recovery	=	4.688%	
46) 2-Fluorobiphenyl (S)	8.13	172	213	0.00518	ppb	0.00
Spiked Amount 100.000			Recovery	=	0.005%	
64) 2,4,6-Tribromophenol (S)	0.00	330	0	0.00000	ppb	
Spiked Amount 200.000			Recovery	=	0.000%	
82) Terphenyl-D14 (S)	12.52	244	770	0.01767	ppb	0.00
Spiked Amount 100.000			Recovery	=	0.018%	

Target Compounds

	R.T.	QIon	Response	Conc	Units	Qvalue
2) 1,4-Dioxane	1.74	58	12729	4.96599		86
3) n-Nitrosodimethylamine	1.96	42	205883	49.54778	ppb	87
4) Pyridine	1.98	79	529141	51.74874	ppb	96
7) Phenol	5.07	94	1701203	49.06389	ppb	94
8) Aniline	5.09	93	1718990	47.36392	ppb	93
9) Bis (2-chloroethyl) ether	5.17	63	760366	47.60321	ppb	91
10) 2-Chlorophenol	5.23	128	1191637	48.69709	ppb	96
11) 1,3-DCB	5.40	146	1276386	49.03029	ppb	99
12) 1,4-DCB	5.49	146	1283777	48.26248	ppb	97
13) Benzyl alcohol	5.63	108	718943	47.15114	ppb	97
14) 1,2-DCB	5.66	146	1196773	48.56573	ppb	97
15) 2-Methylphenol	5.75	107	1000280	47.91957	ppb	99
16) Bis (2-chloroisopropyl) et	5.77	45	1127555	47.01882	ppb	100
17) Acetophenone	5.92	105	1477412	46.45588	ppb	99
18) 3&4-Methylphenol	5.92	107	2347562	95.21848	ppb	99
19) n-Nitrosodi-n-propylamine	5.92	70	832033	46.46922	ppb	99
20) Hexachloroethane	6.03	117	468170	48.18007	ppb	95
23) Nitrobenzene	6.12	77	1337322	51.51079	ppb	100
24) Isophorone	6.39	82	2335484	51.57041	ppb	100
25) 2-Nitrophenol	6.47	139	655816	51.30629	ppb	99
26) 2,4-Dimethylphenol	6.52	122	1093253	51.69152	ppb	97
27) Benzoic acid	6.66	105	894833	54.07578	ppb	98
28) Bis (2-chloroethoxy) metha	6.62	93	1384922	49.31027	ppb	100
29) 2,4-Dichlorophenol	6.74	162	949905	52.19556	ppb	95
30) 1,2,4-Trichlorobenzene	6.83	180	1019586	50.39201	ppb	100
31) 3,4-Dimethylphenol	6.85	107	1456405	50.93263	ppb	100
32) Naphthalene	6.93	128	3388497	49.24639	ppb	100
33) 4-Chloroaniline	6.99	127	1259364	49.47066	ppb	99
34) 2,6-Dichlorophenol	7.00	162	915959	50.82211	ppb	99
35) Hexachloropropene	7.02	213	637825	51.69508	ppb	99
36) Hexachlorobutadiene	7.05	225	538197	51.06295	ppb	97
37) Caprolactum	7.42	55	462035	50.42547	ppb	98

(#) = qualifier out of range (m) = manual integration

Data File : M:\YODA\DATA\Y190124\0124Y034.D  
 Acq On : 28 Jan 19 14:11  
 Sample : SS-8270 01/24/19  
 Misc :

Vial: 34  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Quant Time: Jan 28 15:00 2019

Quant Results File: Y0125NC.RES

Quant Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Mon Jan 28 14:58:58 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
38) 4-Chloro-3-methylphenol	7.55	107	1053821	51.38731	ppb	99
39) 2-Methylnaphthalene	7.72	142	2146475	48.37837	ppb	99
40) 1-Methylnaphthalene	7.83	142	2195869	49.51781	ppb	100
42) Hexachlorocyclopentadiene	7.88	237	412511	56.53516	ppb	100
43) 1,2,4,5-Tetrachlorobenzene	7.90	216	931572	54.64934	ppb	97
44) 2,4,6-Trichlorophenol	8.04	196	637106	57.25617	ppb	99
45) 2,4,5-Trichlorophenol	8.10	196	683790	54.41270	ppb	97
47) 1,1'-Biphenyl	8.25	154	2800863	55.61888	ppb	99
48) 2-Chloronaphthalene	8.28	162	2159211	56.12559	ppb	98
49) 2-Nitroaniline	8.40	65	689275	55.11518	ppb	97
50) Dimethyl phthalate	8.61	163	2465503	54.27961	ppb	100
51) 2,6-DNT	8.69	165	595747	58.49045	ppb	97
52) Acenaphthylene	8.77	152	3379049	55.37197	ppb	99
53) 3-Nitroaniline	8.89	138	624378	54.13436	ppb	95
54) Acenaphthene	8.96	154	2148281	54.35989	ppb	99
55) 2,4-Dinitrophenol	9.02	184	303263	55.09102	ppb	93
56) 4-Nitrophenol	9.09	65	360931	51.49458	ppb	96
57) Dibenzofuran	9.16	168	2924995	52.81029	ppb	100
58) 2,4-DNT	9.16	165	790761	58.86232	ppb	96
59) 2,3,4,6-Tetrachlorophenol	9.31	232	549310	59.39518	ppb	96
60) Diethyl phthalate	9.42	149	2353679	54.68973	ppb	99
61) 4-Chlorophenyl phenyl ethe	9.55	204	1174961	54.37478	ppb	96
62) Fluorene	9.56	166	2428778	54.70594	ppb	100
63) 4-Nitroaniline	9.61	138	658803	56.41060	ppb	93
66) 4,6-Dinitro-2-methylphenol	9.64	198	506716	59.32023	ppb	96
67) Diphenyl amine	9.70	169	3783179	112.13803	ppb	100
68) n-Nitrosodiphenylamine	9.70	169	3783179	112.13803	ppb	100
69) 1,2-Diphenylhydrazine	9.74	77	2626496	55.23523	ppb	88
70) 4-Bromophenyl phenyl ether	10.13	248	638862	55.91557	ppb	97
71) Hexachlorobenzene	10.20	284	611901	56.65132	ppb	# 82
72) Atrazine	10.32	200	318295	27.49651	ppb	97
73) Pentachlorophenol	10.44	266	372770	55.14520	ppb	98
74) Phenanthrene	10.69	178	3621712	56.03684	ppb	99
75) Anthracene	10.75	178	3644386	55.05050	ppb	100
76) Carbazol	10.94	167	3465221	57.59909	ppb	97
77) Di-n-butylphthalate	11.33	149	4025120	56.70186	ppb	100
78) Fluoranthene	12.08	202	3892862	56.09809	ppb	100
80) Benzidine	12.24	184	1135359	53.74461	ppb	99
81) Pyrene	12.35	202	4018707	55.42232	ppb	100
83) Butyl benzylphthalate	13.08	149	1869616	57.51923	ppb	95
84) 3,3'-Dichlorobenzidine	13.71	252	1295998	58.28828	ppb	98
85) Benz (a) anthracene	13.74	228	3486147	55.12946	ppb	99
86) Bis (2-ethylhexyl) phthala	13.72	149	2508599	55.45746	ppb	# 94
87) Chrysene	13.79	228	3424994	55.38630	ppb	99
88) Di-n-octylphthalate	14.48	149	4408873	57.43934	ppb	# 94
90) Benzo (b) fluoranthene	15.08	252	3369057m	53.58981	ppb	99
91) Benzo (k) fluoranthene	15.12	252	3061298	50.66483	ppb	100
92) Benzo (a) pyrene	15.55	252	3279011	57.62317	ppb	100
93) Indeno (1,2,3-cd) pyrene	17.58	276	3494580	59.61887	ppb	99
94) Dibenz (a,h) anthracene	17.61	278	3040489	57.37576	ppb	99
95) Benzo (g,h,i) perylene	18.17	276	2787424	53.67772	ppb	99

Quantitation Report

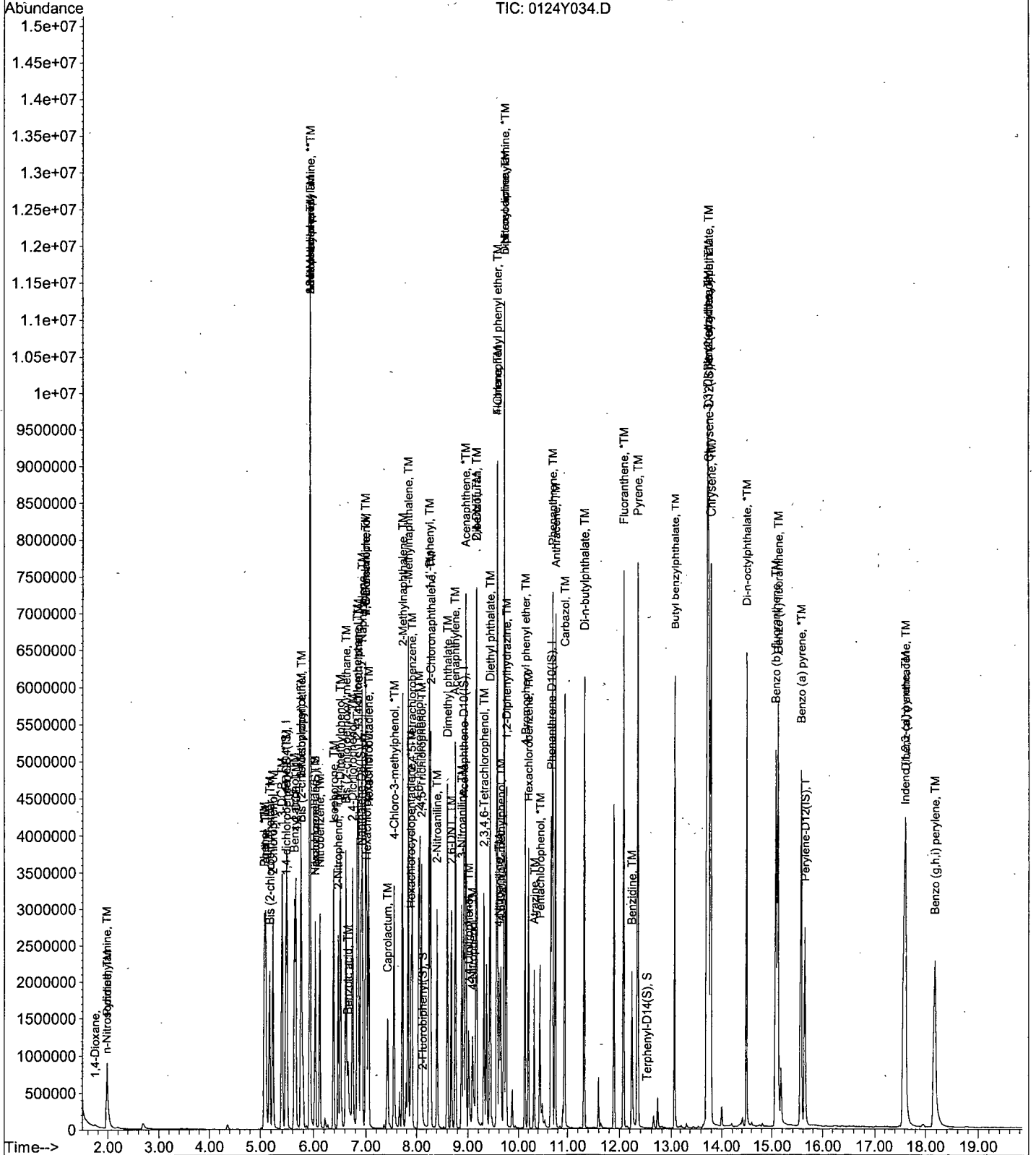
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Acq On : 28 Jan 19 14:11  
Sample : SS-8270 01/24/19  
Misc :

Vial: 34  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Jan 28 15:00 2019

Quant Results File: Y0125NC.RES

Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Mon Jan 28 14:58:58 2019  
Response via : Initial Calibration

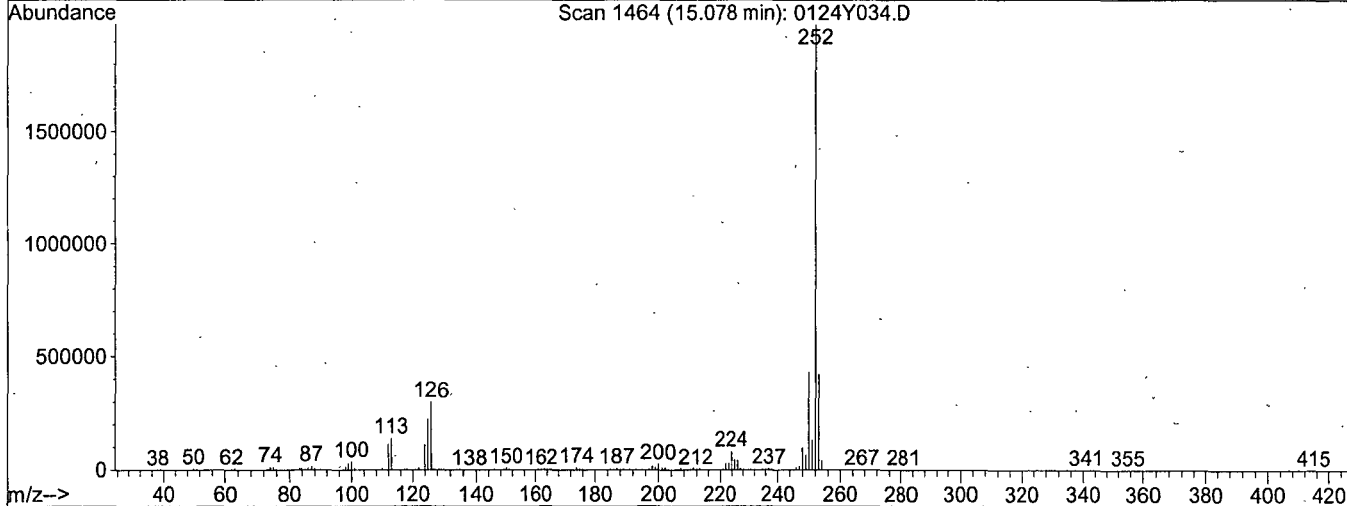
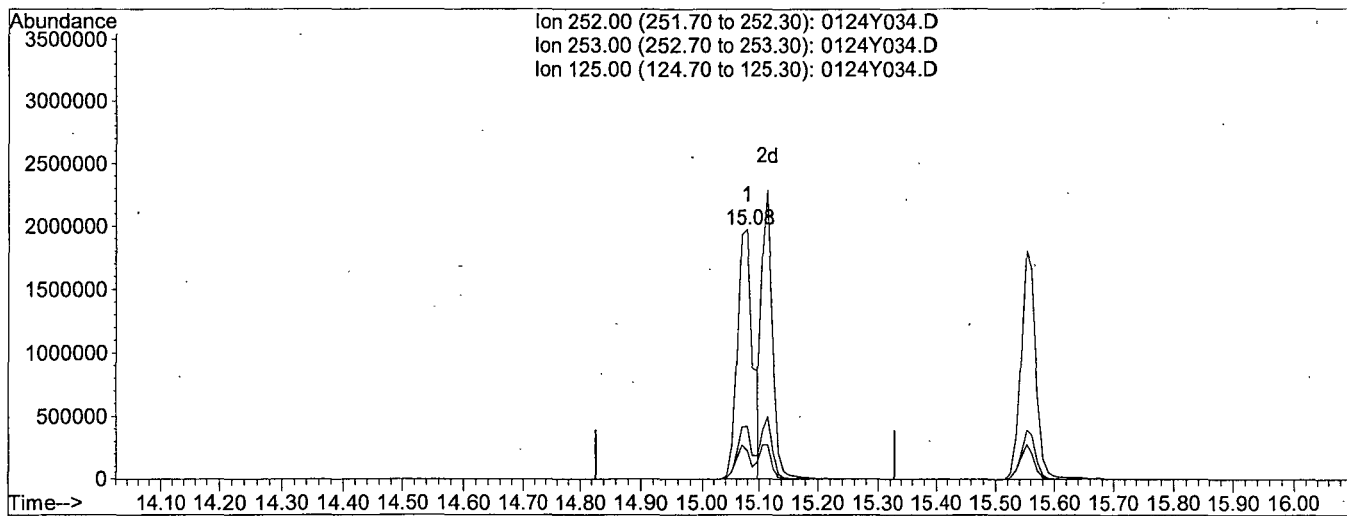


Quantitation Report

Data File : M:\YODA\DATA\Y190124\0124Y034.D  
 Acq On : 28 Jan 19 14:11  
 Sample : SS-8270 01/24/19  
 Misc :  
 Quant Time: Jan 28 15:00 2019

Vial: 34  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00  
 Quant Results File: temp.res

Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Mon Jan 28 14:58:58 2019  
 Response via : Multiple Level Calibration



TIC: 0124Y034.D

(90) Benzo (b) fluoranthene (TM)

15.08min 61.5896ppb

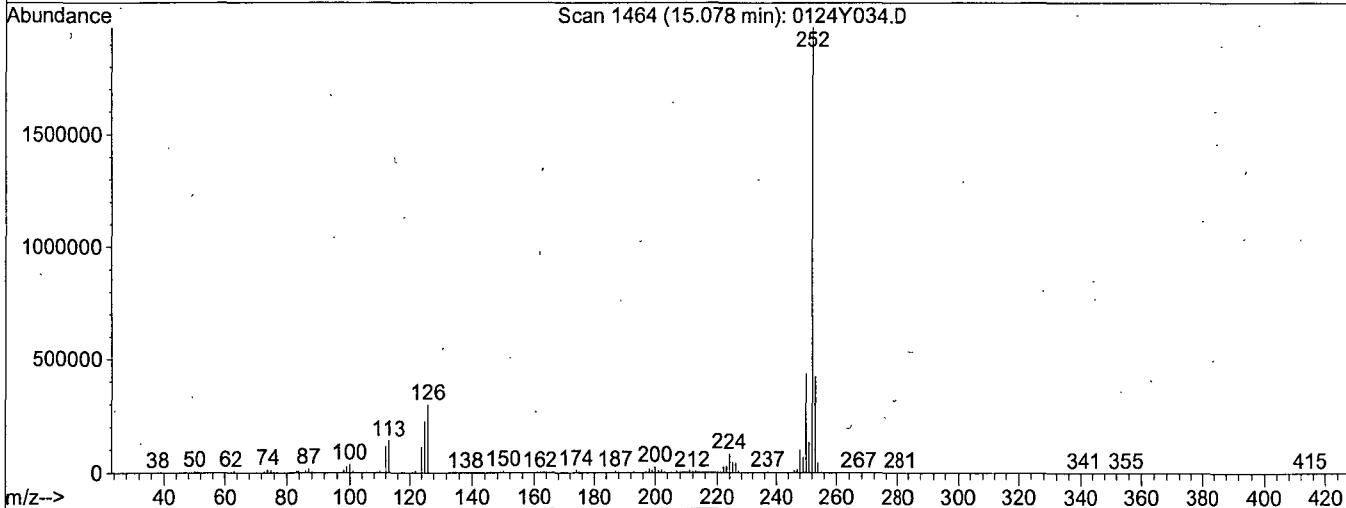
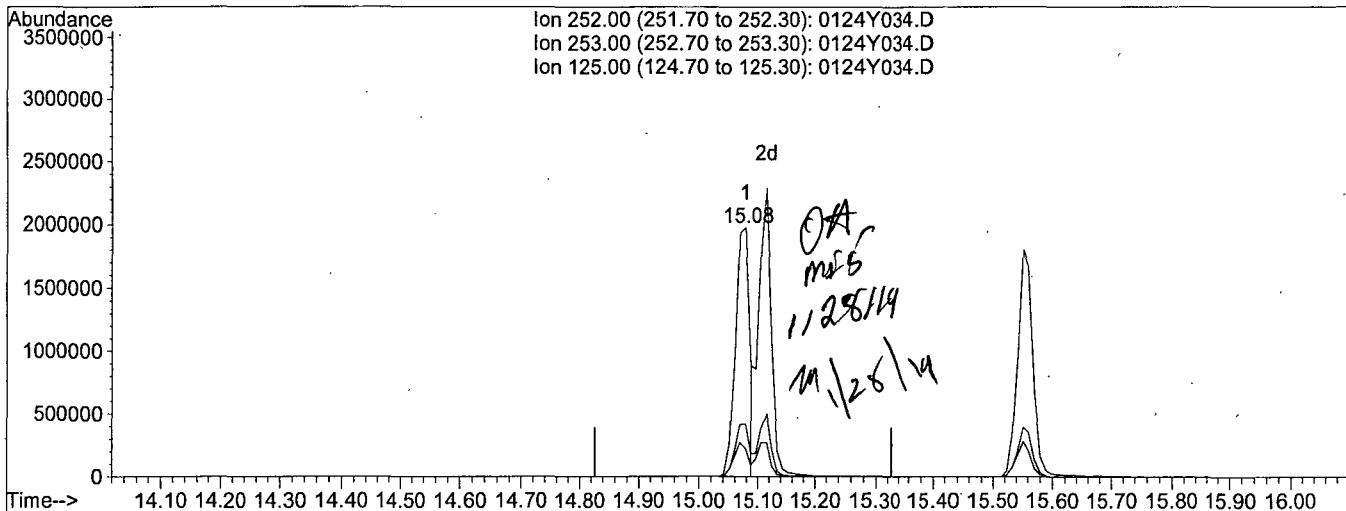
response 3871985

Ion	Exp%	Act%
252.00	100	100
253.00	21.70	21.35
125.00	12.10	11.35
0.00	0.00	0.00

Quantitation Report

Data File : M:\YODA\DATA\Y190124\0124Y034.D Vial: 34  
 Acq On : 28 Jan 19 14:11 Operator: MA  
 Sample : SS-8270 01/24/19 Inst : Yoda  
 Misc : Multiplr: 1.00  
 Quant Time: Jan 28 15:00 2019 Quant Results File: temp.res

Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Mon Jan 28 14:58:58 2019  
 Response via : Multiple Level Calibration



TIC: 0124Y034.D

(90) Benzo (b) fluoranthene (TM)

15.08min 53.5898ppb m

response 3369057

Ion	Exp%	Act%
252.00	100	100
253.00	21.70	21.35
125.00	12.10	11.35
0.00	0.00	0.00

Semi-Volatile Analysis by GC-MS  
EPA 8270

Form 7

Continuing Calibration

Lab Name: APPL, Inc.

SDG No:

Case No: \_\_\_\_\_

Date Analyzed: 1 Feb 19 13:38

Matrix: \_\_\_\_\_

Instrument: Yoda

Initial Cal. Date: 01/25/19

Data File: 0124Y095.D

		Compound	MEAN	CCRF	%D	%Drift
1	I	1,4-dichlorobenzene-D4(IS)	ISTD			I
2		1,4-Dioxane	0.2237	0.2209	1.2	
3	TM	n-Nitrosodimethylamine	0.3626	0.3720	2.6	TM
4	TM	Pyridine	0.8923	1.031	16	TM
5	S	2-Fluorophenol (S)	1.784	1.792	0.46	S
6	S	Phenol-D6 (S)	2.349	2.313	1.5	S
7	*TM	Phenol	3.026	2.780	8.1	*TM
8	TM	Aniline	3.167	2.699	15	TM
9	TM	Bis (2-chloroethyl) ether	1.394	1.293	7.2	TM
10	TM	2-Chlorophenol	2.135	1.963	8.1	TM
11	TM	1,3-DCB	2.272	2.084	8.3	TM
12	*TM	1,4-DCB	2.321	2.114	8.9	*TM
13	TM	Benzyl alcohol	1.331	1.178	11	TM
14	TM	1,2-DCB	2.150	1.980	7.9	TM
15	TM	2-Methylphenol	1.822	1.683	7.6	TM
16	TM	Bis (2-chloroisopropyl) ether	2.093	1.951	6.8	TM
17	TM	Acetophenone	2.775	2.567	7.5	TM
18	TM	3&4-Methylphenol	2.152	2.012	6.5	TM
19	**TM	n-Nitrosodi-n-propylamine	1.563	1.434	8.2	**TM
20	TM	Hexachloroethane	0.8480	0.7802	8.0	TM
21	I	Napthalene-D8(IS)	ISTD			I
22	S	Nitrobenzene-D5(S)	0.4763	0.4906	3.0	S
23	TM	Nitrobenzene	0.5356	0.5160	3.7	TM
24	TM	Isophorone	0.9343	0.9110	2.5	TM
25	*TM	2-Nitrophenol	0.2637	0.2601	1.4	*TM
26	TM	2,4-Dimethylphenol	0.4363	0.4057	7.0	TM
27	TM	Benzoic acid	0.3414	0.3049	11	TM
28	TM	Bis (2-chloroethoxy) methane	0.5794	0.5580	3.7	TM
29	*TM	2,4-Dichlorophenol	0.3755	0.3778	0.62	*TM
30	TM	1,2,4-Trichlorobenzene	0.4174	0.4026	3.5	TM
31	TM	3,4-Dimethylphenol	0.5899	0.5719	3.1	TM
32	TM	Napthalene	1.420	1.370	3.5	TM
33	TM	4-Chloroaniline	0.5252	0.4916	6.4	TM
34	TM	2,6-Dichlorophenol	0.3718	0.3683	0.94	TM
35	TM	Hexachloropropene	0.2546	0.2552	0.24	TM
36	*TM	Hexachlorobutadiene	0.2175	0.2086	4.1	*TM
37	TM	Caprolactum	0.1890	0.1847	2.3	TM
38	*TM	4-Chloro-3-methylphenol	0.4231	0.4128	2.4	*TM
39	TM	2-Methylnapthalene	0.9154	0.8858	3.2	TM
40	TM	1-Methylnapthalene	0.9149	0.8771	4.1	TM

Average

5.5

Semi-Volatile Analysis by GC-MS  
EPA 8270

Form 7

Continuing Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: 0

SDG No: \_\_\_\_\_  
Date Analyzed: 1 Feb 19 13:38  
Instrument: Yoda  
Cal. Date: 01/25/19  
Data File: 0124Y095.D

		Compound	MEAN	CCRF	%D	%Drift
41	I	Acenaphthene-D10(IS)	ISTD			I
42	**TML	Hexachlorocyclopentadiene	0.2131	0.2830	33	**TML 0.07
43	TM	1,2,4,5-Tetrachlorobenzene	0.6719	0.6704	0.22	TM
44	*TM	2,4,6-Trichlorophenol	0.4386	0.4570	4.2	*TM
45	TM	2,4,5-Trichlorophenol	0.4953	0.4948	0.10	TM
46	S	2-Fluorobiphenyl(S)	1.620	1.705	5.2	S
47	TM	1,1'-Biphenyl	1.985	1.994	0.47	TM
48	TM	2-Chloronaphthalene	1.516	1.509	0.49	TM
49	TM	2-Nitroaniline	0.4929	0.5029	2.0	TM
50	TM	Dimethyl phthalate	1.790	1.792	0.12	TM
51	TM	2,6-DNT	0.4015	0.4109	2.3	TM
52	TM	Acenaphthylene	2.405	2.407	0.07	TM
53	TM	3-Nitroaniline	0.4546	0.4664	2.6	TM
54	*TM	Acenaphthene	1.558	1.551	0.44	*TM
55	**TML	2,4-Dinitrophenol	0.1911	0.2258	18	**TML 4.6
56	**TM	4-Nitrophenol	0.2763	0.1942	30	**TM *NT
57	TM	Dibenzofuran	2.183	2.158	1.1	TM
58	TM	2,4-DNT	0.5295	0.5533	4.5	TM
59	TM	2,3,4,6-Tetrachlorophenol	0.3645	0.3660	0.42	TM
60	TM	Diethyl phthalate	1.696	1.695	0.06	TM
61	TM	4-Chlorophenyl phenyl ether	0.8517	0.8508	0.11	TM
62	TM	Fluorene	1.750	1.760	0.58	TM
63	TM	4-Nitroaniline	0.4603	0.4705	2.2	TM
64	S	2,4,6-Tribromophenol(S)	0.1657	0.1803	8.8	S
65	I	Phenanthrene-D10(IS)	ISTD			I
66	TM	4,6-Dinitro-2-methylphenol	0.1787	0.1877	5.1	TM
67	TM	Diphenyl amine	0.7057	0.7091	0.49	TM
68	*TM	n-Nitrosodiphenylamine	0.7057	0.7091	0.49	*TM
69	TM	1,2-Diphenylhydrazine	0.9947	0.9454	5.0	TM
70	TM	4-Bromophenyl phenyl ether	0.2390	0.2425	1.5	TM
71	TM	Hexachlorobenzene	0.2259	0.2297	1.7	TM
72	TM	Atrazine	0.2421	0.2358	2.6	TM
73	*TM	Pentachlorophenol	0.1414	0.1339	5.3	*TM
74	TM	Phenanthrene	1.352	1.343	0.68	TM
75	TM	Anthracene	1.385	1.390	0.38	TM
76	TM	Carbazol	1.258	1.278	1.6	TM
77	TM	Di-n-butylphthalate	1.485	1.515	2.0	TM
78	*TM	Fluoranthene	1.452	1.454	0.19	*TM
79	I	Chrysene-D12(IS)	ISTD			I
80	TM	Benzidine	0.4947	0.4849	2.0	TM

Average

3.9

Semi-Volatile Analysis by GC-MS  
EPA 8270

Form 7

Continuing Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: 0

SDG No: \_\_\_\_\_  
Date Analyzed: 1 Feb 19 13:38  
Instrument: Yoda  
Cal. Date: 01/25/19  
Data File: 0124Y095.D

		Compound	MEAN	CCRF	%D	%Drift
81	TM	Pyrene	1.698	1.657	2.4	TM
82	S	Terphenyl-D14(S)	1.020	1.045	2.4	S
83	TM	Butyl benzylphthalate	0.7611	0.7725	1.5	TM
84	TM	3,3'-Dichlorobenzidine	0.5206	0.5306	1.9	TM
85	TM	Benz (a) anthracene	1.481	1.446	2.4	TM
86	TM	Bis (2-ethylhexyl) phthalate	1.059	1.066	0.67	TM
87	TM	Chrysene	1.448	1.435	0.88	TM
88	*TM	Di-n-octylphthalate	1.797	1.858	3.4	*TM
89	I	Perylene-D12(IS)	ISTD			I
90	TM	Benzo (b) fluoranthene	1.501	1.440	4.1	TM
91	TM	Benzo (k) fluoranthene	1.443	1.509	4.6	TM
92	*TM	Benzo (a) pyrene	1.359	1.392	2.5	*TM
93	TM	Indeno (1,2,3-cd) pyrene	1.400	1.430	2.2	TM
94	TM	Dibenz (a,h) anthracene	1.266	1.315	3.9	TM
95	TM	Benzo (g,h,i) perylene	1.240	1.257	1.4	TM
96						
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119						
120						

Average

2.4



Data File : M:\YODA\DATA\Y190124\0124Y095.D  
 Acq On : 1 Feb 19 13:38  
 Sample : 50ug/mL 8270 01/24/19 (2)  
 Misc :

Vial: 95  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Quant Time: Feb 1 15:05 2019

Quant Results File: Y0125NC.RES

Quant Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Mon Jan 28 14:58:58 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.46	152	416513	40.00000	ppb	0.00
21) Napthalene-D8 (IS)	6.90	136	1765187	40.00000	ppb	0.00
41) Acenaphthene-D10 (IS)	8.92	164	989986	40.00000	ppb	0.00
65) Phenanthrene-D10 (IS)	10.66	188	1903135	40.00000	ppb	0.00
79) Chrysene-D12 (IS)	13.75	240	1732954	40.00000	ppb	0.00
89) Perylene-D12 (IS)	15.63	264	1699588	40.00000	ppb	0.00

System Monitoring Compounds

5) 2-Fluorophenol (S)	3.89	112	1866351	100.46347	ppb	0.02
Spiked Amount 200.000			Recovery =	50.232%		
6) Phenol-D6 (S)	5.06	99	2408819	98.48039	ppb	0.00
Spiked Amount 200.000			Recovery =	49.240%		
22) Nitrobenzene-D5 (S)	6.09	82	1082507	51.49952	ppb	0.00
Spiked Amount 100.000			Recovery =	51.500%		
46) 2-Fluorobiphenyl (S)	8.13	172	2109374	52.61833	ppb	0.00
Spiked Amount 100.000			Recovery =	52.618%		
64) 2,4,6-Tribromophenol (S)	9.85	330	446193	108.80398	ppb	0.00
Spiked Amount 200.000			Recovery =	54.402%		
82) Terphenyl-D14 (S)	12.51	244	2263200	51.19343	ppb	0.00
Spiked Amount 100.000			Recovery =	51.193%		

Target Compounds

	R.T.	QIon	Response	Conc	Units	Qvalue
2) 1,4-Dioxane	1.73	58	11503	4.93865		60
3) n-Nitrosodimethylamine	1.96	42	193677	51.29411	ppb	99
4) Pyridine	1.98	79	536650	57.75708	ppb	96
7) Phenol	5.08	94	1447328	45.93657	ppb	99
8) Aniline	5.10	93	1405363	42.61363	ppb	97
9) Bis (2-chloroethyl) ether	5.17	63	673360	46.39238	ppb	93
10) 2-Chlorophenol	5.23	128	1022251	45.97294	ppb	100
11) 1,3-DCB	5.39	146	1085148	45.87300	ppb	99
12) 1,4-DCB	5.48	146	1100589	45.53349	ppb	99
13) Benzyl alcohol	5.63	108	613099	44.25008	ppb	99
14) 1,2-DCB	5.65	146	1030895	46.03819	ppb	97
15) 2-Methylphenol	5.76	107	876033	46.18463	ppb	98
16) Bis (2-chloroisopropyl) et	5.76	45	1015766	46.61368	ppb	# 87
17) Acetophenone	5.92	105	1336572	46.25058	ppb	94
18) 3&4-Methylphenol	5.92	107	2095562	93.53850	ppb	97
19) n-Nitrosodi-n-propylamine	5.92	70	746500	45.88179	ppb	99
20) Hexachloroethane	6.02	117	406192	46.00245	ppb	97
23) Nitrobenzene	6.12	77	1138613	48.17066	ppb	99
24) Isophorone	6.39	82	2009997	48.74874	ppb	100
25) 2-Nitrophenol	6.47	139	573912	49.31491	ppb	100
26) 2,4-Dimethylphenol	6.52	122	895186	46.48964	ppb	100
27) Benzoic acid	6.67	105	672786	44.65623	ppb	99
28) Bis (2-chloroethoxy) metha	6.62	93	1231247	48.15059	ppb	100
29) 2,4-Dichlorophenol	6.75	162	833572	50.30843	ppb	97
30) 1,2,4-Trichlorobenzene	6.83	180	888396	48.22683	ppb	98
31) 3,4-Dimethylphenol	6.86	107	1261977	48.47409	ppb	96
32) Napthalene	6.93	128	3021964	48.23928	ppb	100
33) 4-Chloroaniline	6.99	127	1084636	46.79772	ppb	100
34) 2,6-Dichlorophenol	7.00	162	812740	49.53049	ppb	100
35) Hexachloropropene	7.02	213	563006	50.11930	ppb	99
36) Hexachlorobutadiene	7.05	225	460313	47.96916	ppb	98
37) Caprolactum	7.42	55	407450	48.84203	ppb	96

(#) = qualifier out of range (m) = manual integration

Data File : M:\YODA\DATA\Y190124\0124Y095.D  
 Acq On : 1 Feb 19 13:38  
 Sample : 50ug/mL 8270 01/24/19 (2)  
 Misc :

Vial: 95  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Quant Time: Feb 1 15:05 2019

Quant Results File: Y0125NC.RES

Quant Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Mon Jan 28 14:58:58 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
38) 4-Chloro-3-methylphenol	7.55	107	910751	48.77901	ppb	92
39) 2-Methylnaphthalene	7.71	142	1954588	48.38658	ppb	100
40) 1-Methylnaphthalene	7.83	142	1935279	47.93391	ppb	99
42) Hexachlorocyclopentadiene	7.88	237	350201	49.96612	ppb	98
43) 1,2,4,5-Tetrachlorobenzene	7.90	216	829608	49.89003	ppb	98
44) 2,4,6-Trichlorophenol	8.04	196	565523	52.09946	ppb	99
45) 2,4,5-Trichlorophenol	8.10	196	612312	49.94852	ppb	92
47) 1,1'-Biphenyl	8.25	154	2467653	50.23274	ppb	99
48) 2-Chloronaphthalene	8.28	162	1867270	49.75599	ppb	98
49) 2-Nitroaniline	8.40	65	622307	51.01005	ppb	99
50) Dimethyl phthalate	8.61	163	2218072	50.05865	ppb	100
51) 2,6-DNT	8.69	165	508461	51.17445	ppb	96
52) Acenaphthylene	8.76	152	2978532	50.03457	ppb	100
53) 3-Nitroaniline	8.88	138	577157	51.29698	ppb	99
54) Acenaphthene	8.96	154	1919008	49.77791	ppb	99
55) 2,4-Dinitrophenol	9.01	184	279393	52.30683	ppb	96
56) 4-Nitrophenol	9.10	65	240322	35.14822	ppb	98
57) Dibenzofuran	9.16	168	2670488	49.42611	ppb	99
58) 2,4-DNT	9.15	165	684648	52.24345	ppb	98
59) 2,3,4,6-Tetrachlorophenol	9.31	232	452976	50.20896	ppb	98
60) Diethyl phthalate	9.42	149	2097804	49.96845	ppb	99
61) 4-Chlorophenyl phenyl ethe	9.55	204	1052819	49.94593	ppb	96
62) Fluorene	9.56	166	2178111	50.29202	ppb	100
63) 4-Nitroaniline	9.61	138	582188	51.10234	ppb	99
66) 4,6-Dinitro-2-methylphenol	9.64	198	446569	52.52977	ppb	94
67) Diphenyl amine	9.70	169	3373858	100.48507	ppb	100
68) n-Nitrosodiphenylamine	9.70	169	3373858	100.48507	ppb	100
69) 1,2-Diphenylhydrazine	9.74	77	2249004	47.52349	ppb	90
70) 4-Bromophenyl phenyl ether	10.13	248	576912	50.73574	ppb	93
71) Hexachlorobenzene	10.19	284	546516	50.84058	ppb	# 84
72) Atrazine	10.32	200	280456	24.34396	ppb	98
73) Pentachlorophenol	10.43	266	318609	47.35911	ppb	98
74) Phenanthrene	10.69	178	3194281	49.66055	ppb	99
75) Anthracene	10.75	178	3306605	50.18777	ppb	100
76) Carbazol	10.94	167	3041157	50.79281	ppb	97
77) Di-n-butylphthalate	11.33	149	3604642	51.02222	ppb	99
78) Fluoranthene	12.08	202	3459621	50.09407	ppb	99
80) Benzidine	12.24	184	1050459	49.01617	ppb	99
81) Pyrene	12.35	202	3588704	48.78592	ppb	100
83) Butyl benzylphthalate	13.08	149	1673326	50.74576	ppb	92
84) 3,3'-Dichlorobenzidine	13.71	252	1149363	50.95569	ppb	99
85) Benz (a) anthracene	13.74	228	3131477	48.81416	ppb	100
86) Bis (2-ethylhexyl) phthala	13.72	149	2309791	50.33383	ppb	# 95
87) Chrysene	13.79	228	3109036	49.55949	ppb	99
88) Di-n-octylphthalate	14.49	149	4024370	51.68188	ppb	97
90) Benzo (b) fluoranthene	15.07	252	3058636	47.94348	ppb	98
91) Benzo (k) fluoranthene	15.11	252	3205338	52.27603	ppb	99
92) Benzo (a) pyrene	15.55	252	2958102	51.22657	ppb	99
93) Indeno (1,2,3-cd) pyrene	17.57	276	3038490	51.08277	ppb	99
94) Dibenz (a,h) anthracene	17.60	278	2792680	51.93188	ppb	99
95) Benzo (g,h,i) perylene	18.17	276	2671288	50.69202	ppb	99

(#) = qualifier out of range (m) = manual integration

Quantitation Report

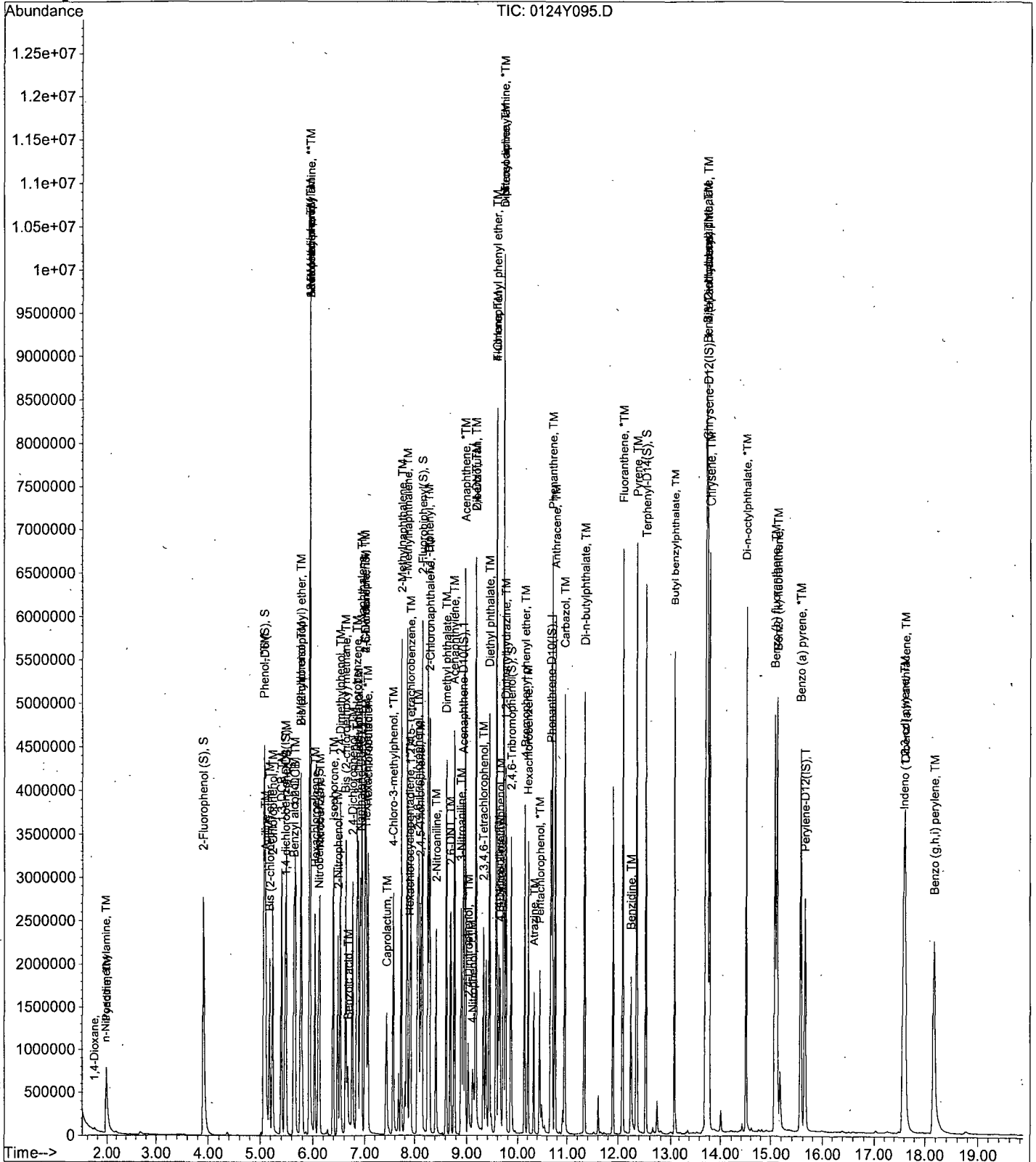
Data File : M:\YODA\DATA\Y190124\0124Y095.D  
 Acq On : 1 Feb 19 13:38  
 Sample : 50ug/mL 8270 01/24/19 (2)  
 Misc :

Vial: 95  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Quant Time: Feb 1 15:05 2019

Quant Results File: Y0125NC.RES

Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Mon Jan 28 14:58:58 2019  
 Response via : Initial Calibration



Semi-Volatile Analysis by GC-MS  
EPA 8270

Form 7

Ending Continuing Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: \_\_\_\_\_

SDG No: \_\_\_\_\_  
Date Analyzed: 2 Feb 19 00:12  
Instrument: Yoda  
Initial Cal. Date: 01/25/19  
Data File: 0124Y115.D

		Compound	MEAN	CCRF	%D	%Drift
1	I	1,4-dichlorobenzene-D4(IS)	ISTD			I
2		1,4-Dioxane	0.2237	0.2534	13	
3	TM	n-Nitrosodimethylamine	0.3626	0.4030	11	TM
4	S	2-Fluorophenol (S)	1.784	1.885	5.7	S
5	S	Phenol-D6 (S)	2.349	2.434	3.6	S
6	*TM	Phenol	3.026	2.790	7.8	*TM
7	TM	Aniline	3.167	2.084	34	TM
8	TM	Bis (2-chloroethyl) ether	1.394	1.343	3.6	TM
9	TM	2-Chlorophenol	2.135	2.048	4.1	TM
10	TM	1,3-DCB	2.272	2.135	6.0	TM
11	*TM	1,4-DCB	2.321	2.174	6.3	*TM
12	TM	Benzyl alcohol	1.331	0.2334	82	TM
13	TM	1,2-DCB	2.150	2.030	5.6	TM
14	TM	2-Methylphenol	1.822	1.733	4.8	TM
15	TM	Bis (2-chloroisopropyl) ether	2.093	1.958	6.4	TM
16	TM	Acetophenone	2.775	2.710	2.3	TM
17	TM	3&4-Methylphenol	2.152	2.040	5.2	TM
18	**TM	n-Nitrosodi-n-propylamine	1.563	1.502	3.9	**TM
19	TM	Hexachloroethane	0.8480	0.7996	5.7	TM
20	I	Napthalene-D8(IS)	ISTD			I
21	S	Nitrobenzene-D5(S)	0.4763	0.5129	7.7	S
22	TM	Nitrobenzene	0.5356	0.5287	1.3	TM
23	TM	Isophorone	0.9343	0.9293	0.53	TM
24	*TM	2-Nitrophenol	0.2637	0.2659	0.82	*TM
25	TM	2,4-Dimethylphenol	0.4363	0.4136	5.2	TM
26	TM	Benzoic acid	0.3414	0.2348	31	TM
27	TM	Bis (2-chloroethoxy) methane	0.5794	0.5611	3.2	TM
28	*TM	2,4-Dichlorophenol	0.3755	0.3835	2.1	*TM
29	TM	1,2,4-Trichlorobenzene	0.4174	0.4092	2.0	TM
30	TM	3,4-Dimethylphenol	0.5899	0.5666	4.0	TM
31	TM	Napthalene	1.420	1.383	2.6	TM
32	TM	4-Chloroaniline	0.5252	0.4340	17	TM
33	TM	2,6-Dichlorophenol	0.3718	0.3762	1.2	TM
34	TM	Hexachloropropene	0.2546	0.2671	4.9	TM
35	*TM	Hexachlorobutadiene	0.2175	0.2152	1.0	*TM
36	TM	Caprolactum	0.1890	0.1858	1.7	TM
37	*TM	4-Chloro-3-methylphenol	0.4231	0.3917	7.4	*TM
38	TM	2-Methylnapthalene	0.9154	0.8970	2.0	TM
39	TM	1-Methylnapthalene	0.9149	0.8942	2.3	TM
40	I	Acenaphthene-D10(IS)	ISTD			I

\*NT

Average

8.4

Semi-Volatile Analysis by GC-MS  
EPA 8270

Form 7

Ending Continuing Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: 0

SDG No: \_\_\_\_\_  
Date Analyzed: 2 Feb 19 00:12  
Instrument: Yoda  
Cal. Date: 01/25/19  
Data File: 0124Y115.D

		Compound	MEAN	CCRF	%D	%Drift	
41	**TML	Hexachlorocyclopentadiene	0.2131	0.3195	50	**TML	11
42	TM	1,2,4,5-Tetrachlorobenzene	0.6719	0.6625	1.4	TM	
43	*TM	2,4,6-Trichlorophenol	0.4386	0.4644	5.9	*TM	
44	TM	2,4,5-Trichlorophenol	0.4953	0.4680	5.5	TM	
45	S	2-Fluorobiphenyl(S)	1.620	1.697	4.8	S	
46	TM	1,1'-Biphenyl	1.985	1.984	0.03	TM	
47	TM	2-Chloronaphthalene	1.516	1.505	0.73	TM	
48	TM	2-Nitroaniline	0.4929	0.5002	1.5	TM	
49	TM	Dimethyl phthalate	1.790	1.789	0.05	TM	
50	TM	2,6-DNT	0.4015	0.4163	3.7	TM	
51	TM	Acenaphthylene	2.405	2.405	0.00	TM	
52	TM	3-Nitroaniline	0.4546	0.4516	0.66	TM	
53	*TM	Acenaphthene	1.558	1.531	1.7	*TM	
54	**TML	2,4-Dinitrophenol	0.1911	0.2189	15	**TML	1.7
55	**TM	4-Nitrophenol	0.2763	0.1051	62	**TM	*NT
56	TM	Dibenzofuran	2.183	2.150	1.5	TM	
57	TM	2,4-DNT	0.5295	0.5501	3.9	TM	
58	TM	2,3,4,6-Tetrachlorophenol	0.3645	0.3495	4.1	TM	
59	TM	Diethyl phthalate	1.696	1.716	1.1	TM	
60	TM	4-Chlorophenyl phenyl ether	0.8517	0.8507	0.11	TM	
61	TM	Fluorene	1.750	1.758	0.48	TM	
62	TM	4-Nitroaniline	0.4603	0.4473	2.8	TM	
63	S	2,4,6-Tribromophenol(S)	0.1657	0.1827	10	S	
64	I	Phenanthrene-D10(IS)	ISTD			I	
65	TM	4,6-Dinitro-2-methylphenol	0.1787	0.1870	4.7	TM	
66	TM	Diphenyl amine	0.7057	0.7079	0.32	TM	
67	*TM	n-Nitrosodiphenylamine	0.7057	0.7079	0.32	*TM	
68	TM	1,2-Diphenylhydrazine	0.9947	1.095	10	TM	
69	TM	4-Bromophenyl phenyl ether	0.2390	0.2472	3.4	TM	
70	TM	Hexachlorobenzene	0.2259	0.2289	1.3	TM	
71	TM	Atrazine	0.2421	0.1943	20	TM	
72	*TM	Pentachlorophenol	0.1414	0.1121	21	*TM	
73	TM	Phenanthrene	1.352	1.338	1.1	TM	
74	TM	Anthracene	1.385	1.386	0.11	TM	
75	TM	Carbazol	1.258	1.244	1.2	TM	
76	TM	Di-n-butylphthalate	1.485	1.504	1.3	TM	
77	*TM	Fluoranthene	1.452	1.443	0.61	*TM	
78	I	Chrysene-D12(IS)	ISTD			I	
79	TM	Benzidine	0.4947	0.1453	71	TM	*NT
80	TM	Pyrene	1.698	1.718	1.2	TM	

Average

8.3

Semi-Volatile Analysis by GC-MS  
EPA 8270

Form 7

Ending Continuing Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: 0

SDG No: \_\_\_\_\_  
Date Analyzed: 2 Feb 19 00:12  
Instrument: Yoda  
Cal. Date: 01/25/19  
Data File: 0124Y115.D

		Compound	MEAN	CCRF	%D	%Drift
81	S	Terphenyl-D14(S)	1.020	1.100	7.8	S
82	TM	Butyl benzylphthalate	0.7611	0.8046	5.7	TM
83	TM	3,3'-Dichlorobenzidine	0.5206	0.5087	2.3	TM
84	TM	Benz (a) anthracene	1.481	1.491	0.72	TM
85	TM	Bis (2-ethylhexyl) phthalate	1.059	1.092	3.1	TM
86	TM	Chrysene	1.448	1.447	0.05	TM
87	*TM	Di-n-octylphthalate	1.797	1.901	5.8	*TM
88	I	Perylene-D12(IS)	ISTD			I
89	TM	Benzo (b) fluoranthene	1.501	1.512	0.72	TM
90	TM	Benzo (k) fluoranthene	1.443	1.448	0.33	TM
91	*TM	Benzo (a) pyrene	1.359	1.397	2.8	*TM
92	TM	Indeno (1,2,3-cd) pyrene	1.400	1.404	0.27	TM
93	TM	Dibenz (a,h) anthracene	1.266	1.286	1.6	TM
94	TM	Benzo (g,h,i) perylene	1.240	1.217	1.8	TM
95						
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118						
119						
120						

Average

2.5

Data File : M:\YODA\DATA\Y190124\0124Y115.D  
 Acq On : 2 Feb 19 00:12  
 Sample : 50ug/mL 8270 01/24/19 (1)  
 Misc :

Vial: 15  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Quant Time: Feb 4 7:25 2019

Quant Results File: Y0125NC.RES

Quant Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Mon Jan 28 14:58:58 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.47	152	496552	40.00000	ppb	0.00
21) Napthalene-D8 (IS)	6.90	136	2165400	40.00000	ppb	0.00
41) Acenaphthene-D10 (IS)	8.92	164	1244881	40.00000	ppb	0.00
65) Phenanthrene-D10 (IS)	10.66	188	2389876	40.00000	ppb	0.00
79) Chrysene-D12 (IS)	13.76	240	2082073	40.00000	ppb	0.00
89) Perylene-D12 (IS)	15.64	264	2039768	40.00000	ppb	0.00

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
5) 2-Fluorophenol (S)	3.92	112	2340360	105.67234	ppb	0.05
Spiked Amount 200.000			Recovery =	52.836%		
6) Phenol-D6 (S)	5.09	99	3020946	103.59824	ppb	0.03
Spiked Amount 200.000			Recovery =	51.799%		
22) Nitrobenzene-D5 (S)	6.10	82	1388367	53.84301	ppb	0.00
Spiked Amount 100.000			Recovery =	53.843%		
46) 2-Fluorobiphenyl (S)	8.14	172	2640473	52.38012	ppb	0.00
Spiked Amount 100.000			Recovery =	52.380%		
64) 2,4,6-Tribromophenol (S)	9.86	330	568606	110.26424	ppb	0.00
Spiked Amount 200.000			Recovery =	55.132%		
82) Terphenyl-D14 (S)	12.51	244	2863298	53.90746	ppb	0.00
Spiked Amount 100.000			Recovery =	53.907%		

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) 1,4-Dioxane	1.73	58	15731	5.66523		91
3) n-Nitrosodimethylamine	1.97	42	250163	55.57460	ppb	98
7) Phenol	5.09	94	1731537	46.09854	ppb	100
8) Aniline	5.17	93	1293796	32.90710	ppb #	97
9) Bis (2-chloroethyl) ether	5.17	63	833755	48.18386	ppb	95
10) 2-Chlorophenol	5.24	128	1270872	47.94136	ppb	99
11) 1,3-DCB	5.40	146	1325432	46.99909	ppb	99
12) 1,4-DCB	5.48	146	1349672	46.83795	ppb	100
13) Benzyl alcohol	5.64	108	144860	8.76992	ppb	97
14) 1,2-DCB	5.65	146	1259804	47.19225	ppb	99
15) 2-Methylphenol	5.77	107	1075819	47.57514	ppb	94
16) Bis (2-chloroisopropyl) et	5.76	45	1215615	46.79286	ppb #	85
17) Acetophenone	5.93	105	1682335	48.83162	ppb	75
18) 3&4-Methylphenol	5.94	107	2531933	94.79948	ppb	98
19) n-Nitrosodi-n-propylamine	5.93	70	931988	48.04903	ppb	98
20) Hexachloroethane	6.03	117	496330	47.15025	ppb	89
23) Nitrobenzene	6.13	77	1431134	49.35594	ppb	99
24) Isophorone	6.39	82	2515476	49.73255	ppb	99
25) 2-Nitrophenol	6.48	139	719682	50.41109	ppb	96
26) 2,4-Dimethylphenol	6.52	122	1119550	47.39571	ppb	99
27) Benzoic acid	6.69	105	635436	34.38187	ppb	97
28) Bis (2-chloroethoxy) metha	6.63	93	1518874	48.42066	ppb	99
29) 2,4-Dichlorophenol	6.76	162	1038130	51.07425	ppb	94
30) 1,2,4-Trichlorobenzene	6.84	180	1107676	49.01708	ppb	99
31) 3,4-Dimethylphenol	6.87	107	1533738	48.02440	ppb	98
32) Naphthalene	6.93	128	3743822	48.71687	ppb	99
33) 4-Chloroaniline	7.11	127	1174805	41.31988	ppb	99
34) 2,6-Dichlorophenol	7.00	162	1018309	50.58865	ppb	98
35) Hexachloropropene	7.02	213	722872	52.45731	ppb	99
36) Hexachlorobutadiene	7.05	225	582560	49.48826	ppb	99
37) Caprolactum	7.45	55	503008	49.15264	ppb	99
38) 4-Chloro-3-methylphenol	7.56	107	1060137	46.28582	ppb	96

(#) = qualifier out of range (m) = manual integration

Data File : M:\YODA\DATA\Y190124\0124Y115.D  
 Acq On : 2 Feb 19 00:12  
 Sample : 50ug/mL 8270 01/24/19 (1)  
 Misc :

Vial: 15  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Quant Time: Feb 4 7:25 2019

Quant Results File: Y0125NC.RES

Quant Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Mon Jan 28 14:58:58 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
39) 2-Methylnaphthalene	7.71	142	2428021	48.99759	ppb	100
40) 1-Methylnaphthalene	7.83	142	2420244	48.86648	ppb	99
42) Hexachlorocyclopentadiene	7.89	237	497218	55.65502	ppb	98
43) 1,2,4,5-Tetrachlorobenzene	7.91	216	1030920	49.30228	ppb	98
44) 2,4,6-Trichlorophenol	8.05	196	722719	52.94850	ppb	100
45) 2,4,5-Trichlorophenol	8.11	196	728244	47.24197	ppb	100
47) 1,1'-Biphenyl	8.25	154	3087683	49.98465	ppb	99
48) 2-Chloronaphthalene	8.28	162	2342284	49.63397	ppb	99
49) 2-Nitroaniline	8.42	65	778396	50.74028	ppb	82
50) Dimethyl phthalate	8.60	163	2784470	49.97436	ppb	99
51) 2,6-DNT	8.69	165	647823	51.85052	ppb	# 80
52) Acenaphthylene	8.76	152	3742987	50.00200	ppb	100
53) 3-Nitroaniline	8.90	138	702707	49.66761	ppb	87
54) Acenaphthene	8.97	154	2381834	49.13292	ppb	99
55) 2,4-Dinitrophenol	9.02	184	340648	50.86832	ppb	96
56) 4-Nitrophenol	9.13	65	163535	19.02049	ppb	95
57) Dibenzofuran	9.16	168	3346328	49.25332	ppb	95
58) 2,4-DNT	9.16	165	856085	51.94965	ppb	96
59) 2,3,4,6-Tetrachlorophenol	9.31	232	543842	47.93801	ppb	95
60) Diethyl phthalate	9.43	149	2669927	50.57450	ppb	98
61) 4-Chlorophenyl phenyl ethe	9.56	204	1323801	49.94251	ppb	90
62) Fluorene	9.56	166	2736135	50.24095	ppb	100
63) 4-Nitroaniline	9.62	138	696033	48.58571	ppb	97
66) 4,6-Dinitro-2-methylphenol	9.64	198	558646	52.32965	ppb	94
67) Diphenyl amine	9.71	169	4229730	100.31863	ppb	100
68) n-Nitrosodiphenylamine	9.71	169	4229730	100.31863	ppb	100
69) 1,2-Diphenylhydrazine	9.75	77	3271061	55.04286	ppb	96
70) 4-Bromophenyl phenyl ether	10.13	248	738392	51.71132	ppb	96
71) Hexachlorobenzene	10.20	284	683765	50.65341	ppb	96
72) Atrazine	10.33	200	290170	20.05733	ppb	99
73) Pentachlorophenol	10.44	266	334871	39.63850	ppb	98
74) Phenanthrene	10.69	178	3995650	49.46751	ppb	99
75) Anthracene	10.75	178	4141165	50.05326	ppb	99
76) Carbazol	10.94	167	3716019	49.42374	ppb	97
77) Di-n-butylphthalate	11.32	149	4492693	50.64052	ppb	99
78) Fluoranthene	12.08	202	4309982	49.69669	ppb	98
80) Benzidine	12.24	184	378134	14.68578	ppb	99
81) Pyrene	12.34	202	4471510	50.59437	ppb	99
83) Butyl benzylphthalate	13.08	149	2093953	52.85392	ppb	98
84) 3,3'-Dichlorobenzidine	13.71	252	1324044	48.85724	ppb	97
85) Bis (a) anthracene	13.74	228	3881347	50.35819	ppb	99
86) Bis (2-ethylhexyl) phthala	13.73	149	2841101	51.53058	ppb	98
87) Chrysene	13.78	228	3766636	49.97419	ppb	100
88) Di-n-octylphthalate	14.49	149	4947258	52.88056	ppb	99
90) Benzo (b) fluoranthene	15.07	252	3855956	50.36127	ppb	99
91) Benzo (k) fluoranthene	15.11	252	3691472	50.16390	ppb	98
92) Benzo (a) pyrene	15.56	252	3561169	51.38515	ppb	97
93) Indeno (1,2,3-cd) pyrene	17.58	276	3578985	50.13481	ppb	97
94) Dibenz (a,h) anthracene	17.62	278	3277771	50.78721	ppb	97
95) Benzo (g,h,i) perylene	18.17	276	3104199	49.08303	ppb	98

(#) = qualifier out of range (m) = manual integration



Quantitation Report

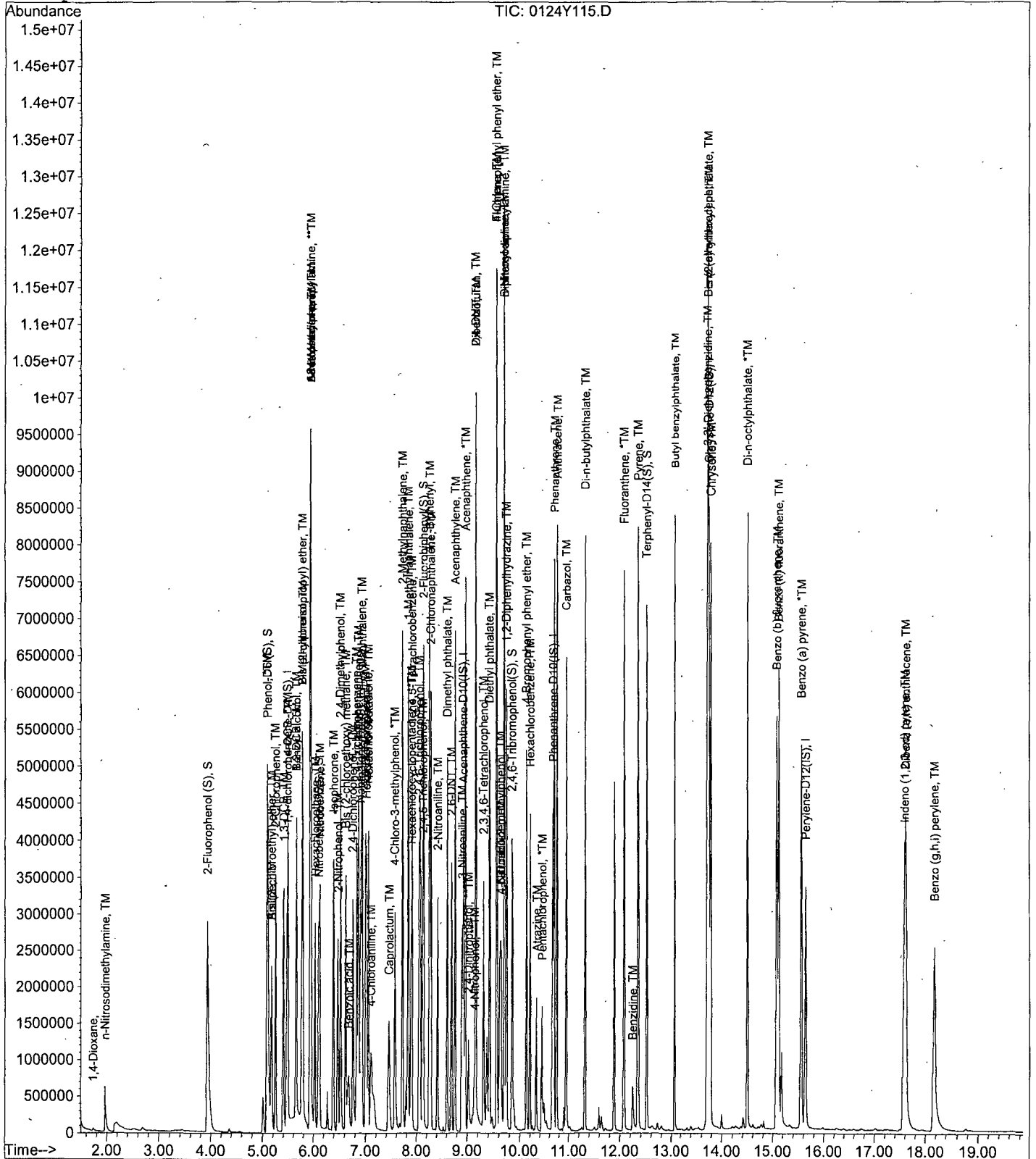
Data File : M:\YODA\DATA\Y190124\0124Y115.D  
Acq On : 2 Feb 19 00:12  
Sample : 50ug/mL 8270 01/24/19 (1)  
Misc :

Vial: 15  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Feb 4 7:25 2019

Quant Results File: Y0125NC.RES

Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Mon Jan 28 14:58:58 2019  
Response via : Initial Calibration



**ORGANICS**  
**Raw Data**

Data File : M:\YODA\DATA\Y190124\0124Y112.D Vial: 12  
 Acq On : 1 Feb 19 22:49 Operator: MA  
 Sample : AZ85763W10 1/800 Inst : Yoda  
 Misc : Multiplr: 1.25

Quant Time: Feb 4 10:22 2019 Quant Results File: Y0125NC.RES

Quant Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Mon Jan 28 14:58:58 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.47	152	531985	40.0000	ppb	0.00
21) Napthalene-D8 (IS)	6.90	136	2225888	40.0000	ppb	0.00
41) Acenaphthene-D10 (IS)	8.92	164	1111760	40.0000	ppb	0.00
65) Phenanthrene-D10 (IS)	10.66	188	2241474	40.0000	ppb	0.00
79) Chrysene-D12 (IS)	13.75	240	1978162	40.0000	ppb	-0.01
89) Perylene-D12 (IS)	15.63	264	838347	40.0000	ppb	0.00
System Monitoring Compounds						
5) 2-Fluorophenol (S)	3.92	112	3574936	188.3312	ppb	0.04
Spiked Amount	250.000		Recovery	=	75.332%	
6) Phenol-D6 (S)	5.08	99	4348547	173.9919	ppb	0.03
Spiked Amount	250.000		Recovery	=	69.597%	
22) Nitrobenzene-D5 (S)	6.10	82	2137295	100.7939	ppb	0.00
Spiked Amount	125.000		Recovery	=	80.635%	
46) 2-Fluorobiphenyl (S)	8.13	172	4022050	111.6758	ppb	0.00
Spiked Amount	125.000		Recovery	=	89.341%	
64) 2,4,6-Tribromophenol (S)	9.85	330	937323	254.4130	ppb	0.00
Spiked Amount	250.000		Recovery	=	101.765%	
82) Terphenyl-D14 (S)	12.52	244	4408000	109.1863	ppb	0.00
Spiked Amount	125.000		Recovery	=	87.349%	

Target Compounds Qvalue

Quantitation Report

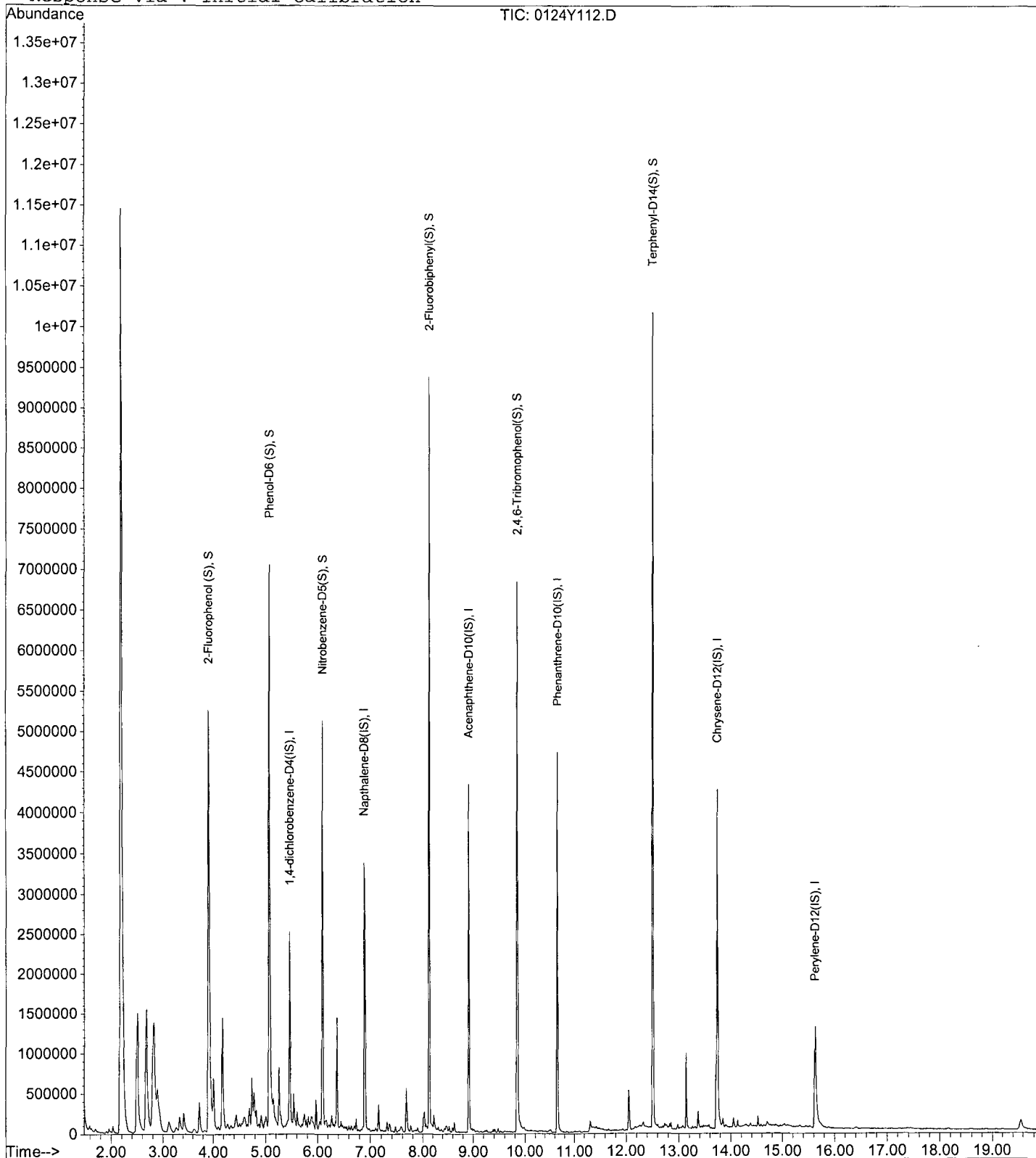
Data File : M:\YODA\DATA\Y190124\0124Y112.D  
Acq On : 1 Feb 19 22:49  
Sample : AZ85763W10 1/800  
Misc :

Vial: 12  
Operator: MA  
Inst : Yoda  
Multiplr: 1.25

Quant Time: Feb 4 10:22 2019

Quant Results File: Y0125NC.RES

Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Mon Feb 04 19:46:10 2019  
Response via : Initial Calibration



Tentatively Identified Compound (LSC) summary

Operator ID: MA Date Acquired: 1 Feb 19 22:49  
Data File: M:\YODA\DATA\Y190124\0124Y112.D  
Name: AZ85763W10 1/800  
Misc:  
Method: M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
Title: EPA 8270C  
Library Searched: M:\DATABASE\WILEY138.L

TIC Top Hit name	RT	EstConc	Units	Area	IntStd	ISRT	ISArea	ISConc
3-Penten-2-one, 4-me	2.68	61.4	ppb	3972580	ISTD01	5.47	3233080	40.0
Hexanedioic acid, di	13.14	6.9	ppb	899149	ISTD05	13.75	6516430	40.0

0124Y112.D Y0125NC.M Fri Feb 08 08:27:27 2019

LSC Area Percent Report

Data File : M:\YODA\DATA\Y190124\0124Y112.D  
 Acq On : 1 Feb 19 22:49  
 Sample : AZ85763W10 1/800  
 Misc :  
 MS Integration Params: LSCINT.P

Vial: 12  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.25000

Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Smoothing : ON  
 Sampling : 1  
 Start Thrs: 0.002  
 Stop Thrs : 0  
 Filtering: 5  
 Min Area: 3 % of largest Peak  
 Max Peaks: 100  
 Peak Location: TOP

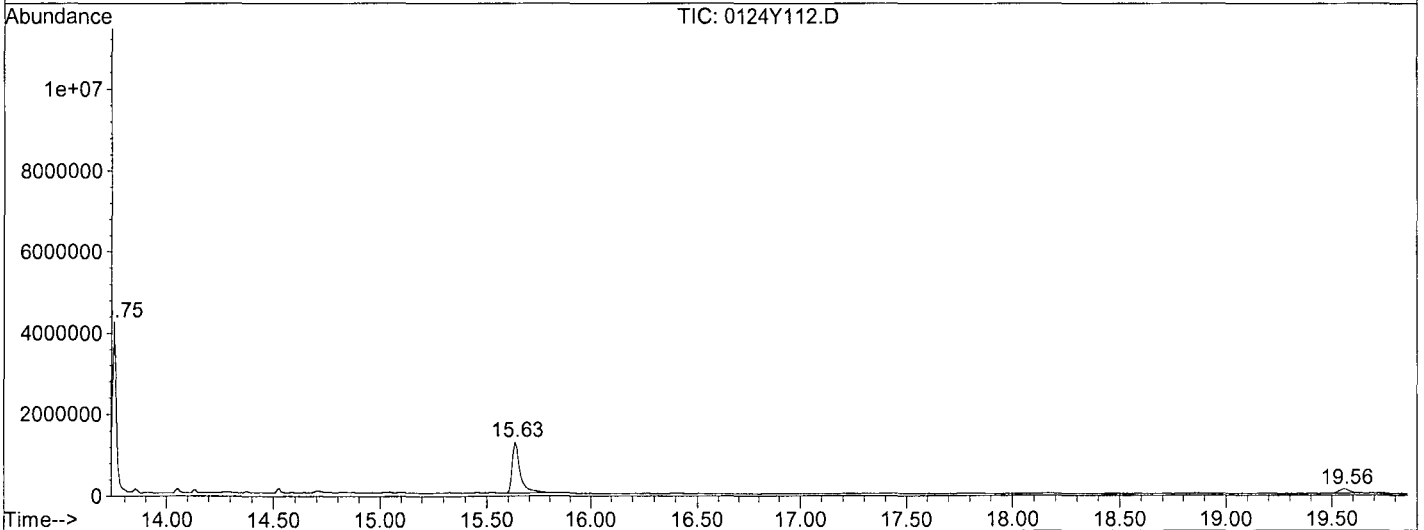
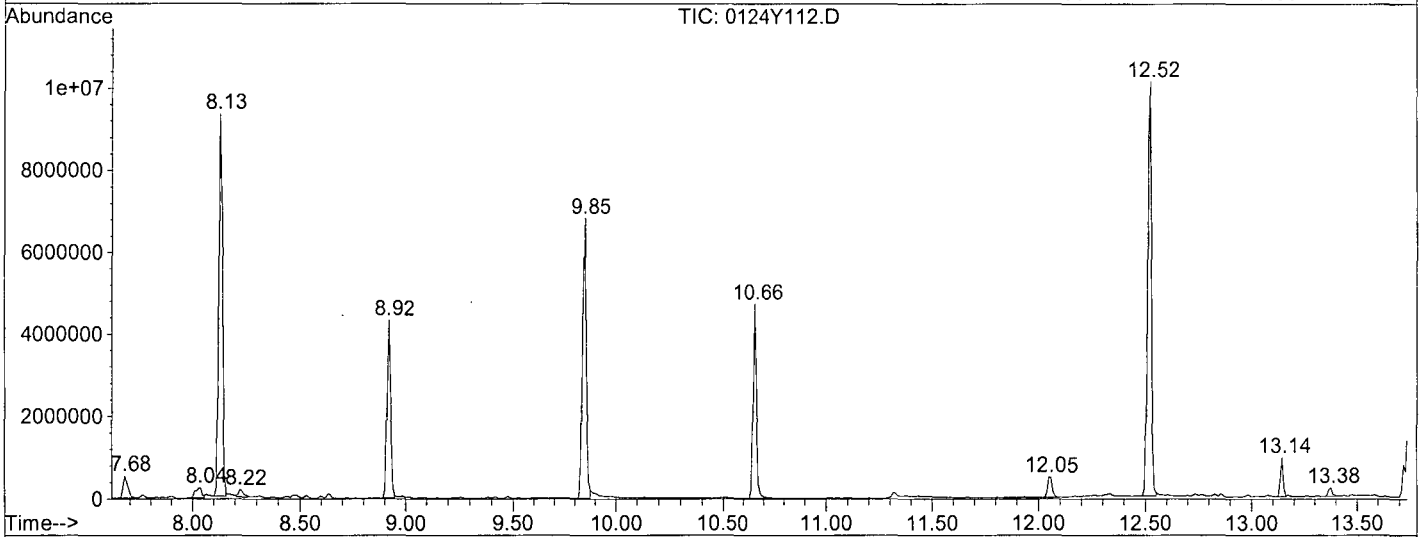
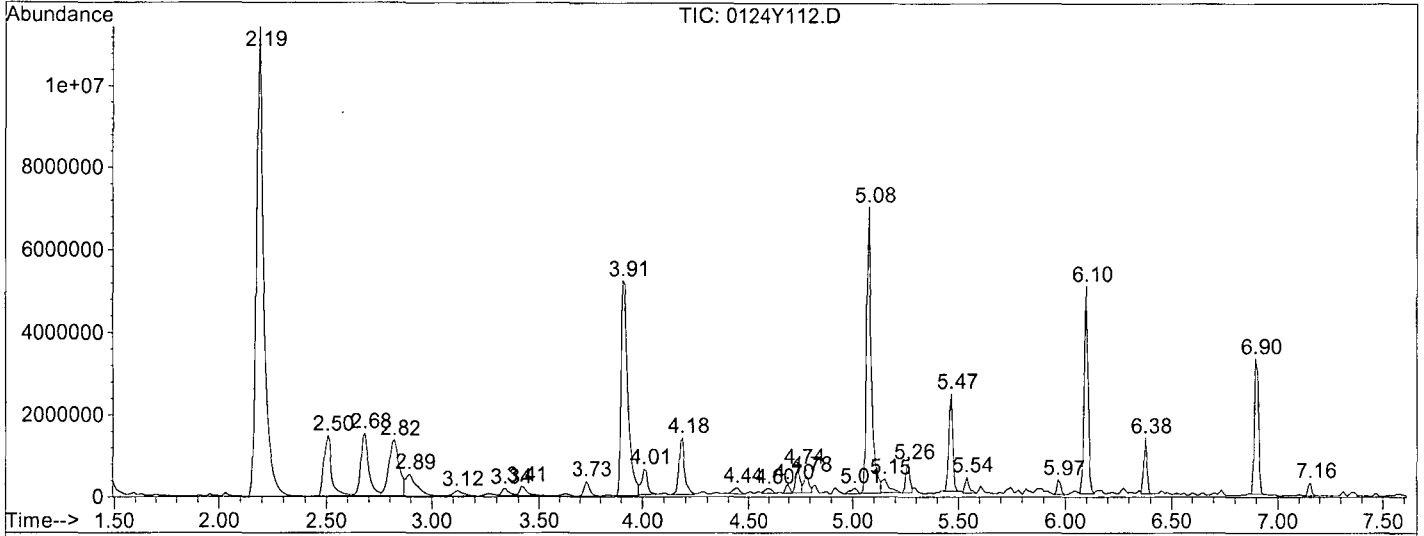
If leading or trailing edge < 100 prefer < Baseline drop else tangent >  
 Peak separation: 5

Signal : TIC

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	raw area	corr. area	corr. % max.	% of total
1	2.189	70	76	100	rVB	11437260	31285123	27430485	100.00%	18.373%
2	2.504	105	110	123	rVV	1479491	6013969	3717328	13.55%	2.490%
3	2.681	123	129	137	rVV	1531019	5858057	3972579	14.48%	2.661%
4	2.820	137	144	149	rVV	1357753	6544560	4748451	17.31%	3.181%
5	2.894	149	152	170	rVV3	533380	6951765	1948081	7.10%	1.305%
6	3.117	170	176	186	rVB2	124517	2414659	417489	1.52%	0.280%
7	3.340	196	200	206	rVV	176458	1761096	448637	1.64%	0.300%
8	3.414	206	208	218	rVB	222216	2351274	518545	1.89%	0.347%
9	3.730	237	242	250	rBV	367054	2326474	713357	2.60%	0.478%
10	3.906	258	261	269	rBV	5225777	13837557	11804217	43.03%	7.906%
11	4.008	269	272	279	rVB	626389	3223206	1209464	4.41%	0.810%
12	4.185	285	291	297	rBV	1388668	4191743	2567571	9.36%	1.720%
13	4.445	314	319	323	rBV2	158080	1662773	365692	1.33%	0.245%
14	4.603	332	336	340	rVB4	118227	1549791	302726	1.10%	0.203%
15	4.695	343	346	348	rVV	223806	1086426	316772	1.15%	0.212%
16	4.742	348	351	353	rVV	595413	1693353	882926	3.22%	0.591%
17	4.779	353	355	358	rVV2	413889	1818346	763214	2.78%	0.511%
18	5.011	375	380	383	rBV4	141435	1544554	335548	1.22%	0.225%
19	5.076	383	387	393	rBV	6955813	12766375	11133981	40.59%	7.458%
20	5.150	393	395	404	rVB	340477	3330176	777377	2.83%	0.521%
21	5.262	404	407	409	rBV	716845	1924224	1030833	3.76%	0.690%
22	5.466	425	429	433	rVB	2381115	4554674	3233078	11.79%	2.166%
23	5.540	435	437	442	rVB	398094	1950326	538282	1.96%	0.361%
24	5.967	481	483	487	rBV	362862	1358516	435319	1.59%	0.292%
25	6.097	494	497	501	rVV	5041180	8365343	6417291	23.39%	4.298%
26	6.376	525	527	530	rVB	1364284	2750110	1385748	5.05%	0.928%
27	6.896	581	583	587	rVB	3295189	6396233	4278748	15.60%	2.866%
28	7.155	608	611	616	rBV	325401	1520617	422242	1.54%	0.283%
29	7.675	664	667	674	rBV2	532006	2208005	879758	3.21%	0.589%
30	8.037	701	706	708	rBV2	244988	1455130	539011	1.97%	0.361%
31	8.130	713	716	719	rBV	9298242	12270617	11080499	40.39%	7.422%
32	8.223	724	726	731	rVB2	172696	1329351	286768	1.05%	0.192%
33	8.919	798	801	804	rBV	4307062	6013314	4927987	17.97%	3.301%
34	9.848	897	901	904	rBV	6816283	9467771	8527879	31.09%	5.712%
35	10.655	985	988	1007	rBV	4713658	9658113	5708753	20.81%	3.824%
36	12.048	1135	1138	1143	rBV	493631	1749498	724025	2.64%	0.485%
37	12.521	1185	1189	1192	rBV	10089371	14339928	12997264	47.38%	8.706%
38	13.143	1253	1256	1258	rBV	940070	1598319	899149	3.28%	0.602%
39	13.375	1278	1281	1285	rBV2	207677	1284431	289461	1.06%	0.194%
40	13.747	1315	1321	1329	rBV2	4213129	8397933	6516432	23.76%	4.365%
41	15.631	1519	1524	1542	rBV2	1259222	6489175	3342945	12.19%	2.239%
42	19.558	1940	1947	1960	rBV3	113268	3069302	462804	1.69%	0.310%

LSC Report - Integrated Chromatogram

File : M:\YODA\DATA\Y190124\0124Y112.D  
 Operator : MA  
 Acquired : 1 Feb 19 22:49 using AcqMethod SVOC416  
 Instrument : Yoda  
 Sample Name: AZ85763W10 1/800  
 Misc Info :  
 Vial Number: 12  
 Quant File : Y0125NC.RES (RTE Integrator)



Library Search Compound Report

Data File : M:\YODA\DATA\Y190124\0124Y112.D  
 Acq On : 1 Feb 19 22:49  
 Sample : AZ85763W10 1/800  
 Misc :

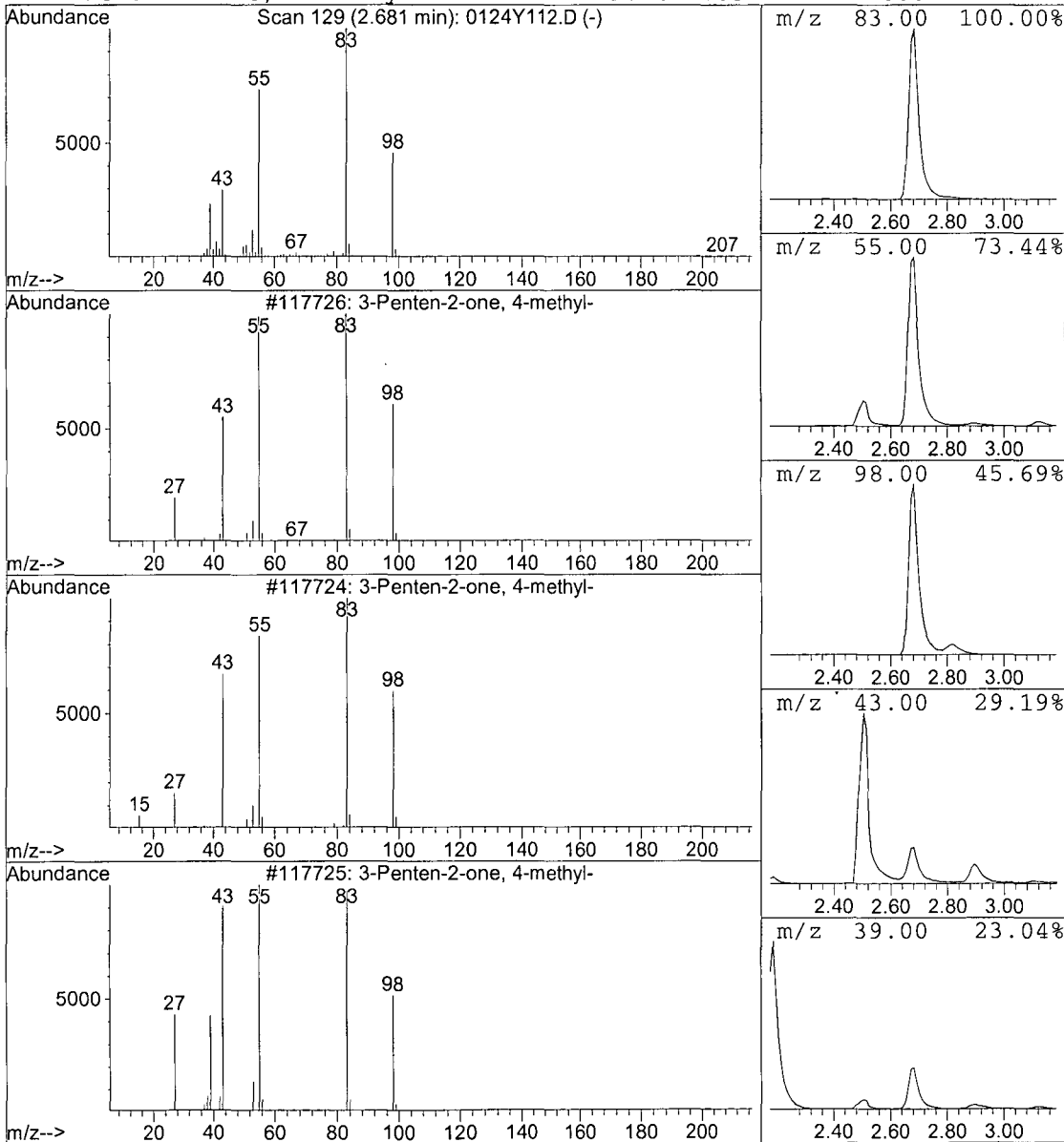
Vial: 12  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.25

Quant Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Library : M:\DATABASE\WILEY138.L

\*\*\*\*\*  
 Peak Number 1 3-Penten-2-one, 4-methyl- Concentration Rank 3

R.T.	EstConc	Area	Relative to ISTD	R.T.
2.68	61.44 ppb	3972580	1,4-dichlorobenzene-D4 (IS)	5.47

Hit#	of 5	Tentative ID	MW	MolForm	CAS#	Qual
1		3-Penten-2-one, 4-methyl-	98	C6H10O	000141-79-7	91
2		3-Penten-2-one, 4-methyl-	98	C6H10O	000141-79-7	91
3		3-Penten-2-one, 4-methyl-	98	C6H10O	000141-79-7	91
4		3-Penten-2-one, 4-methyl-	98	C6H10O	000141-79-7	87





Data File : M:\YODA\DATA\Y190124\0124Y112.D  
 Acq On : 1 Feb 19 22:49  
 Sample : AZ85763W10 1/800  
 Misc :

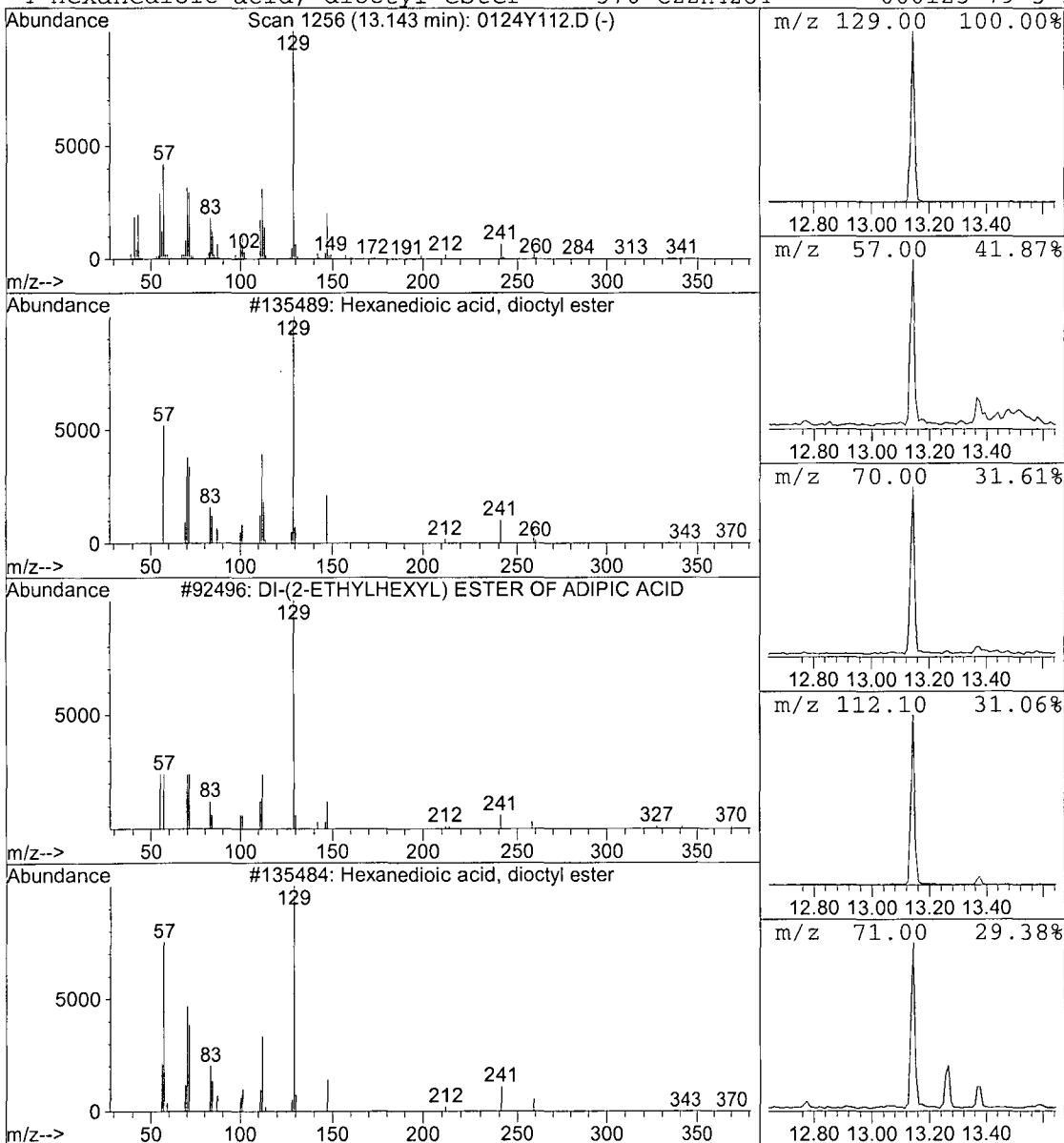
Vial: 12  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.25

Quant Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Library : M:\DATABASE\WILEY138.L

\*\*\*\*\*  
 Peak Number 2 Hexanedioic acid, dioctyl este Concentration Rank 18

R.T.	EstConc	Area	Relative to ISTD	R.T.
13.14	6.90 ppb	899149	Chrysene-D12 (IS)	13.75

Hit#	of	5	Tentative ID	MW	MolForm	CAS#	Qual
1			Hexanedioic acid, dioctyl ester	370	C22H42O4	000123-79-5	91
2			DI-(2-ETHYLHEXYL) ESTER OF ADIPIC A	370	C22H42O4	000000-00-0	80
3			Hexanedioic acid, dioctyl ester	370	C22H42O4	000123-79-5	80
4			Hexanedioic acid, dioctyl ester	370	C22H42O4	000123-79-5	52



Data File : M:\YODA\DATA\Y190124\0124Y113.D  
 Acq On : 1 Feb 19 23:16  
 Sample : AZ85764W10 1/800  
 Misc :

Vial: 13  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.25

Quant Time: Feb 4 10:20 2019

Quant Results File: Y0125NC.RES

Quant Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Mon Jan 28 14:58:58 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.47	152	491998	40.0000	ppb	0.00
21) Napthalene-D8 (IS)	6.90	136	2109213	40.0000	ppb	0.00
41) Acenaphthene-D10 (IS)	8.92	164	1161122	40.0000	ppb	0.00
65) Phenanthrene-D10 (IS)	10.66	188	2259448	40.0000	ppb	0.00
79) Chrysene-D12 (IS)	13.75	240	1977569	40.0000	ppb	-0.01
89) Perylene-D12 (IS)	15.63	264	1851627	40.0000	ppb	0.00
System Monitoring Compounds						
5) 2-Fluorophenol (S)	3.91	112	3427028	195.2125	ppb	0.04
Spiked Amount	250.000					
					Recovery =	78.085%
6) Phenol-D6 (S)	5.08	99	4463727	193.1161	ppb	0.03
Spiked Amount	250.000					
					Recovery =	77.246%
22) Nitrobenzene-D5 (S)	6.10	82	2093458	104.1878	ppb	0.00
Spiked Amount	125.000					
					Recovery =	83.350%
46) 2-Fluorobiphenyl (S)	8.13	172	3965027	105.4122	ppb	0.00
Spiked Amount	125.000					
					Recovery =	84.330%
64) 2,4,6-Tribromophenol (S)	9.85	330	915512	237.9290	ppb	0.00
Spiked Amount	250.000					
					Recovery =	95.172%
82) Terphenyl-D14 (S)	12.51	244	4420566	109.5304	ppb	0.00
Spiked Amount	125.000					
					Recovery =	87.624%

Target Compounds Qvalue

Quantitation Report

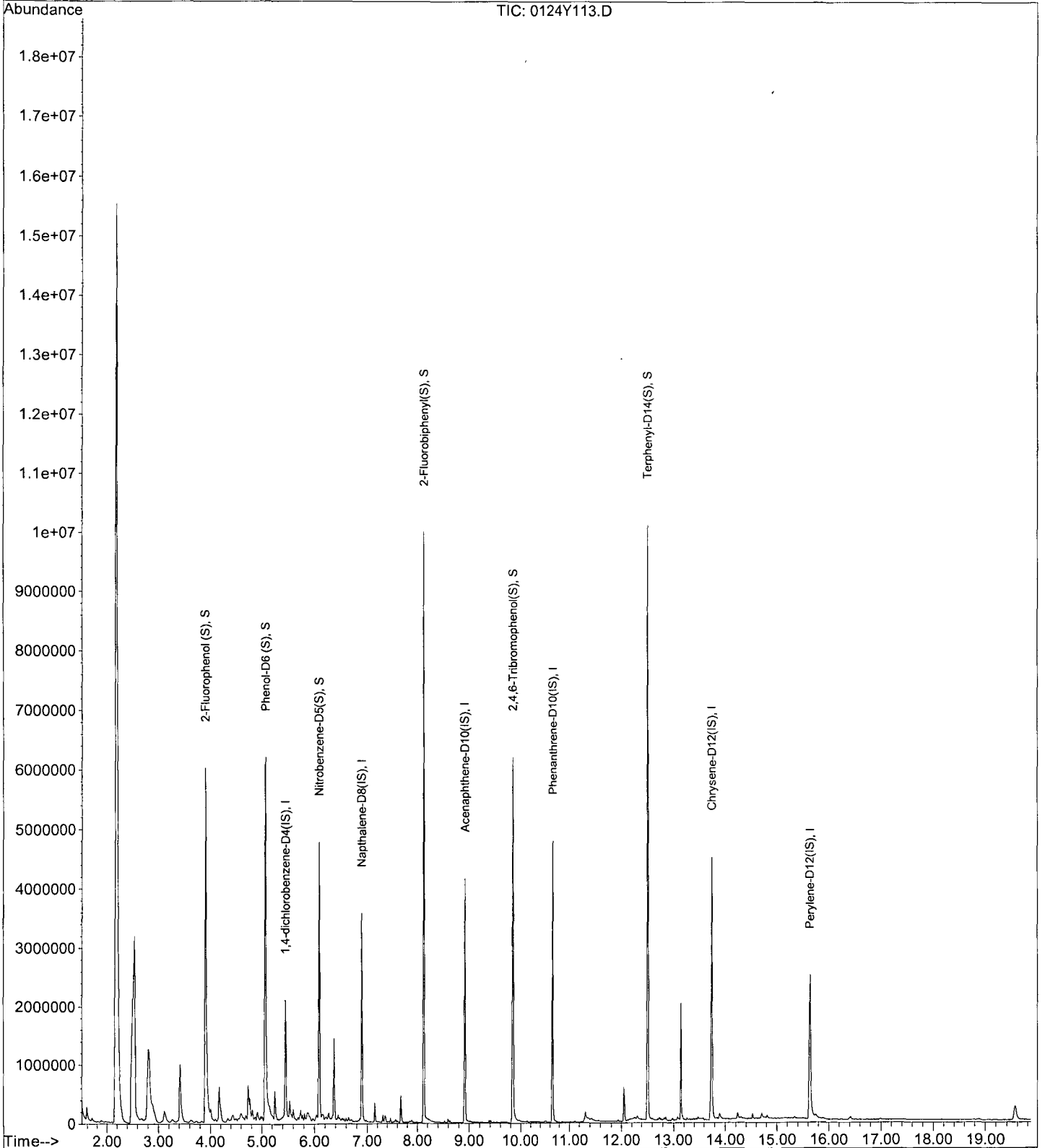
Data File : M:\YODA\DATA\Y190124\0124Y113.D  
Acq On : 1 Feb 19 23:16  
Sample : AZ85764W10 1/800  
Misc :

Vial: 13  
Operator: MA  
Inst : Yoda  
Multiplr: 1.25

Quant Time: Feb 4 10:20 2019

Quant Results File: Y0125NC.RES

Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Mon Feb 04 19:46:10 2019  
Response via : Initial Calibration



Tentatively Identified Compound (LSC) summary

Operator ID: MA Date Acquired: 1 Feb 19 23:16  
Data File: M:\YODA\DATA\Y190124\0124Y113.D  
Name: AZ85764W10 1/800  
Misc:  
Method: M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
Title: EPA 8270C  
Library Searched: M:\DATABASE\WILEY138.L

TIC Top Hit name	RT	EstConc	Units	Area	IntStd	ISRT	ISArea	ISConc
1,2-Benzenedicarboxy	11.32	5.1	ppb	567336	ISTD04	10.66	5583320	40.0
0124Y113.D Y0125NC.M			Fri Feb 08 08:30:58 2019					

LSC Area Percent Report

Data File : M:\YODA\DATA\Y190124\0124Y113.D  
 Acq On : 1 Feb 19 23:16  
 Sample : AZ85764W10 1/800  
 Misc :  
 MS Integration Params: LSCINT.P

Vial: 13  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.25000

Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Smoothing : ON  
 Sampling : 1  
 Start Thrs: 0.002  
 Stop Thrs : 0  
 Filtering: 5  
 Min Area: 3 % of largest Peak  
 Max Peaks: 100  
 Peak Location: TOP

If leading or trailing edge < 100 prefer < Baseline drop else tangent >  
 Peak separation: 5

Signal : TIC

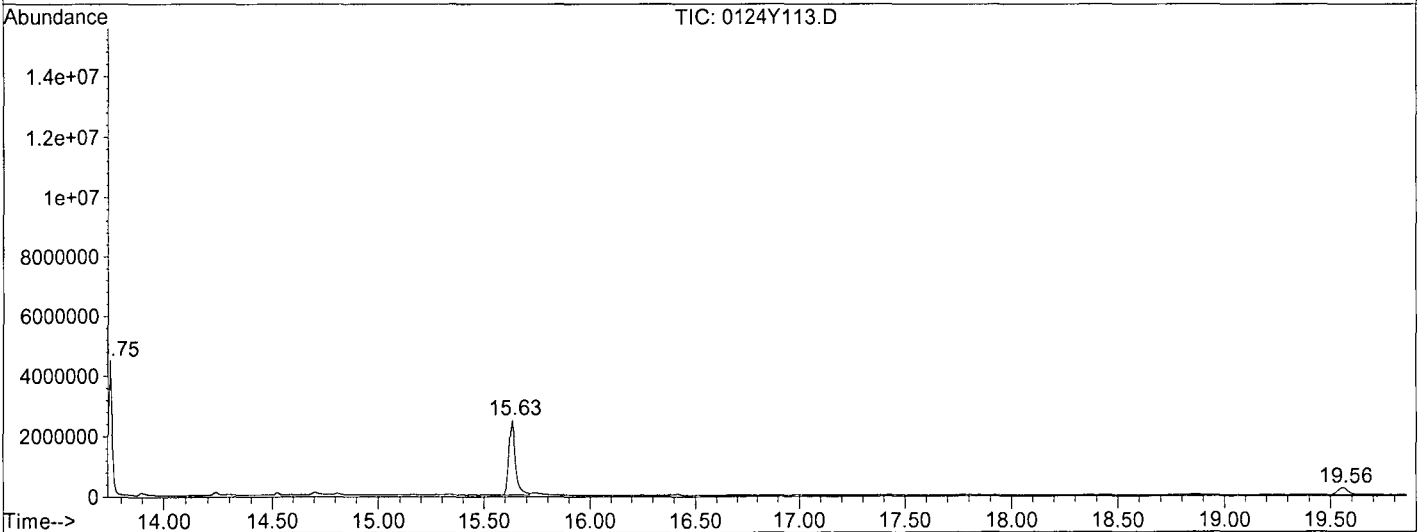
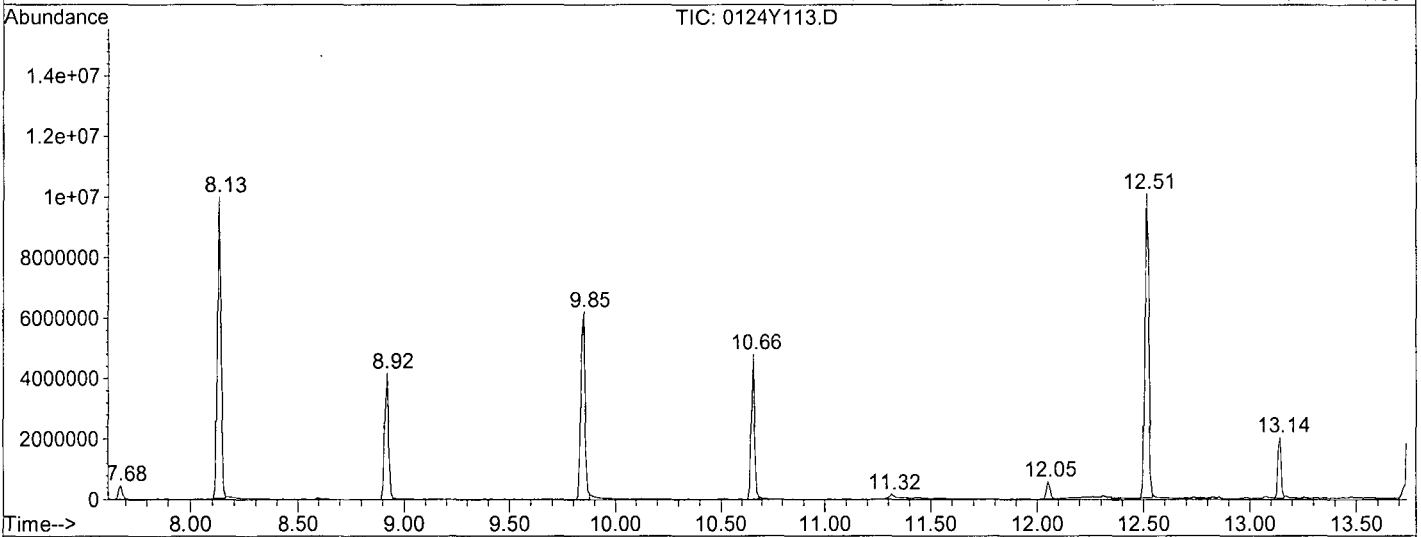
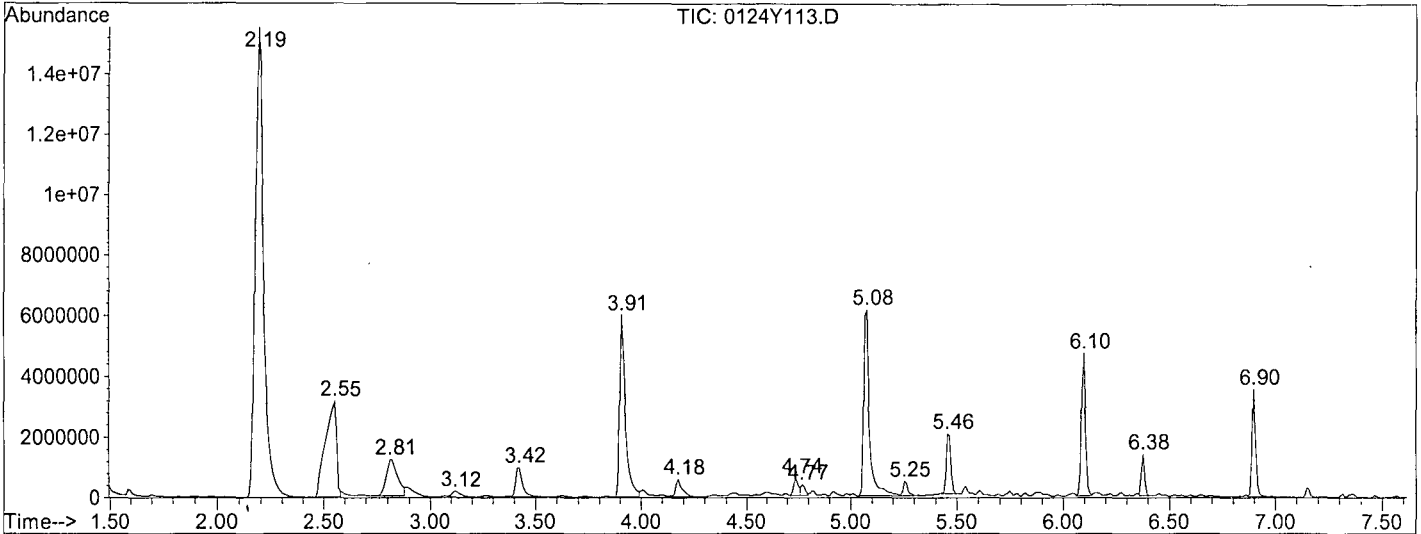
peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	raw area	corr. area	corr. % max.	% of total
1	2.190	70	76	104	rVB	15530888	47111735	42371061	100.00%	26.124%
2	2.552	104	115	118	rBV	3183831	13400764	11710666	27.64%	7.220%
3	2.812	133	143	150	rBV	1213178	6738470	4471255	10.55%	2.757%
4	3.118	172	176	187	rVB	189324	2557386	568269	1.34%	0.350%
5	3.424	205	209	226	rVB	981763	5340051	2213018	5.22%	1.364%
6	3.907	257	261	270	rBV	5989751	12934794	11305135	26.68%	6.970%
7	4.176	285	290	303	rVB	595710	3695875	1300288	3.07%	0.802%
8	4.743	348	351	353	rVV	579167	1779106	945891	2.23%	0.583%
9	4.771	353	354	357	rVV2	365193	1437909	482774	1.14%	0.298%
10	5.077	383	387	404	rBV	6136470	15735960	11841391	27.95%	7.301%
11	5.253	404	406	412	rVB2	477758	2175941	744197	1.76%	0.459%
12	5.457	425	428	433	rVV	1978284	4305812	2977302	7.03%	1.836%
13	6.098	493	497	501	rVV	4709382	7549438	6373388	15.04%	3.930%
14	6.377	525	527	530	rVB	1371656	3032959	1394396	3.29%	0.860%
15	6.896	580	583	590	rVB	3542436	5716509	4245617	10.02%	2.618%
16	7.676	664	667	674	rBV	457391	1931188	611513	1.44%	0.377%
17	8.131	713	716	719	rBV	9962215	12276669	10909048	25.75%	6.726%
18	8.920	797	801	804	rBV	4159436	5922280	5062835	11.95%	3.122%
19	9.849	897	901	904	rBV	6192263	9436155	8406803	19.84%	5.183%
20	10.656	984	988	991	rBV	4782088	6417131	5583322	13.18%	3.442%
21	11.315	1054	1059	1070	rBV	169092	2491860	567336	1.34%	0.350%
22	12.049	1135	1138	1143	rBV	578304	1695830	705134	1.66%	0.435%
23	12.513	1185	1188	1191	rBV	10052853	14476535	12949530	30.56%	7.984%
24	13.144	1253	1256	1258	rBV	1995155	3066617	2247154	5.30%	1.386%
25	13.748	1315	1321	1329	rBV	4475901	7855901	6046342	14.27%	3.728%
26	15.632	1519	1524	1533	rBV	2480443	7161888	5259149	12.41%	3.243%
27	19.559	1939	1947	1959	rBV2	240832	3419227	896396	2.12%	0.553%

Sum of corrected areas: 162189210

0124Y113.D Y0125NC.M Fri Feb 08 08:30:56 2019

LSC Report - Integrated Chromatogram

File : M:\YODA\DATA\Y190124\0124Y113.D  
Operator : MA  
Acquired : 1 Feb 19 23:16 using AcqMethod SVOC416  
Instrument : Yoda  
Sample Name: AZ85764W10 1/800  
Misc Info :  
Vial Number: 13  
Quant File : Y0125NC.RES (RTE Integrator)



Library Search Compound Report

Data File : M:\YODA\DATA\Y190124\0124Y113.D  
 Acq On : 1 Feb 19 23:16  
 Sample : AZ85764W10 1/800  
 Misc :

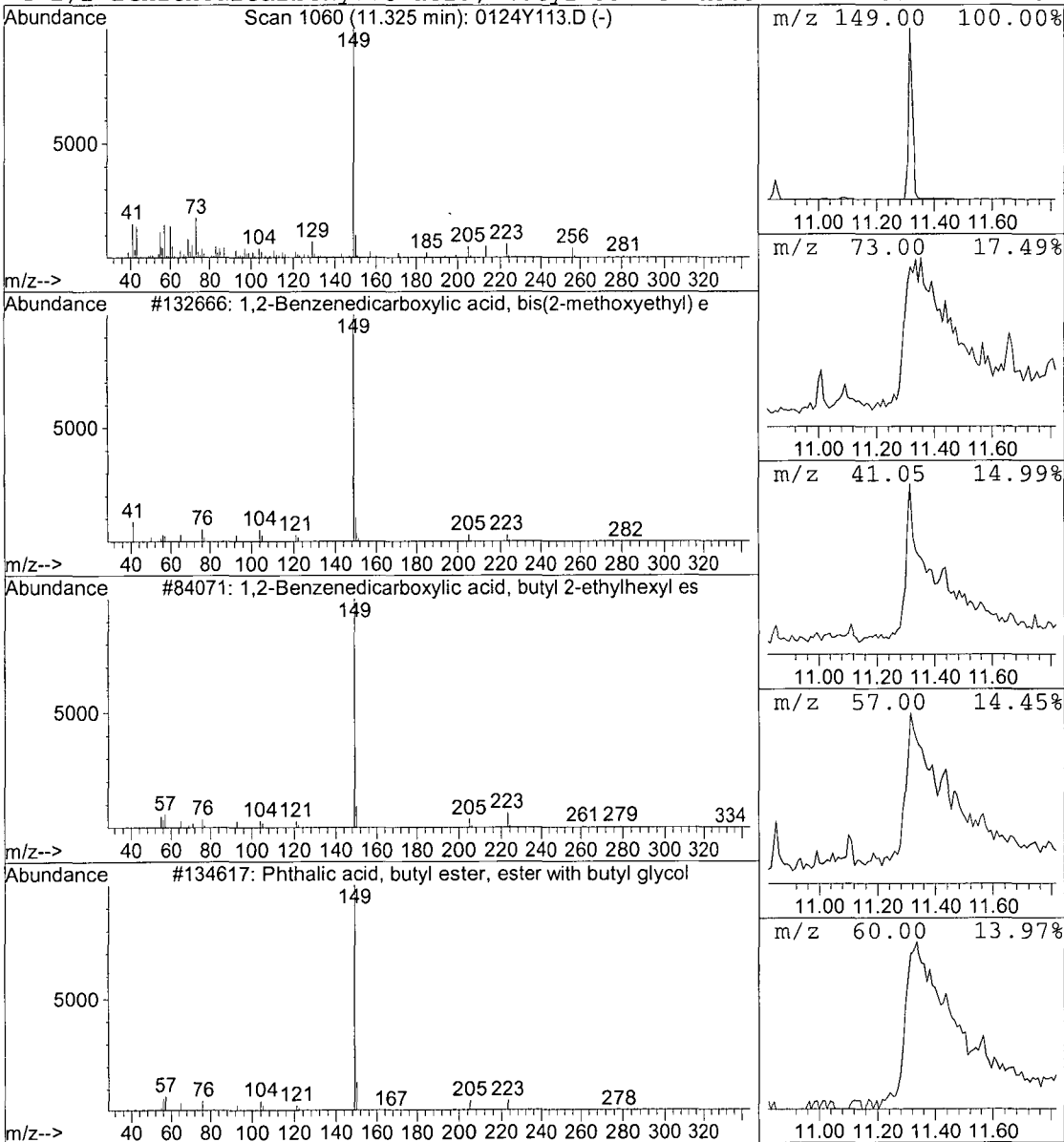
Vial: 13  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.25

Quant Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Library : M:\DATABASE\WILEY138.L

\*\*\*\*\*  
 Peak Number 1 1,2-Benzenedicarboxylic acid, Concentration Rank 14

R.T.	EstConc	Area	Relative to ISTD	R.T.
11.32	5.08 ppb	567336	Phenanthrene-D10 (IS)	10.66

Hit#	of	5	Tentative ID	MW	MolForm	CAS#	Qual
1			1,2-Benzenedicarboxylic acid, bis(2	282	C14H18O6	000117-82-8	80
2			1,2-Benzenedicarboxylic acid, butyl	334	C20H30O4	000085-69-8	80
3			Phthalic acid, butyl ester, ester w	336	C18H24O6	000085-70-1	74
4			1,2-Benzenedicarboxylic acid, butyl	334	C20H30O4	000084-78-6	72



Data File : M:\YODA\DATA\Y190124\0124Y114.D Vial: 14  
 Acq On : 1 Feb 19 23:44 Operator: MA  
 Sample : AZ85766W24 1/800 Inst : Yoda  
 Misc : Multiplr: 1.25

Quant Time: Feb 4 10:19 2019 Quant Results File: Y0125NC.RES

Quant Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Mon Jan 28 14:58:58 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.46	152	519880	40.0000	ppb	0.00
21) Napthalene-D8 (IS)	6.90	136	2168268	40.0000	ppb	0.00
41) Acenaphthene-D10 (IS)	8.92	164	1149483	40.0000	ppb	0.00
65) Phenanthrene-D10 (IS)	10.66	188	2215505	40.0000	ppb	0.00
79) Chrysene-D12 (IS)	13.75	240	1924763	40.0000	ppb	0.00
89) Perylene-D12 (IS)	15.63	264	1804180	40.0000	ppb	0.00

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
5) 2-Fluorophenol (S)	3.92	112	3408827	183.7618	ppb	0.05
Spiked Amount 250.000			Recovery =	73.505%		
6) Phenol-D6 (S)	5.07	99	4483440	183.5661	ppb	0.02
Spiked Amount 250.000			Recovery =	73.426%		
22) Nitrobenzene-D5 (S)	6.10	82	2070738	100.2502	ppb	0.01
Spiked Amount 125.000			Recovery =	80.200%		
46) 2-Fluorobiphenyl (S)	8.13	172	3909208	104.9805	ppb	0.00
Spiked Amount 125.000			Recovery =	83.985%		
64) 2,4,6-Tribromophenol (S)	9.85	330	927112	243.3833	ppb	0.00
Spiked Amount 250.000			Recovery =	97.353%		
82) Terphenyl-D14 (S)	12.52	244	4240046	107.9398	ppb	0.00
Spiked Amount 125.000			Recovery =	86.352%		

Target Compounds Qvalue



Quantitation Report

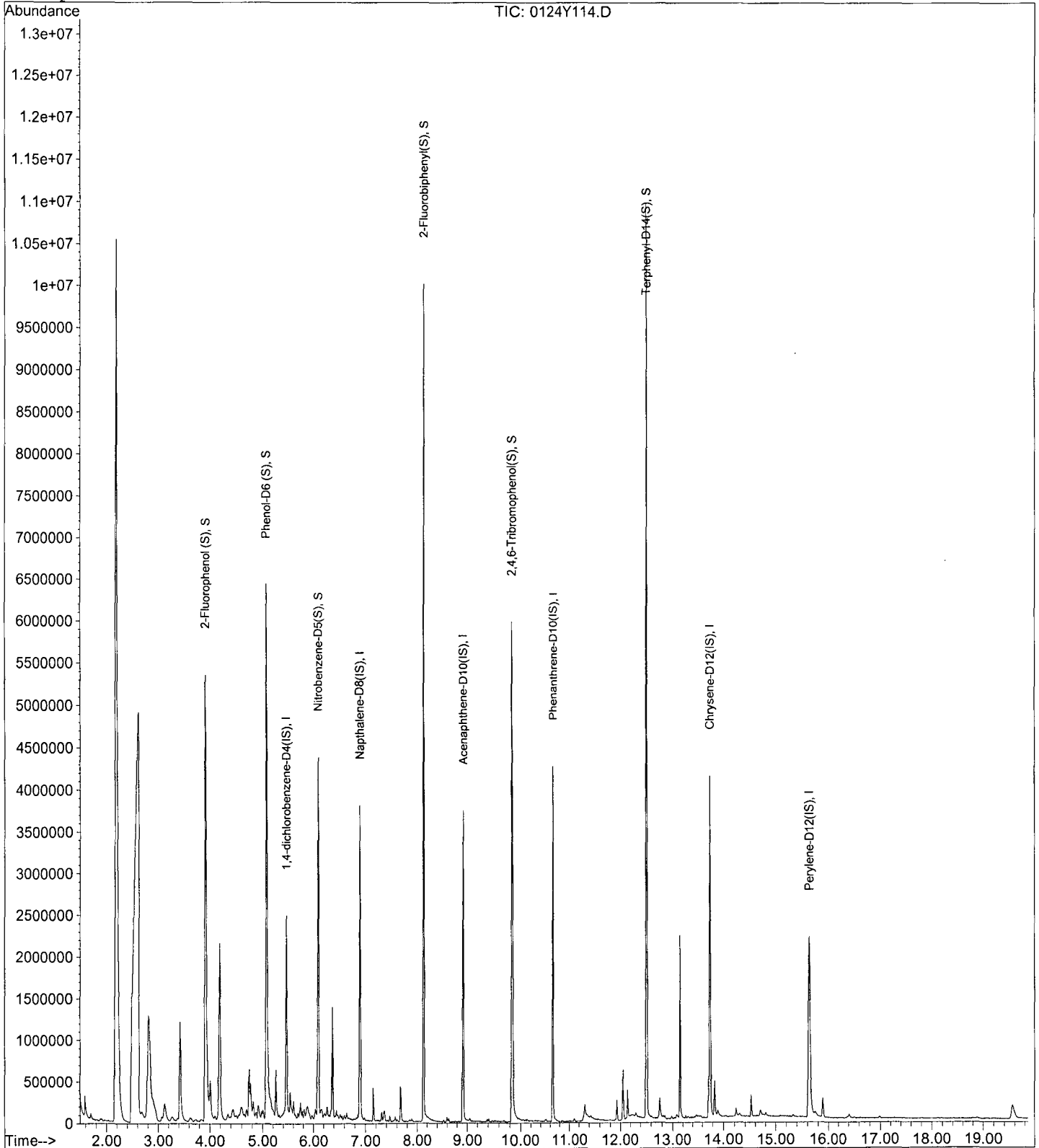
Data File : M:\YODA\DATA\Y190124\0124Y114.D  
Acq On : 1 Feb 19 23:44  
Sample : AZ85766W24 1/800  
Misc :

Vial: 14  
Operator: MA  
Inst : Yoda  
Multiplr: 1.25

Quant Time: Feb 4 10:19 2019

Quant Results File: Y0125NC.RES

Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Mon Feb 04 19:46:10 2019  
Response via : Initial Calibration



Tentatively Identified Compound (LSC) summary

Operator ID: MA Date Acquired: 1 Feb 19 23:44  
 Data File: M:\YODA\DATA\Y190124\0124Y114.D  
 Name: AZ85766W24 1/800  
 Misc:  
 Method: M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title: EPA 8270C  
 Library Searched: M:\DATABASE\WILEY138.L

TIC Top Hit name	RT	EstConc	Units	Area	IntStd	ISRT	ISArea	ISConc
1,2-Benzenedicarboxy	11.32	5.7	ppb	623809	ISTD04	10.66	5469440	40.0
Hexanedioic acid, di	13.14	20.2	ppb	2355650	ISTD05	13.75	5840420	40.0

0124Y114.D Y0125NC.M Fri Feb 08 08:34:27 2019

LSC Area Percent Report

Data File : M:\YODA\DATA\Y190124\0124Y114.D  
 Acq On : 1 Feb 19 23:44  
 Sample : AZ85766W24 1/800  
 Misc :  
 MS Integration Params: LSCINT.P

Vial: 14  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.25000

Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Smoothing : ON  
 Sampling : 1  
 Start Thrs: 0.002  
 Stop Thrs : 0  
 Filtering: 5  
 Min Area: 3 % of largest Peak  
 Max Peaks: 100  
 Peak Location: TOP

If leading or trailing edge < 100 prefer < Baseline drop else tangent >  
 Peak separation: 5

Signal : TIC

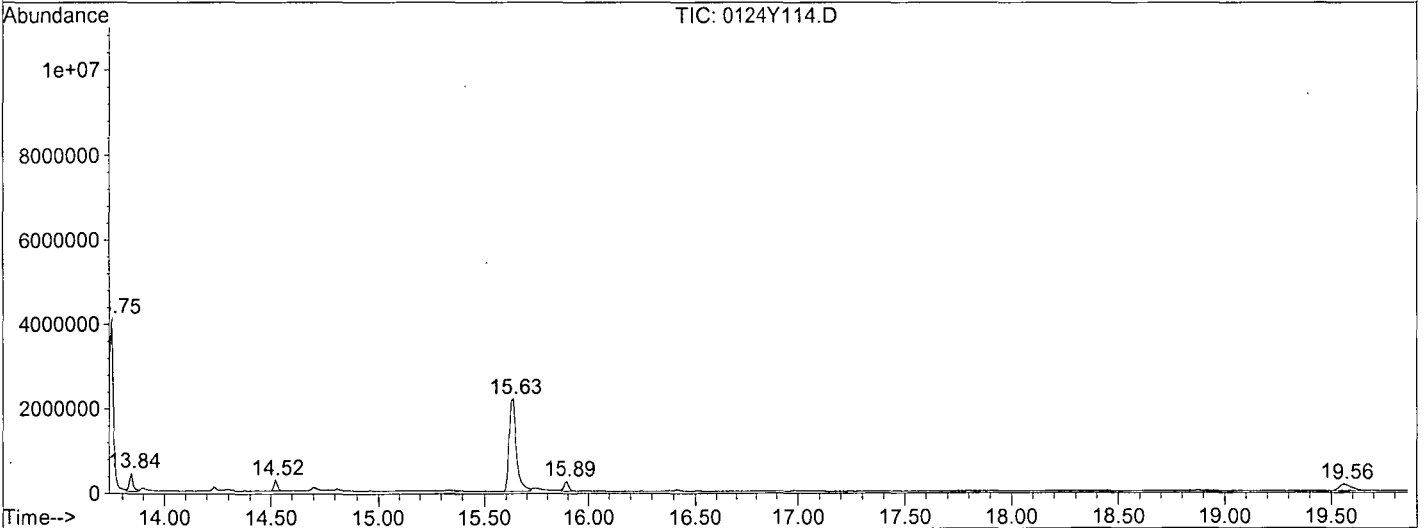
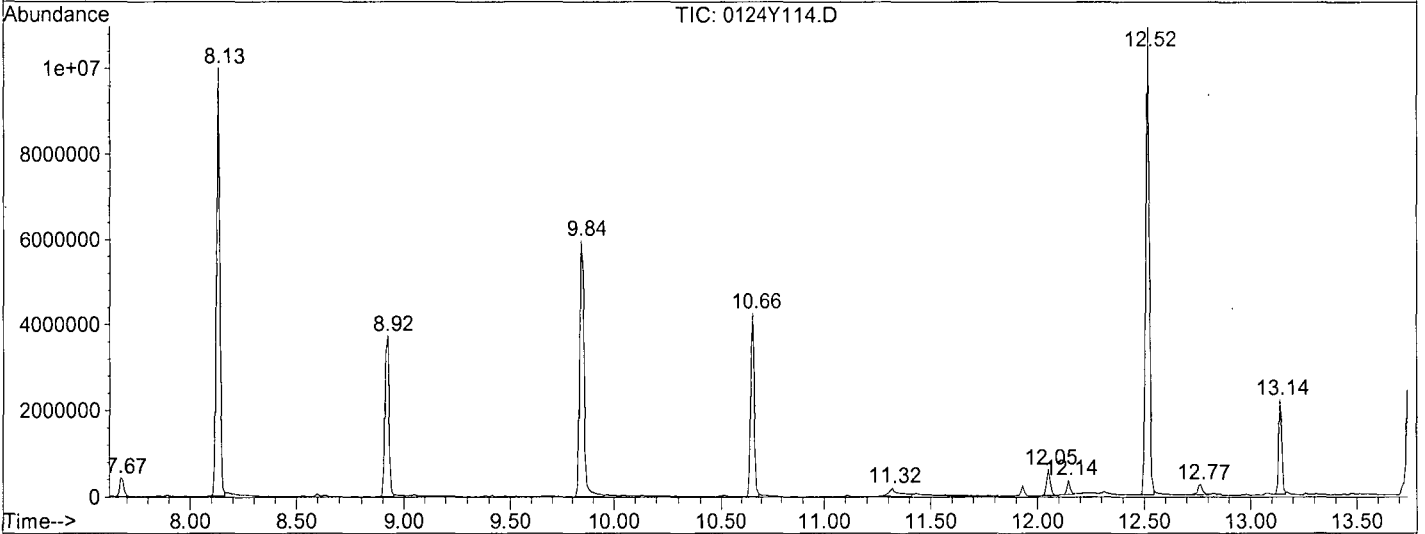
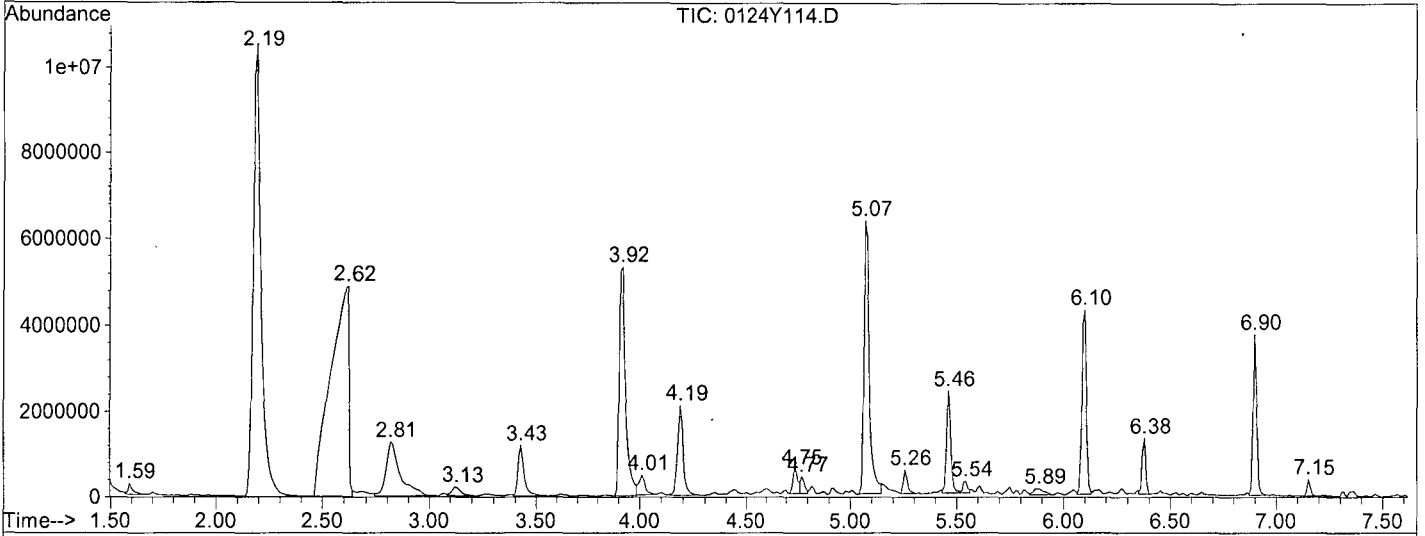
peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	raw area	corr. area	corr. % max.	% of total
1	1.589	9	11	21	rVB	263149	2139429	401264	1.40%	0.233%
2	2.192	70	76	104	rVB	10535661	31908925	27187918	95.18%	15.815%
3	2.619	104	122	124	rBV	4899124	30903817	28564618	100.00%	16.616%
4	2.814	135	143	167	rVB2	1266364	10057862	5789968	20.27%	3.368%
5	3.130	172	177	187	rVB	203137	2570560	610297	2.14%	0.355%
6	3.427	205	209	225	rVB	1185639	4974708	2356262	8.25%	1.371%
7	3.919	258	262	269	rBV	5324044	13046406	11243380	39.36%	6.540%
8	4.012	269	272	279	rVB	455292	2888143	926874	3.24%	0.539%
9	4.188	284	291	303	rVB	2112393	6242322	3864449	13.53%	2.248%
10	4.745	348	351	353	rVV	569710	1887015	994764	3.48%	0.579%
11	4.773	353	354	357	rVV2	402599	1485114	500326	1.75%	0.291%
12	5.070	383	386	394	rBV	6356525	13366089	11219571	39.28%	6.526%
13	5.256	404	406	411	rVB2	559520	2152982	768554	2.69%	0.447%
14	5.460	425	428	434	rVV	2390553	5059245	3445277	12.06%	2.004%
15	5.544	434	437	439	rVV	272366	1170220	419679	1.47%	0.244%
16	5.887	469	474	481	rVB3	149968	2160017	506335	1.77%	0.295%
17	6.101	493	497	500	rVV	4306612	7403209	6303910	22.07%	3.667%
18	6.379	524	527	530	rVB	1313626	2495098	1509613	5.28%	0.878%
19	6.899	580	583	590	rVB	3757469	6063695	4340437	15.20%	2.525%
20	7.150	607	610	616	rBV	393500	1478581	412464	1.44%	0.240%
21	7.669	664	666	674	rBV	419398	1980075	597980	2.09%	0.348%
22	8.134	712	716	719	rBV	9981793	11687600	10809362	37.84%	6.288%
23	8.923	797	801	804	rBV	3726590	5847404	4976638	17.42%	2.895%
24	9.842	897	900	912	rBV	5965420	11318640	8717267	30.52%	5.071%
25	10.659	984	988	991	rBV	4255349	6318646	5469444	19.15%	3.182%
26	11.318	1053	1059	1069	rBV	193045	2492794	623809	2.18%	0.363%
27	12.051	1135	1138	1143	rBV	604382	1717426	714715	2.50%	0.416%
28	12.144	1145	1148	1151	rBV	329904	1098589	338952	1.19%	0.197%
29	12.515	1184	1188	1191	rBV	10917000	13564280	12618702	44.18%	7.340%
30	12.766	1209	1215	1220	rBV2	245044	1791326	430501	1.51%	0.250%
31	13.137	1253	1255	1258	rBV	2188423	3395864	2355651	8.25%	1.370%
32	13.750	1315	1321	1328	rBV	4104676	7507540	5840416	20.45%	3.397%
33	13.843	1328	1331	1335	rVV	430620	1534524	554475	1.94%	0.323%
34	14.521	1401	1404	1409	rBV	260154	1354000	315650	1.11%	0.184%
35	15.635	1519	1524	1533	rBV	2178488	7077590	5120076	17.92%	2.978%
36	15.895	1548	1552	1558	rVB	230375	1685978	377902	1.32%	0.220%
37	19.562	1940	1947	1959	rBV4	161834	3014177	681234	2.38%	0.396%

Sum of corrected areas: 171908734

0124Y114.D Y0125NC.M Fri Feb 08 08:34:23 2019

LSC Report - Integrated Chromatogram

File : M:\YODA\DATA\Y190124\0124Y114.D  
Operator : MA  
Acquired : 1 Feb 19 23:44 using AcqMethod SVOC416  
Instrument : Yoda  
Sample Name: AZ85766W24 1/800  
Misc Info :  
Vial Number: 14  
Quant File : Y0125NC.RES (RTE Integrator)



Library Search Compound Report

Data File : M:\YODA\DATA\Y190124\0124Y114.D  
 Acq On : 1 Feb 19 23:44  
 Sample : AZ85766W24 1/800  
 Misc :

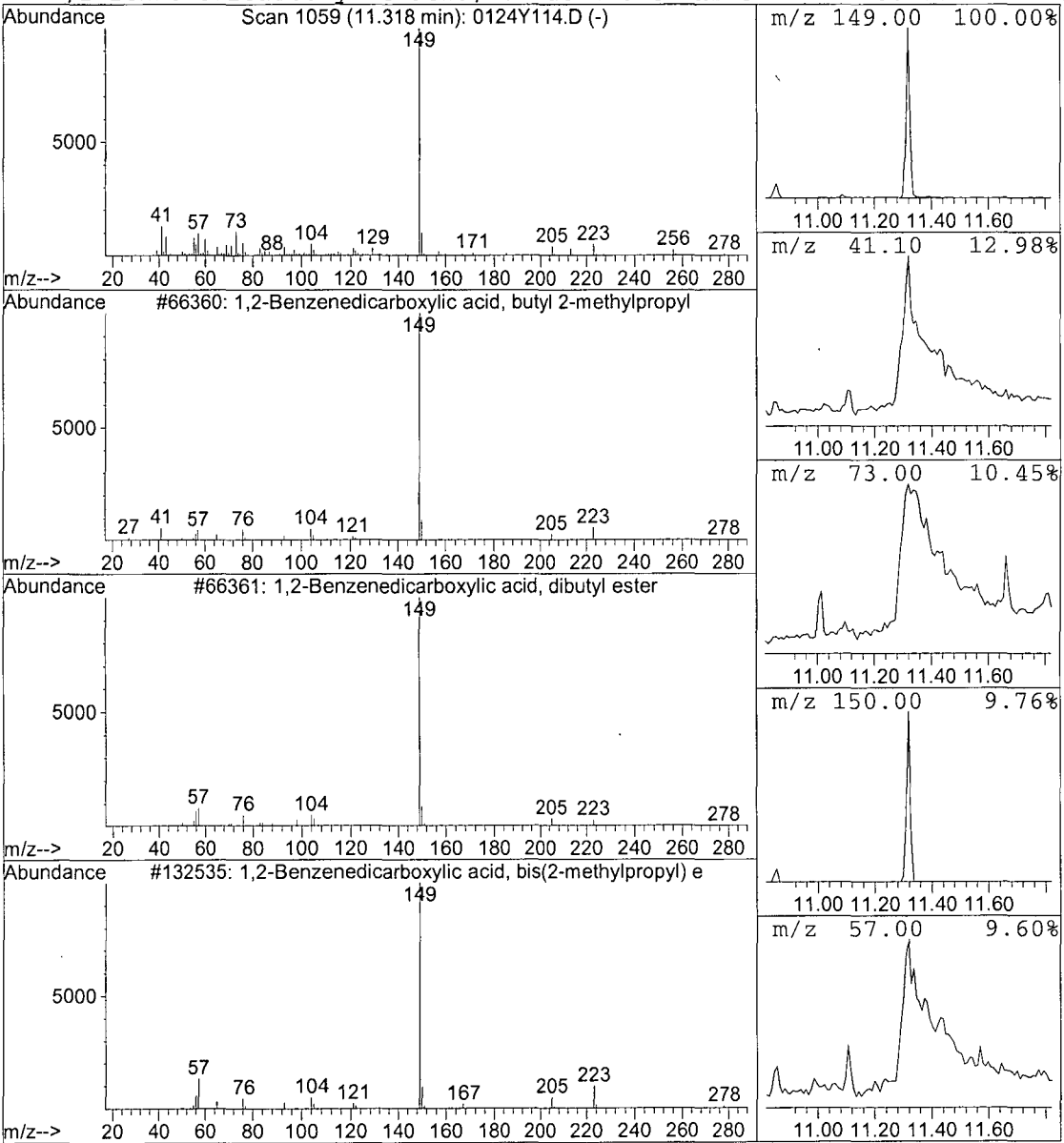
Vial: 14  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.25

Quant Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Library : M:\DATABASE\WILEY138.L

\*\*\*\*\*  
 Peak Number 1 1,2-Benzenedicarboxylic acid, Concentration Rank 19

R.T.	EstConc	Area	Relative to ISTD	R.T.
11.32	5.70 ppb	623809	Phenanthrene-D10 (IS)	10.66

Hit#	of	5	Tentative ID	MW	MolForm	CAS#	Qual
1			1,2-Benzenedicarboxylic acid, butyl	278	C16H22O4	017851-53-5	93
2			1,2-Benzenedicarboxylic acid, dibut	278	C16H22O4	000084-74-2	90
3			1,2-Benzenedicarboxylic acid, bis(2	278	C16H22O4	000084-69-5	89
4			1,2-Benzenedicarboxylic acid, dibut	278	C16H22O4	000084-74-2	81



Library Search Compound Report

Data File : M:\YODA\DATA\Y190124\0124Y114.D  
 Acq On : 1 Feb 19 23:44  
 Sample : AZ85766W24 1/800  
 Misc :

Vial: 14  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.25

Quant Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)

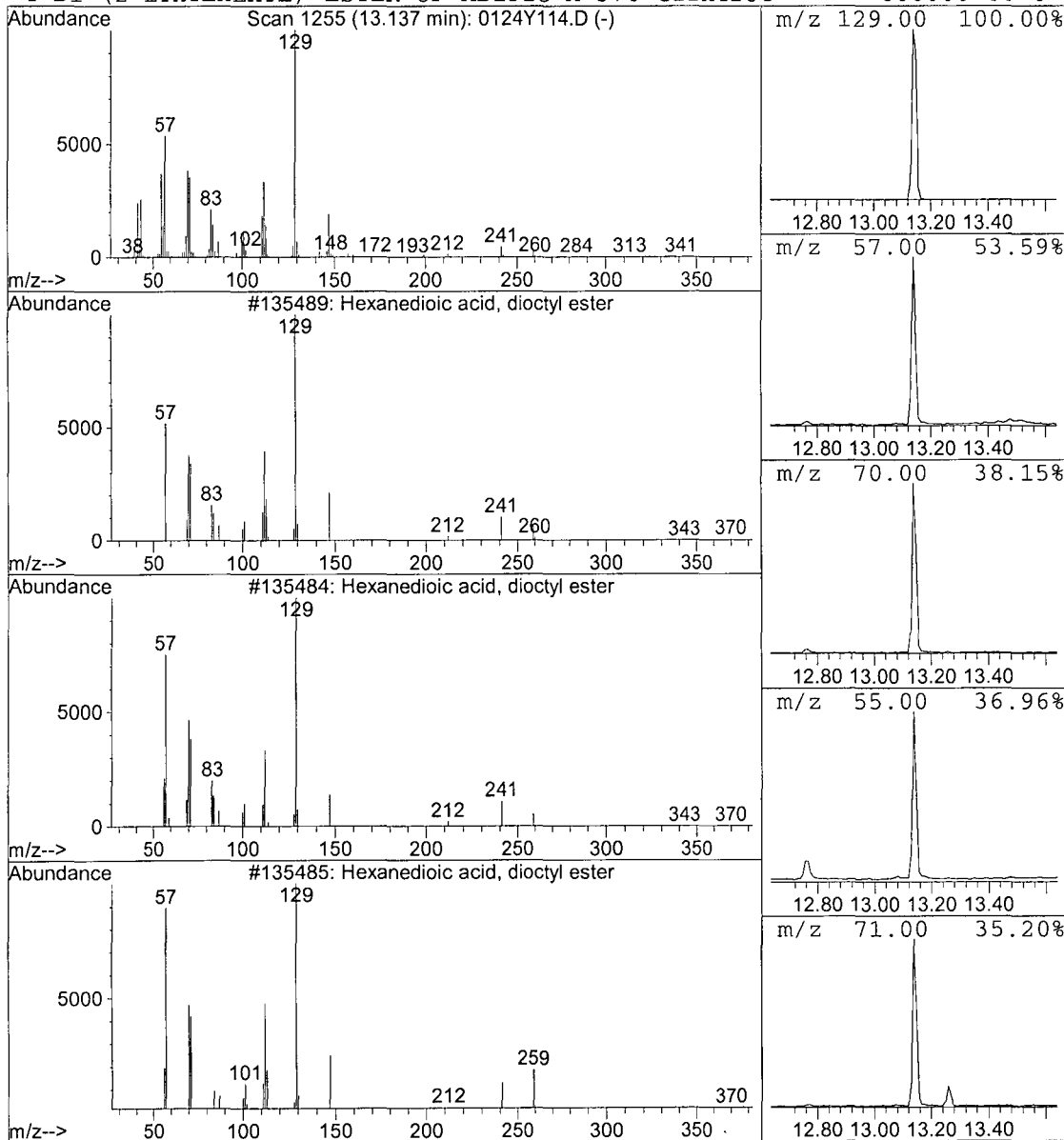
Title : EPA 8270C

Library : M:\DATABASE\WILEY138.L

\*\*\*\*\*  
 Peak Number 2 Hexanedioic acid, dioctyl este Concentration Rank 6

R.T.	EstConc	Area	Relative to ISTD	R.T.
13.14	20.17 ppb	2355650	Chrysene-D12 (IS)	13.75

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Hexanedioic acid, dioctyl ester	370	C22H42O4	000123-79-5	91
2	Hexanedioic acid, dioctyl ester	370	C22H42O4	000123-79-5	86
3	Hexanedioic acid, dioctyl ester	370	C22H42O4	000123-79-5	62
4	DI-(2-ETHYLHEXYL) ESTER OF ADIPIC A	370	C22H42O4	000000-00-0	53



Data File : M:\YODA\DATA\Y190124\0124Y098.D  
 Acq On : 1 Feb 19 16:19  
 Sample : 190130A Blk 1/800  
 Misc :

Vial: 98  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.25

Quant Time: Feb 4 10:48 2019

Quant Results File: Y0125NC.RES

Quant Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Mon Jan 28 14:58:58 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.46	152	407906	40.0000	ppb	0.00
21) Napthalene-D8 (IS)	6.90	136	1730017	40.0000	ppb	0.00
41) Acenaphthene-D10 (IS)	8.92	164	912178	40.0000	ppb	0.00
65) Phenanthrene-D10 (IS)	10.66	188	1761484	40.0000	ppb	0.00
79) Chrysene-D12 (IS)	13.75	240	1559813	40.0000	ppb	-0.01
89) Perylene-D12 (IS)	15.63	264	1513972	40.0000	ppb	0.00

System Monitoring Compounds

5) 2-Fluorophenol (S)	3.89	112	3313768	227.6750	ppb	0.02
Spiked Amount 250.000				Recovery =	91.070%	
6) Phenol-D6 (S)	5.06	99	4218189	220.1152	ppb	0.00
Spiked Amount 250.000				Recovery =	88.046%	
22) Nitrobenzene-D5 (S)	6.09	82	2015717	122.3073	ppb	0.00
Spiked Amount 125.000				Recovery =	97.846%	
46) 2-Fluorobiphenyl (S)	8.13	172	3786452	128.1373	ppb	0.00
Spiked Amount 125.000				Recovery =	102.510%	
64) 2,4,6-Tribromophenol (S)	9.85	330	872148	288.5172	ppb	0.00
Spiked Amount 250.000				Recovery =	115.407%	
82) Terphenyl-D14 (S)	12.51	244	4243389	133.2995	ppb	0.00
Spiked Amount 125.000				Recovery =	106.640%	

Target Compounds

Qvalue

Quantitation Report

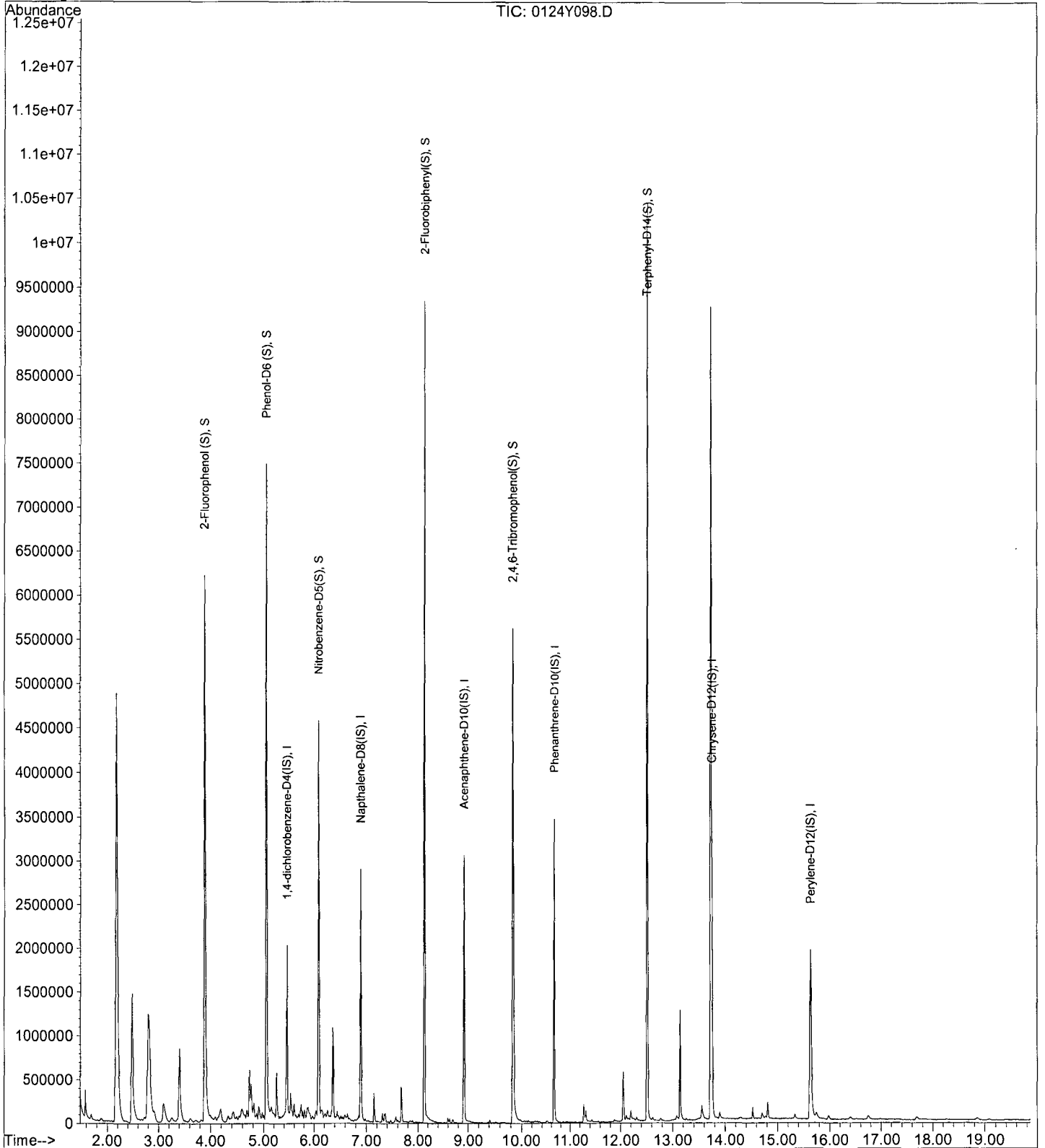
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Acq On : 1 Feb 19 16:19  
Sample : 190130A Blk 1/800  
Misc :

Vial: 98  
Operator: MA  
Inst : Yoda  
Multiplr: 1.25

Quant Time: Feb 4 10:48 2019

Quant Results File: Y0125NC.RES

Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Mon Feb 04 19:46:10 2019  
Response via : Initial Calibration





Tentatively Identified Compound (LSC) summary

Operator ID: MA Date Acquired: 1 Feb 19 16:19  
 Data File: M:\YODA\DATA\Y190124\0124Y098.D  
 Name: 190130A Blk 1/800  
 Misc:  
 Method: M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title: EPA 8270C  
 Library Searched: M:\DATABASE\WILEY138.L

TIC Top Hit name	RT	EstConc	Units	Area	IntStd	ISRT	ISArea	ISConc
Benzene, methyl-	2.18	218.0	ppb	11425600	ISTD01	5.46	2620080	40.0
Acetic acid, ethyl e	2.49	63.9	ppb	3347430	ISTD01	5.46	2620080	40.0
Ethene, tetrachloro-	2.80	84.6	ppb	4431650	ISTD01	5.46	2620080	40.0
Butanedioic acid, di	5.53	7.7	ppb	401962	ISTD01	5.46	2620080	40.0
Pentanedioic acid, d	6.37	18.4	ppb	1289090	ISTD02	6.90	3509310	40.0
Hexanedioic acid, di	7.15	5.3	ppb	369644	ISTD02	6.90	3509310	40.0

0124Y098.D Y0125NC.M Fri Feb 08 08:10:08 2019

LSC Area Percent Report

Data File : M:\YODA\DATA\Y190124\0124Y098.D  
 Acq On : 1 Feb 19 16:19  
 Sample : 190130A Blk 1/800  
 Misc :  
 MS Integration Params: LSCINT.P

Vial: 98  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.25000

Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Smoothing : ON  
 Sampling : 1  
 Start Thrs: 0.002  
 Stop Thrs : 0  
 Filtering: 5  
 Min Area: 3 % of largest Peak  
 Max Peaks: 100  
 Peak Location: TOP

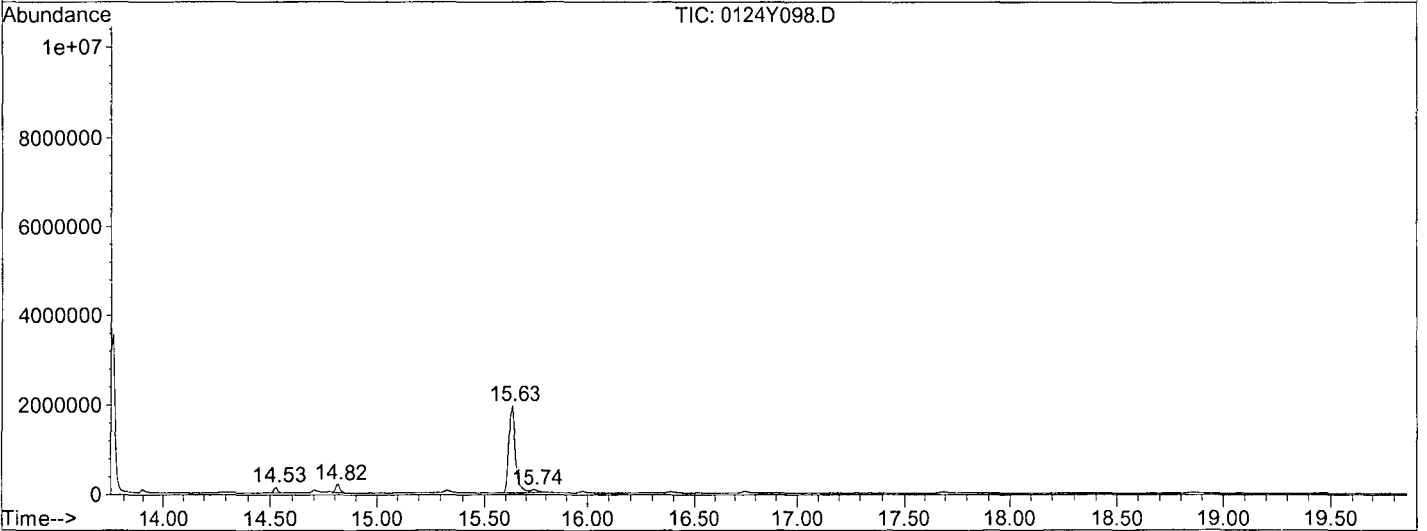
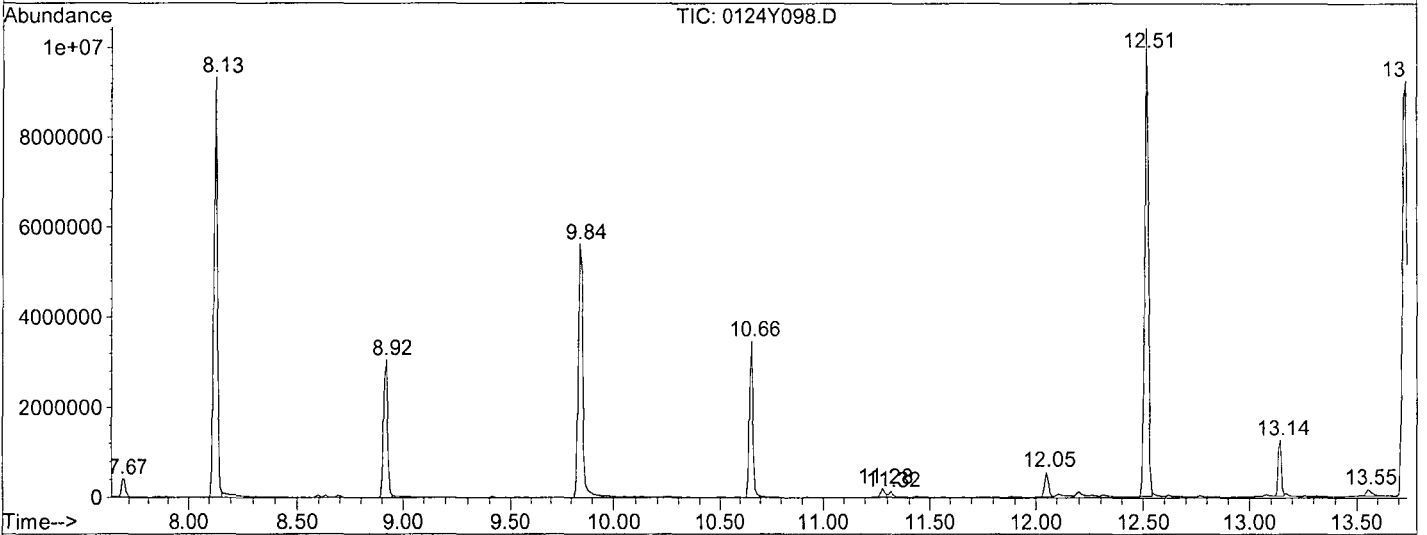
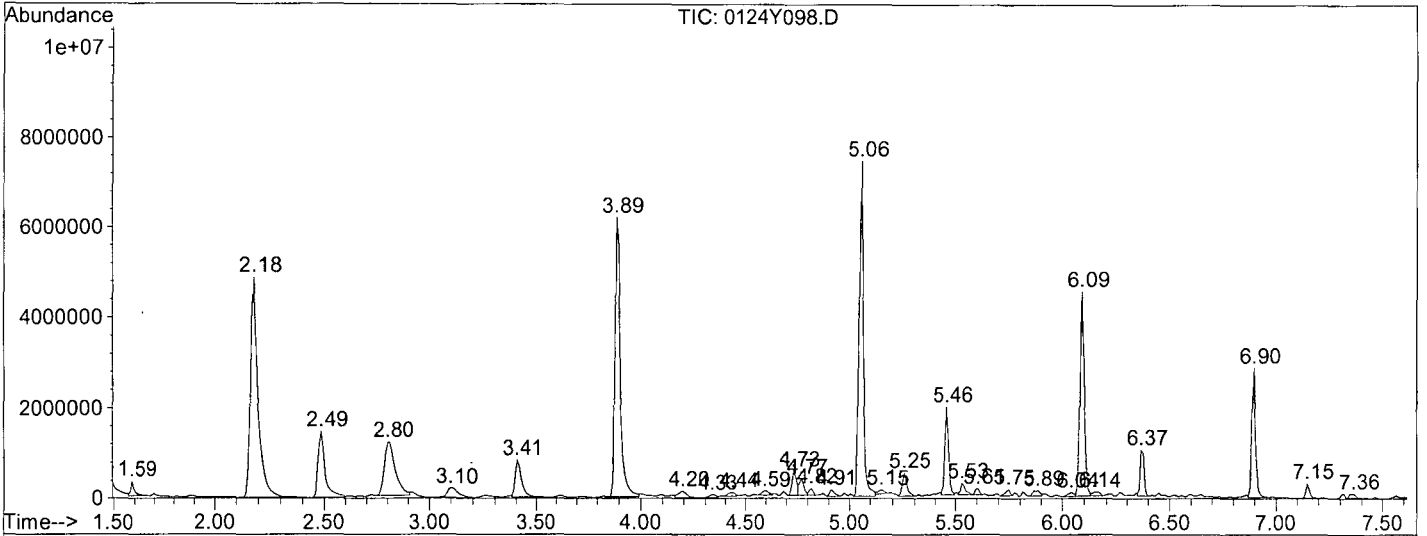
If leading or trailing edge < 100 prefer < Baseline drop else tangent >  
 Peak separation: 5

Signal : TIC

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	raw area	corr. area	corr. % max.	% of total
1	1.587	9	11	20	rVB	327810	1914866	424902	2.67%	0.335%
2	2.181	69	75	91	rBV	4869307	13705170	11425577	71.84%	8.997%
3	2.487	104	108	120	rBV	1464366	5364796	3347431	21.05%	2.636%
4	2.803	136	142	153	rBV	1192201	6493373	4431654	27.87%	3.490%
5	3.100	167	174	186	rBV3	213372	2718907	774626	4.87%	0.610%
6	3.406	204	207	217	rVB	822735	3626605	1759672	11.06%	1.386%
7	3.889	256	259	270	rBV	6192385	13820287	10930960	68.73%	8.607%
8	4.195	288	292	301	rVB2	153588	2029265	420148	2.64%	0.331%
9	4.335	301	307	310	rBV	69919	1102551	180838	1.14%	0.142%
10	4.437	313	318	321	rVV4	79010	1116371	203579	1.28%	0.160%
11	4.595	331	335	339	rBV2	95704	1197788	240463	1.51%	0.189%
12	4.734	347	350	352	rVV	539736	1426445	809329	5.09%	0.637%
13	4.771	352	354	357	rVV2	374096	1577308	579569	3.64%	0.456%
14	4.817	357	359	362	rVB2	156971	952629	194528	1.22%	0.153%
15	4.910	367	369	374	rBV2	146445	1163001	258751	1.63%	0.204%
16	5.059	381	385	392	rBV	7441081	12102047	10653140	66.99%	8.388%
17	5.152	392	395	398	rVB2	83225	993115	171167	1.08%	0.135%
18	5.254	403	406	411	rVB	525628	1748404	759179	4.77%	0.598%
19	5.458	425	428	432	rVV	1954165	3876593	2620081	16.48%	2.063%
20	5.532	434	436	441	rVV	264169	1397605	401962	2.53%	0.317%
21	5.607	441	444	446	rVV	137354	828702	189887	1.19%	0.150%
22	5.746	455	459	461	rBV3	146062	966410	223838	1.41%	0.176%
23	5.885	469	474	476	rBV3	123403	1142036	309024	1.94%	0.243%
24	6.043	486	491	493	rBV	93474	962968	184390	1.16%	0.145%
25	6.089	493	496	500	rVV	4521994	7406600	6077860	38.22%	4.786%
26	6.145	500	502	506	rVB4	90406	990829	209194	1.32%	0.165%
27	6.368	524	526	530	rVB	1021558	2259706	1289087	8.11%	1.015%
28	6.897	580	583	590	rVB	2872179	5264757	3509310	22.07%	2.763%
29	7.148	608	610	615	rBV	323835	1257448	369644	2.32%	0.291%
30	7.361	629	633	636	rVB2	94111	928606	187316	1.18%	0.147%
31	7.667	664	666	671	rBV	399097	1431262	571618	3.59%	0.450%
32	8.132	712	716	719	rBV	9334728	11185498	10438905	65.64%	8.220%
33	8.921	797	801	804	rBV	3054563	4724547	3995069	25.12%	3.146%
34	9.840	897	900	912	rBV2	5617378	10538591	8258336	51.93%	6.503%
35	10.657	984	988	1006	rBV	3462155	6685263	4451138	27.99%	3.505%
36	11.279	1052	1055	1057	rBV	198296	755203	247442	1.56%	0.195%
37	11.316	1057	1059	1069	rVB	121100	1583767	181280	1.14%	0.143%
38	12.049	1135	1138	1142	rBV	555150	1437005	687040	4.32%	0.541%
39	12.513	1185	1188	1191	rBV	10410879	13722632	12440161	78.22%	9.796%
40	13.145	1253	1256	1258	rBV	1244092	2071486	1430467	8.99%	1.126%
41	13.553	1297	1300	1315	rVB2	153646	2424654	326633	2.05%	0.257%
42	13.730	1315	1319	1329	rBV2	9237465	17617520	15903204	100.00%	12.522%
43	14.528	1402	1405	1408	rBV	129638	852679	164543	1.03%	0.130%
44	14.816	1433	1436	1446	rVB	192035	1884206	16639	1.89%	0.237%
45	15.633	1519	1524	1533	rBV	1936832	5881367	4286473	26.95%	3.375%

LSC Report - Integrated Chromatogram

File : M:\YODA\DATA\Y190124\0124Y098.D  
 Operator : MA  
 Acquired : 1 Feb 19 16:19 using AcqMethod SVOC416  
 Instrument : Yoda  
 Sample Name: 190130A Blk 1/800  
 Misc Info :  
 Vial Number: 98  
 Quant File :Y0125NC.RES (RTE Integrator)



Library Search Compound Report

Data File : M:\YODA\DATA\Y190124\0124Y098.D  
 Acq On : 1 Feb 19 16:19  
 Sample : 190130A Blk 1/800  
 Misc :

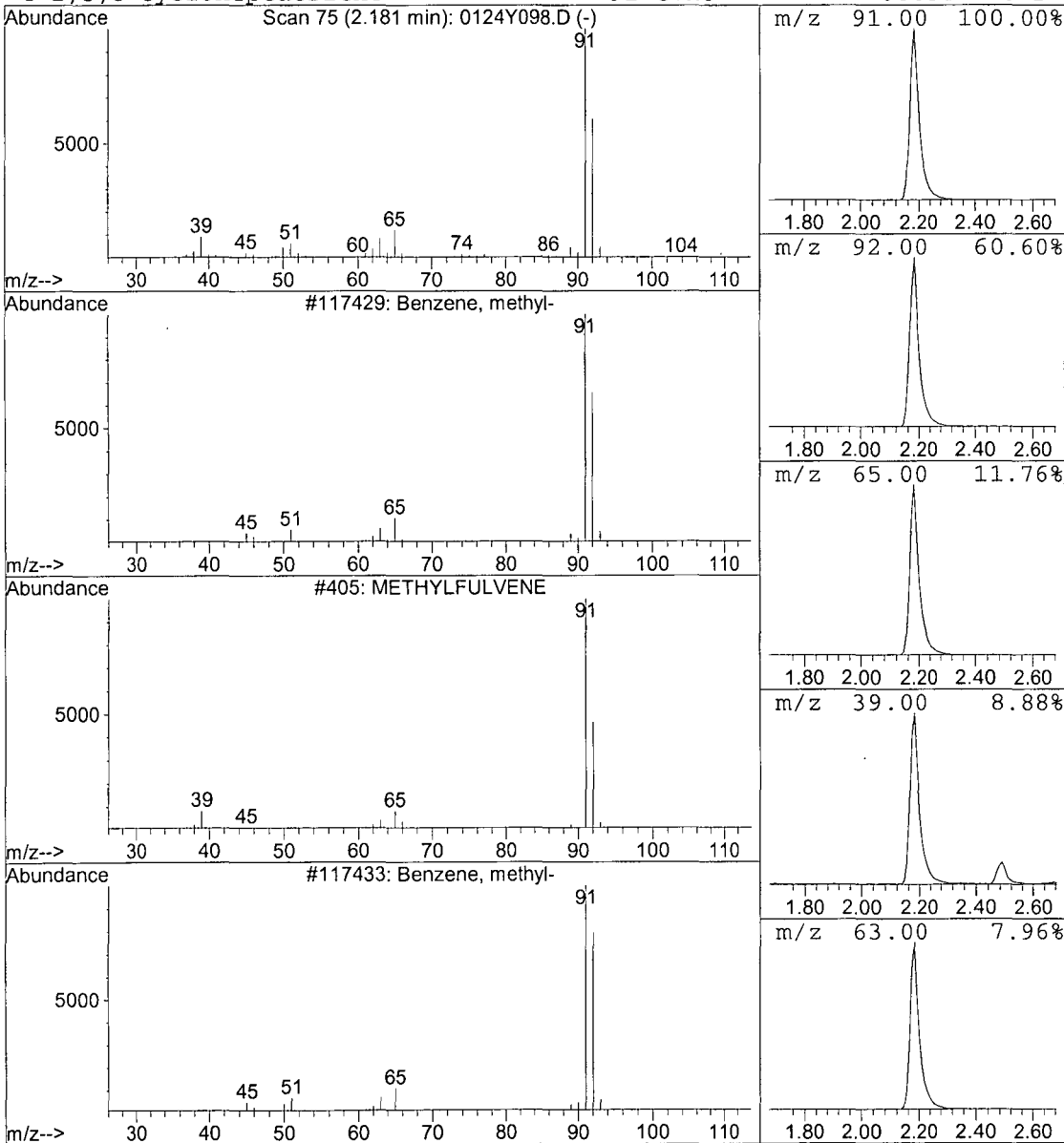
Vial: 98  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.25

Quant Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Library : M:\DATABASE\WILEY138.L

\*\*\*\*\*  
 Peak Number 1 Benzene, methyl- Concentration Rank 1

R.T.	EstConc	Area	Relative to ISTD	R.T.
2.18	218.04 ppb	11425600	1,4-dichlorobenzene-D4 (IS)	5.46

Hit#	of 5	Tentative ID	MW	MolForm	CAS#	Qual
1		Benzene, methyl-	92	C7H8	000108-88-3	94
2		METHYLFULVENE	92	C7H8	000000-00-0	91
3		Benzene, methyl-	92	C7H8	000108-88-3	91
4		1,3,5-Cycloheptatriene	92	C7H8	000544-25-2	91



Library Search Compound Report

Data File : M:\YODA\DATA\Y190124\0124Y098.D  
 Acq On : 1 Feb 19 16:19  
 Sample : 190130A Blk 1/800  
 Misc :

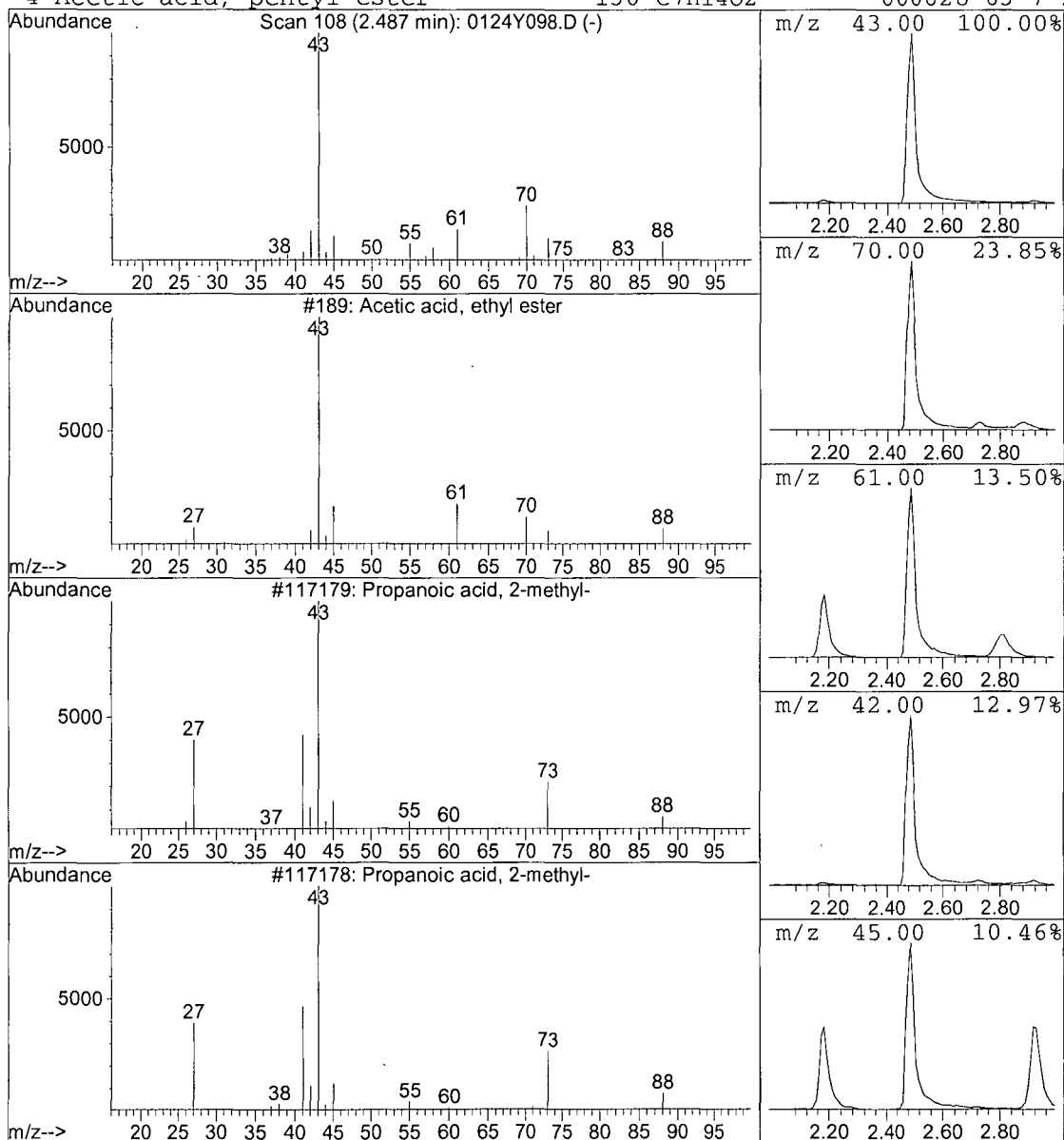
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 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.25

Quant Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Library : M:\DATABASE\WILEY138.L

\*\*\*\*\*  
 Peak Number 2 Acetic acid, ethyl ester Concentration Rank 3

R.T.	EstConc	Area	Relative to ISTD	R.T.
2.49	63.88 ppb	3347430	1,4-dichlorobenzene-D4 (IS)	5.46

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Acetic acid, ethyl ester	88	C4H8O2	000141-78-6	38
2	Propanoic acid, 2-methyl-	88	C4H8O2	000079-31-2	32
3	Propanoic acid, 2-methyl-	88	C4H8O2	000079-31-2	32
4	Acetic acid, pentyl ester	130	C7H14O2	000628-63-7	25



Library Search Compound Report

Data File : M:\YODA\DATA\Y190124\0124Y098.D  
 Acq On : 1 Feb 19 16:19  
 Sample : 190130A Blk 1/800  
 Misc :

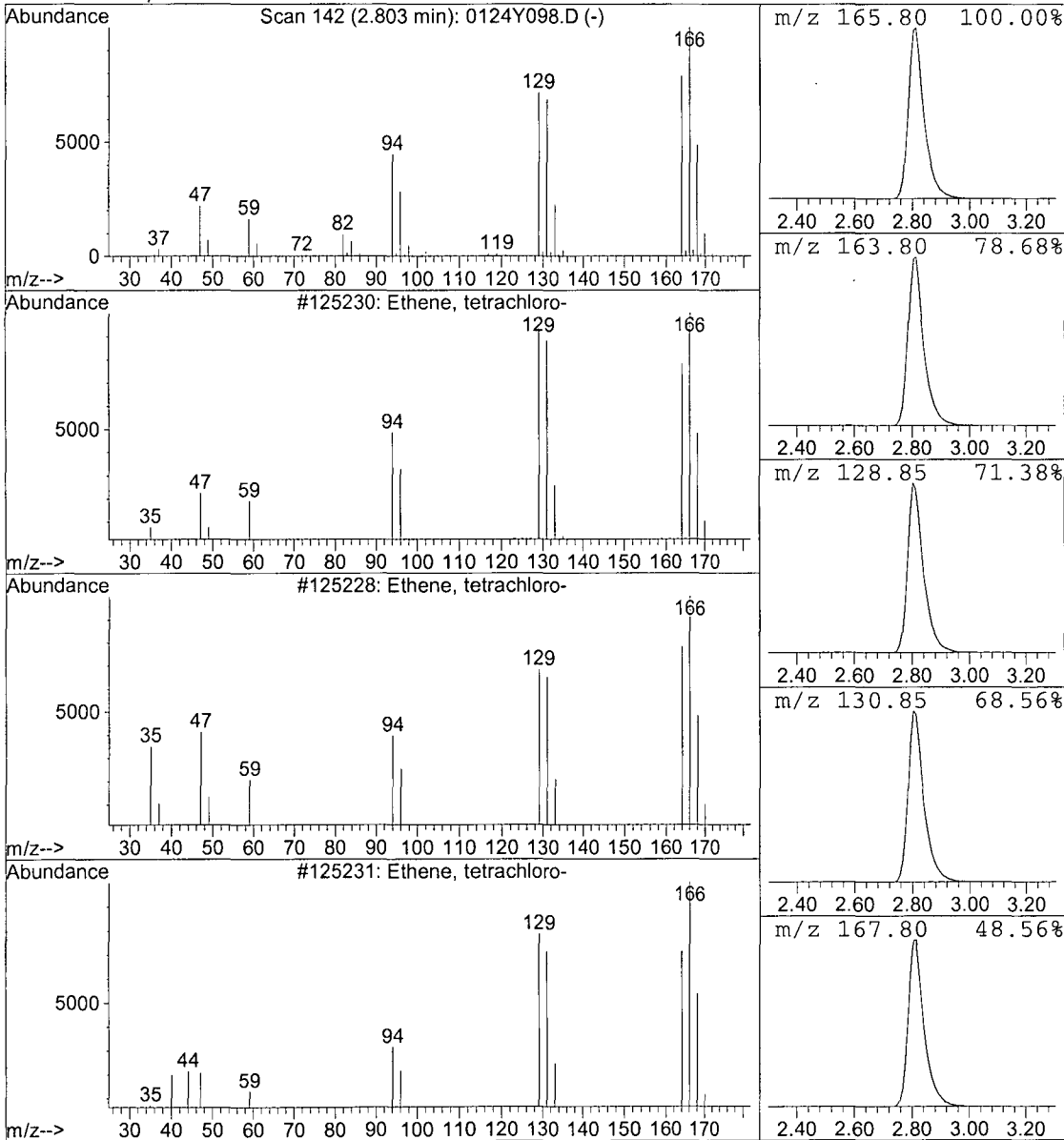
Vial: 98  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.25

Quant Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Library : M:\DATABASE\WILEY138.L

\*\*\*\*\*  
 Peak Number 3 Ethene, tetrachloro- Concentration Rank 2

R.T.	EstConc	Area	Relative to ISTD	R.T.
2.80	84.57 ppb	4431650	1,4-dichlorobenzene-D4 (IS)	5.46

Hit#	of	5	Tentative ID	MW	MolForm	CAS#	Qual
1			Ethene, tetrachloro-	164	C2Cl4	000127-18-4	97
2			Ethene, tetrachloro-	164	C2Cl4	000127-18-4	97
3			Ethene, tetrachloro-	164	C2Cl4	000127-18-4	95
4			Ethene, tetrachloro-	164	C2Cl4	000127-18-4	94



Library Search Compound Report

Data File : M:\YODA\DATA\Y190124\0124Y098.D  
 Acq On : 1 Feb 19 16:19  
 Sample : 190130A Blk 1/800  
 Misc :

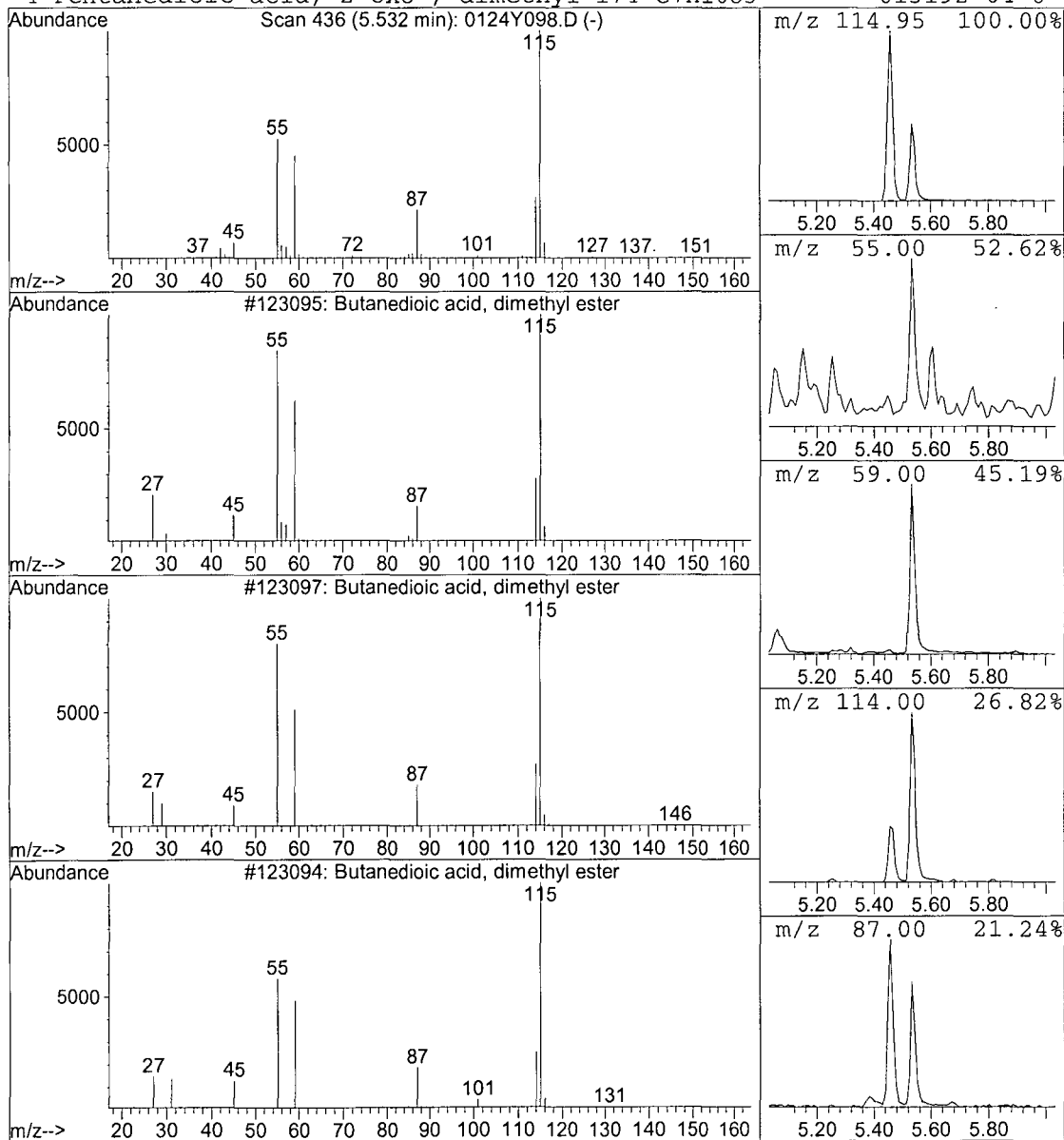
Vial: 98  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.25

Quant Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Library : M:\DATABASE\WILEY138.L

\*\*\*\*\*  
 Peak Number 4 Butanedioic acid, dimethyl est Concentration Rank 14

R.T.	EstConc	Area	Relative to ISTD	R.T.
5.53	7.67 ppb	401962	1,4-dichlorobenzene-D4 (IS)	5.46

Hit#	of	5	Tentative ID	MW	MolForm	CAS#	Qual
1			Butanedioic acid, dimethyl ester	146	C6H10O4	000106-65-0	83
2			Butanedioic acid, dimethyl ester	146	C6H10O4	000106-65-0	83
3			Butanedioic acid, dimethyl ester	146	C6H10O4	000106-65-0	74
4			Pentanedioic acid, 2-oxo-, dimethyl 174	C7H10O5	013192-04-6	64	



Library Search Compound Report

Data File : M:\YODA\DATA\Y190124\0124Y098.D  
 Acq On : 1 Feb 19 16:19  
 Sample : 190130A Blk 1/800  
 Misc :

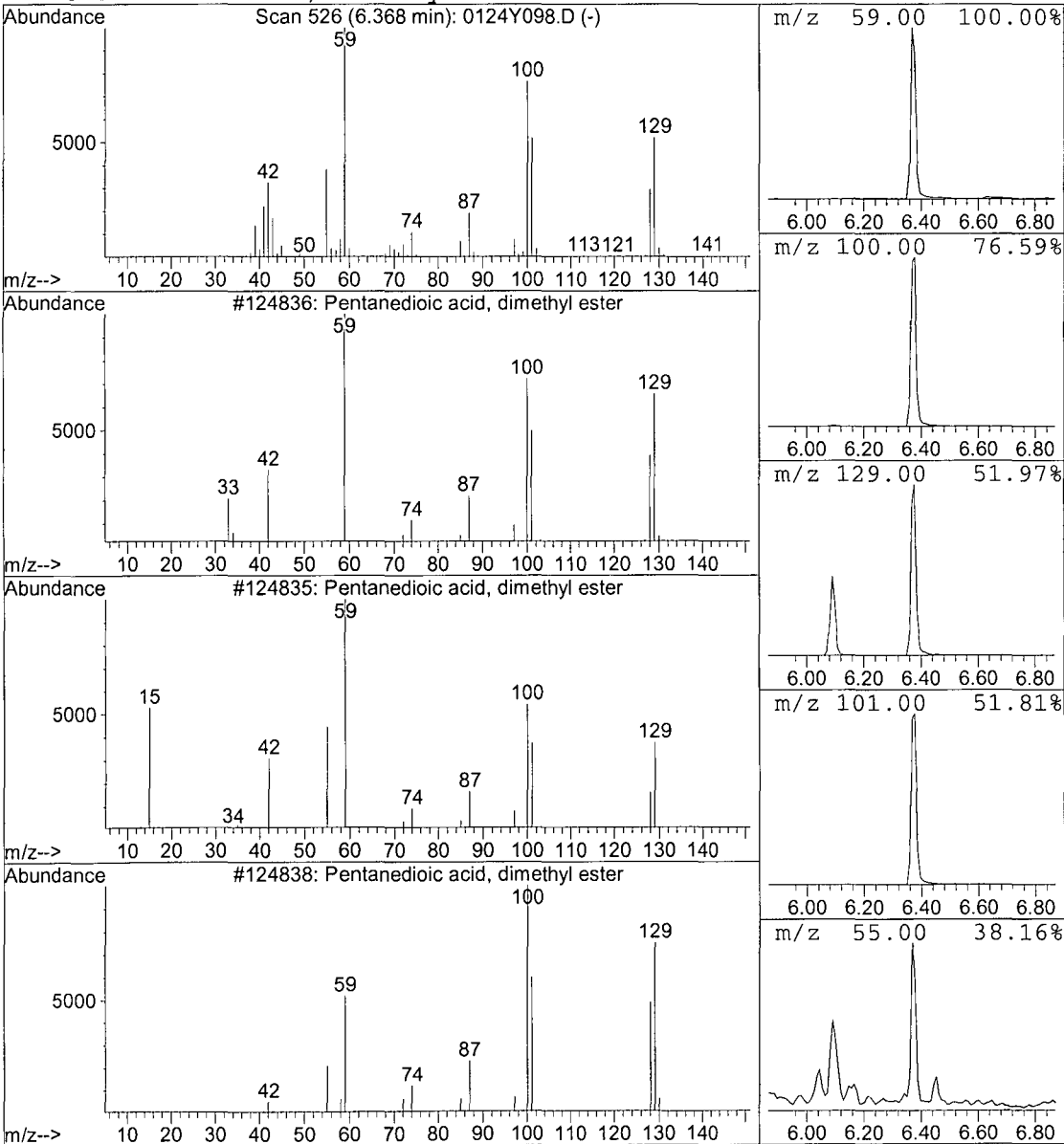
Vial: 98  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.25

Quant Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Library : M:\DATABASE\WILEY138.L

\*\*\*\*\*  
 Peak Number 5 Pentanedioic acid, dimethyl es Concentration Rank 5

R.T.	EstConc	Area	Relative to ISTD	R.T.
6.37	18.37 ppb	1289090	Napthalene-D8(IS)	6.90

Hit#	of	5	Tentative ID	MW	MolForm	CAS#	Qual
1			Pentanedioic acid, dimethyl ester	160	C7H12O4	001119-40-0	91
2			Pentanedioic acid, dimethyl ester	160	C7H12O4	001119-40-0	78
3			Pentanedioic acid, dimethyl ester	160	C7H12O4	001119-40-0	58
4			Pentanedioic acid, dimethyl ester	160	C7H12O4	001119-40-0	50





Library Search Compound Report

Data File : M:\YODA\DATA\Y190124\0124Y098.D  
 Acq On : 1 Feb 19 16:19  
 Sample : 190130A Blk 1/800  
 Misc :

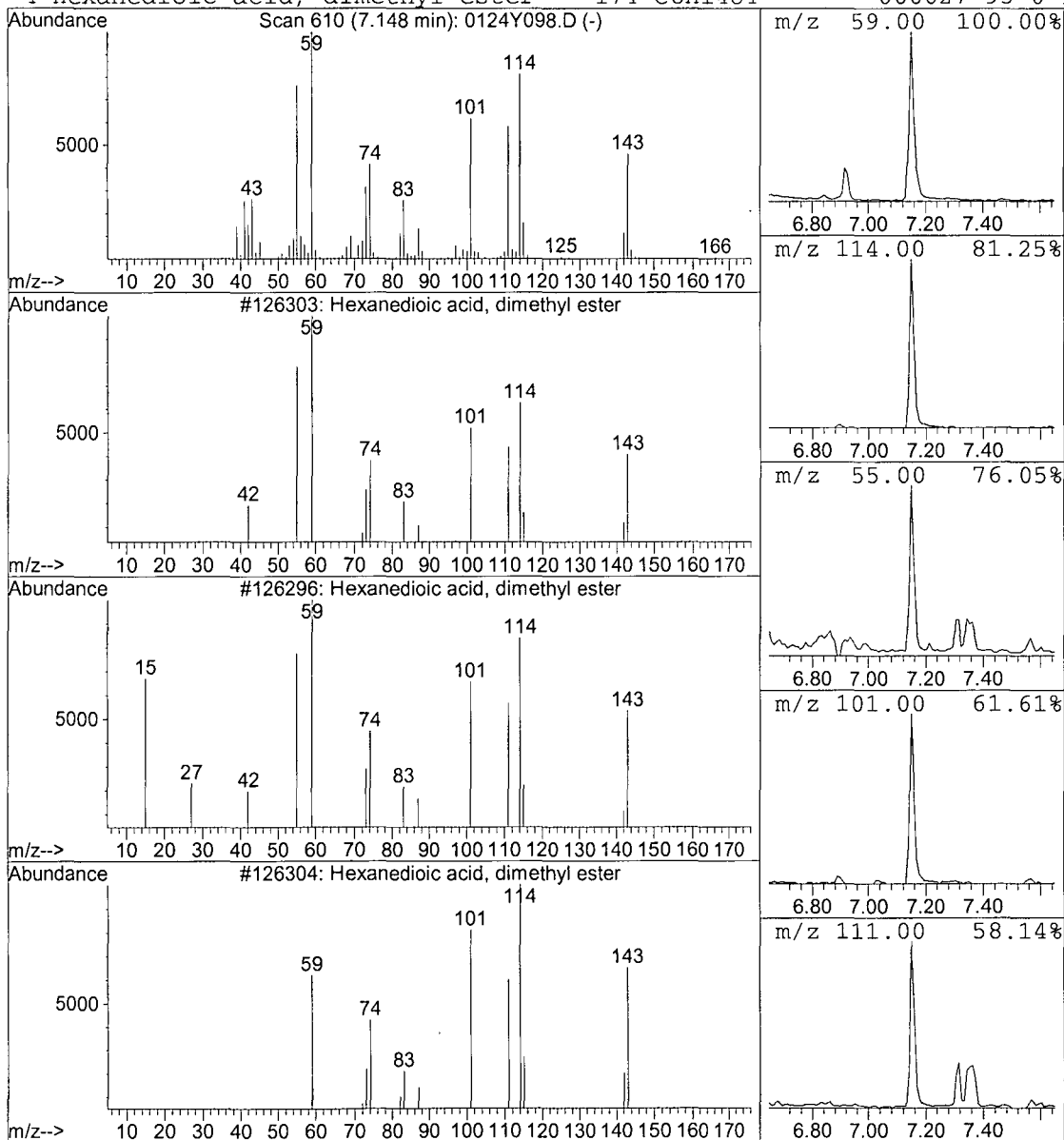
Vial: 98  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.25

Quant Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Library : M:\DATABASE\WILEY138.L

\*\*\*\*\*  
 Peak Number 6 Hexanedioic acid, dimethyl est Concentration Rank 16

R.T.	EstConc	Area	Relative to ISTD	R.T.
7.15	5.27 ppb	369644	Napthalene-D8(IS)	6.90

Hit#	of	5	Tentative ID	MW	MolForm	CAS#	Qual
1			Hexanedioic acid, dimethyl ester	174	C8H14O4	000627-93-0	91
2			Hexanedioic acid, dimethyl ester	174	C8H14O4	000627-93-0	91
3			Hexanedioic acid, dimethyl ester	174	C8H14O4	000627-93-0	90
4			Hexanedioic acid, dimethyl ester	174	C8H14O4	000627-93-0	90



Data File : M:\YODA\DATA\Y190124\0124Y099.D  
 Acq On : 1 Feb 19 16:47  
 Sample : 190130A LCS-1 1/800  
 Misc :

Vial: 99  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.25

Quant Time: Feb 4 7:36 2019

Quant Results File: Y0125NC.RES

Quant Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Mon Jan 28 14:58:58 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.47	152	511564	40.0000	ppb	0.00
21) Napthalene-D8 (IS)	6.91	136	2139035	40.0000	ppb	0.00
41) Acenaphthene-D10 (IS)	8.92	164	1151768	40.0000	ppb	0.00
65) Phenanthrene-D10 (IS)	10.66	188	2179017	40.0000	ppb	0.00
79) Chrysene-D12 (IS)	13.76	240	1955925	40.0000	ppb	0.00
89) Perylene-D12 (IS)	15.63	264	1751725	40.0000	ppb	0.00

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
5) 2-Fluorophenol (S)	3.90	112	3288190	180.1401	ppb	0.03
Spiked Amount 250.000			Recovery =	72.056%		
6) Phenol-D6 (S)	5.07	99	4263766	177.4098	ppb	0.02
Spiked Amount 250.000			Recovery =	70.964%		
22) Nitrobenzene-D5 (S)	6.10	82	1924266	94.4323	ppb	0.00
Spiked Amount 125.000			Recovery =	75.546%		
46) 2-Fluorobiphenyl (S)	8.13	172	3628655	97.2531	ppb	0.00
Spiked Amount 125.000			Recovery =	77.802%		
64) 2,4,6-Tribromophenol (S)	9.85	330	884858	231.8300	ppb	0.00
Spiked Amount 250.000			Recovery =	92.732%		
82) Terphenyl-D14 (S)	12.51	244	4036942	101.1320	ppb	0.00
Spiked Amount 125.000			Recovery =	80.906%		

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) 1,4-Dioxane	1.73	58	8926	3.9003		86
3) n-Nitrosodimethylamine	1.97	42	166776	44.9533	ppb	92
4) Pyridine	1.98	79	244483	26.7794	ppb	94
7) Phenol	5.09	94	1156545	37.3588	ppb	95
8) Aniline	5.10	93	332915	10.2738	ppb	92
9) Bis (2-chloroethyl) ether	5.17	63	565317	39.6397	ppb	96
10) 2-Chlorophenol	5.23	128	865654	39.6212	ppb	93
11) 1,3-DCB	5.39	146	870665	37.4591	ppb	98
12) 1,4-DCB	5.48	146	895606	37.7104	ppb	99
13) Benzyl alcohol	5.63	108	517224	37.9928	ppb	95
14) 1,2-DCB	5.65	146	843354	38.3312	ppb	97
15) 2-Methylphenol	5.75	107	744554	39.9495	ppb	97
16) Bis (2-chloroisopropyl) et	5.76	45	850362	39.7157	ppb	# 82
17) Acetophenone	5.92	105	1151712	40.5609	ppb	91
18) 3&4-Methylphenol	5.93	107	1803081	81.9113	ppb	98
19) n-Nitrosodi-n-propylamine	5.92	70	642726	40.2045	ppb	98
20) Hexachloroethane	6.02	117	313270	36.1083	ppb	91
23) Nitrobenzene	6.12	77	998050	43.5554	ppb	94
24) Isophorone	6.39	82	1743555	43.6201	ppb	100
25) 2-Nitrophenol	6.47	139	489802	43.4146	ppb	95
26) 2,4-Dimethylphenol	6.52	122	770183	41.2591	ppb	99
27) Benzoic acid	6.65	105	624376	42.7498	ppb	98
28) Bis (2-chloroethoxy) metha	6.62	93	1023795	41.3002	ppb	99
29) 2,4-Dichlorophenol	6.75	162	715223	44.5269	ppb	97
30) 1,2,4-Trichlorobenzene	6.83	180	731427	40.9577	ppb	100
31) 3,4-Dimethylphenol	6.86	107	1123068	44.4987	ppb	96
32) Napthalene	6.92	128	2563041	42.2036	ppb	100
33) 4-Chloroaniline	7.00	127	54129	2.4091	ppb	# 79
34) 2,6-Dichlorophenol	7.00	162	707972	44.5061	ppb	99
35) Hexachloropropene	7.02	213	240044	22.0427	ppb	99
36) Hexachlorobutadiene	7.05	225	339042	36.4456	ppb	100
37) Caprolactum	7.42	55	351878	43.5105	ppb	99

(#) = qualifier out of range (m) = manual integration  
 0124Y099.D Y0125NC.M Wed Feb 06 09:36:34 2019

Data File : M:\YODA\DATA\Y190124\0124Y099.D  
 Acq On : 1 Feb 19 16:47  
 Sample : 190130A LCS-1 1/800  
 Misc :

Vial: 99  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.25

Quant Time: Feb 4 7:36 2019

Quant Results File: Y0125NC.RES

Quant Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Mon Jan 28 14:58:58 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
38) 4-Chloro-3-methylphenol	7.55	107	796812	44.0222	ppb	100
39) 2-Methylnaphthalene	7.71	142	1632764	41.6942	ppb	100
40) 1-Methylnaphthalene	7.82	142	1700322	43.4424	ppb	100
42) Hexachlorocyclopentadiene	7.88	237	44201	13.3494	ppb	98
43) 1,2,4,5-Tetrachlorobenzene	7.91	216	705697	45.5967	ppb	100
44) 2,4,6-Trichlorophenol	8.05	196	503885	49.8756	ppb	97
45) 2,4,5-Trichlorophenol	8.09	196	540864	47.4037	ppb	98
47) 1,1'-Biphenyl	8.25	154	2156073	47.1564	ppb	99
48) 2-Chloronaphthalene	8.28	162	1622025	46.4376	ppb	98
49) 2-Nitroaniline	8.41	65	490469	43.1953	ppb	82
50) Dimethyl phthalate	8.60	163	1974674	47.8821	ppb	100
51) 2,6-DNT	8.69	165	457140	49.4332	ppb	98
52) Acenaphthylene	8.76	152	2514250	45.3785	ppb	100
53) 3-Nitroaniline	8.88	138	97549	9.3153	ppb	97
54) Acenaphthene	8.96	154	1659506	46.2501	ppb	100
55) 2,4-Dinitrophenol	9.01	184	252616	52.2036	ppb	96
56) 4-Nitrophenol	9.11	65	398193	62.5716	ppb	98
57) Dibenzofuran	9.16	168	2349848	46.7283	ppb	99
58) 2,4-DNT	9.15	165	602488	49.3955	ppb	98
59) 2,3,4,6-Tetrachlorophenol	9.31	232	415041	49.4278	ppb	97
60) Diethyl phthalate	9.42	149	1855924	47.4969	ppb	100
61) 4-Chlorophenyl phenyl ethe	9.55	204	905193	46.1383	ppb	98
62) Fluorene	9.56	166	1922102	47.6837	ppb	99
63) 4-Nitroaniline	9.60	138	280770	26.4790	ppb	92
66) 4,6-Dinitro-2-methylphenol	9.63	198	392246	50.3726	ppb	91
67) Diphenyl amine	9.70	169	1829817	59.4979	ppb	100
68) n-Nitrosodiphenylamine	9.70	169	1829817	59.4979	ppb	100
69) 1,2-Diphenylhydrazine	9.74	77	1724614	39.7859	ppb	90
70) 4-Bromophenyl phenyl ether	10.13	248	501482	48.1481	ppb	96
71) Hexachlorobenzene	10.20	284	480235	48.7731	ppb	96
72) Atrazine	10.32	200	59209	5.6109	ppb	98
73) Pentachlorophenol	10.43	266	303972	49.3285	ppb	99
74) Phenanthrene	10.68	178	2867863	48.6761	ppb	99
75) Anthracene	10.75	178	2829108	46.8796	ppb	100
76) Carbazol	10.93	167	2354197	42.9265	ppb	97
77) Di-n-butylphthalate	11.32	149	3286530	50.7871	ppb	99
78) Fluoranthene	12.08	202	3090833	48.8599	ppb	99
80) Benzidine	12.26	184	2978	0.1539	ppb #	34
81) Pyrene	12.35	202	3162679	47.6164	ppb	99
83) Butyl benzylphthalate	13.08	149	1441016	48.3986	ppb	95
84) 3,3'-Dichlorobenzidine	13.71	252	20074	0.9856	ppb #	97
85) Benz (a) anthracene	13.74	228	2732171	47.1682	ppb	100
86) Bis (2-ethylhexyl) phthala	13.73	149	2363753	57.0472	ppb	99
87) Chrysene	13.78	228	2724979	48.1071	ppb	99
88) Di-n-octylphthalate	14.48	149	3559778	50.6300	ppb	95
90) Benzo (b) fluoranthene	15.07	252	2627365	49.9471	ppb	97
91) Benzo (k) fluoranthene	15.11	252	2762990	54.6507	ppb	98
92) Benzo (a) pyrene	15.55	252	2346180	49.2755	ppb	99
93) Indeno (1,2,3-cd) pyrene	17.57	276	2617585	53.3710	ppb	99
94) Dibenz (a,h) anthracene	17.61	278	2397031	54.0598	ppb	97
95) Benzo (g,h,i) perylene	18.17	276	2200071	50.6341	ppb	98

(#) = qualifier out of range (m) = manual integration  
 0124Y099.D Y0125NC.M Wed Feb 06 09:36:35 2019

Quantitation Report

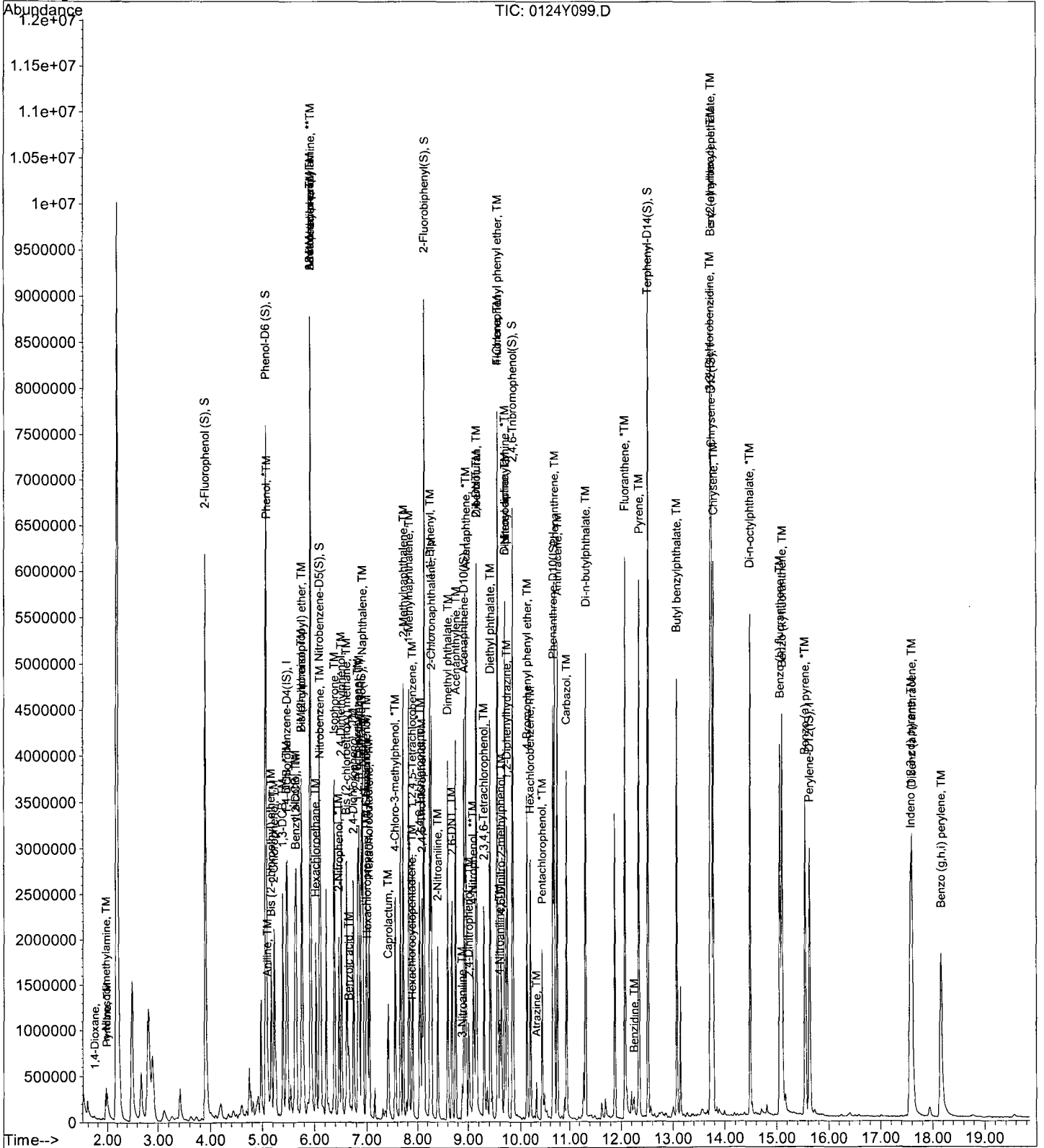
Data File : M:\YODA\DATA\Y190124\0124Y099.D  
Acq On : 1 Feb 19 16:47  
Sample : 190130A LCS-1 1/800  
Misc :

Vial: 99  
Operator: MA  
Inst : Yoda  
Multiplr: 1.25

Quant Time: Feb 4 7:36 2019

Quant Results File: Y0125NC.RES

Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Mon Feb 04 19:46:10 2019  
Response via : Initial Calibration



Data File : M:\YODA\DATA\Y190124\0124Y100.D  
 Acq On : 1 Feb 19 17:14  
 Sample : 190130A LCSD-1 1/800  
 Misc :

Vial: 100  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.25

Quant Time: Feb 4 7:36 2019

Quant Results File: Y0125NC.RES

Quant Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Mon Jan 28 14:58:58 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.47	152	493547	40.0000	ppb	0.00
21) Napthalene-D8 (IS)	6.91	136	2051252	40.0000	ppb	0.00
41) Acenaphthene-D10 (IS)	8.92	164	1092291	40.0000	ppb	0.00
65) Phenanthrene-D10 (IS)	10.66	188	2061300	40.0000	ppb	0.00
79) Chrysene-D12 (IS)	13.76	240	1805530	40.0000	ppb	0.00
89) Perylene-D12 (IS)	15.63	264	1080606	40.0000	ppb	0.00

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
5) 2-Fluorophenol (S)	3.90	112	3234387	183.6610	ppb	0.03
Spiked Amount 250.000			Recovery =	73.464%		
6) Phenol-D6 (S)	5.07	99	4238109	182.7796	ppb	0.02
Spiked Amount 250.000			Recovery =	73.112%		
22) Nitrobenzene-D5 (S)	6.10	82	1894411	96.9457	ppb	0.00
Spiked Amount 125.000			Recovery =	77.557%		
46) 2-Fluorobiphenyl (S)	8.13	172	3591262	101.4919	ppb	0.00
Spiked Amount 125.000			Recovery =	81.194%		
64) 2,4,6-Tribromophenol (S)	9.85	330	861720	238.0614	ppb	0.00
Spiked Amount 250.000			Recovery =	95.224%		
82) Terphenyl-D14 (S)	12.51	244	3976305	107.9104	ppb	0.00
Spiked Amount 125.000			Recovery =	86.328%		

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) 1,4-Dioxane	1.73	58	8491	3.8456		83
3) n-Nitrosodimethylamine	1.96	42	170423	47.6132	ppb	82
4) Pyridine	1.99	79	207376	23.5441	ppb	99
7) Phenol	5.09	94	1155581	38.6903	ppb	93
8) Aniline	5.10	93	253738	8.1163	ppb	# 82
9) Bis (2-chloroethyl) ether	5.17	63	566223	41.1526	ppb	97
10) 2-Chlorophenol	5.23	128	870498	41.2974	ppb	94
11) 1,3-DCB	5.39	146	874621	39.0030	ppb	97
12) 1,4-DCB	5.49	146	899568	39.2600	ppb	98
13) Benzyl alcohol	5.62	108	434721	33.0982	ppb	96
14) 1,2-DCB	5.65	146	844111	39.7661	ppb	97
15) 2-Methylphenol	5.75	107	751838	41.8130	ppb	98
16) Bis (2-chloroisopropyl) et	5.76	45	844286	40.8714	ppb	# 80
17) Acetophenone	5.92	105	1146614	41.8555	ppb	92
18) 3&4-Methylphenol	5.93	107	1781751	83.8971	ppb	98
19) n-Nitrosodi-n-propylamine	5.92	70	642044	41.6280	ppb	100
20) Hexachloroethane	6.02	117	314071	37.5221	ppb	92
23) Nitrobenzene	6.12	77	1007080	45.8302	ppb	95
24) Isophorone	6.39	82	1730489	45.1459	ppb	99
25) 2-Nitrophenol	6.47	139	498337	46.0615	ppb	97
26) 2,4-Dimethylphenol	6.52	122	770161	43.0235	ppb	99
27) Benzoic acid	6.66	105	593253	42.3572	ppb	98
28) Bis (2-chloroethoxy) metha	6.62	93	891780	37.5142	ppb	99
29) 2,4-Dichlorophenol	6.75	162	709073	46.0331	ppb	96
30) 1,2,4-Trichlorobenzene	6.83	180	737765	43.0806	ppb	99
31) 3,4-Dimethylphenol	6.86	107	1096400	45.3011	ppb	97
32) Napthalene	6.92	128	2551166	43.8058	ppb	100
33) 4-Chloroaniline	7.00	127	61751	2.8659	ppb	# 80
34) 2,6-Dichlorophenol	7.00	162	700728	45.9359	ppb	99
35) Hexachloropropene	7.02	213	236859	22.6811	ppb	99
36) Hexachlorobutadiene	7.05	225	339719	38.0812	ppb	99
37) Caprolactum	7.42	55	357477	46.0945	ppb	97

(#) = qualifier out of range (m) = manual integration  
 0124Y100.D Y0125NC.M Wed Feb 06 09:36:40 2019

Data File : M:\YODA\DATA\Y190124\0124Y100.D  
 Acq On : 1 Feb 19 17:14  
 Sample : 190130A LCSD-1 1/800  
 Misc :

Vial: 100  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.25

Quant Time: Feb 4 7:36 2019

Quant Results File: Y0125NC.RES

Quant Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Mon Jan 28 14:58:58 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
38) 4-Chloro-3-methylphenol	7.56	107	789729	45.4981	ppb	99
39) 2-Methylnaphthalene	7.71	142	1624576	43.2605	ppb	99
40) 1-Methylnaphthalene	7.82	142	1681039	44.7877	ppb	100
42) Hexachlorocyclopentadiene	7.88	237	59047	15.7912	ppb	96
43) 1,2,4,5-Tetrachlorobenzene	7.90	216	701750	47.8106	ppb	97
44) 2,4,6-Trichlorophenol	8.05	196	501960	52.3905	ppb	99
45) 2,4,5-Trichlorophenol	8.09	196	547158	50.5666	ppb	97
47) 1,1'-Biphenyl	8.25	154	2174397	50.1467	ppb	99
48) 2-Chloronaphthalene	8.28	162	1615091	48.7569	ppb	99
49) 2-Nitroaniline	8.41	65	431722	40.0918	ppb	80
50) Dimethyl phthalate	8.60	163	1985676	50.7706	ppb	100
51) 2,6-DNT	8.69	165	450958	51.4200	ppb	97
52) Acenaphthylene	8.76	152	2459051	46.7990	ppb	100
53) 3-Nitroaniline	8.88	138	101032	10.1732	ppb	97
54) Acenaphthene	8.96	154	1637282	48.1154	ppb	100
55) 2,4-Dinitrophenol	9.01	184	259574	56.0415	ppb	96
56) 4-Nitrophenol	9.11	65	384211	63.6620	ppb	99
57) Dibenzofuran	9.16	168	2312398	48.4874	ppb	100
58) 2,4-DNT	9.15	165	605503	52.3458	ppb	97
59) 2,3,4,6-Tetrachlorophenol	9.31	232	411218	51.6391	ppb	98
60) Diethyl phthalate	9.42	149	1846939	49.8407	ppb	100
61) 4-Chlorophenyl phenyl ethe	9.55	204	899471	48.3431	ppb	97
62) Fluorene	9.56	166	1907513	49.8985	ppb	99
63) 4-Nitroaniline	9.60	138	195914	19.4825	ppb	98
66) 4,6-Dinitro-2-methylphenol	9.63	198	393009	53.3529	ppb	87
67) Diphenyl amine	9.70	169	860248	29.5690	ppb	99
68) n-Nitrosodiphenylamine	9.70	169	860248	29.5690	ppb	99
69) 1,2-Diphenylhydrazine	9.74	77	1390112	33.9005	ppb	92
70) 4-Bromophenyl phenyl ether	10.13	248	498782	50.6237	ppb	96
71) Hexachlorobenzene	10.20	284	480506	51.5875	ppb	95
72) Atrazine	10.32	200	9109	0.9125	ppb	96
73) Pentachlorophenol	10.43	266	298630	51.2292	ppb	100
74) Phenanthrene	10.68	178	2783224	49.9373	ppb	100
75) Anthracene	10.75	178	2776667	48.6382	ppb	100
76) Carbazol	10.93	167	1052830	20.2936	ppb	98
77) Di-n-butylphthalate	11.32	149	3211726	52.4655	ppb	100
78) Fluoranthene	12.08	202	3038828	50.7811	ppb	99
80) Benzidine	12.22	184	146	0.0082	ppb	# 1
81) Pyrene	12.35	202	3073658	50.1308	ppb	100
83) Butyl benzylphthalate	13.08	149	1516885	55.1905	ppb	97
84) 3,3'-Dichlorobenzidine	13.71	252	1959	0.1042	ppb	# 62
85) Benz (a) anthracene	13.74	228	2627669	49.1428	ppb	99
86) Bis (2-ethylhexyl) phthala	13.73	149	2817272	73.6560	ppb	99
87) Chrysene	13.78	228	2688027	51.4076	ppb	99
88) Di-n-octylphthalate	14.48	149	3547271	54.6546	ppb	# 94
90) Benzo (b) fluoranthene	15.07	252	2576910	79.4122	ppb	98
91) Benzo (k) fluoranthene	15.11	252	2695133	86.4162	ppb	98
92) Benzo (a) pyrene	15.55	252	2160572	73.5592	ppb	99
93) Indeno (1,2,3-cd) pyrene	17.57	276	2489216	82.2745	ppb	99
94) Dibenz (a,h) anthracene	17.60	278	2301117	84.1275	ppb	99
95) Benzo (g,h,i) perylene	18.16	276	2065261	77.0513	ppb	99

(#) = qualifier out of range (m) = manual integration  
 0124Y100.D Y0125NC.M Wed Feb 06 09:36:42 2019

Quantitation Report

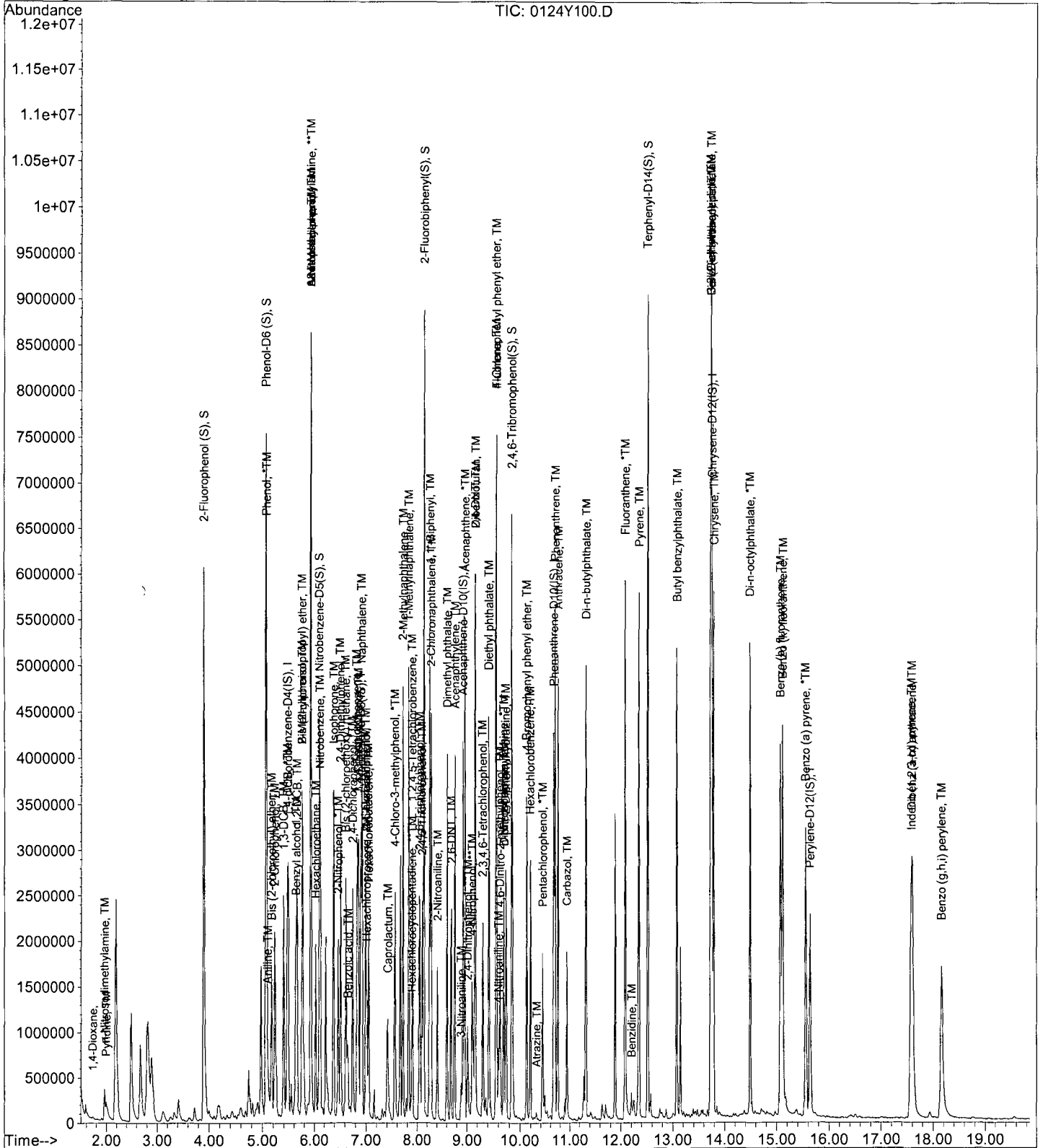
Data File : M:\YODA\DATA\Y190124\0124Y100.D  
Acq On : 1 Feb 19 17:14  
Sample : 190130A LCSD-1 1/800  
Misc :

Vial: 100  
Operator: MA  
Inst : Yoda  
Multiplr: 1.25

Quant Time: Feb 4 7:36 2019

Quant Results File: Y0125NC.RES

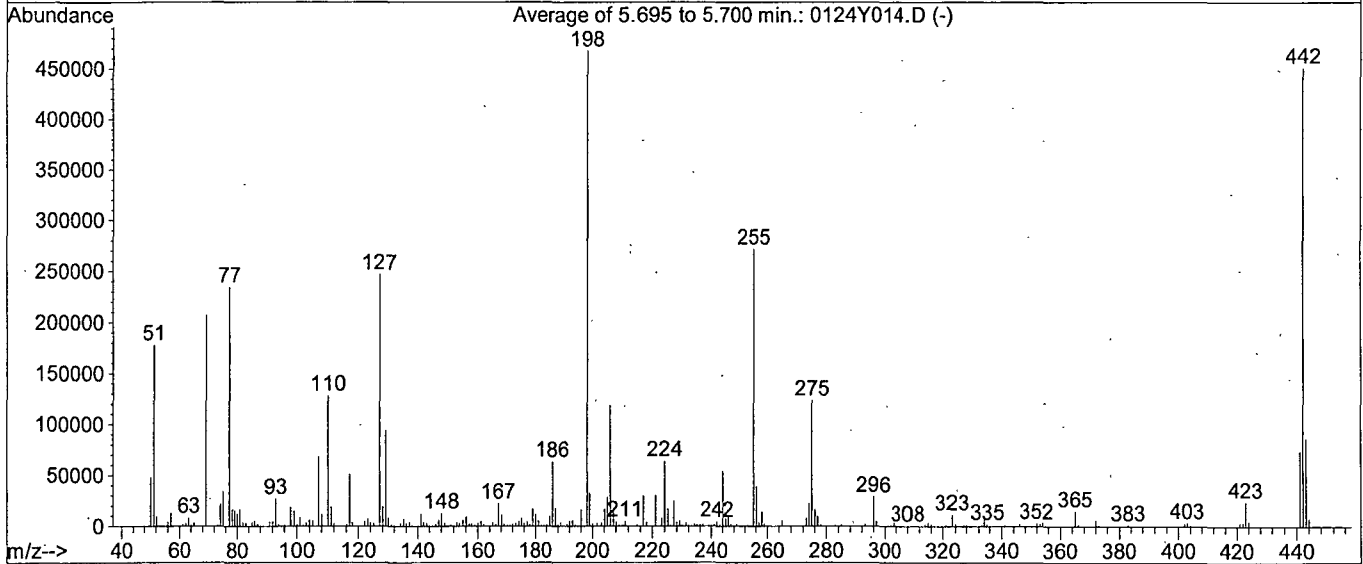
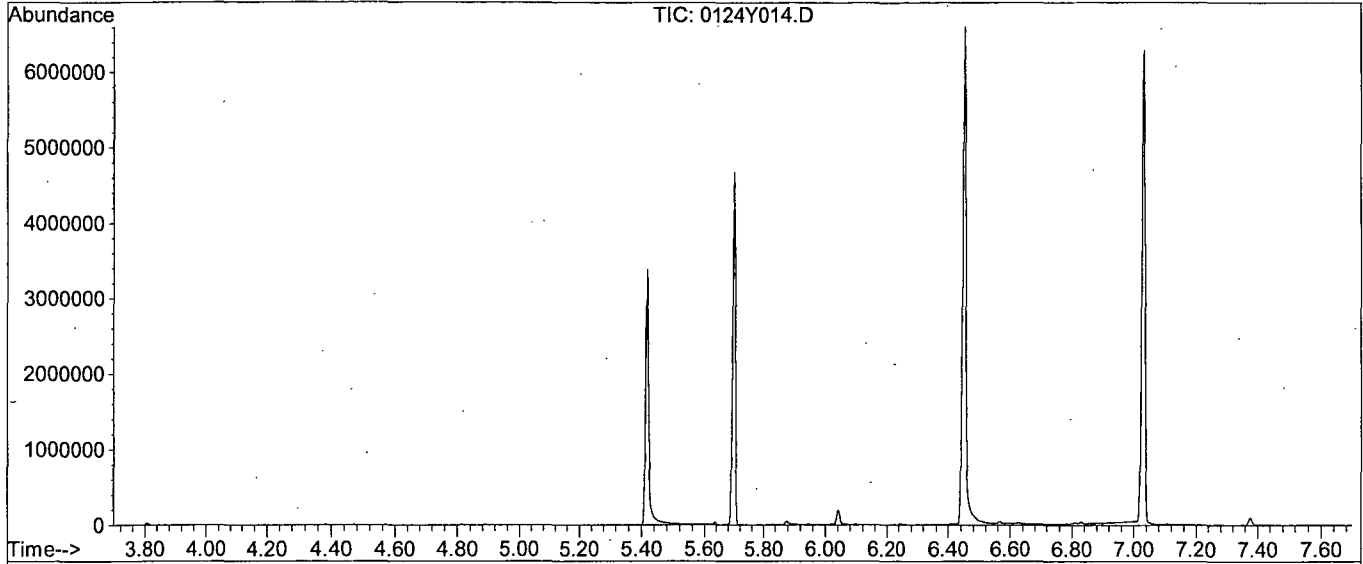
Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Mon Feb 04 19:46:10 2019  
Response via : Initial Calibration



Data File : M:\YODA\DATA\Y190124\0124Y014.D  
 Acq On : 25 Jan 19 7:05  
 Sample : SV TUNE 11/10/18  
 Misc :

Vial: 14  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Method : M:\YODA\DATA\Y181201\Y1201NC.M (RTE Integrator)  
 Title : EPA 8270C



AutoFind: Scans 844, 845, 846; Background Corrected with Scan 836

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	38.0	177707	PASS
68	69	0.00	2	0.0	0	PASS
70	69	0.00	2	0.2	324	PASS
127	198	10	80	52.7	246677	PASS
197	198	0.00	2	0.0	0	PASS
198	198	100	100	100.0	467755	PASS
199	198	5	9	6.9	32176	PASS
275	198	10	60	26.4	123307	PASS
365	198	1	100	3.2	14799	PASS
441	442	0.01	24	16.3	73683	PASS
442	198	50	150	96.4	451136	PASS
443	442	15	24	19.1	86139	PASS



Data File Name: 0124Y014.D  
Data File Path: M:\YODA\DATA\Y190124\  
Operator: MA  
Date Acquired: 25 Jan 2019 07:05  
Method File: DFTPP2.M  
Sample Name: SV TUNE 11/10/18  
Vial Number: 14  
Instrument Name: Yoda

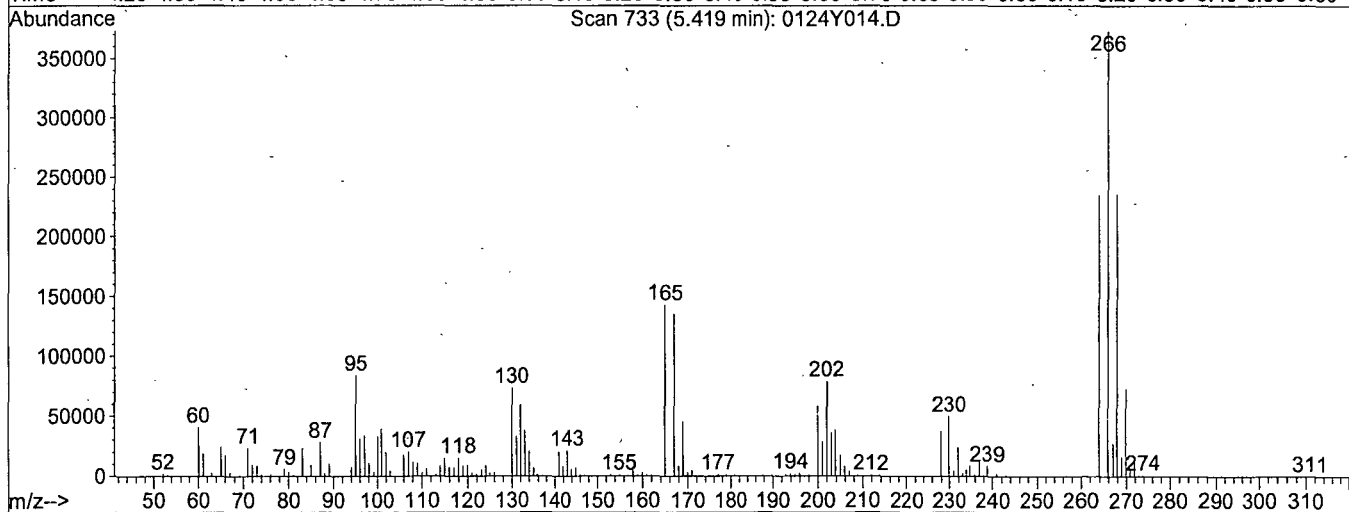
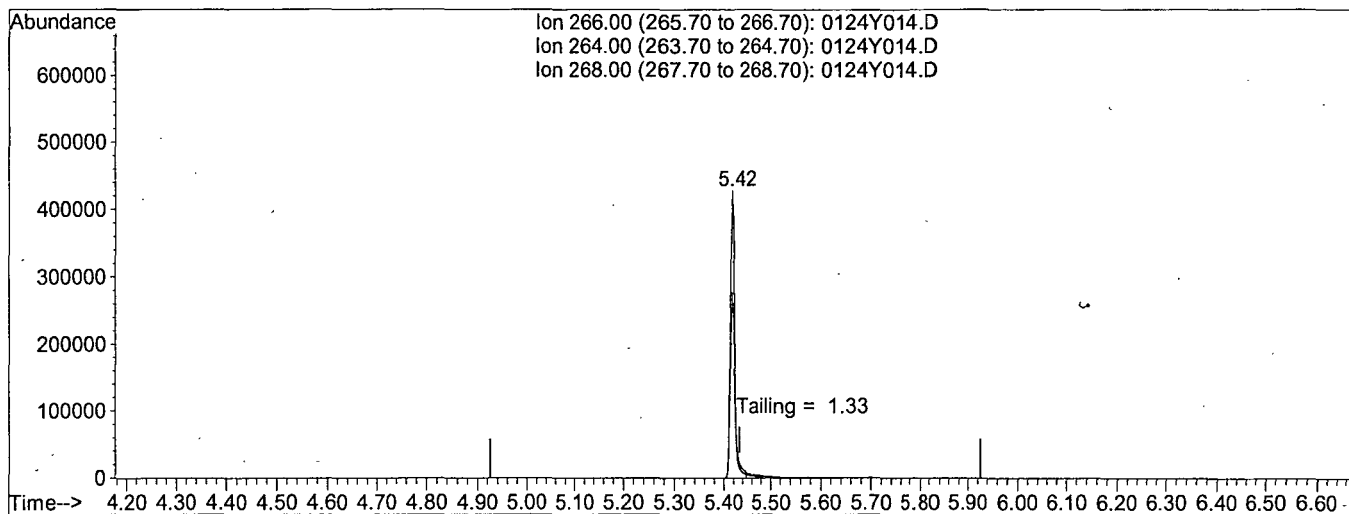
#	Name	Ret Time	Target Response
1)	DDT	7.05	45543100
2)	DDD	6.83	289306
3)	DDE	6.98	50792

Breakdown 0.74

Quantitation Report

Data File : M:\YODA\DATA\Y190124\0124Y014.D Vial: 14  
 Acq On : 25 Jan 19 7:05 Operator: MA  
 Sample : SV TUNE 11/10/18 Inst : Yoda  
 Misc : Multiplr: 1.00  
 Quant Time: Jan 25 7:20 2019 Quant Results File: temp.res

Method : M:\YODA\DATA\Y190124\DFTPP2.M (Chemstation Integrator)  
 Title :  
 Last Update : Mon Jan 14 14:55:57 2019  
 Response via : Single Level Calibration



TIC: 0124Y014.D

(5) Pentachlorophenol

5.42min 0.0000

response 2758498

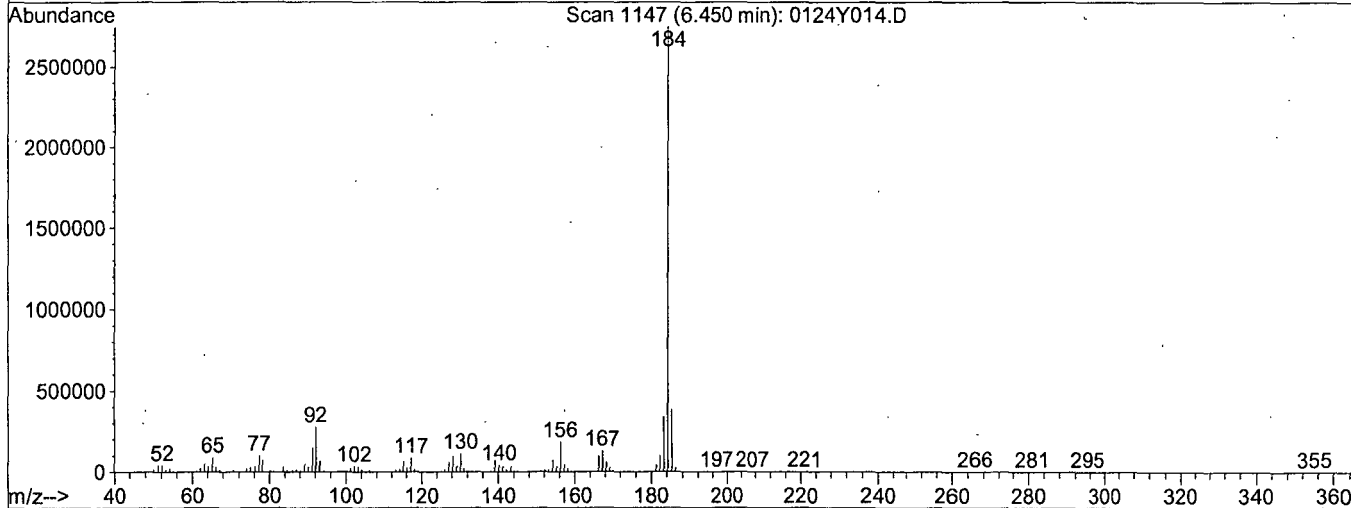
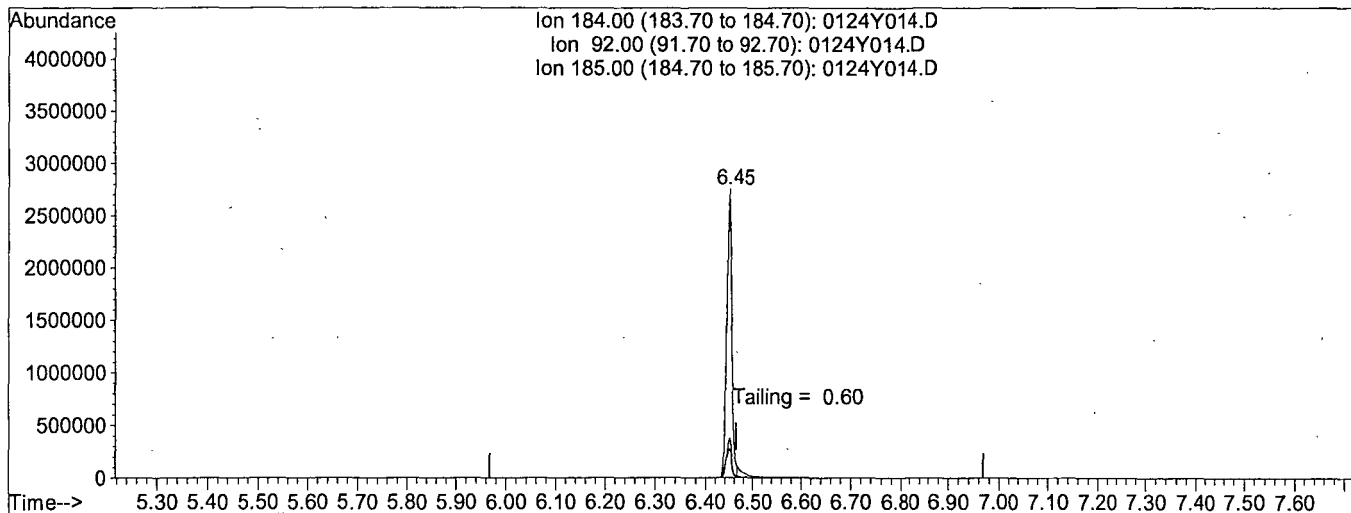
Ion	Exp%	Act%
266.00	100	100
264.00	62.00	64.93
268.00	62.10	64.03
0.00	0.00	0.00

Quantitation Report

Data File : M:\YODA\DATA\Y190124\0124Y014.D  
 Acq On : 25 Jan 19 7:05  
 Sample : SV TUNE 11/10/18  
 Misc :  
 Quant Time: Jan 25 7:20 2019

Vial: 14  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00  
 Quant Results File: temp.res

Method : M:\YODA\DATA\Y190124\DFTPP2.M (Chemstation Integrator)  
 Title :  
 Last Update : Mon Jan 14 14:55:57 2019  
 Response via : Single Level Calibration



TIC: 0124Y014.D

(6) Benzidine

6.45min 0.0000

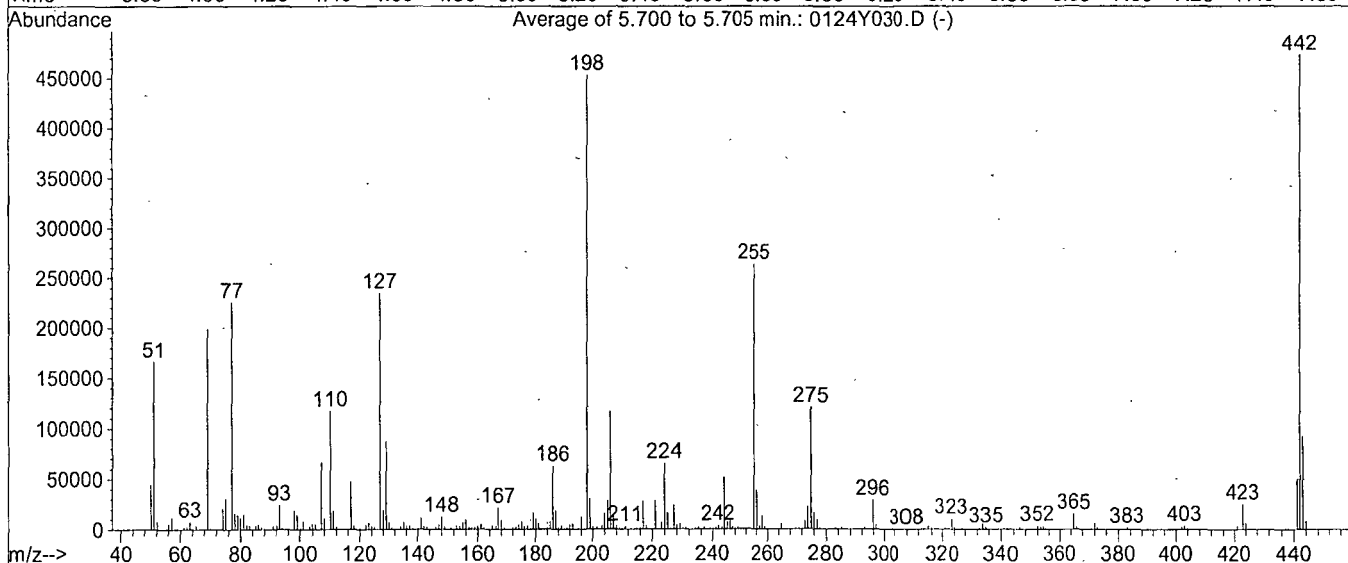
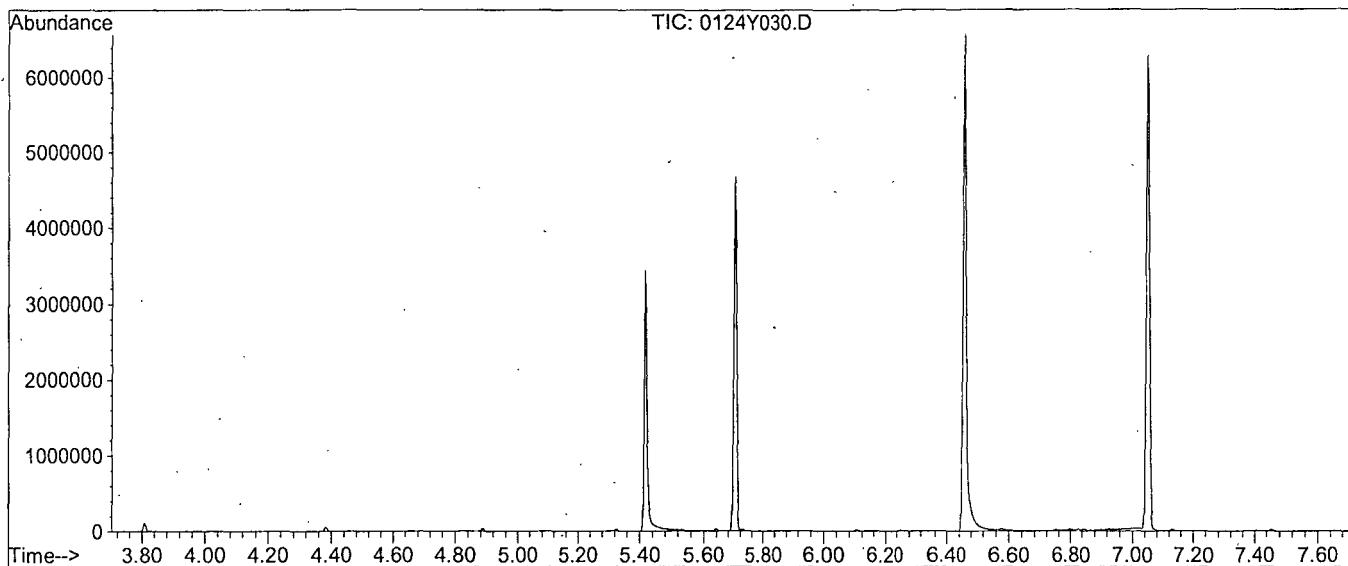
response 21096537

Ion	Exp%	Act%
184.00	100	100
92.00	10.50	10.55
185.00	13.80	14.00
0.00	0.00	0.00

Data File : M:\YODA\DATA\Y190124\0124Y030.D  
 Acq On : 28 Jan 19 11:49  
 Sample : SV TUNE 11/10/18  
 Misc :

Vial: 30  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title : EPA 8270C



AutoFind: Scans 847, 848, 849; Background Corrected with Scan 838

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	36.7	166219	PASS
68	69	0.00	2	0.0	0	PASS
70	69	0.00	2	0.5	962	PASS
127	198	10	80	51.8	234731	PASS
197	198	0.00	2	0.0	0	PASS
198	198	100	100	100.0	453312	PASS
199	198	5	9	6.7	30395	PASS
275	198	10	60	26.6	120363	PASS
365	198	1	100	3.4	15570	PASS
441	442	0.01	24	10.6	50421	PASS
442	198	50	150	104.5	473707	PASS
443	442	15	24	19.5	92189	PASS

M:\YODA\DATA\Y190124\0124Y030.D

Data File Name: 0124Y030.D  
Data File Path: M:\YODA\DATA\Y190124\  
Operator: MA  
Date Acquired: 28 Jan 2019 11:49  
Method File: DFTPP2.M  
Sample Name: SV TUNE 11/10/18  
Vial Number: 30  
Instrument Name: Yoda

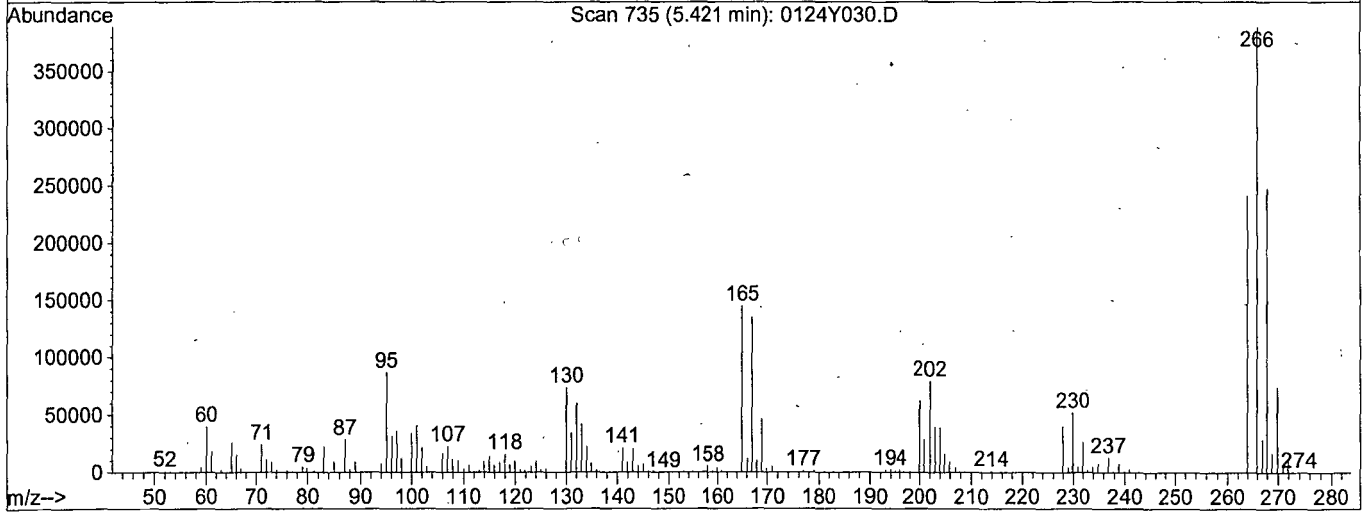
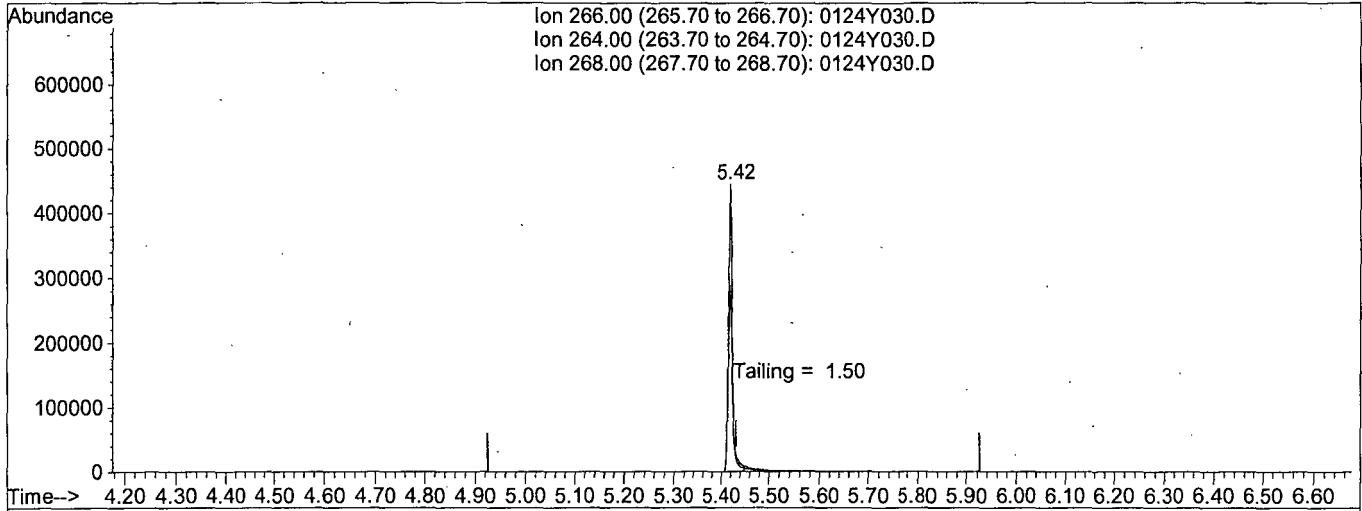
#	Name	Ret Time	Target Response
1)	DDT	7.05	45582200
2)	DDD	6.83	168406
3)	DDE	6.98	0

Breakdown 0.37

Quantitation Report

Data File : M:\YODA\DATA\Y190124\0124Y030.D Vial: 30  
 Acq On : 28 Jan 19 11:49 Operator: MA  
 Sample : SV TUNE 11/10/18 Inst : Yoda  
 Misc : Multiplr: 1.00  
 Quant Time: Jan 28 12:04 2019 Quant Results File: temp.res

Method : M:\YODA\DATA\Y190124\DFTPP2.M (Chemstation Integrator)  
 Title :  
 Last Update : Mon Jan 14 14:55:57 2019  
 Response via : Single Level Calibration



TIC: 0124Y030.D

(5) Pentachlorophenol

5.42min 0.0000

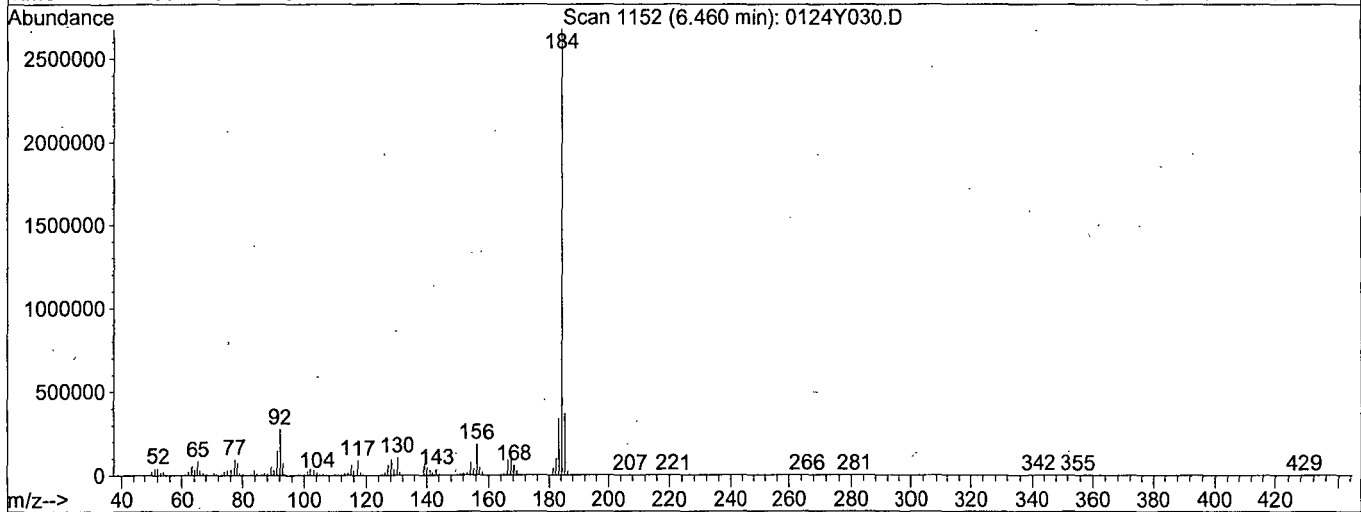
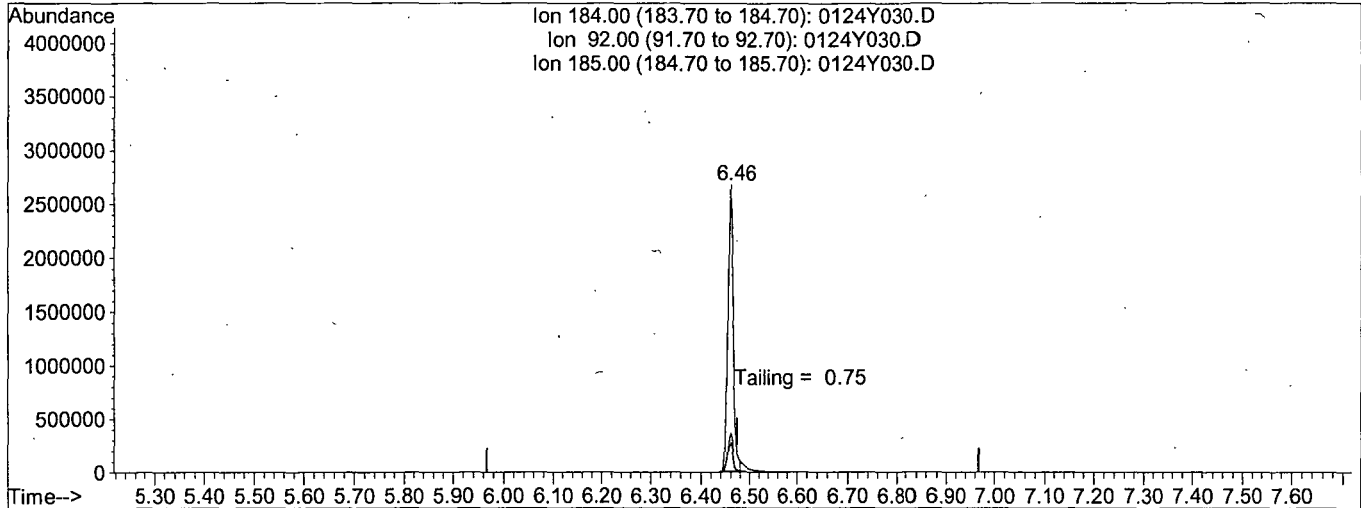
response 2670044

Ion	Exp%	Act%
266.00	100	100
264.00	62.00	60.30
268.00	62.10	65.12
0.00	0.00	0.00

Quantitation Report

Data File : M:\YODA\DATA\Y190124\0124Y030.D Vial: 30  
 Acq On : 28 Jan 19 11:49 Operator: MA  
 Sample : SV TUNE 11/10/18 Inst : Yoda  
 Misc : Multiplr: 1.00  
 Quant Time: Jan 28 12:04 2019 Quant Results File: temp.res

Method : M:\YODA\DATA\Y190124\DFTPP2.M (Chemstation Integrator)  
 Title :  
 Last Update : Mon Jan 14 14:55:57 2019  
 Response via : Single Level Calibration



TIC: 0124Y030.D

(6) Benzidine

6.46min 0.0000

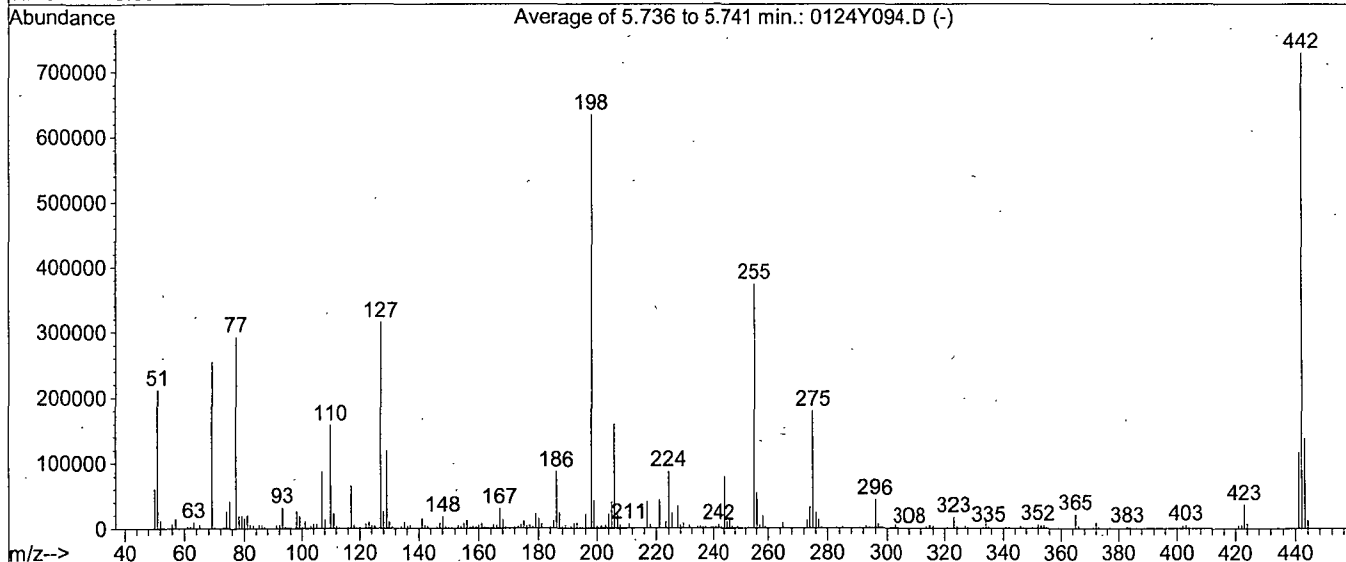
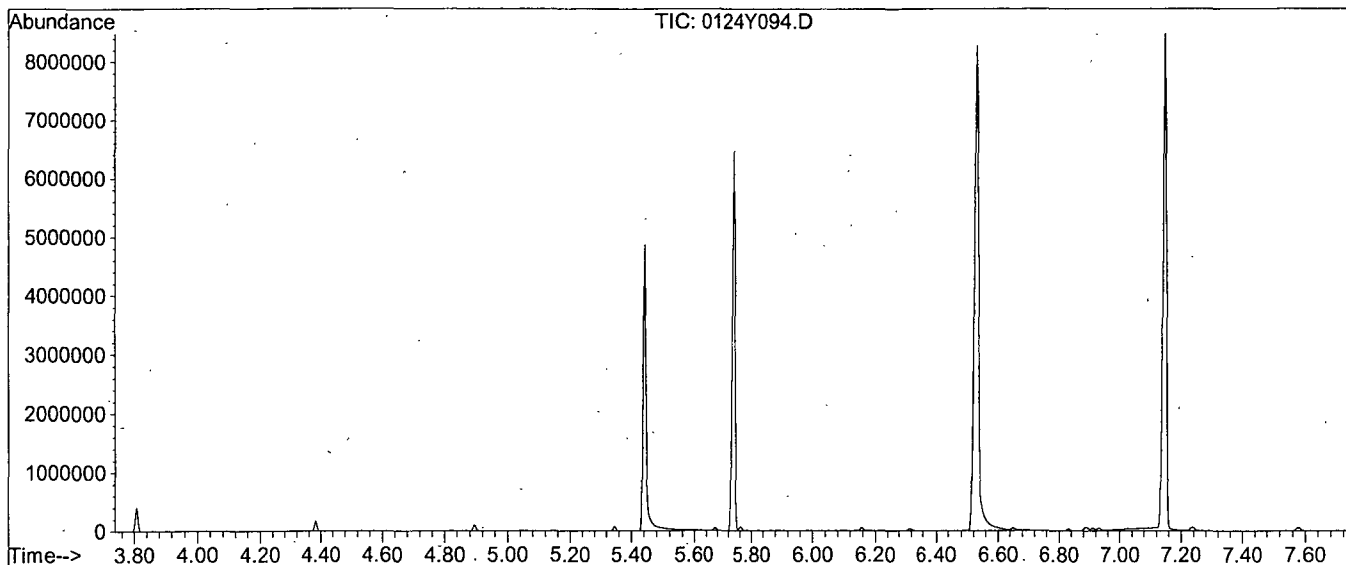
response 21118726

Ion	Exp%	Act%
184.00	100	100
92.00	10.50	10.26
185.00	13.80	13.74
0.00	0.00	0.00

Data File : M:\YODA\DATA\Y190124\0124Y094.D  
 Acq On : 1 Feb 19 13:23  
 Sample : SV TUNE 11/10/18  
 Misc :

Vial: 94  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Method : M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title : EPA 8270C



AutoFind: Scans 861, 862, 863; Background Corrected with Scan 852

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	33.4	211611	PASS
68	69	0.00	2	0.0	0	PASS
70	69	0.00	2	0.6	1438	PASS
127	198	10	80	49.6	314795	PASS
197	198	0.00	2	0.0	0	PASS
198	198	100	100	100.0	634197	PASS
199	198	5	9	6.7	42336	PASS
275	198	10	60	28.3	179563	PASS
365	198	1	100	3.4	21411	PASS
441	442	0.01	24	16.1	117525	PASS
442	198	50	150	115.1	729813	PASS
443	442	15	24	18.9	138091	PASS



Data File Name: 0124Y094.D  
Data File Path: M:\YODA\DATA\Y190124\  
Operator: MA  
Date Acquired: 1 Feb 19 13:23  
Method File: DFTPP2.M  
Sample Name: SV TUNE 11/10/18  
Vial Number: 94  
Instrument Name: Yoda

#	Name	Ret Time	Target Response
1)	DDT	7.05	69891300
2)	DDD	6.83	352986
3)	DDE	6.98	46709

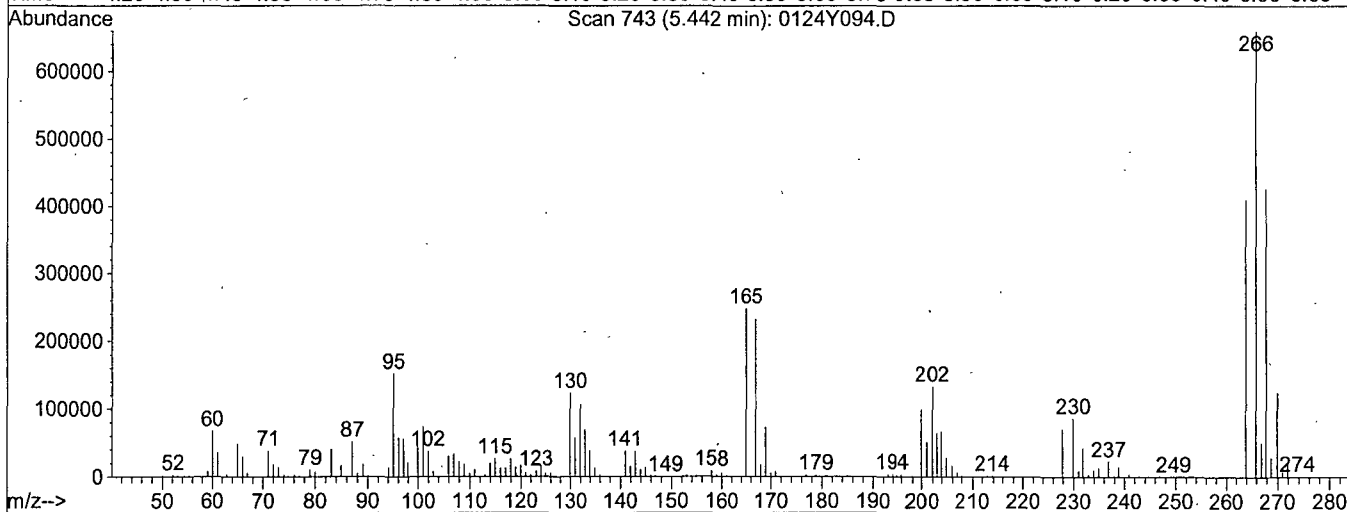
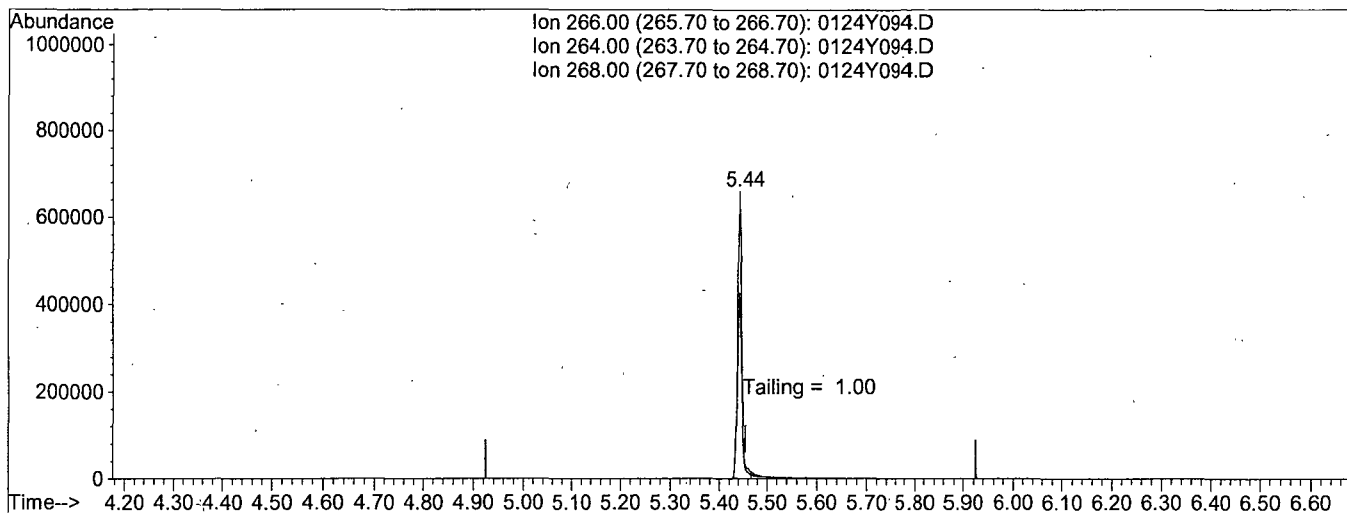
Breakdown 0.57

Quantitation Report

Data File : M:\YODA\DATA\Y190124\0124Y094.D  
 Acq On : 1 Feb 19 13:23  
 Sample : SV TUNE 11/10/18  
 Misc :  
 Quant Time: Feb 4 7:31 2019

Vial: 94  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00  
 Quant Results File: temp.res

Method : M:\YODA\DATA\Y190124\DFTPP2.M (Chemstation Integrator)  
 Title :  
 Last Update : Mon Jan 14 14:55:57 2019  
 Response via : Single Level Calibration



TIC: 0124Y094.D

(5) Pentachlorophenol

5.44min 0.0000

response 4102610

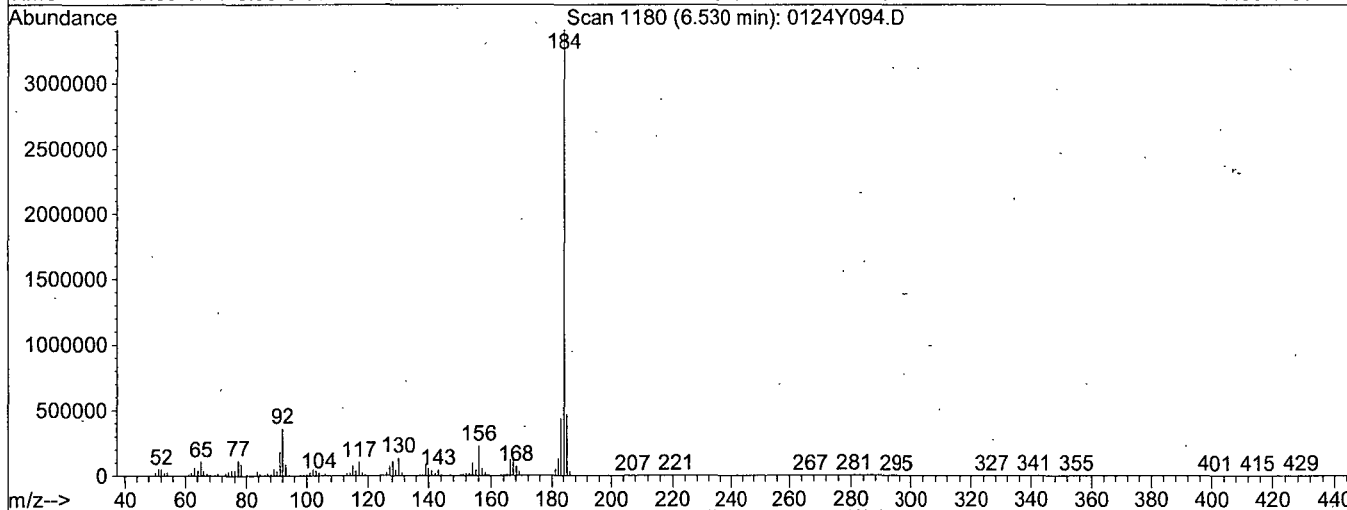
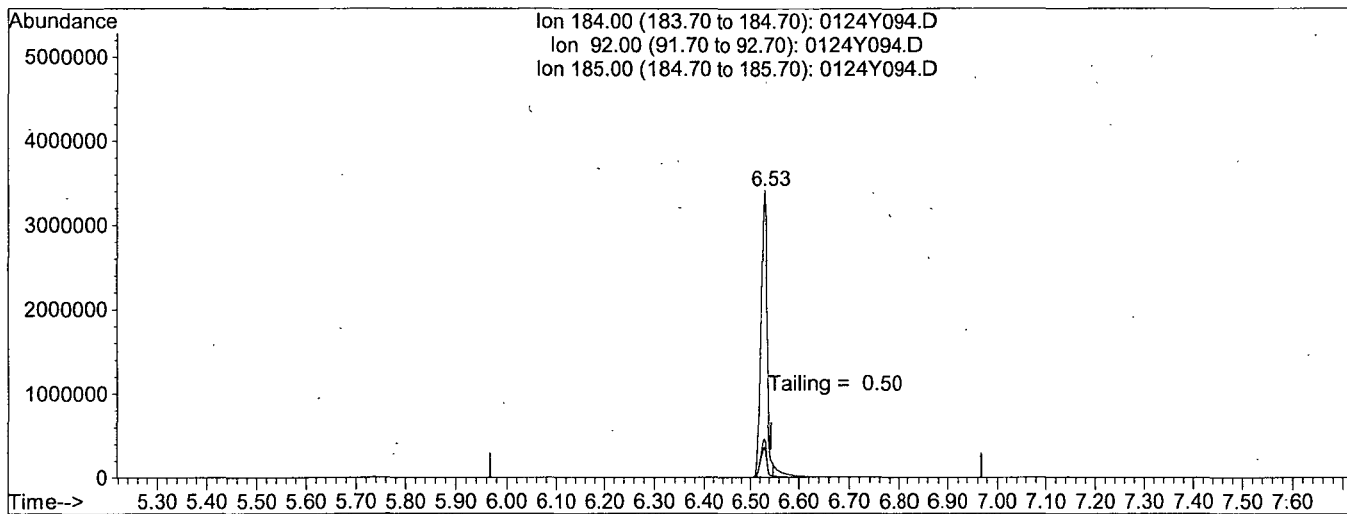
Ion	Exp%	Act%
266.00	100	100
264.00	62.00	65.22
268.00	62.10	65.52
0.00	0.00	0.00

Quantitation Report

Data File : M:\YODA\DATA\Y190124\0124Y094.D  
 Acq On : 1 Feb 19 13:23  
 Sample : SV TUNE 11/10/18  
 Misc :  
 Quant Time: Feb 4 7:31 2019

Vial: 94  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00  
 Quant Results File: temp.res

Method : M:\YODA\DATA\Y190124\DFTPP2.M (Chemstation Integrator)  
 Title :  
 Last Update : Mon Jan 14 14:55:57 2019  
 Response via : Single Level Calibration



TIC: 0124Y094.D

(6) Benzidine

6.53min 0.0000

response 32338105

Ion	Exp%	Act%
184.00	100	100
92.00	10.50	10.42
185.00	13.80	13.69
0.00	0.00	0.00

Name of Final Standard  
Prep Date  
Exp Date

8270 Full Scan Standard Curve

01/23/19

09/17/19

Prep'd By (Initials)

OA

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
8270 Stock	APPL	8270 Stock	200 ug/mL	11/09/18	10/20/19	4 uL	200uL	MC 56258 192uL	4 ug/mL
8270 Surrogate	APPL	8270 Surrogate	200/400 ug/mL	10/17/18	09/17/19	4 uL			
SV Internal Standard	APPL	SV Internal Standard	2000 ug/mL	01/16/19	01/16/20	4 uL			
8270 Stock	APPL	8270 Stock	200 ug/mL	11/09/18	10/20/19	5 uL	200uL	MC 56258 190uL	5 ug/mL
8270 Surrogate	APPL	8270 Surrogate	200/400 ug/mL	10/17/18	09/17/19	5 uL			
SV Internal Standard	APPL	SV Internal Standard	2000 ug/mL	01/16/19	01/16/20	4 uL			
8270 Stock	APPL	8270 Stock	200 ug/mL	11/09/18	10/20/19	5 uL	100uL	MC 56258 90uL	10 ug/mL
8270 Surrogate	APPL	8270 Surrogate	200/400 ug/mL	10/17/18	09/17/19	5 uL			
SV Internal Standard	APPL	SV Internal Standard	2000 ug/mL	01/16/19	01/16/20	2 uL			
8270 Stock	APPL	8270 Stock	200 ug/mL	11/09/18	10/20/19	10 uL	100uL	MC 56258 80 uL	20 ug/mL
8270 Surrogate	APPL	8270 Surrogate	200/400 ug/mL	10/17/18	09/17/19	10 uL			
SV Internal Standard	APPL	SV Internal Standard	2000 ug/mL	01/16/19	01/16/20	2 uL			
8270 Stock	APPL	8270 Stock	200 ug/mL	11/09/18	10/20/19	20 uL	100uL	MC 56258 60 uL	40 ug/mL
8270 Surrogate	APPL	8270 Surrogate	200/400 ug/mL	10/17/18	09/17/19	20 uL			
SV Internal Standard	APPL	SV Internal Standard	2000 ug/mL	01/16/19	01/16/20	2 uL			
8270 Stock	APPL	8270 Stock	200 ug/mL	11/09/18	10/20/19	50 uL	200 uL	MC 56258 100 uL	50 ug/mL
8270 Surrogate	APPL	8270 Surrogate	200/400 ug/mL	10/17/18	09/17/19	50 uL			
SV Internal Standard	APPL	SV Internal Standard	2000 ug/mL	01/16/19	01/16/20	4 uL			
8270 Stock	APPL	8270 Stock	200 ug/mL	11/09/18	10/20/19	30 uL	100uL	MC 56258 40 uL	60 ug/mL
8270 Surrogate	APPL	8270 Surrogate	200/400 ug/mL	10/17/18	09/17/19	30 uL			
SV Internal Standard	APPL	SV Internal Standard	2000 ug/mL	01/16/19	01/16/20	2 uL			
8270 Stock	APPL	8270 Stock	200 ug/mL	11/09/18	10/20/19	40 uL	100uL	MC 56258 20 uL	80 ug/mL
8270 Surrogate	APPL	8270 Surrogate	200/400 ug/mL	10/17/18	09/17/19	40 uL			

SV Internal Standard	APPL	SV Internal Standard	2000 ug/mL	01/16/19	01/16/20	2 uL			
8270 Stock	APPL	8270 Stock	200 ug/mL	11/09/18	10/20/19	50 uL	100uL	na	100 ug/mL
8270 Surrogate	APPL	8270 Surrogate	200/400 ug/mL	10/17/18	09/17/19	50 uL			
SV Internal Standard	APPL	SV Internal Standard	2000 ug/mL	01/16/19	01/16/20	2 uL			

**Name of Final Standard**      8270 Full Scan Second Source      **Prep'd By (Initials)**      OA  
**Prep Date**      11/15/18  
**Exp Date**      04/19/19

Initial Standard Information					Final Standard Information				
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
8270 SS Stock	o2si	8270 SS Stock	200 ug/mL	04/19/18	04/19/19	50 uL	200uL	MC 56258 150uL	50 ug/mL
SV Internal Standard	APPL	SV Internal Standard	2000 ug/mL	01/16/19	01/16/20	4 uL			

Name of  
Final

Standard 8270 Full Scan Spike

Prep'd By (Initials)

GA

Prep Date 11/09/18

Exp Date 10/20/19

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc.(range)
10001	Absolute	10001	2000	051018-39433	11/09/19	1.0 mL	20 mL	NA	2000 ug/mL
10002	Absolute	10002	2000	051018-39437	11/09/19	1.0 mL			2000 ug/mL
10004	Absolute	10004	2000	071618-39441	11/09/19	1.0 mL			2000 ug/mL
10005	Absolute	10005	2000	032018-39609	11/09/19	1.0 mL			2000 ug/mL
10006	Absolute	10006	2000	071318-39447	11/09/19	1.0 mL			2000 ug/mL
10007	Absolute	10007	2000	080116-39614	11/09/19	1.0 mL			2000 ug/mL
10018	Absolute	10018	2000	062718-39452	11/09/19	1.0 mL			2000 ug/mL
70023	Absolute	70023	1000	020818-39457	11/09/19	1.0 mL			1000 ug/mL
82705	Absolute	82705	2000	081418-39618	11/09/19	1.0 mL			2000 ug/mL
94552	Absolute	94552	various	102017-39621	10/20/19	1.0 mL			various

Name of Final Standard 8270 Surrogate 200/400 ppm  
 Prep Date 10/17/18  
 Exp Date 09/27/19

Prep'd By (Initials) GA

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
8270 Acid Surrogate Mix	Restek	33029	10,000 ug/mL	A0136352-39395	10/17/19	200 uL	5 mL	MC 56258	400 ug/mL
8270 B/N Surrogate Mix	Restek	31086	5000 ug/mL	A0135243-39166	09/27/19	200 uL			200 ug/mL

Name of Final Standard 8270 Internal Standard (Ampule)

Prep'd By (Initials)

OA

Prep Date 01/16/19

Exp Date 01/16/20

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
Semivolatil e Internal Standard	Restek	31206	2mg/mL	A0138585-39544	01/16/20	1 mL	1 mL	NA	2mg/mL



Name of  
Final  
Standard

**8270 SS STOCK**

Prep'd By (Initials)

OA

Prep Date 04/19/18

Exp Date 04/19/19

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA# (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
	Absolute	10001	2000	G34-081717-38180	04/19/19	1.0 mL	10 mL	NA	2000 ug/mL
	Absolute	10002	2000	G34-020217-38183	04/19/19	1.0 mL	*	*	2000 ug/mL
	Absolute	10004	2000	010815-38624	04/19/19	1.0 mL	*	*	2000 ug/mL
	Absolute	10005	2000	041317-37803	04/19/19	1.0 mL	*	*	2000 ug/mL
	Absolute	10006	2000	011718-38826	04/19/19	1.0 mL	*	*	2000 ug/mL
	Absolute	10007	2000	020515-38628	04/19/19	1.0 mL	*	*	2000 ug/mL
	Absolute	10018	2000	G34-030216-38198	04/19/19	1.0 mL	*	*	2000 ug/mL
	Absolute	70023	1000	013118-38829	04/19/19	1.0 mL	*	*	1000 ug/mL
	Absolute	82705	2000	090617-38831	04/19/19	1.0 mL	*	*	2000 ug/mL
	Absolute	94552	various	013118-38824	04/19/19	1.0 mL	*	*	various

Name of  
 Final **8270 Surrogate 100/200**  
 Standard **ppm**

Prep'd By (Initials) **GA**

Prep Date **11/06/18**  
 Exp Date **09/27/19**

Initial Standard Information					Final Standard Information				
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Allquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
8270 Acid Surrogate Mix	Restek	33029	10,000 ug/mL	A0136352 - 39395	10/17/19	5.0 mL	250 mL	Acetone #030817A	200 ug/mL
8270 B/N Surrogate Mix	Restek	31086	5000 ug/mL	A0135243 - 39166 & A0140132 - 39545	09/27/19 11/06/19	5.0 mL	250 mL	*	100 ug/mL

# Organic Extraction Worksheet

<b>Method</b>	Continuous Liquid/Liquid SVOC 3520C	<b>Extraction Set</b>	190130A	<b>Extraction Method</b>	LIQ003	<b>Units</b>	mL
Spiked ID 1	8270T Spike 1-30-19 EXP 10-30-19	Surrogate ID 1	8270 Surrogate 12-6-18 EXP 10-17-19				
Spiked ID 2	Sim Spike 1-30-19 EXP 1-30-20	Surrogate ID 2	SIM Surrogate 1-24-19 EXP 6-7-19				
Spiked ID 3		Surrogate ID 3					
Spiked ID 4		Surrogate ID 4					
Spiked ID 5		Surrogate ID 5					
Spiked ID 6		Sufficient Vol for Matrix QC:		yes			
Spiked ID 7		Ext. Start Time:		01/30/19 16:15 <i>01/31/19 13:20</i>			
Spiked ID 8		Ext. End Time:		01/31/19 10:30 <i>01/31/19 07:35, 02/01/19 11:20</i>			
GC Requires Extract By:				01/31/19 0:00			
pH1	2	01/30/19 1:40:00 PM		Water Bath Temp Criteria		73.75 °C	
pH2	14	01/31/19 12:30:00 PM					
pH3							

Spiked By: DL

Date 01/30/19

Witnessed By: CFM

Date 01/30/19

Sample	Sample Container	Spike Amount	Spike ID	Surrogate Amount	Surrogate ID	Extract Amount	Final Volume	pH	Extract Date/Time	Comments
1	190130A Blk			1,0.050	1,2	800	1	2/1	01/30/19 13:30	
					equip	e-wb5 E-HP51				
2	190130A LCS-1	0.250	1	1	1	800	1	2/1	01/30/19 13:30	
					equip	e-wb5 E-HP50				
3	190130A LCS-2	0.0250	2	0.050	2	800	1	2/1	01/30/19 13:30	
					equip	e-wb5 E-HP49				
4	190130A LCS-D-1	0.250	1	1	1	800	1	2/1	01/30/19 13:30	
					equip	e-wb5 E-HP48				
5	190130A LCS-D-2	0.0250	2	0.050	2	800	1	2/1	01/30/19 13:30	
					equip	e-wb5 E-HP47				
6	AZ85562 MS-1 AZ85562W31	0.250	1	1	1	800	1	2/1	01/30/19 13:30	87940
					equip	e-wb5 E-HP25				
7	AZ85562 MSD-1 AZ85562W33	0.250	1	1	1	800	1	2/1	01/30/19 13:30	87940
					equip	e-wb5 E-HP26				
8	AZ85562 MS-2 AZ85562W37	0.0250	2	0.050	2	800	1	2/1	01/30/19 13:30	87940
					equip	e-wb5 E-HP27				
9	AZ85562 MSD-2 AZ85562W38	0.0250	2	0.050	2	800	1	2/1	01/30/19 13:30	87940
					equip	E-WB5 E-HP28				
10	AZ85562 AZ85562W36			1,0.050	1,2	800	1	2/1	01/30/19 13:30	87940
					equip	e-wb5 E-HP29				
11	AZ85563 AZ85563W10			1,0.050	1,2	800	1	2/1	01/30/19 13:30	87940
					equip	E-WB5 E-HP30				
12	AZ85569 AZ85569W22			1,0.050	1,2	800	1	2/1	01/30/19 13:30	87940
					equip	E-WB5 E-HP17				
13	AZ85643 MS-1 AZ85643W33	0.250	1	1	1	800	1	2/1	01/30/19 13:30	87956
					equip	E-WB6 E-HP16				
14	AZ85643 MSD-1 AZ85643W34	0.250	1	1	1	800	1	2/1	01/30/19 13:30	87956
					equip	E-WB6 E-HP15				
15	AZ85643 MS-2 AZ85643W35	0.0250	2	0.050	2	800	1	2/1	01/30/19 13:30	87956
					equip	E-WB6 E-HP14				
16	AZ85643 MSD-2 AZ85643W30	0.0250	2	0.050	2	800	1	2/1	01/30/19 13:30	87956
					equip	E-WB6 E-HP13				

Solvent and Lot#	
PH Strips	HC 849161
Dichloromethane (DCM)	18G194011
1+1 H2SO4	11-28-18
10N NaOH	1-8-19
Filter Paper	400148
Acidified Na2SO4	11-27-18
B. Na2SO4	2018110573

Extraction COC Transfer	
Extraction lab employee Initials	KY
GC analyst's initials	OA
Date	02/01/19
Time	11:31
Refrigerator	GC-C

Technician's Initials	
Scanned By	DL
Sample Preparation	DL
Extraction	DL
Concentration	DL
Modified	02/01/19 4:47:57 PM

Reviewed By: *KY* Date *2/1/19*

# Organic Extraction Worksheet








Method	Continuous Liquid/Liquid SVOC 3520C		Extraction Set	190130A	Extraction Method	LIQ003	Units	mL
Spiked ID 1	8270T Spike 1-30-19 EXP 10-30-19		Surrogate ID 1	8270 Surrogate 12-6-18 EXP 10-17-19				
Spiked ID 2	Sim Spike 1-30-19 EXP 1-30-20		Surrogate ID 2	SIM Surrogate 1-24-19 EXP 6-7-19				
Spiked ID 3			Surrogate ID 3					
Spiked ID 4			Surrogate ID 4					
Spiked ID 5			Surrogate ID 5					
Spiked ID 6			Sufficient Vol for Matrix QC:		yes			
Spiked ID 7			Ext. Start Time:		01/30/19 16:15, 01/31/19 13:00			
Spiked ID 8			Ext. End Time:		01/31/19 10:30, 02/01/19 07:05, 02/01/19 11:20			
			GC Requires Extract By:		01/31/19 0:00			
			pH1	2	01/30/19 1:40:00 PM	Water Bath Temp Criteria		73,75 °C
			pH2	14	01/31/19 12:30:00 PM			
			pH3					

Spiked By: DL

Date 01/30/19

Witnessed By: CFM

Date 01/30/19

Sample	Sample Container	Spike Amount	Spike ID	Surrogate Amount	Surrogate ID	Extract Amount	Final Volume	pH	Extract Date/Time	Comments
17	AZ85643 			1,0.050	1,2	800	1	2/1	01/30/19 13:30	87956
						equip E-WB6 E-HP12				
18	AZ85644 			1,0.050	1,2	800	1	2/1	01/30/19 13:30	87956
						equip E-WB6 E-HP11				
19	AZ85646 			1,0.050	1,2	800	1	2/1	01/30/19 13:30	87956
						equip E-WB6 E-HP10				
20	AZ85653 			1,0.050	1,2	800	1	2/1	01/30/19 13:30	87956
						equip E-WB6 E-HP9				
21	AZ85763 			1,0.050	1,2	800	1	2/1	01/30/19 15:55	87986
						equip E-WB6 E-HP7				
22	AZ85764 			1,0.050	1,2	800	1	2/1	01/30/19 15:55	87986
						equip E-WB6 E-HP6				
23	AZ85766 			1,0.050	1,2	800	1	2/1	01/30/19 15:55	87986
						equip E-WB6 E-HP4				

Kys 2/4/19

Solvent and Lot#	
PH Strips	HC 849161
Dichloromethane (DCM)	18G194011
1+1 H2SO4	11-28-18
10N NaOH	1-8-19
Filter Paper	400148
Acidified Na2SO4	11-27-18
B. Na2SO4	2018110573

Extraction COC Transfer	
Extraction lab employee Initials	KY
GC analyst's initials	
Date	
Time	
Refrigerator	

Technician's Initials	
Scanned By	DL
Sample Preparation	DL
Extraction	DL
Concentration	DL
Modified	02/01/19 4:47:57 PM

Reviewed By: *Kys*

Date *2/4/19*

## Injection Log

Directory: M:\YODA\DATA\Y190124\

Vial	FileName	Multiplier	SampleName	Misc Info	Injected
14	0124Y014.D	1	SV TUNE 11/10/18		25 Jan 19 7:05
15	0124Y015.D	1	50ug/mL 8270 01/24/19		25 Jan 19 7:20
16	0124Y016.D	1	4ug/mL 8270 01/24/19		25 Jan 19 9:53
17	0124Y017.D	1	5ug/mL 8270 01/24/19		25 Jan 19 10:21
18	0124Y018.D	1	10ug/mL 8270 01/24/19		25 Jan 19 10:49
20	0124Y020.D	1	40ug/mL 8270 01/24/19		25 Jan 19 11:44
21	0124Y021.D	1	60ug/mL 8270 01/24/19		25 Jan 19 12:11
22	0124Y022.D	1	80ug/mL 8270 01/24/19		25 Jan 19 12:39
23	0124Y023.D	1	100ug/mL 8270 01/24/19		25 Jan 19 13:07
30	0124Y030.D	1	SV TUNE 11/10/18		28 Jan 19 11:49
33	0124Y033.D	1	20ug/mL 8270 01/24/19		28 Jan 19 13:36
34	0124Y034.D	1	SS-8270 01/24/19		28 Jan 19 14:11
94	0124Y094.D	1	SV TUNE 11/10/18		1 Feb 19 13:23
95	0124Y095.D	1	50ug/mL 8270 01/24/19 (2)		1 Feb 19 13:38
98	0124Y098.D	1.25	190130A Blk 1/800		1 Feb 19 16:19
99	0124Y099.D	1.25	190130A LCS-1 1/800		1 Feb 19 16:47
100	0124Y100.D	1.25	190130A LCSD-1 1/800		1 Feb 19 17:14
12	0124Y112.D	1.25	AZ85763W10 1/800		1 Feb 19 22:49
13	0124Y113.D	1.25	AZ85764W10 1/800		1 Feb 19 23:16
14	0124Y114.D	1.25	AZ85766W24 1/800		1 Feb 19 23:44
15	0124Y115.D	1.25	50ug/mL 8270 01/24/19 (1)		2 Feb 19 00:12

**ORGANICS**  
**Calibration Data**

2MEE  
EPA 8270

**Form 6**  
**Initial Calibration**

Lab Name: APPL, Inc. \_\_\_\_\_

SDG No: \_\_\_\_\_

Case No: \_\_\_\_\_

Initial Cal. Date: 11/28/18

Matrix: \_\_\_\_\_

Instrument: Yoda

Initials: \_\_\_\_\_

1128Y004.D    1128Y005.D    1128Y006.D    1128Y007.D    1128Y012.D    1128Y008.D    1128Y009.D    1128Y010.D

	Compound	1	2	3	4	5	6	7	8			Avg	%RSD	Type	r <sup>2</sup>	Q	MRF
1	I 1,4-dichlorobenzene-D4(IS)																
2	TM 2-(2-Methoxyethoxy)ethanol	0.2305	0.2453	0.2498	0.2070	0.2284	0.2415	0.2719	0.2475			0.24	7.9	TM			
3	I Napthalene-D8(IS)																
4	I Acenaphthene-D10(IS)																
5	I Phenanthrene-D10(IS)																
6	I Chrysene-D12(IS)																
7	I Perylene-D12(IS)																
8																	
9																	
10																	
11																	
12																	
13																	
14																	
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31																	
32																	
33																	
34																	
35																	

Data File : M:\YODA\DATA\Y181128M\1128Y004.D Vial: 4  
 Acq On : 28 Nov 18 8:08 Operator: MA  
 Sample : 50ug/ml MEE 08/01/18 Inst : Yoda  
 Misc : soil Multiplr: 1.00

Quant Time: Nov 28 11:30 2018 Quant Results File: YMEE1128.RES

Quant Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Wed Nov 28 11:29:49 2018  
 Response via : Initial Calibration  
 DataAcq Meth : GED

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.29	152	846679	40.00000	ppb	0.00
3) Napthalene-D8 (IS)	6.72	136	3808187	40.00000	ppb	0.00
4) Acenaphthene-D10 (IS)	8.74	164	1917814	40.00000	ppb	0.00
5) Phenanthrene-D10 (IS)	10.49	188	3593004	40.00000	ppb	0.00
6) Chrysene-D12 (IS)	13.58	240	3055748	40.00000	ppb	0.00
7) Perylene-D12 (IS)	15.40	264	3109829	40.00000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) 2-(2-Methoxyethoxy)ethanol	4.46	45	243946	76.98478	ppb	99



Quantitation Report

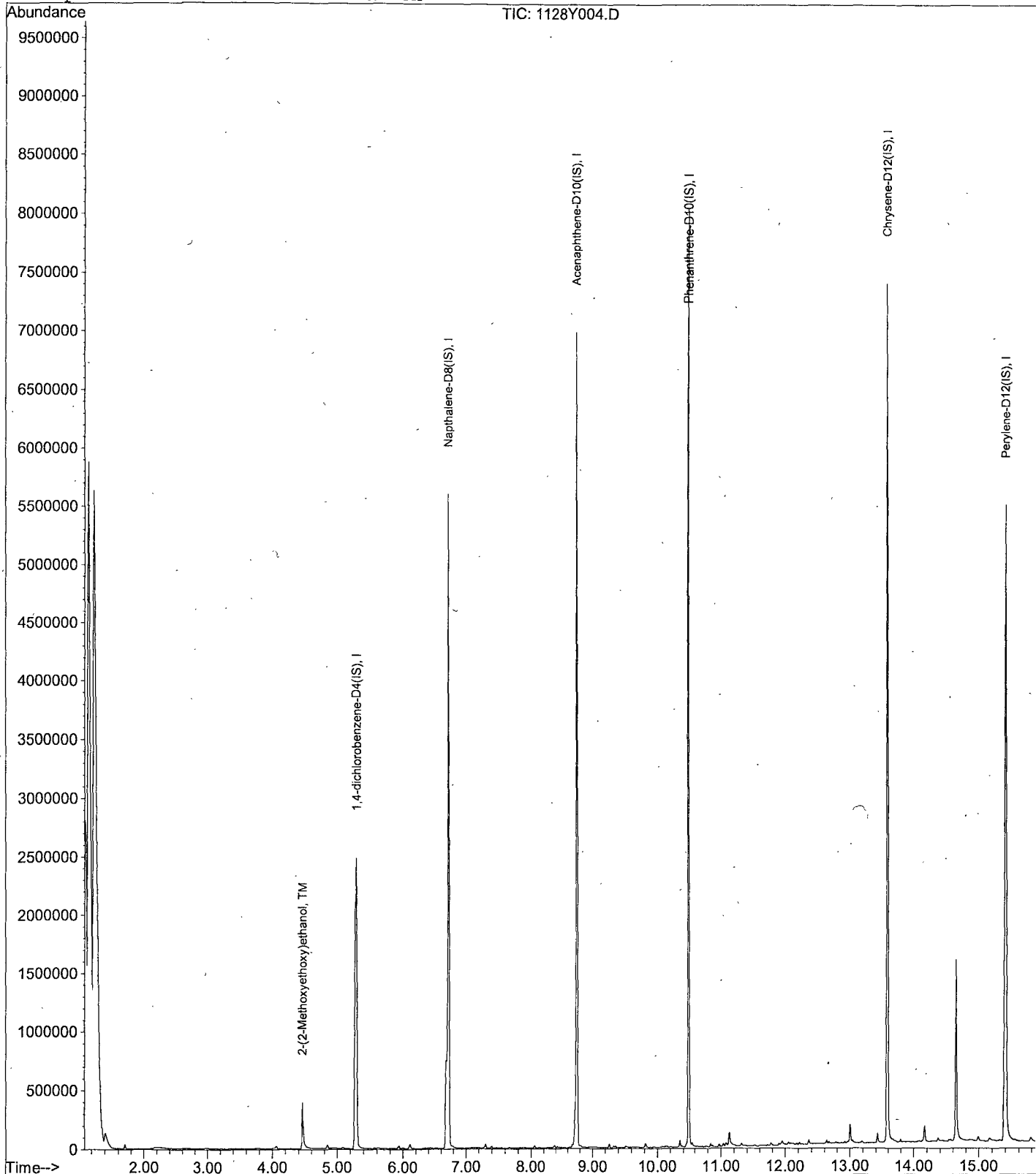
Data File : M:\YODA\DATA\Y181128M\1128Y004.D  
Acq On : 28 Nov 18 8:08  
Sample : 50ug/ml MEE 08/01/18  
Misc : soil

Vial: 4  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Nov 28 11:30 2018

Quant Results File: YMEE1128.RES

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Wed Nov 28 11:42:34 2018  
Response via : Initial Calibration



Data File : M:\YODA\DATA\Y181128M\1128Y005.D Vial: 5  
 Acq On : 28 Nov 18 8:32 Operator: MA  
 Sample : 100ug/ml MEE 08/01/18 Inst : Yoda  
 Misc : soil Multiplr: 1.00

Quant Time: Nov 28 11:30 2018 Quant Results File: YMEE1128.RES

Quant Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Wed Nov 28 11:29:49 2018  
 Response via : Initial Calibration  
 DataAcq Meth : GED

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.31	152	833525	40.00000	ppb	0.00
3) Napthalene-D8 (IS)	6.73	136	3655933	40.00000	ppb	0.00
4) Acenaphthene-D10 (IS)	8.75	164	1870603	40.00000	ppb	0.00
5) Phenanthrene-D10 (IS)	10.49	188	3472767	40.00000	ppb	0.00
6) Chrysene-D12 (IS)	13.58	240	2784977	40.00000	ppb	0.00
7) Perylene-D12 (IS)	15.40	264	2713194	40.00000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) 2-(2-Methoxyethoxy) ethanol	4.47	45	511054	121.26713	ppb	99

Quantitation Report

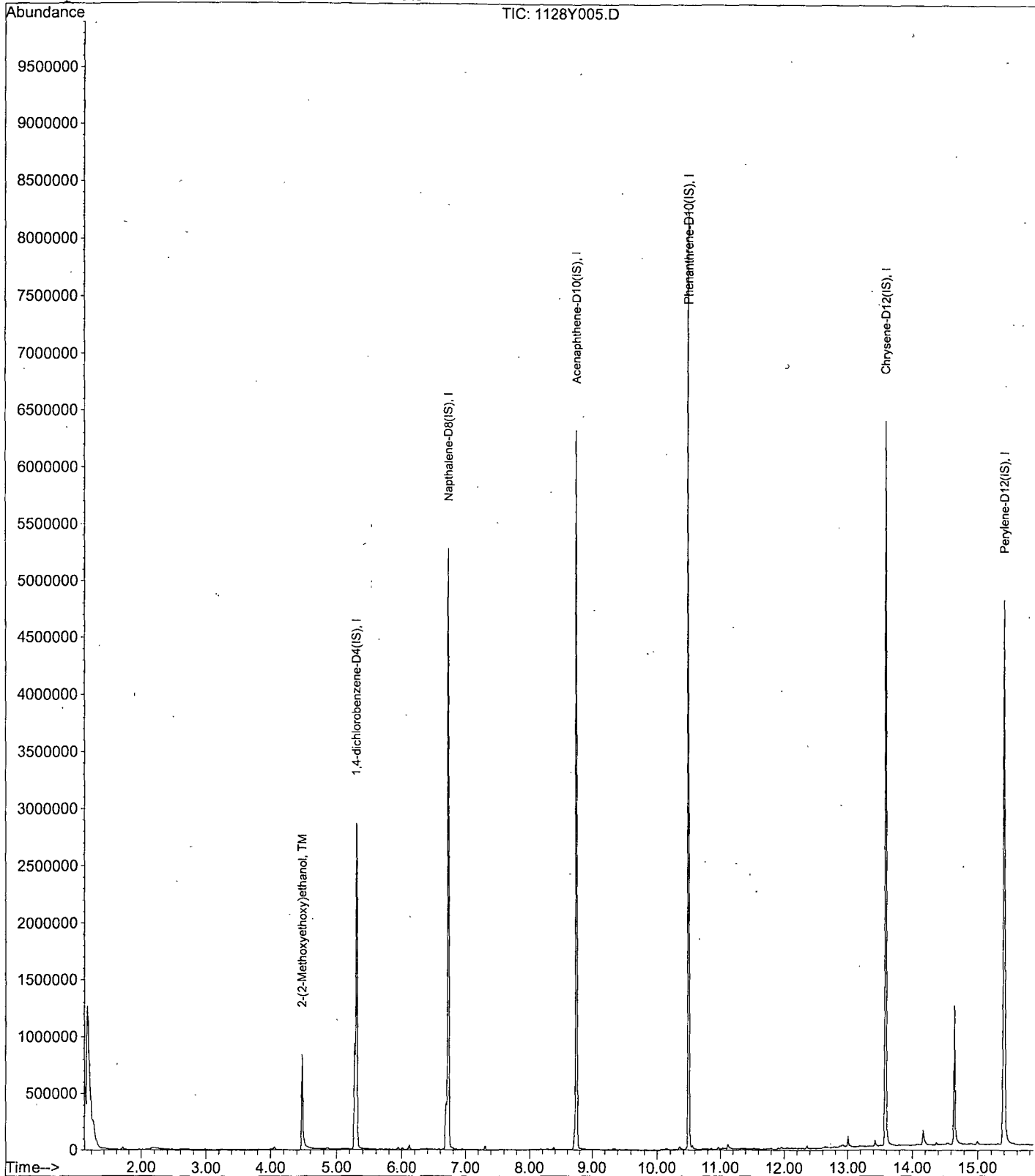
Data File : M:\YODA\DATA\Y181128M\1128Y005.D  
Acq On : 28 Nov 18 8:32  
Sample : 100ug/ml MEE 08/01/18  
Misc : soil

Vial: 5  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Nov 28 11:30 2018

Quant Results File: YMEE1128.RES

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Wed Nov 28 11:42:34 2018  
Response via : Initial Calibration



Data File : M:\YODA\DATA\Y181128M\1128Y006.D Vial: 6  
 Acq On : 28 Nov 18 8:55 Operator: MA  
 Sample : 200ug/ml MEE 08/01/18 Inst : Yoda  
 Misc : soil Multiplr: 1.00

Quant Time: Nov 28 11:30 2018 Quant Results File: YMEE1128.RES

Quant Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Wed Nov 28 11:29:49 2018  
 Response via : Initial Calibration  
 DataAcq Meth : GED

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.30	152	906220	40.00000	ppb	0.00
3) Napthalene-D8 (IS)	6.72	136	4175598	40.00000	ppb	0.00
4) Acenaphthene-D10 (IS)	8.75	164	2128971	40.00000	ppb	0.00
5) Phenanthrene-D10 (IS)	10.49	188	3974569	40.00000	ppb	0.00
6) Chrysene-D12 (IS)	13.58	240	3488549	40.00000	ppb	0.00
7) Perylene-D12 (IS)	15.40	264	3293123	40.00000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) 2-(2-Methoxyethoxy)ethanol	4.48	45	1131710	207.88279	ppb	99

Quantitation Report

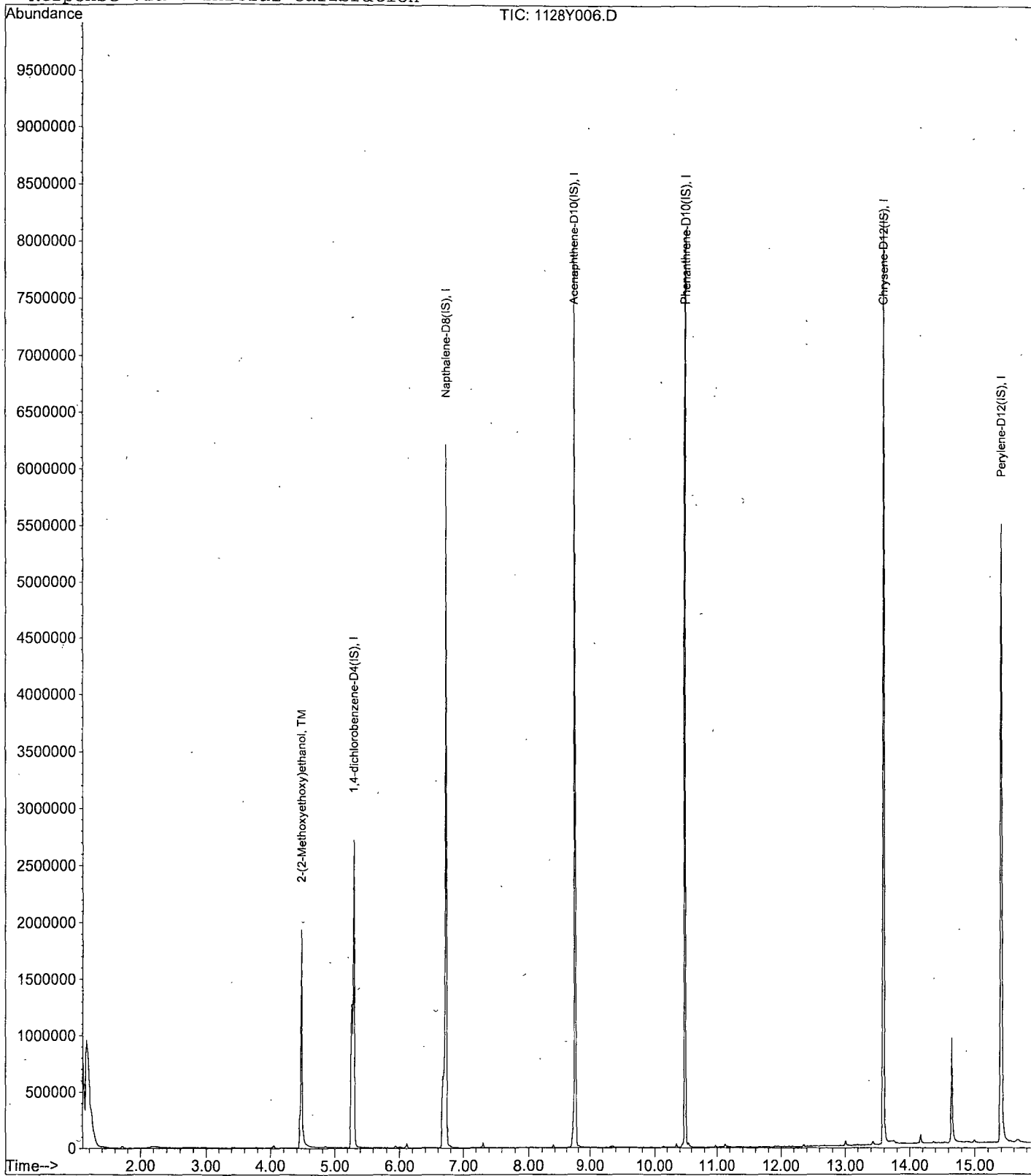
Data File : M:\YODA\DATA\Y181128M\1128Y006.D  
Acq On : 28 Nov 18 8:55  
Sample : 200ug/ml MEE 08/01/18  
Misc : soil

Vial: 6  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Nov 28 11:30 2018

Quant Results File: YMEE1128.RES

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Wed Nov 28 11:42:34 2018  
Response via : Initial Calibration



Data File : M:\YODA\DATA\Y181128M\1128Y007.D Vial: 7  
 Acq On : 28 Nov 18 9:19 Operator: MA  
 Sample : 400ug/ml MEE 08/01/18 Inst : Yoda  
 Misc : soil Multiplr: 1.00

Quant Time: Nov 28 11:31 2018 Quant Results File: YMEE1128.RES

Quant Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Wed Nov 28 11:29:49 2018  
 Response via : Initial Calibration  
 DataAcq Meth : GED

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.30	152	948008	40.00000	ppb	0.00
3) Napthalene-D8 (IS)	6.72	136	4475913	40.00000	ppb	0.00
4) Acenaphthene-D10 (IS)	8.74	164	2298421	40.00000	ppb	0.00
5) Phenanthrene-D10 (IS)	10.49	188	4282330	40.00000	ppb	0.00
6) Chrysene-D12 (IS)	13.59	240	3776629	40.00000	ppb	0.00
7) Perylene-D12 (IS)	15.40	264	3748965	40.00000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) 2-(2-Methoxyethoxy) ethanol	4.48	45	1962520	319.79035	ppb	100

Quantitation Report

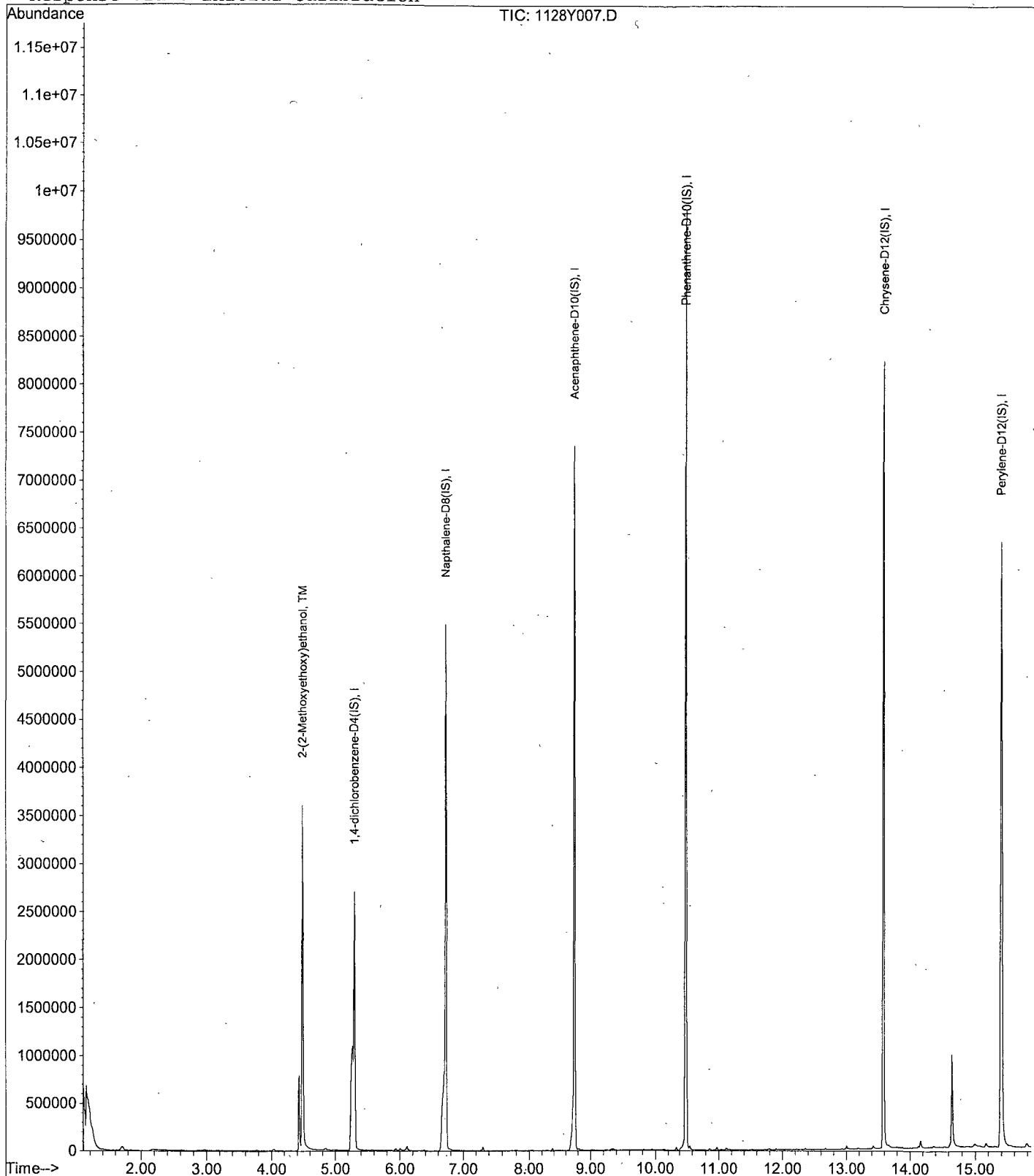
Data File : M:\YODA\DATA\Y181128M\1128Y007.D  
Acq On : 28 Nov 18 9:19  
Sample : 400ug/ml MEE 08/01/18  
Misc : soil

Vial: 7  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Nov 28 11:31 2018

Quant Results File: YMEE1128.RES

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Wed Nov 28 11:42:34 2018  
Response via : Initial Calibration



Data File : M:\YODA\DATA\Y181128M\1128Y012.D Vial: 12  
 Acq On : 28 Nov 18 11:17 Operator: MA  
 Sample : 500ug/ml MEE 08/01/18 Inst : Yoda  
 Misc : soil Multiplr: 1.00

Quant Time: Nov 28 11:25 2018 Quant Results File: YMEE1128.RES

Quant Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Wed Nov 28 09:56:17 2018  
 Response via : Initial Calibration  
 DataAcq Meth : GED

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.30	152	830482	40.00000	ppb	0.00
3) Napthalene-D8 (IS)	6.72	136	3639618	40.00000	ppb	0.00
4) Acenaphthene-D10 (IS)	8.74	164	1806558	40.00000	ppb	0.00
5) Phenanthrene-D10 (IS)	10.49	188	3340149	40.00000	ppb	0.00
6) Chrysene-D12 (IS)	13.59	240	2995047	40.00000	ppb	0.00
7) Perylene-D12 (IS)	15.40	264	2844171	40.00000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) 2-(2-Methoxyethoxy) ethanol	4.49	45	2370937	400.21340	ppb	100



Quantitation Report

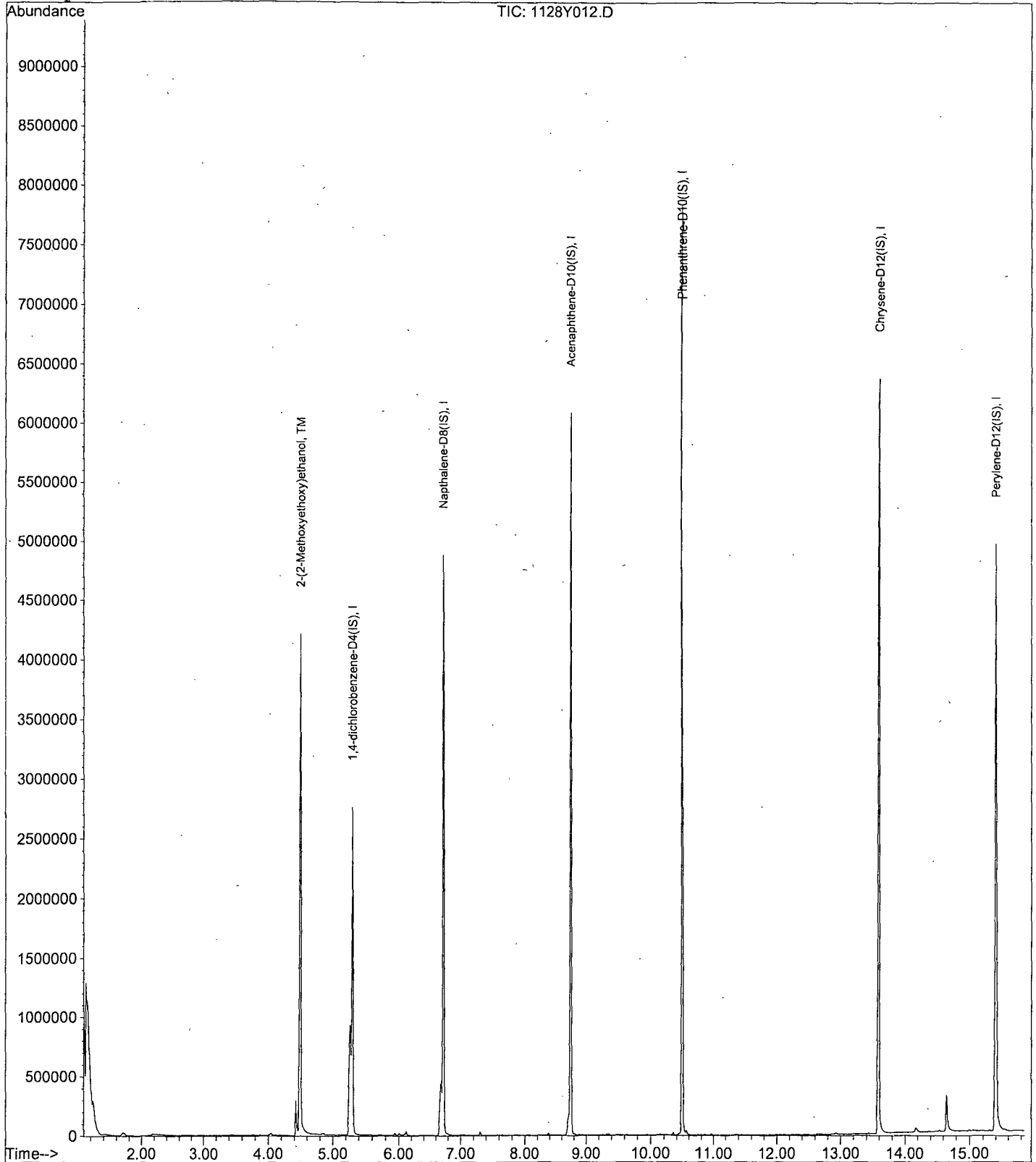
Data File : M:\YODA\DATA\Y181128M\1128Y012.D  
Acq On : 28 Nov 18 11:17  
Sample : 500ug/ml MEE 08/01/18  
Misc : soil

Vial: 12  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Nov 28 11:25 2018

Quant Results File: YMEE1128.RES

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Wed Nov 28 11:42:34 2018  
Response via : Initial Calibration



Data File : M:\YODA\DATA\Y181128M\1128Y008.D Vial: 8  
 Acq On : 28 Nov 18 9:43 Operator: MA  
 Sample : 600ug/ml MEE 08/01/18 Inst : Yoda  
 Misc : soil Multiplr: 1.00

Quant Time: Nov 28 11:40 2018 Quant Results File: YMEE1128.RES

Quant Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Wed Nov 28 11:40:16 2018  
 Response via : Initial Calibration  
 DataAcq Meth : GED

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.31	152	856651m	40.00000	ppb	0.00
3) Napthalene-D8 (IS)	6.73	136	3531920	40.00000	ppb	0.00
4) Acenaphthene-D10 (IS)	8.75	164	2073085	40.00000	ppb	0.00
5) Phenanthrene-D10 (IS)	10.49	188	3859845	40.00000	ppb	0.00
6) Chrysene-D12 (IS)	13.59	240	3489580	40.00000	ppb	0.00
7) Perylene-D12 (IS)	15.40	264	3140389	40.00000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) 2-(2-Methoxyethoxy)ethanol	4.50	45	3103564	483.70926	ppb	100

Quantitation Report

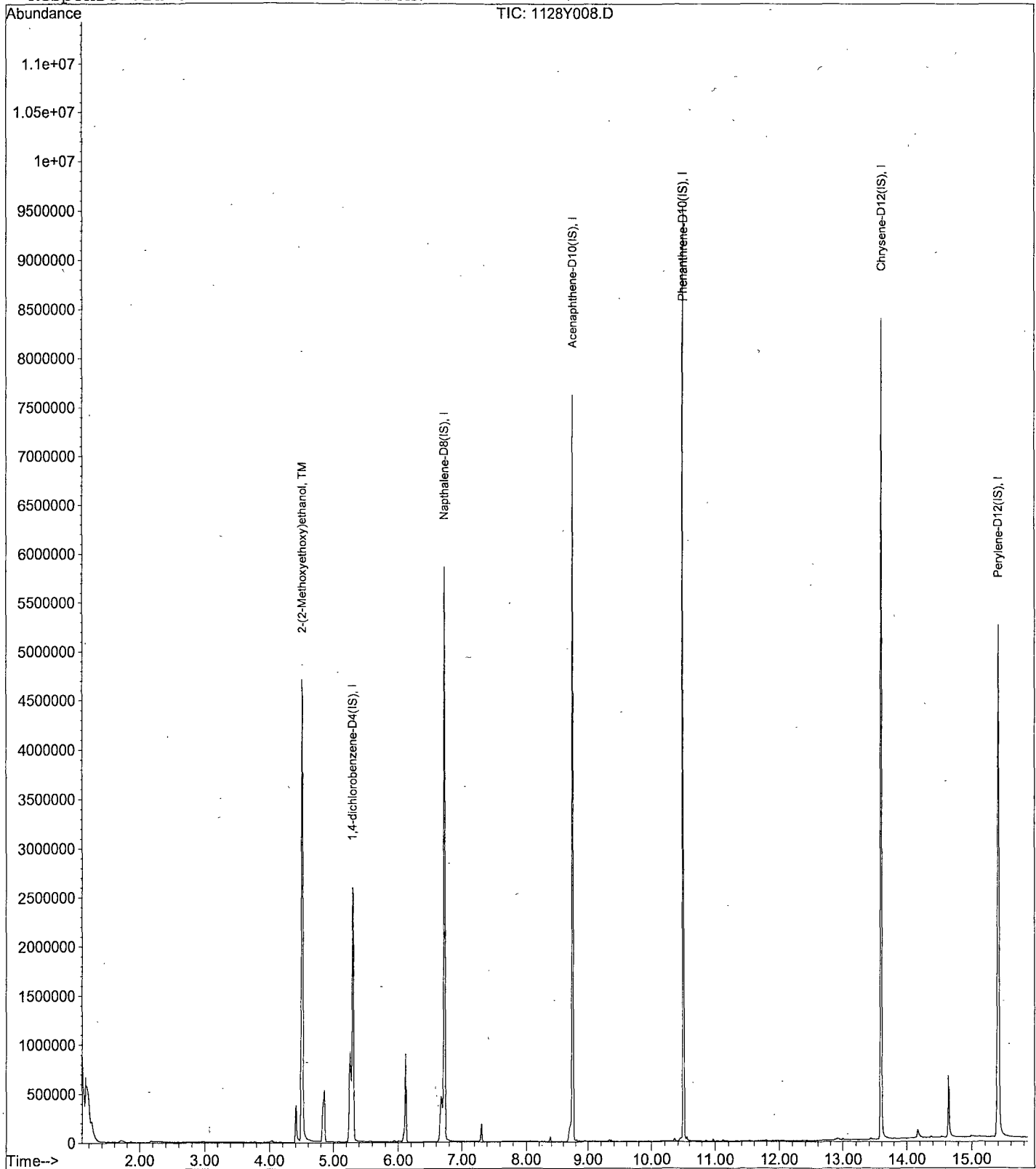
Data File : M:\YODA\DATA\Y181128M\1128Y008.D  
Acq On : 28 Nov 18 9:43  
Sample : 600ug/ml MEE 08/01/18  
Misc : soil

Vial: 8  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Nov 28 11:40 2018

Quant Results File: YMEE1128.RES

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Wed Nov 28 11:42:34 2018  
Response via : Initial Calibration

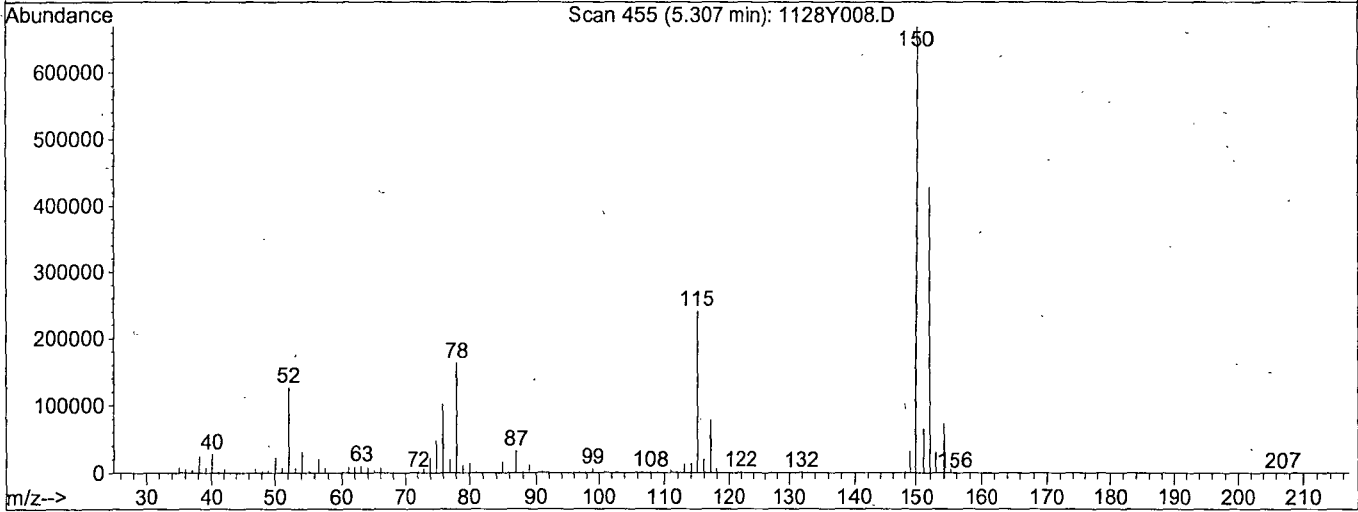
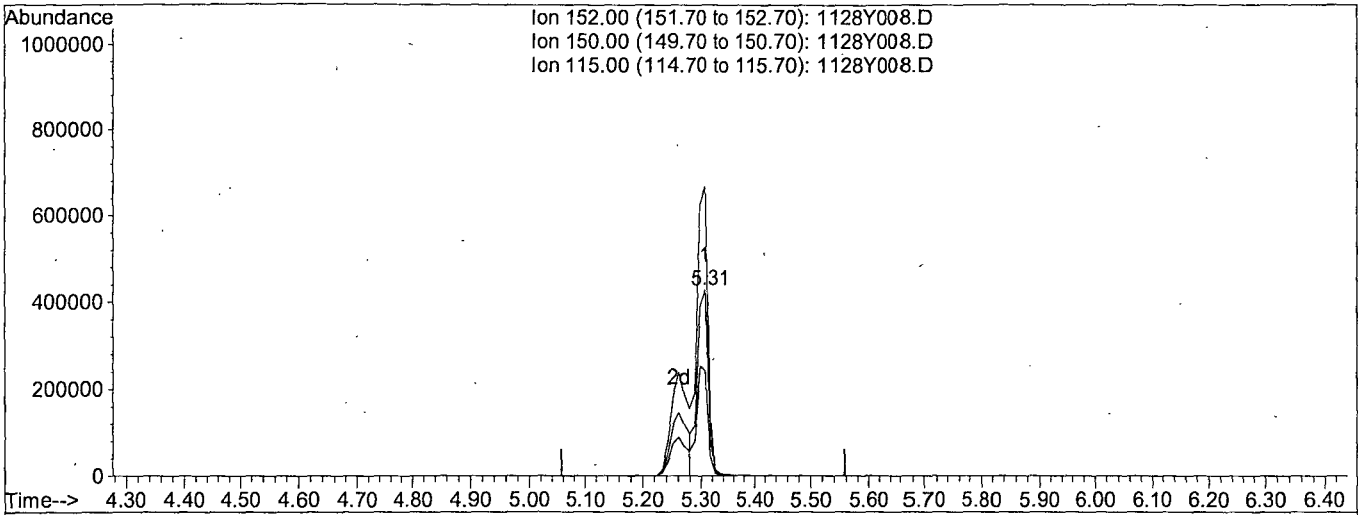


Quantitation Report

Data File : M:\YODA\DATA\Y181128M\1128Y008.D  
 Acq On : 28 Nov 18 9:43  
 Sample : 600ug/ml MEE 08/01/18  
 Misc : soil  
 Quant Time: Nov 28 11:40 2018

Vial: 8  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00  
 Quant Results File: temp.res

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Wed Nov 28 11:40:16 2018  
 Response via : Multiple Level Calibration



TIC: 1128Y008.D

(1) 1,4-dichlorobenzene-D4(IS) (I)

5.31min 40.0000ppb

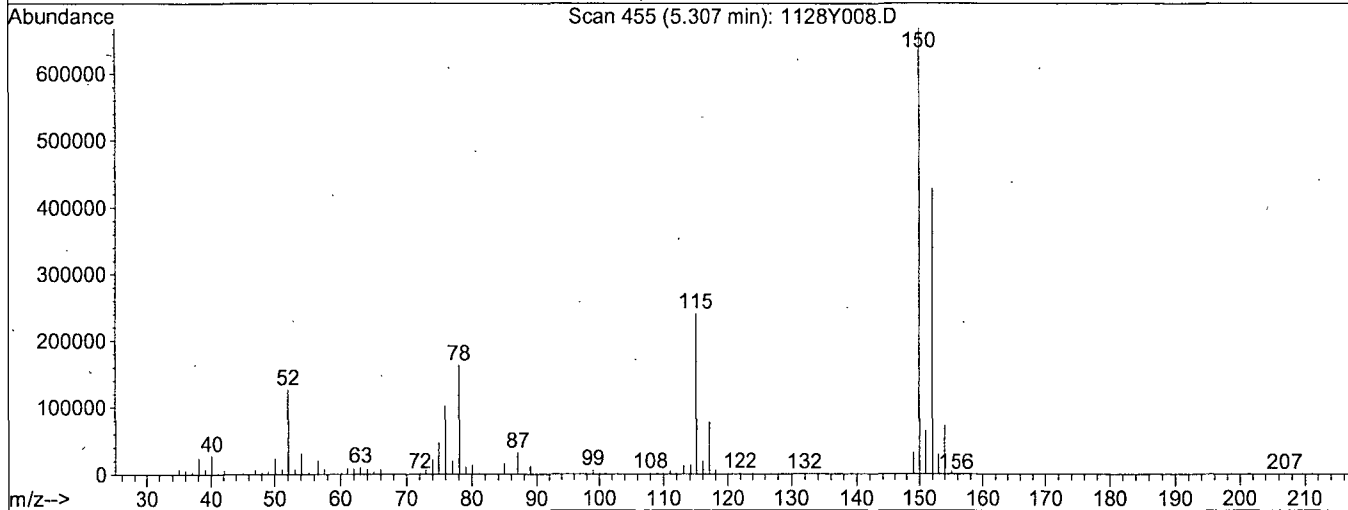
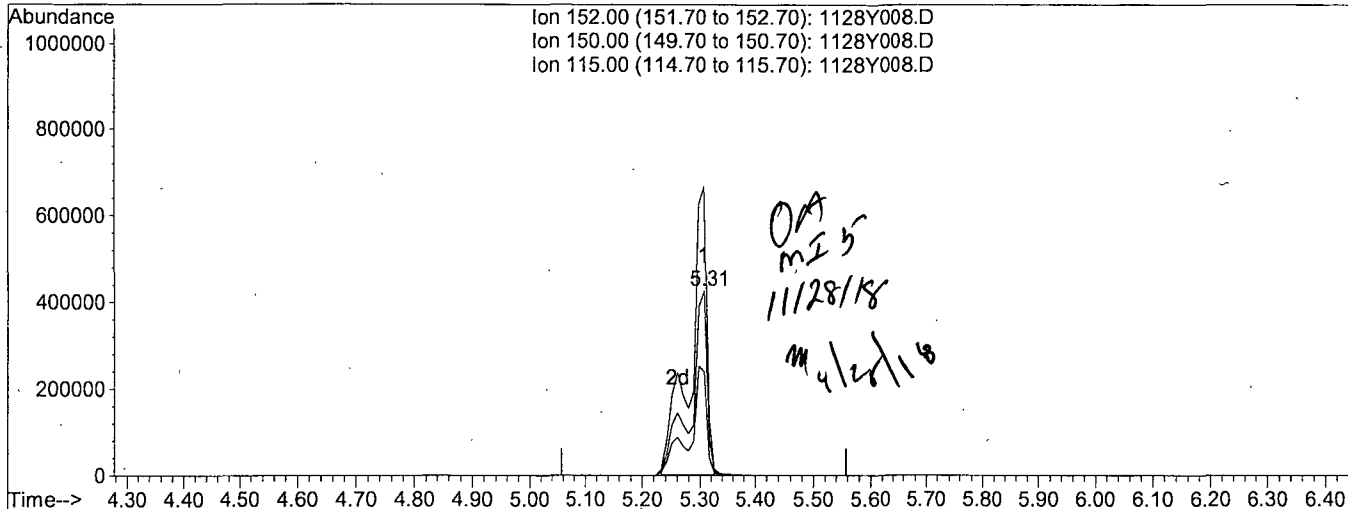
response 580797

Ion	Exp%	Act%
152.00	100	100
150.00	156.20	156.26
115.00	56.30	56.24
0.00	0.00	0.00

Quantitation Report

Data File : M:\YODA\DATA\Y181128M\1128Y008.D Vial: 8  
 Acq On : 28 Nov 18 9:43 Operator: MA  
 Sample : 600ug/ml MEE 08/01/18 Inst : Yoda  
 Misc : soil Multiplr: 1.00  
 Quant Time: Nov 28 11:40 2018 Quant Results File: temp.res

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Wed Nov 28 11:40:16 2018  
 Response via : Multiple Level Calibration



TIC: 1128Y008.D

(1) 1,4-dichlorobenzene-D4(IS) (I)

5.31min 40.0000ppb m

response 856651

Ion	Exp%	Act%
152.00	100	100
150.00	156.20	156.25
115.00	56.30	56.26
0.00	0.00	0.00

Data File : M:\YODA\DATA\Y181128M\1128Y009.D Vial: 9  
 Acq On : 28 Nov 18 10:06 Operator: MA  
 Sample : 800ug/ml MEE 08/01/18 Inst : Yoda  
 Misc : soil Multiplr: 1.00

Quant Time: Nov 28 11:40 2018 Quant Results File: YMEE1128.RES

Quant Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Wed Nov 28 11:29:49 2018  
 Response via : Initial Calibration  
 DataAcq Meth : GED

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.30	152	785528m	40.00000	ppb	0.00
3) Napthalene-D8 (IS)	6.72	136	3646286	40.00000	ppb	0.00
4) Acenaphthene-D10 (IS)	8.74	164	2099263	40.00000	ppb	0.00
5) Phenanthrene-D10 (IS)	10.49	188	3938984	40.00000	ppb	0.00
6) Chrysene-D12 (IS)	13.59	240	3411642	40.00000	ppb	0.00
7) Perylene-D12 (IS)	15.40	264	2743638	40.00000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) 2-(2-Methoxyethoxy) ethanol	4.52	45	4272210	778.75542	ppb	98

Quantitation Report

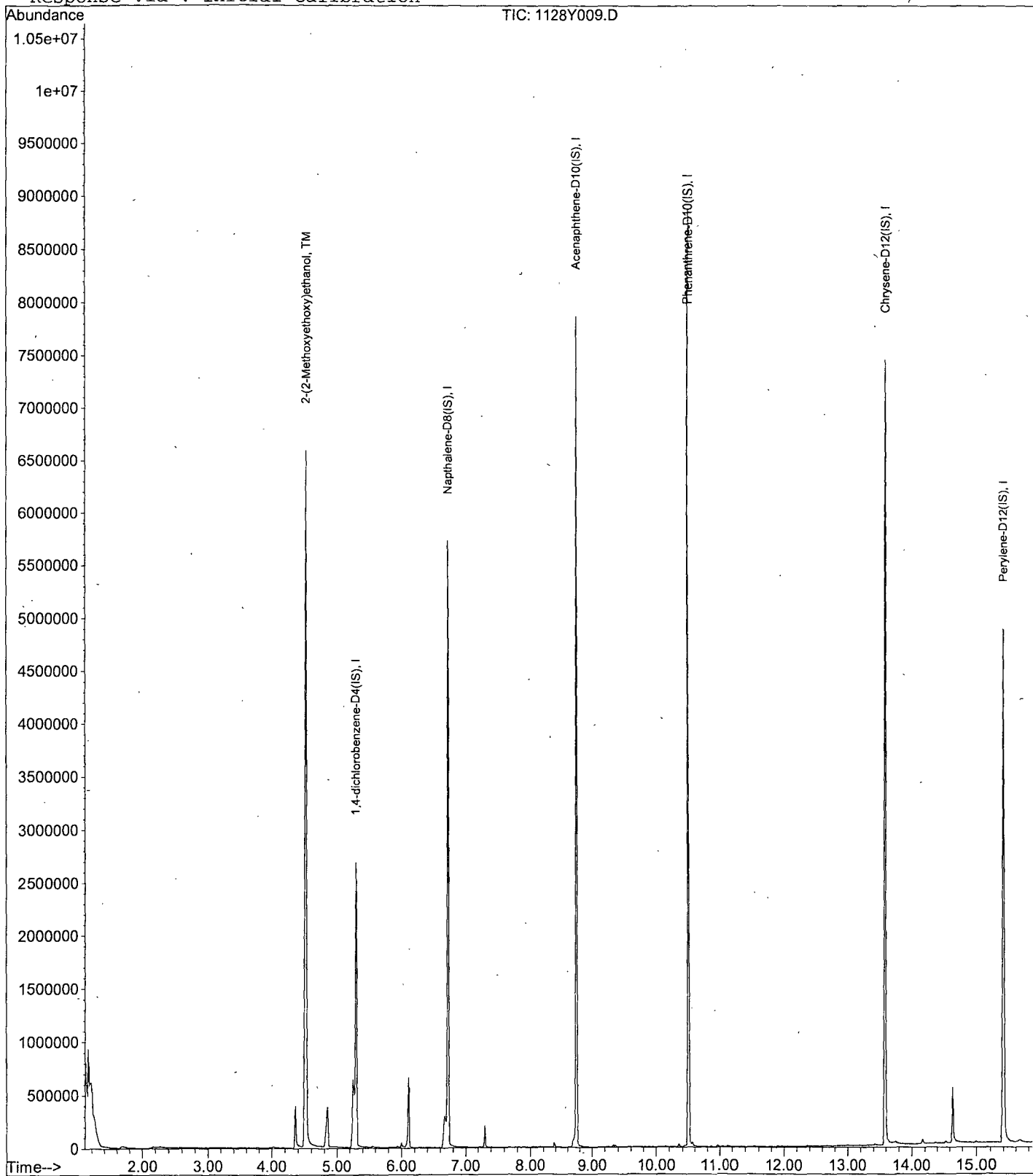
Data File : M:\YODA\DATA\Y181128M\1128Y009.D  
Acq On : 28 Nov 18 10:06  
Sample : 800ug/ml MEE 08/01/18  
Misc : soil

Vial: 9  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Nov 28 11:40 2018

Quant Results File: YMEE1128.RES

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Wed Nov 28 11:42:34 2018  
Response via : Initial Calibration

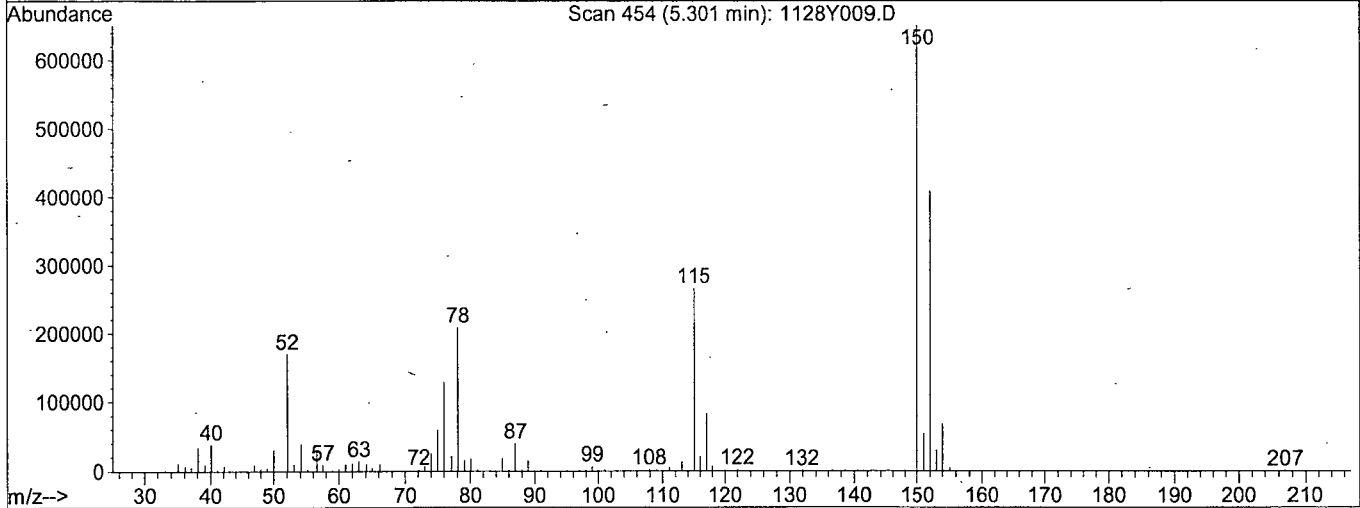
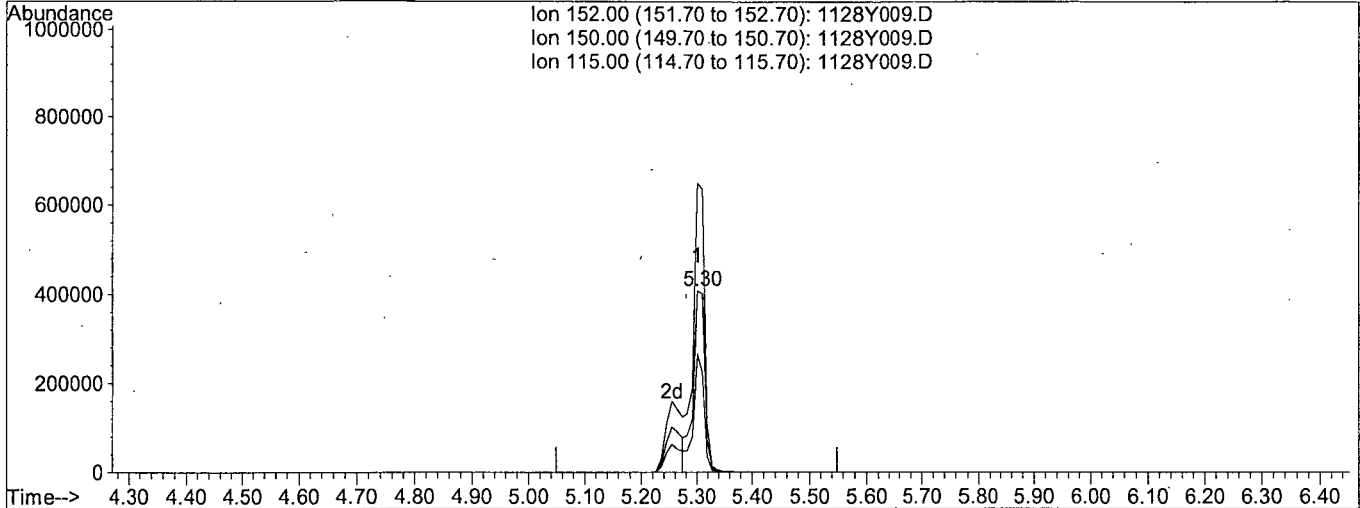


Quantitation Report

Data File : M:\YODA\DATA\Y181128M\1128Y009.D  
 Acq On : 28 Nov 18 10:06  
 Sample : 800ug/ml MEE 08/01/18  
 Misc : soil  
 Quant Time: Nov 28 11:31 2018

Vial: 9  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00  
 Quant Results File: temp.res

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Wed Nov 28 11:40:16 2018  
 Response via : Multiple Level Calibration



TIC: 1128Y009.D

(1) 1,4-dichlorobenzene-D4(tS) (l)

5.30min 40.0000ppb

response 614492

Ion	Exp%	Act%
152.00	100	100
150.00	160.10	159.30
115.00	63.20	65.14
0.00	0.00	0.00

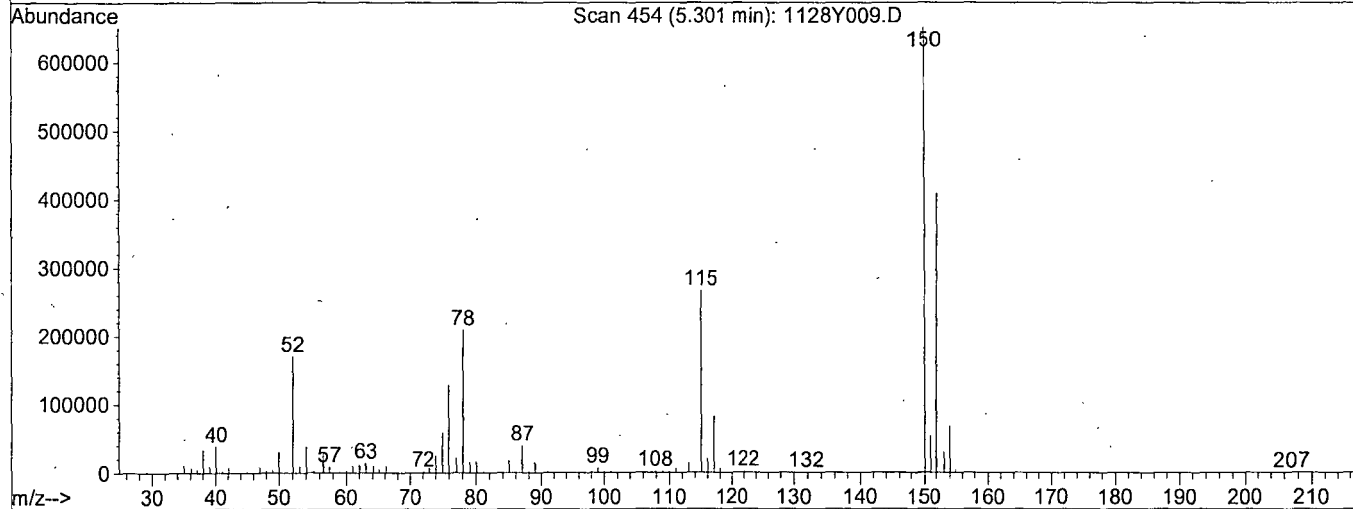
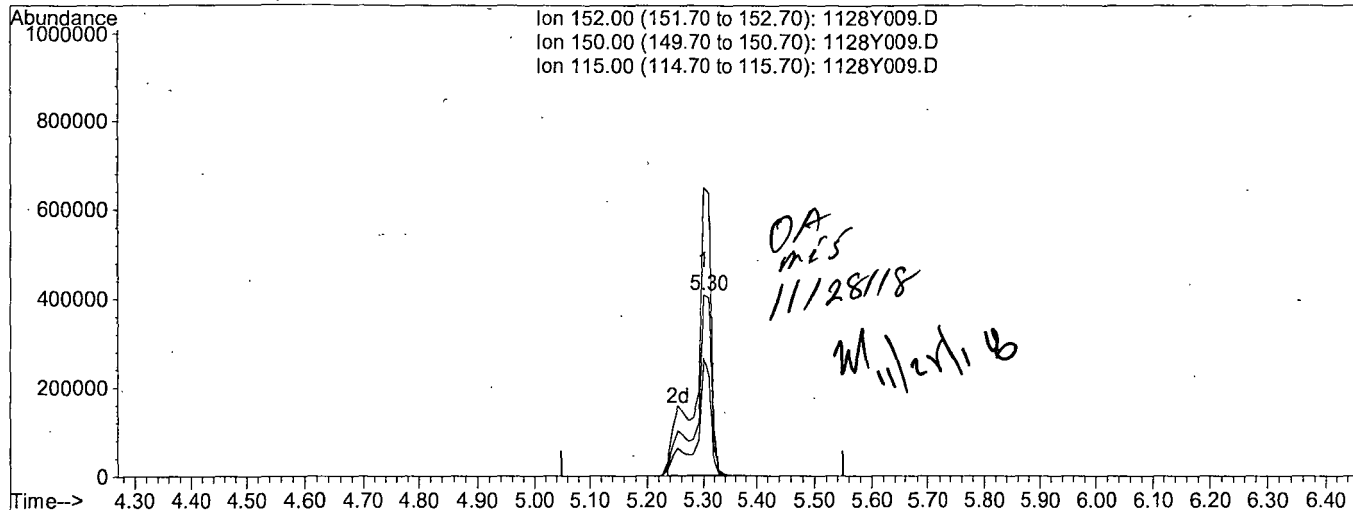


Quantitation Report

Data File : M:\YODA\DATA\Y181128M\1128Y009.D  
 Acq On : 28 Nov 18 10:06  
 Sample : 800ug/ml MEE 08/01/18  
 Misc : soil  
 Quant Time: Nov 28 11:40 2018

Vial: 9  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00  
 Quant Results File: temp.res

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Wed Nov 28 11:40:16 2018  
 Response via : Multiple Level Calibration



TIC: 1128Y009.D

(1) 1,4-dichlorobenzene-D4(1S) (I)

5.30min 40.0000ppb m

response 785528

Ion	Exp%	Act%
152.00	100	100
150.00	160.10	159.35
115.00	63.20	65.18
0.00	0.00	0.00

Data File : M:\YODA\DATA\Y181128M\1128Y010.D Vial: 10  
 Acq On : 28 Nov 18 10:30 Operator: MA  
 Sample : 1000ug/ml MEE 08/01/18 Inst : Yoda  
 Misc : soil Multiplr: 1.00

Quant Time: Nov 28 11:41 2018

Quant Results File: YMEE1128.RES

Quant Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Wed Nov 28 11:29:49 2018  
 Response via : Initial Calibration  
 DataAcq Meth : GED

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.30	152	817975m	40.00000	ppb	0.00
3) Napthalene-D8 (IS)	6.72	136	3554268	40.00000	ppb	0.00
4) Acenaphthene-D10 (IS)	8.74	164	2016499	40.00000	ppb	0.00
5) Phenanthrene-D10 (IS)	10.49	188	3774107	40.00000	ppb	0.00
6) Chrysene-D12 (IS)	13.59	240	3353765	40.00000	ppb	0.00
7) Perylene-D12 (IS)	15.40	264	3559145	40.00000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) 2-(2-Methoxyethoxy)ethanol	4.53	45	5060771	787.46043	ppb	98

Quantitation Report

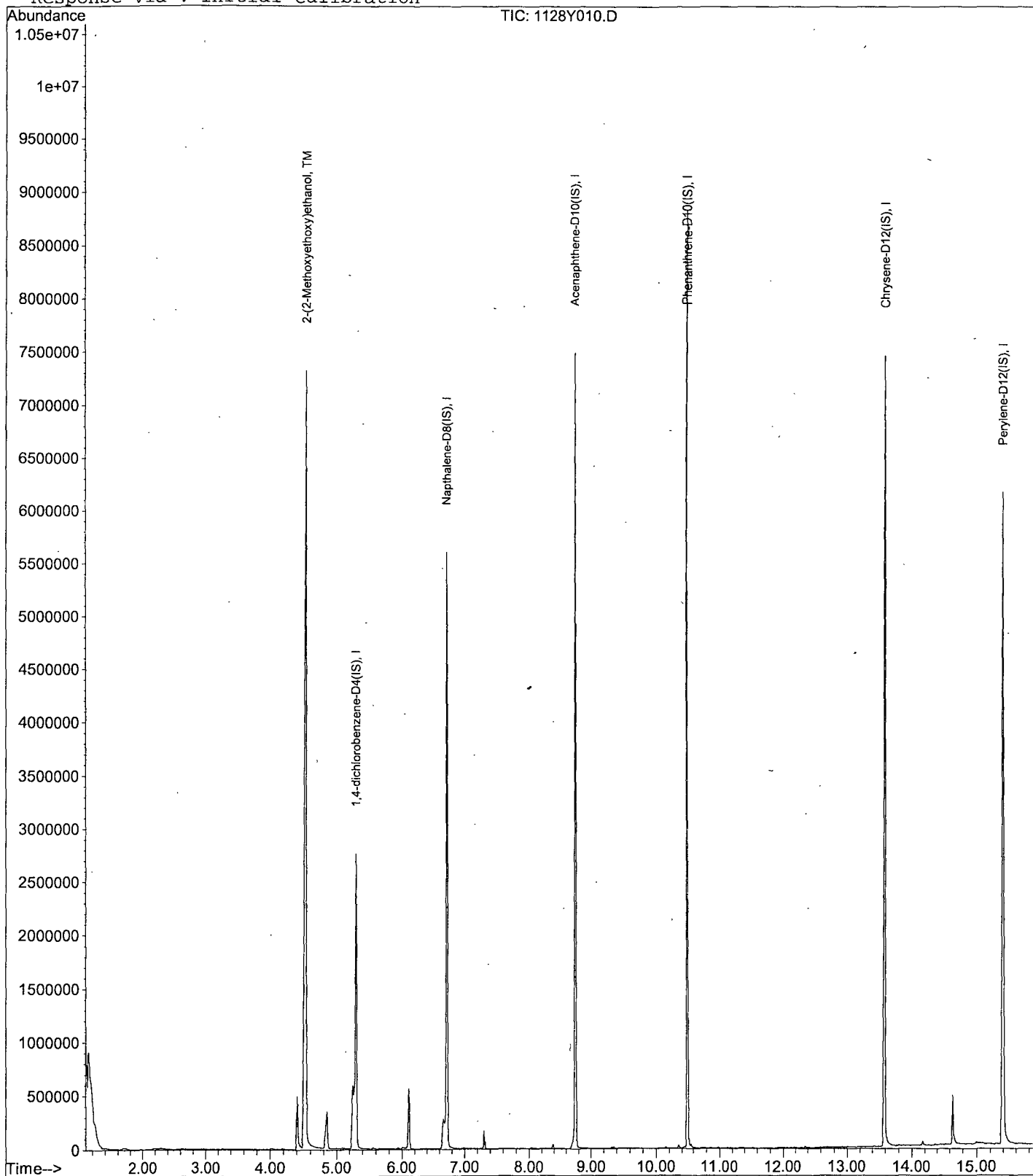
Data File : M:\YODA\DATA\Y181128M\1128Y010.D  
Acq On : 28 Nov 18 10:30  
Sample : 1000ug/ml MEE 08/01/18  
Misc : soil

Vial: 10  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Nov 28 11:41 2018

Quant Results File: YMEE1128.RES

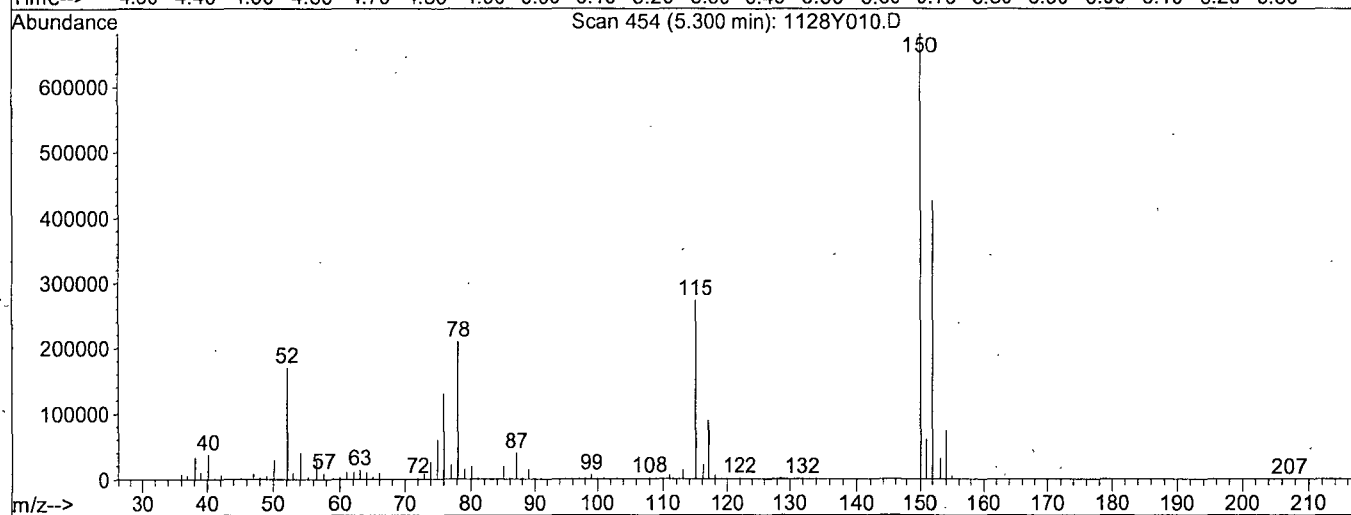
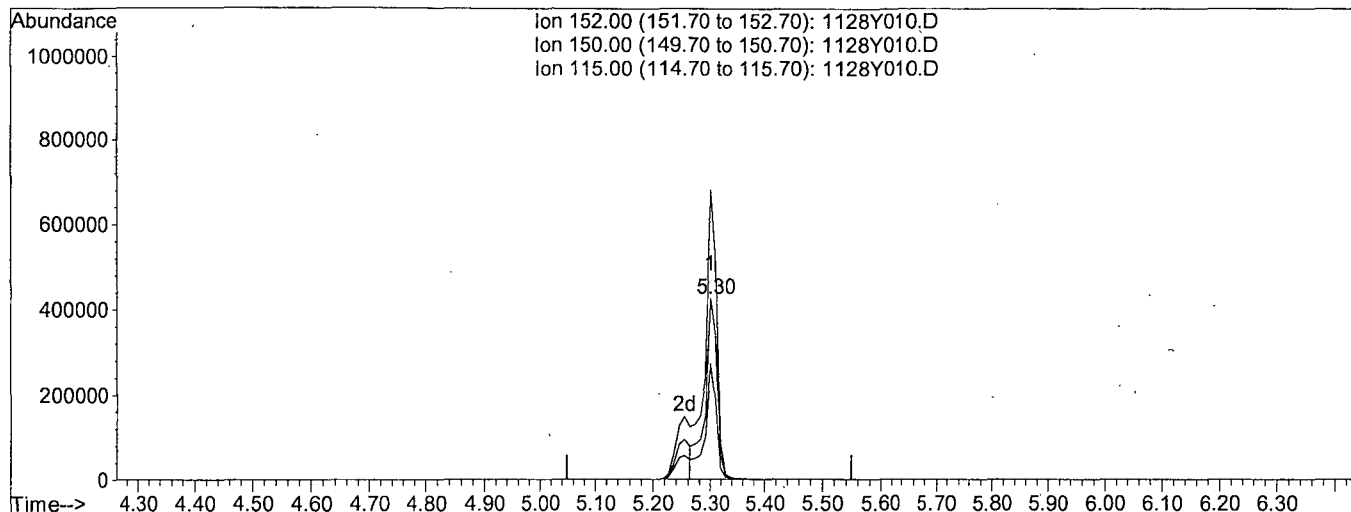
Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Wed Nov 28 11:42:34 2018  
Response via : Initial Calibration



Quantitation Report

Data File : M:\YODA\DATA\Y181128M\1128Y010.D Vial: 10  
 Acq On : 28 Nov 18 10:30 Operator: MA  
 Sample : 1000ug/ml MEE 08/01/18 Inst: Yoda  
 Misc : soil Multiplr: 1.00  
 Quant Time: Nov 28 11:32 2018 Quant Results File: temp.res

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Wed Nov 28 11:40:16 2018  
 Response via : Multiple Level Calibration



TIC: 1128Y010.D

(1) 1,4-dichlorobenzene-D4(IS) (I)

5.30min 40.0000ppb

response 652352

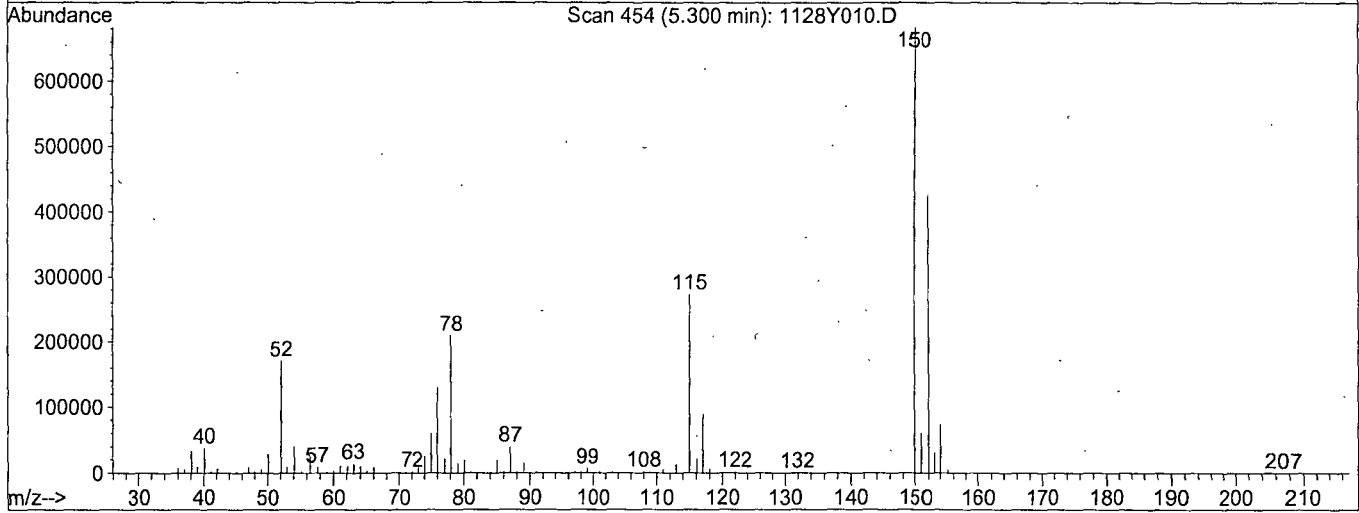
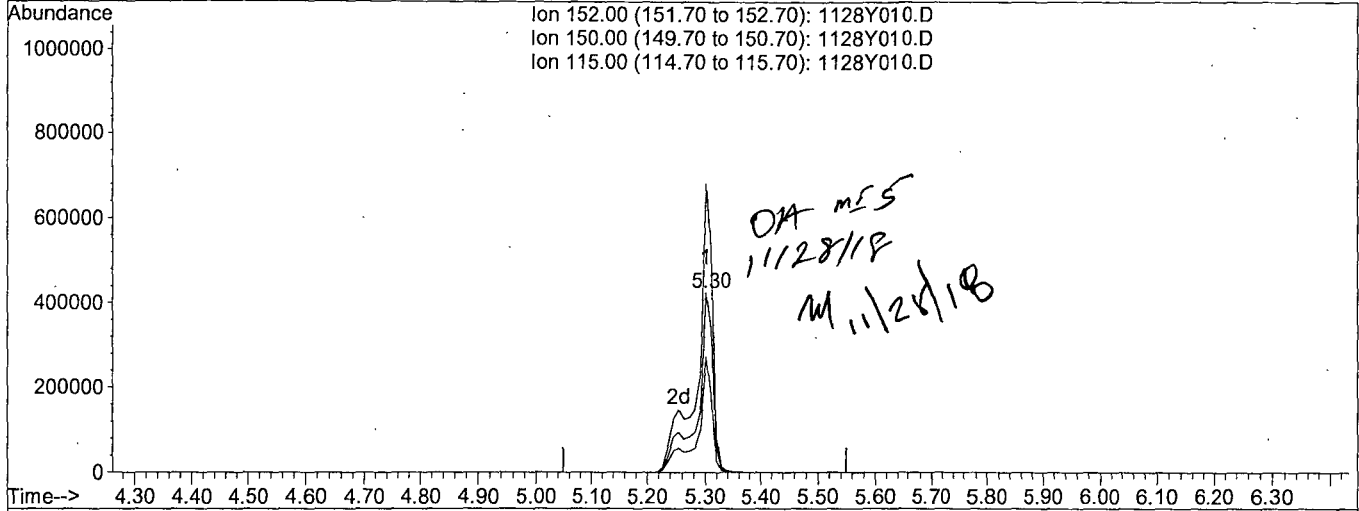
Ion	Exp%	Act%
152.00	100	100
150.00	160.10	160.08
115.00	63.20	64.08
0.00	0.00	0.00

Quantitation Report

Data File : M:\YODA\DATA\Y181128M\1128Y010.D  
 Acq On : 28 Nov 18 10:30  
 Sample : 1000ug/ml MEE 08/01/18  
 Misc : soil  
 Quant Time: Nov 28 11:41 2018

Vial: 10  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00  
 Quant Results File: temp.res

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Wed Nov 28 11:40:16 2018  
 Response via : Multiple Level Calibration



TIC: 1128Y010.D

(1) 1,4-dichlorobenzene-D4(1S) (I)

5.30min 40.0000ppb m

response 817975

Ion	Exp%	Act%
152.00	100	100
150.00	160.10	160.10
115.00	63.20	64.11
0.00	0.00	0.00

2MEE  
EPA 8270

Form 7

Second Source Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: \_\_\_\_\_

SDG No: \_\_\_\_\_  
Date Analyzed: 11/28/18  
Instrument: Yoda  
Initial Cal. Date: 11/28/18  
Data File: 1128Y014.D

		Compound	MEAN	CCRF	%D	%Drift
1	TM	2-(2-Methoxyethoxy)ethanol	0.2402	0.2671	11	TM
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						
33						
34						
35						
36						
37						
38						
39						
40						

Average

11.0

Data File : M:\YODA\DATA\Y181128M\1128Y014.D Vial: 14  
 Acq On : 28 Nov 18 12:26 Operator: MA  
 Sample : SS ug/ml MEE 08/01/18 Inst : Yoda  
 Misc : soil Multiplr: 1.00

Quant Time: Nov 28 12:58 2018 Quant Results File: YMEE1128.RES

Quant Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Wed Nov 28 11:42:34 2018  
 Response via : Initial Calibration  
 DataAcq Meth : GED

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.30	152	835108m	40.00000	ppb	0.00
3) Napthalene-D8 (IS)	6.72	136	3156594	40.00000	ppb	0.00
4) Acenaphthene-D10 (IS)	8.75	164	1957153	40.00000	ppb	0.00
5) Phenanthrene-D10 (IS)	10.49	188	3684850	40.00000	ppb	0.00
6) Chrysene-D12 (IS)	13.58	240	3336185	40.00000	ppb	0.00
7) Perylene-D12 (IS)	15.40	264	3221218	40.00000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) 2-(2-Methoxyethoxy) ethanol	4.49	45	2787828	555.84367	ppb	100

Quantitation Report

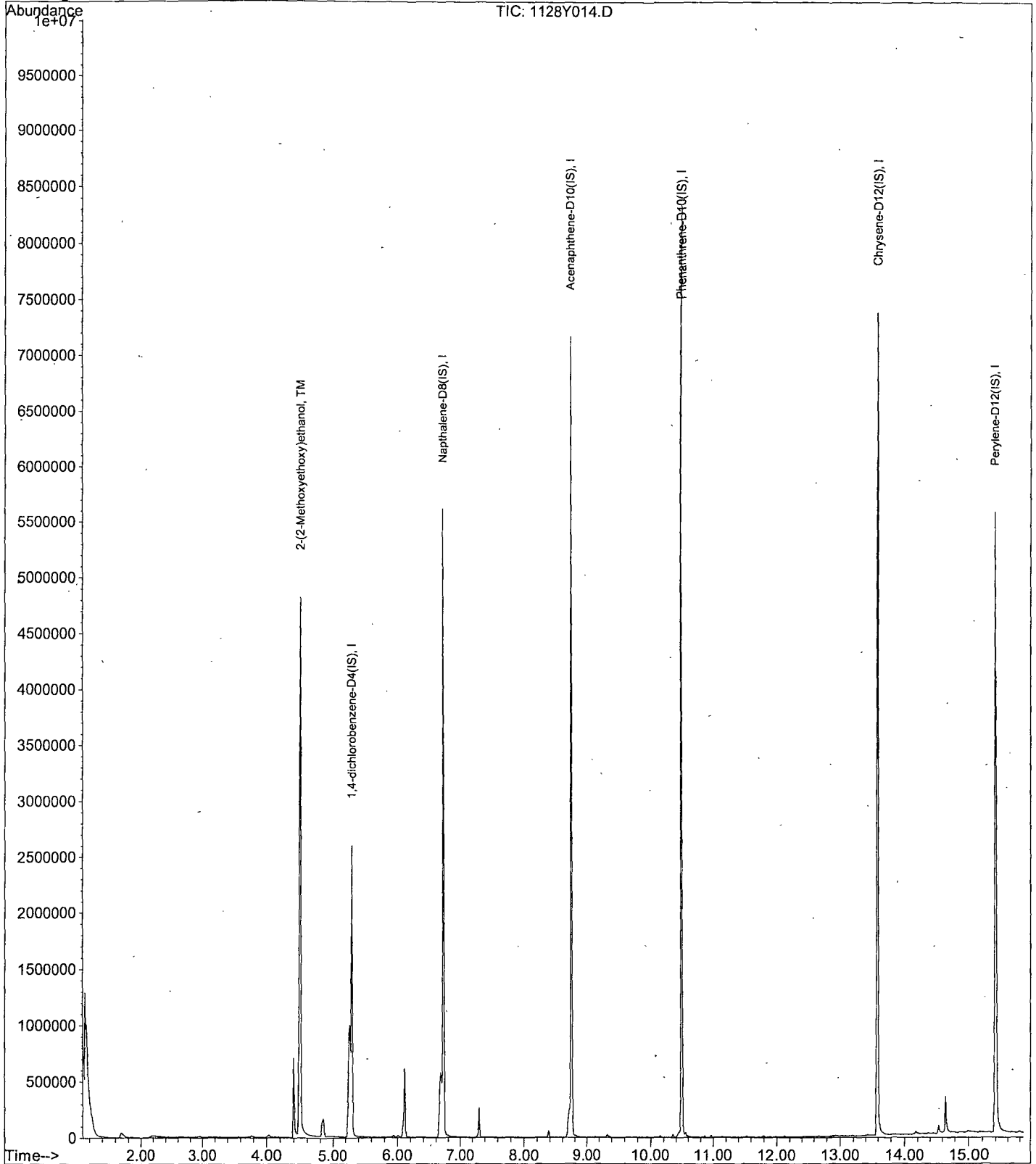
Data File : M:\YODA\DATA\Y181128M\1128Y014.D  
Acq On : 28 Nov 18 12:26  
Sample : SS ug/ml MEE 08/01/18  
Misc : soil

Vial: 14  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Nov 28 12:58 2018

Quant Results File: YMEE1128.RES

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Wed Nov 28 11:42:34 2018  
Response via : Initial Calibration



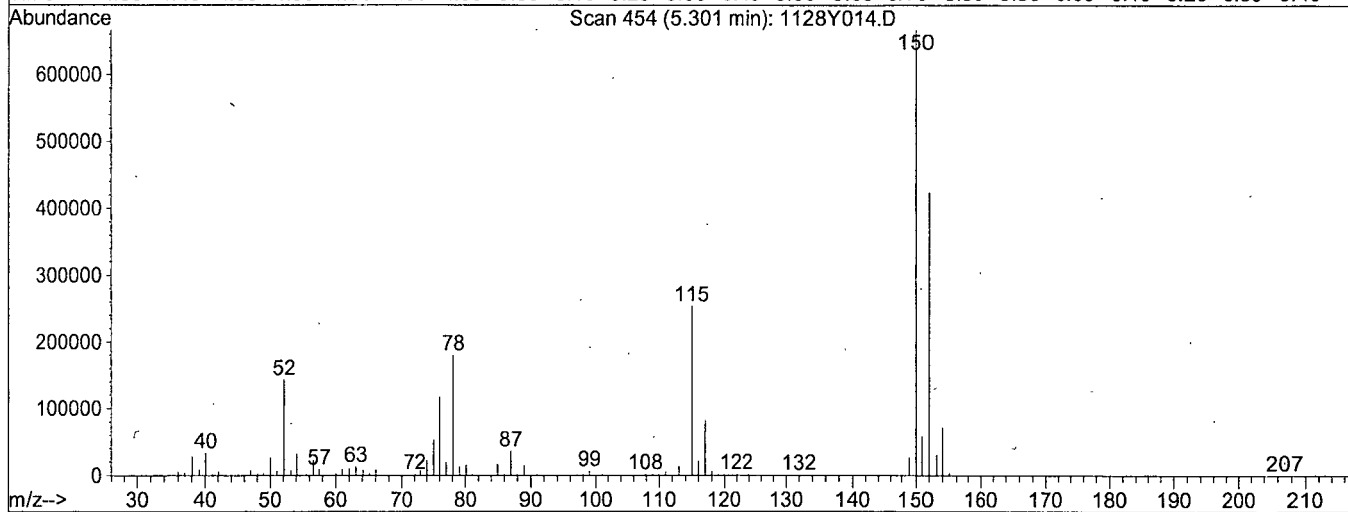
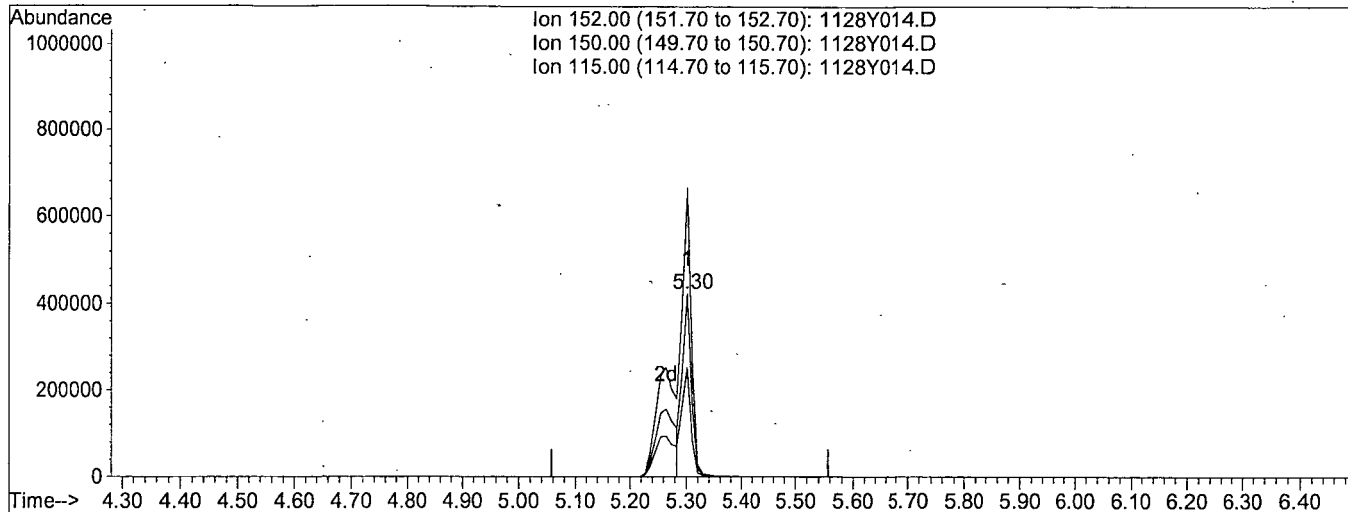


Quantitation Report

Data File : M:\YODA\DATA\Y181128M\1128Y014.D  
 Acq On : 28 Nov 18 12:26  
 Sample : SS ug/ml MEE 08/01/18  
 Misc : soil  
 Quant Time: Nov 28 12:58 2018

Vial: 14  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00  
 Quant Results File: temp.res

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Wed Nov 28 11:42:34 2018  
 Response via : Multiple Level Calibration



TIC: 1128Y014.D

(1) 1,4-dichlorobenzene-D4(IS) (I)

5.30min 40.0000ppb

response 473674

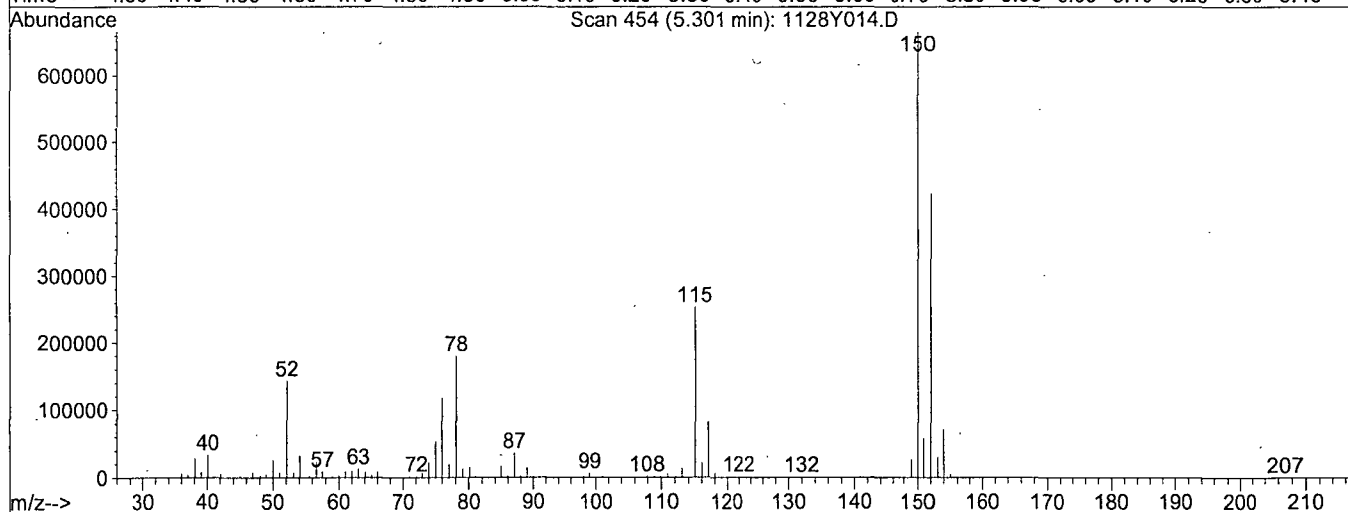
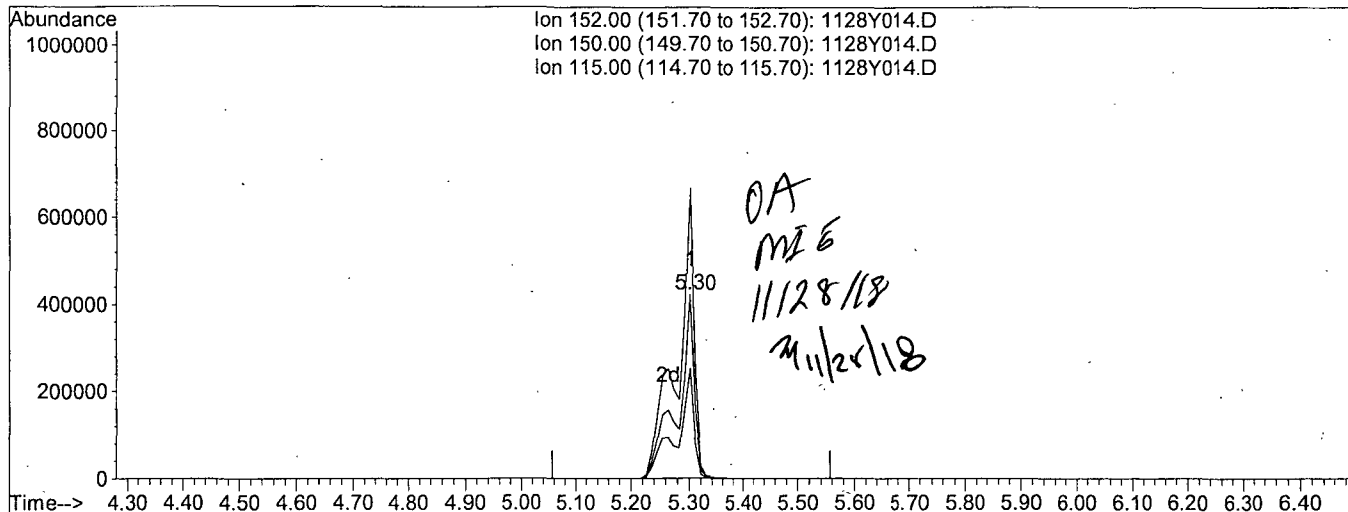
Ion	Exp%	Act%
152.00	100	100
150.00	156.20	157.54
115.00	56.30	59.84
0.00	0.00	0.00

Quantitation Report

Data File : M:\YODA\DATA\Y181128M\1128Y014.D  
 Acq On : 28 Nov 18 12:26  
 Sample : SS ug/ml MEE 08/01/18  
 Misc : soil  
 Quant Time: Nov 28 12:58 2018

Vial: 14  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00  
 Quant Results File: temp.res

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Wed Nov 28 11:42:34 2018  
 Response via : Multiple Level Calibration



TIC: 1128Y014.D

(1) 1,4-dichlorobenzene-D4(IS) (I)

5.30min 40.0000ppb m

response 835108

Ion	Exp%	Act%
152.00	100	100
150.00	156.20	157.52
115.00	56.30	59.85
0.00	0.00	0.00

2MEE  
EPA 8270

Form 7

Continuing Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: \_\_\_\_\_

SDG No: \_\_\_\_\_  
Date Analyzed: 8 Feb 19 8:51  
Instrument: Yoda  
Initial Cal. Date: 11/28/18  
Data File: 1128Y107.D

	Compound	MEAN	CCRF	%D	%Drift
1	I 1,4-dichlorobenzene-D4(IS)	ISTD			I
2	TM 2-(2-Methoxyethoxy)ethanol	0.2402	0.2710	13	TM
3	I Napthalene-D8(IS)	ISTD			I
4	I Acenaphthene-D10(IS)	ISTD			I
5	I Phenanthrene-D10(IS)	ISTD			I
6	I Chrysene-D12(IS)	ISTD			I
7	I Perylene-D12(IS)	ISTD			I
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
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31					
32					
33					
34					
35					
36					
37					
38					
39					
40					

Average

13.0

Data File : M:\YODA\DATA\Y181128M\1128Y107.D Vial: 7  
 Acq On : 8 Feb 19 8:51 Operator: MA  
 Sample : 500ug/ml MEE 12/19/18 Inst : Yoda  
 Misc : soil Multiplr: 1.00

Quant Time: Feb 8 9:02 2019 Quant Results File: YMEE1128.RES

Quant Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Fri Feb 08 09:02:12 2019  
 Response via : Initial Calibration  
 DataAcq Meth : GED

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.18	152	342119	40.00000	ppb	0.00
3) Napthalene-D8 (IS)	6.61	136	1451939	40.00000	ppb	0.00
4) Acenaphthene-D10 (IS)	8.63	164	756037	40.00000	ppb	0.00
5) Phenanthrene-D10 (IS)	10.36	188	1465582	40.00000	ppb	0.00
6) Chrysene-D12 (IS)	13.45	240	1321247	40.00000	ppb	0.00
7) Perylene-D12 (IS)	15.19	264	1210054	40.00000	ppb	-0.20

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) 2-(2-Methoxyethoxy)ethanol	4.38	45	1158979	564.06312	ppb	96

Quantitation Report

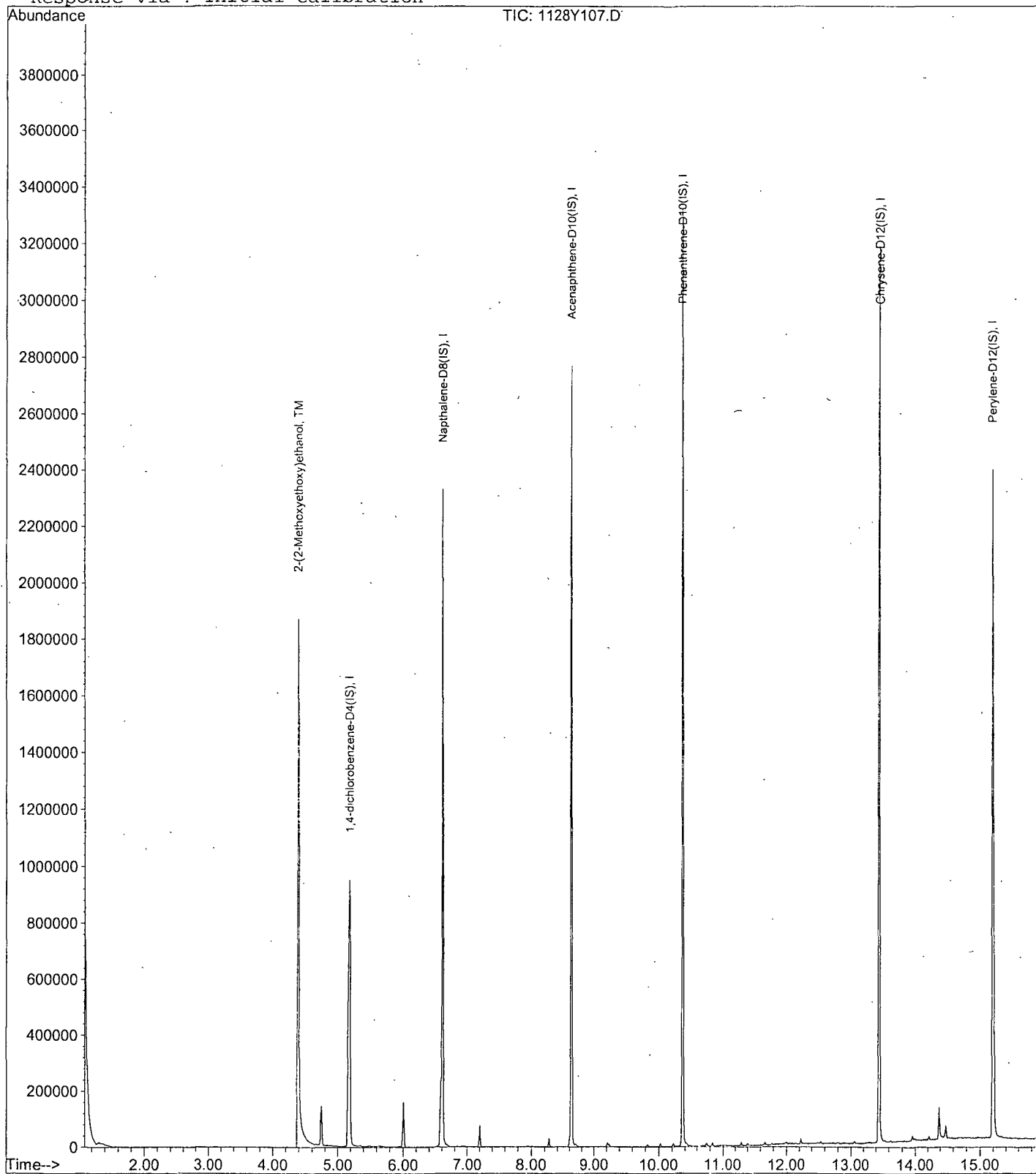
Data File : M:\YODA\DATA\Y181128M\1128Y107.D  
Acq On : 8 Feb 19 8:51  
Sample : 500ug/ml MEE 12/19/18  
Misc : soil

Vial: 7  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Feb 8 9:02 2019

Quant Results File: YMEE1128.RES

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Fri Feb 08 09:02:12 2019  
Response via : Initial Calibration



2MEE  
EPA 8270

Form 7

Continuing Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: \_\_\_\_\_

SDG No: \_\_\_\_\_  
Date Analyzed: 8 Feb 19 11:45  
Instrument: Yoda  
Initial Cal. Date: 11/28/18  
Data File: 1128Y114.D

	Compound	MEAN	CCRF	%D	%Drift
1	I 1,4-dichlorobenzene-D4(IS)	ISTD			I
2	TM 2-(2-Methoxyethoxy)ethanol	0.2402	0.2533	5.4	TM
3	I Napthalene-D8(IS)	ISTD			I
4	I Acenaphthene-D10(IS)	ISTD			I
5	I Phenanthrene-D10(IS)	ISTD			I
6	I Chrysene-D12(IS)	ISTD			I
7	I Perylene-D12(IS)	ISTD			I
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
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26					
27					
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29					
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34					
35					
36					
37					
38					
39					
40					
	Average			5.4	

Data File : M:\YODA\DATA\Y181128M\1128Y114.D Vial: 14  
 Acq On : 8 Feb 19 11:45 Operator: MA  
 Sample : 500ug/ml MEE 12/19/18 Inst : Yoda  
 Misc : soil Multiplr: 1.00

Quant Time: Feb 8 12:05 2019 Quant Results File: YMEE1128.RES

Quant Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Fri Feb 08 09:02:12 2019  
 Response via : Initial Calibration  
 DataAcq Meth : GED

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.19	152	374263	40.0000	ppb	0.01
3) Napthalene-D8 (IS)	6.61	136	1577151	40.0000	ppb	0.00
4) Acenaphthene-D10 (IS)	8.62	164	841706	40.0000	ppb	0.00
5) Phenanthrene-D10 (IS)	10.36	188	1616241	40.0000	ppb	0.00
6) Chrysene-D12 (IS)	13.44	240	1482256	40.0000	ppb	0.00
7) Perylene-D12 (IS)	15.20	264	1355915	40.0000	ppb	-0.20

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) 2-(2-Methoxyethoxy)ethanol	4.40	45	1184846	527.1259	ppb	94

(#) = qualifier out of range (m) = manual integration

Quantitation Report

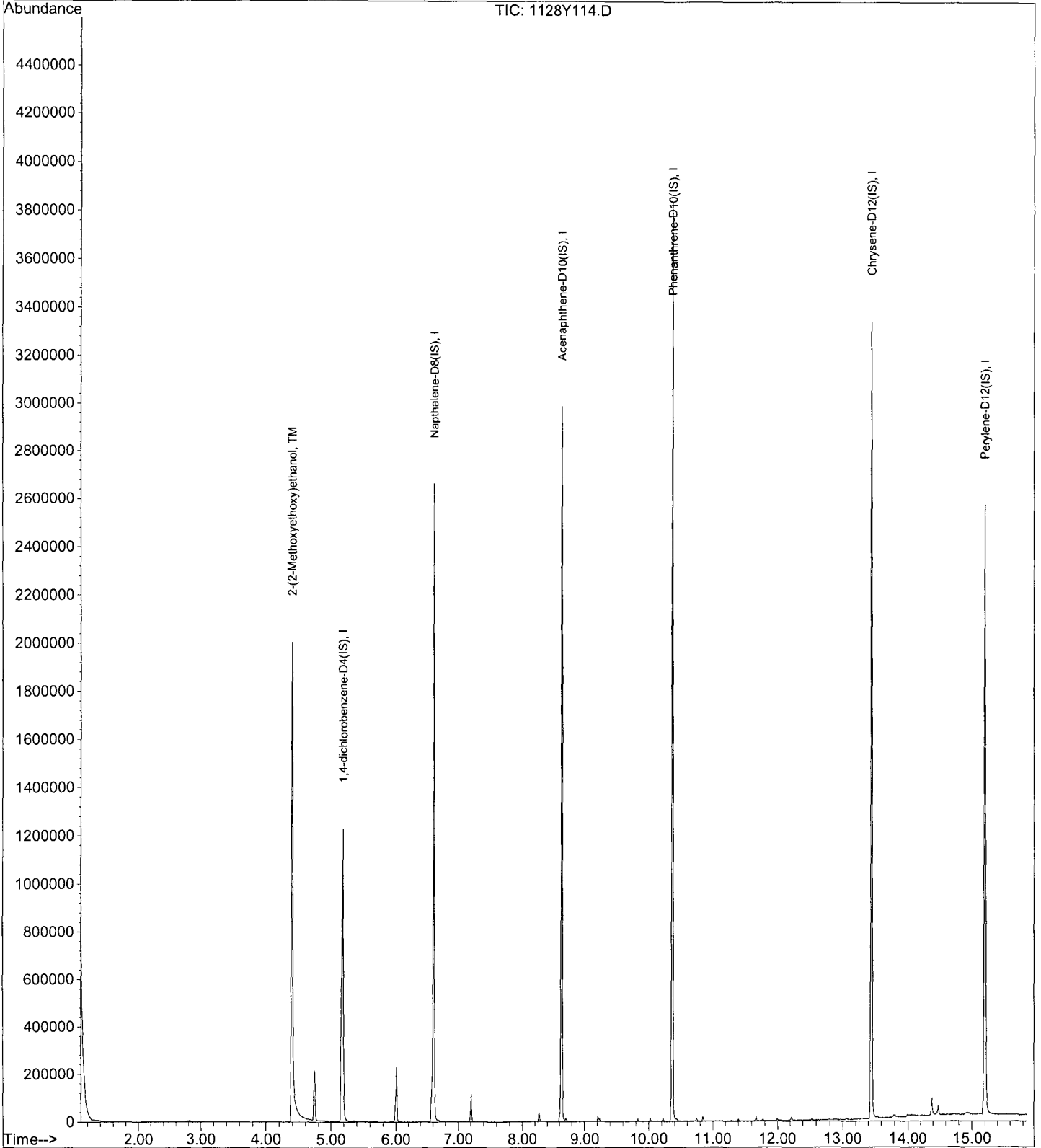
Data File : M:\YODA\DATA\Y181128M\1128Y114.D  
Acq On : 8 Feb 19 11:45  
Sample : 500ug/ml MEE 12/19/18  
Misc : soil

Vial: 14  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Feb 8 12:05 2019

Quant Results File: YMEE1128.RES

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Fri Feb 08 09:02:12 2019  
Response via : Initial Calibration





**ORGANICS**  
**Raw Data**

Data File : M:\YODA\DATA\Y181128M\1128Y111.D Vial: 11  
 Acq On : 8 Feb 19 10:34 Operator: MA  
 Sample : AZ85763W05 2/500 Inst : Yoda  
 Misc : soil Multiplr: 1.00

Quant Time: Feb 8 13:09 2019 Quant Results File: YMEE1128.RES

Quant Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Fri Feb 08 09:02:12 2019  
 Response via : Initial Calibration  
 DataAcq Meth : GED

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.20	152	327245	40.0000	ppb	0.02
3) Napthalene-D8 (IS)	6.61	136	1378457	40.0000	ppb	0.00
4) Acenaphthene-D10 (IS)	8.62	164	809481	40.0000	ppb	0.00
5) Phenanthrene-D10 (IS)	10.36	188	1567840	40.0000	ppb	0.00
6) Chrysene-D12 (IS)	13.44	240	1259321	40.0000	ppb	0.00
7) Perylene-D12 (IS)	15.20	264	1024049	40.0000	ppb	-0.20

System Monitoring Compounds

Target Compounds Qvalue

Quantitation Report

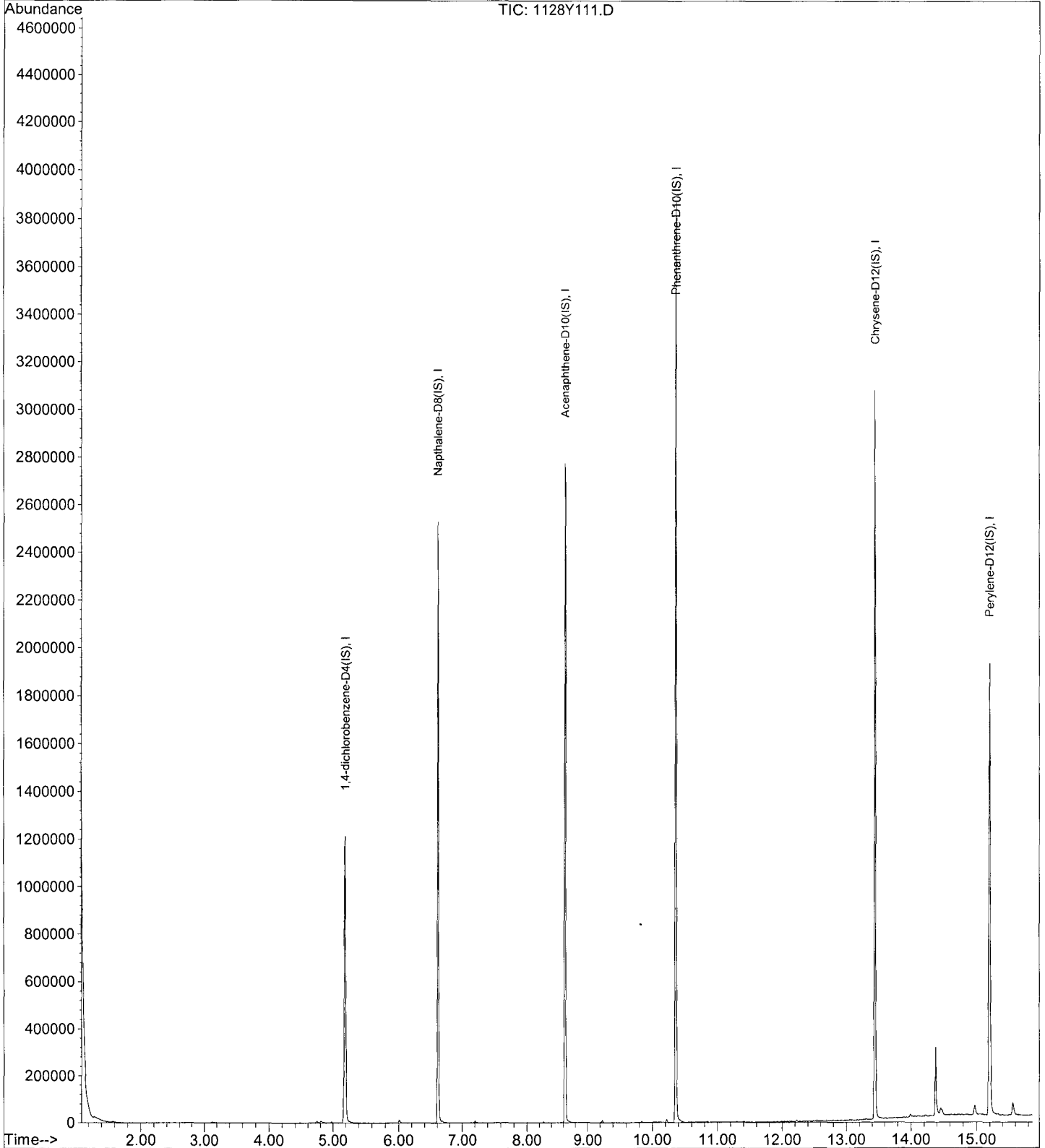
Data File : M:\YODA\DATA\Y181128M\1128Y111.D  
Acq On : 8 Feb 19 10:34  
Sample : AZ85763W05 2/500  
Misc : soil

Vial: 11  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Feb 8 13:09 2019

Quant Results File: YMEE1128.RES

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Fri Feb 08 09:02:12 2019  
Response via : Initial Calibration



Data File : M:\YODA\DATA\Y181128M\1128Y112.D Vial: 12  
 Acq On : 8 Feb 19 10:58 Operator: MA  
 Sample : AZ85764W04 2/500 Inst : Yoda  
 Misc : soil Multiplr: 1.00

Quant Time: Feb 8 13:08 2019 Quant Results File: YMEE1128.RES

Quant Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Fri Feb 08 09:02:12 2019  
 Response via : Initial Calibration  
 DataAcq Meth : GED

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.19	152	438611	40.0000	ppb	0.00
3) Napthalene-D8 (IS)	6.61	136	1879676	40.0000	ppb	0.00
4) Acenaphthene-D10 (IS)	8.63	164	1021055	40.0000	ppb	0.00
5) Phenanthrene-D10 (IS)	10.36	188	1985841	40.0000	ppb	0.00
6) Chrysene-D12 (IS)	13.45	240	1767043	40.0000	ppb	0.00
7) Perylene-D12 (IS)	15.20	264	1442827	40.0000	ppb	-0.20

System Monitoring Compounds

Target Compounds Qvalue

Quantitation Report

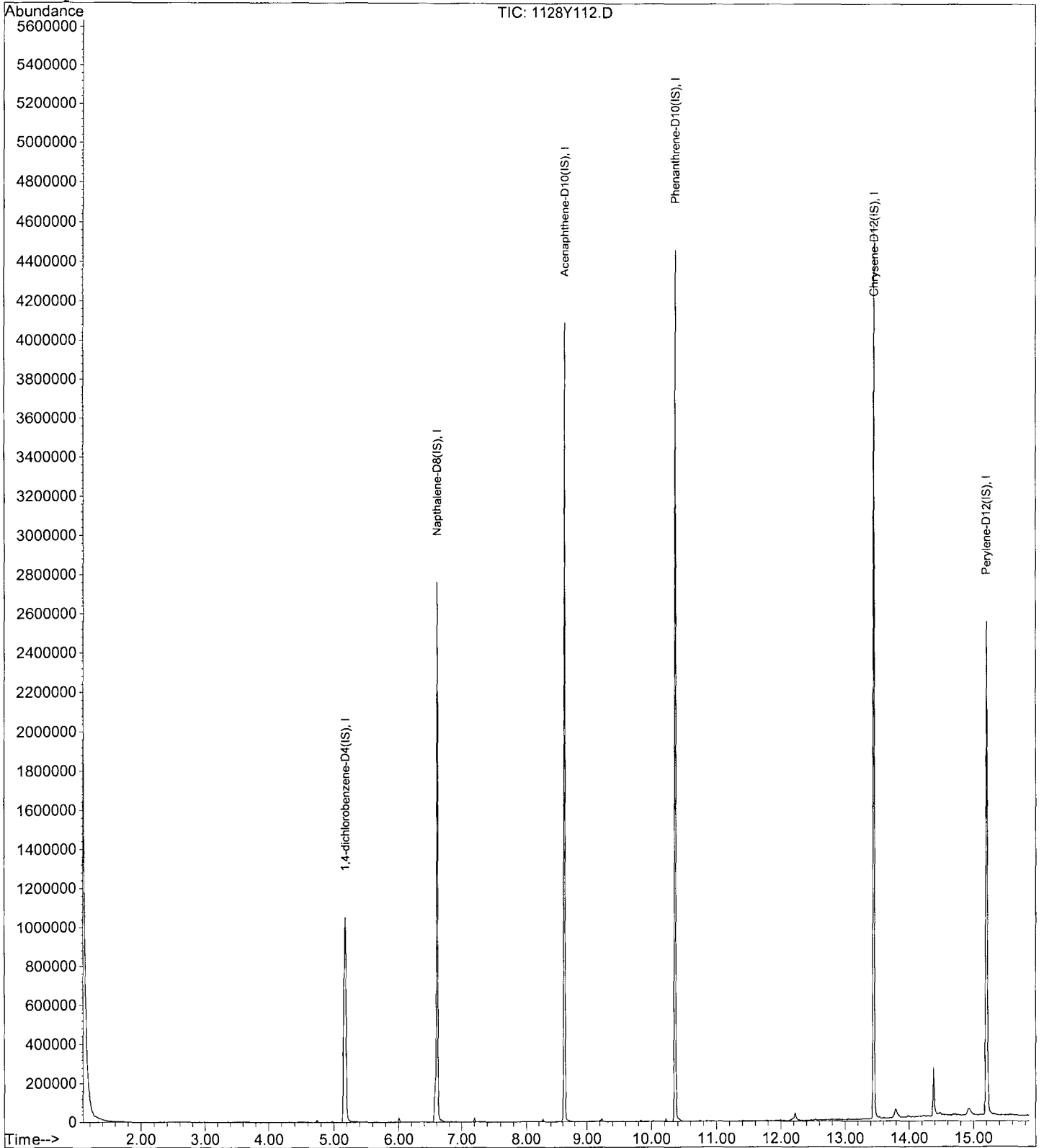
Data File : M:\YODA\DATA\Y181128M\1128Y112.D  
Acq On : 8 Feb 19 10:58  
Sample : AZ85764W04 2/500  
Misc : soil

Vial: 12  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Feb 8 13:08 2019

Quant Results File: YMEE1128.RES

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Fri Feb 08 09:02:12 2019  
Response via : Initial Calibration



Data File : M:\YODA\DATA\Y181128M\1128Y113.D Vial: 13  
 Acq On : 8 Feb 19 11:21 Operator: MA  
 Sample : AZ85766W18 2/500 Inst : Yoda  
 Misc : soil Multiplr: 1.00

Quant Time: Feb 8 12:05 2019 Quant Results File: YMEE1128.RES

Quant Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Fri Feb 08 09:02:12 2019  
 Response via : Initial Calibration  
 DataAcq Meth : GED

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.18	152	324164	40.0000	ppb	0.00
3) Napthalene-D8 (IS)	6.61	136	1619949	40.0000	ppb	0.00
4) Acenaphthene-D10 (IS)	8.63	164	1013629	40.0000	ppb	0.00
5) Phenanthrene-D10 (IS)	10.36	188	1935390	40.0000	ppb	0.00
6) Chrysene-D12 (IS)	13.44	240	1455955	40.0000	ppb	0.00
7) Perylene-D12 (IS)	15.20	264	1247052	40.0000	ppb	-0.20

System Monitoring Compounds

Target Compounds Qvalue

(#) = qualifier out of range (m) = manual integration

Quantitation Report

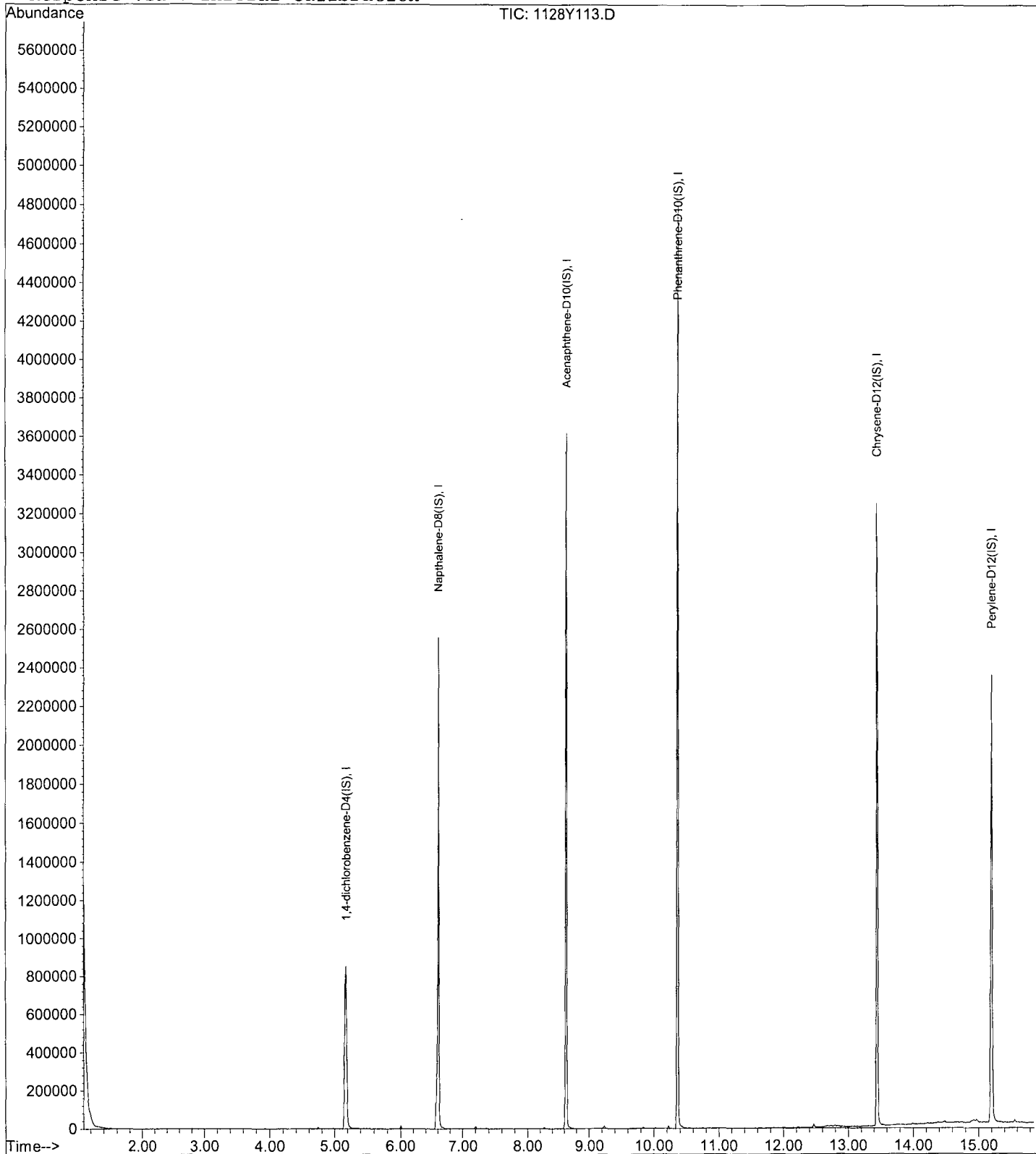
Data File : M:\YODA\DATA\Y181128M\1128Y113.D  
Acq On : 8 Feb 19 11:21  
Sample : AZ85766W18 2/500  
Misc : soil

Vial: 13  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Feb 8 12:05 2019

Quant Results File: YMEE1128.RES

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Fri Feb 08 09:02:12 2019  
Response via : Initial Calibration



Data File : M:\YODA\DATA\Y181128M\1128Y108.D Vial: 8  
 Acq On : 8 Feb 19 9:24 Operator: MA  
 Sample : 190204A BLK 2/500 Inst : Yoda  
 Misc : soil Multiplr: 1.00

Quant Time: Feb 8 13:10 2019 Quant Results File: YMEE1128.RES

Quant Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Fri Feb 08 09:02:12 2019  
 Response via : Initial Calibration  
 DataAcq Meth : GED

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.20	152	390792	40.0000	ppb	0.02
3) Napthalene-D8 (IS)	6.62	136	1736846	40.0000	ppb	0.00
4) Acenaphthene-D10 (IS)	8.63	164	938400	40.0000	ppb	0.00
5) Phenanthrene-D10 (IS)	10.36	188	1774577	40.0000	ppb	0.00
6) Chrysene-D12 (IS)	13.45	240	1462954	40.0000	ppb	0.00
7) Perylene-D12 (IS)	15.20	264	1095582	40.0000	ppb	-0.20

System Monitoring Compounds

Target Compounds Qvalue

(#) = qualifier out of range (m) = manual integration



Quantitation Report

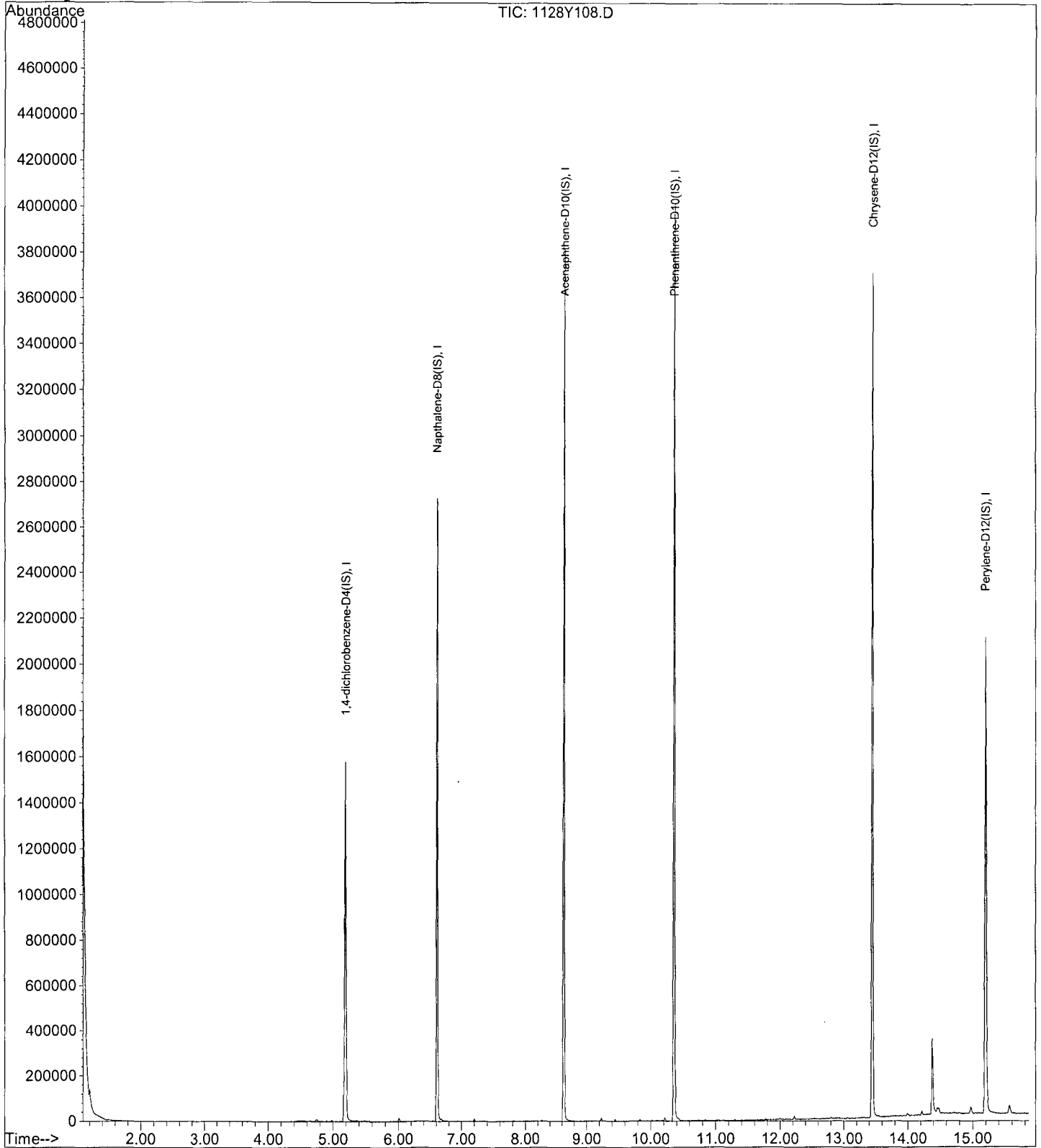
Data File : M:\YODA\DATA\Y181128M\1128Y108.D  
Acq On : 8 Feb 19 9:24  
Sample : 190204A BLK 2/500  
Misc : soil

Vial: 8  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Feb 8 13:10 2019

Quant Results File: YMEE1128.RES

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Fri Feb 08 09:02:12 2019  
Response via : Initial Calibration



Data File : M:\YODA\DATA\Y181128M\1128Y109.D Vial: 9  
 Acq On : 8 Feb 19 9:47 Operator: MA  
 Sample : 190204A LCS-1 2/500 Inst : Yoda  
 Misc : soil Multiplr: 1.00

Quant Time: Feb 8 12:05 2019 Quant Results File: YMEE1128.RES

Quant Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Fri Feb 08 09:02:12 2019  
 Response via : Initial Calibration  
 DataAcq Meth : GED

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.20	152	309955	40.0000	ppb	0.02
3) Napthalene-D8 (IS)	6.61	136	1348276	40.0000	ppb	0.00
4) Acenaphthene-D10 (IS)	8.63	164	758272	40.0000	ppb	0.00
5) Phenanthrene-D10 (IS)	10.36	188	1456178	40.0000	ppb	0.00
6) Chrysene-D12 (IS)	13.45	240	1243432	40.0000	ppb	0.00
7) Perylene-D12 (IS)	15.20	264	1109287	40.0000	ppb	-0.20

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) 2-(2-Methoxyethoxy)ethanol	4.49	45	102593	55.1123	ppb	96

Quantitation Report

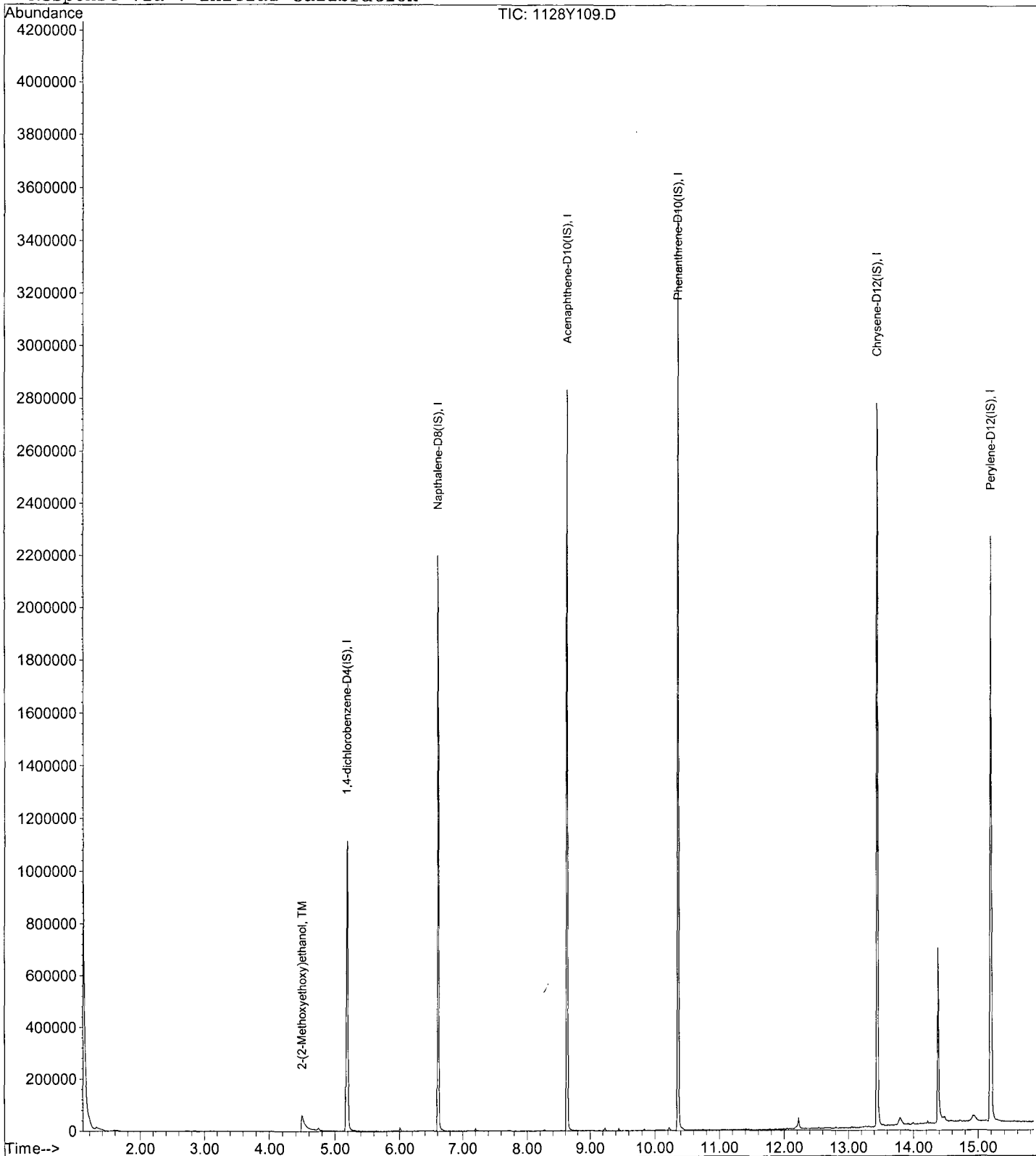
Data File : M:\YODA\DATA\Y181128M\1128Y109.D  
Acq On : 8 Feb 19 9:47  
Sample : 190204A LCS-1 2/500  
Misc : soil

Vial: 9  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Feb 8 12:05 2019

Quant Results File: YMEE1128.RES

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Fri Feb 08 09:02:12 2019  
Response via : Initial Calibration



Data File : M:\YODA\DATA\Y181128M\1128Y110.D Vial: 10  
 Acq On : 8 Feb 19 10:10 Operator: MA  
 Sample : 190204A LCSD-1 2/500 Inst : Yoda  
 Misc : soil Multiplr: 1.00

Quant Time: Feb 8 12:05 2019 Quant Results File: YMEE1128.RES

Quant Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Fri Feb 08 09:02:12 2019  
 Response via : Initial Calibration  
 DataAcq Meth : GED

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.20	152	282552	40.0000	ppb	0.02
3) Napthalene-D8 (IS)	6.61	136	1187674	40.0000	ppb	0.00
4) Acenaphthene-D10 (IS)	8.63	164	623833	40.0000	ppb	0.00
5) Phenanthrene-D10 (IS)	10.36	188	1195344	40.0000	ppb	0.00
6) Chrysene-D12 (IS)	13.44	240	1084069	40.0000	ppb	0.00
7) Perylene-D12 (IS)	15.20	264	875079	40.0000	ppb	-0.20

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) 2-(2-Methoxyethoxy) ethanol	4.49	45	92097	54.2721	ppb	99

(#) = qualifier out of range (m) = manual integration

Quantitation Report

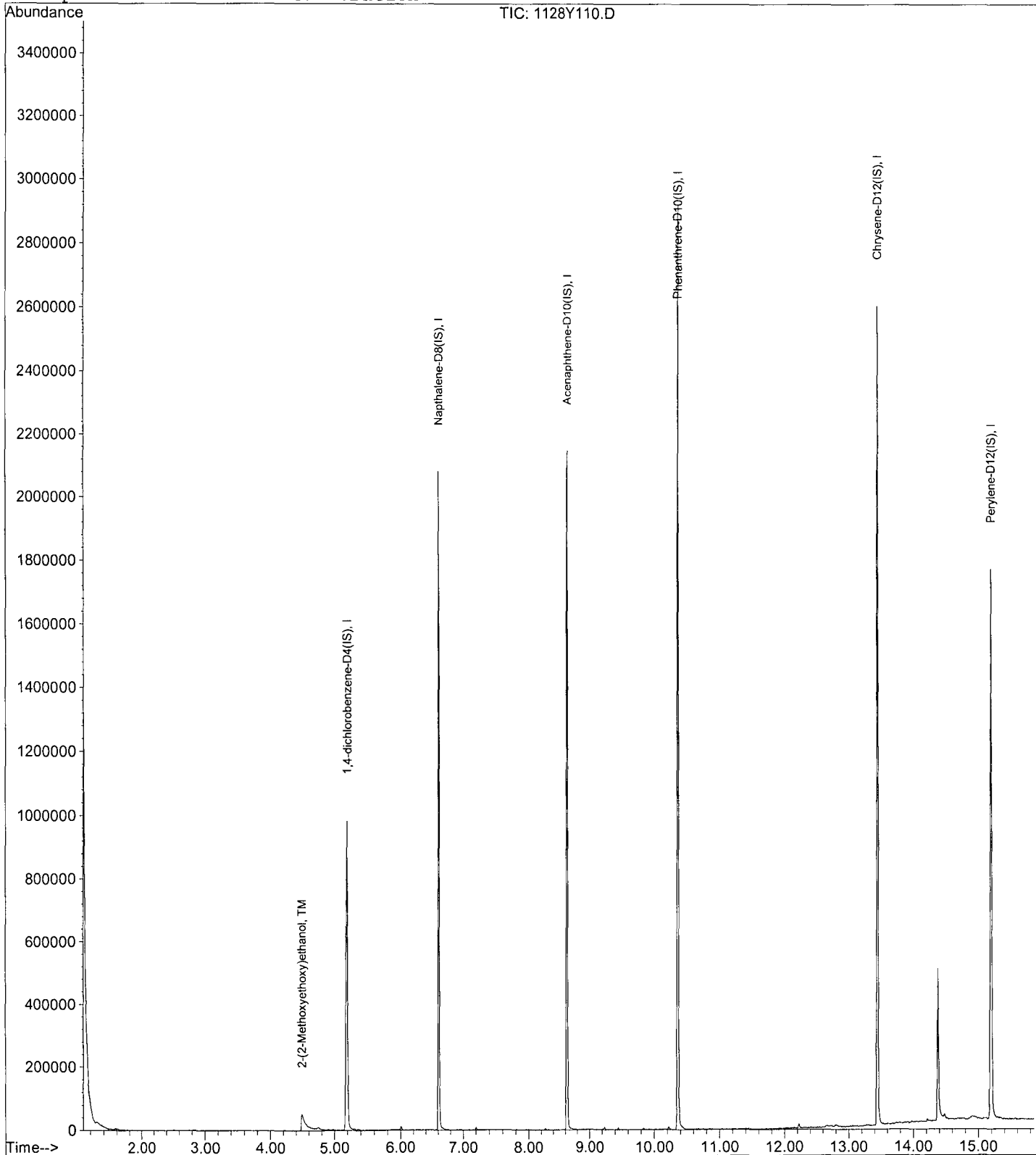
Data File : M:\YODA\DATA\Y181128M\1128Y110.D  
Acq On : 8 Feb 19 10:10  
Sample : 190204A LCSD-1 2/500  
Misc : soil

Vial: 10  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Feb 8 12:05 2019

Quant Results File: YMEE1128.RES

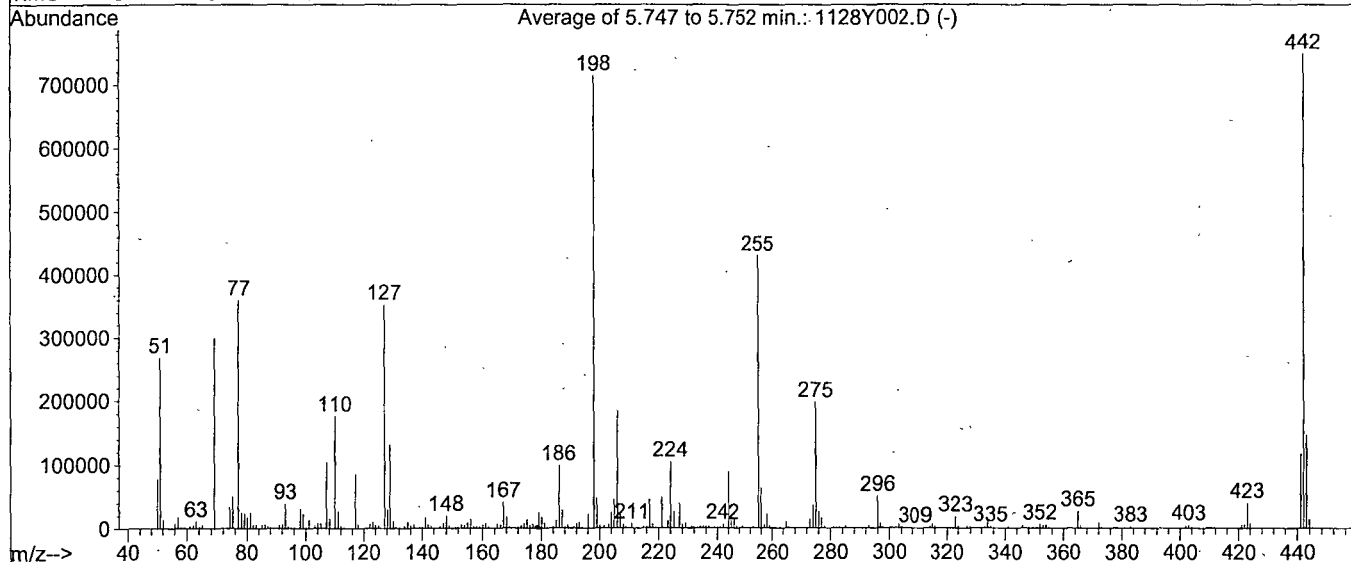
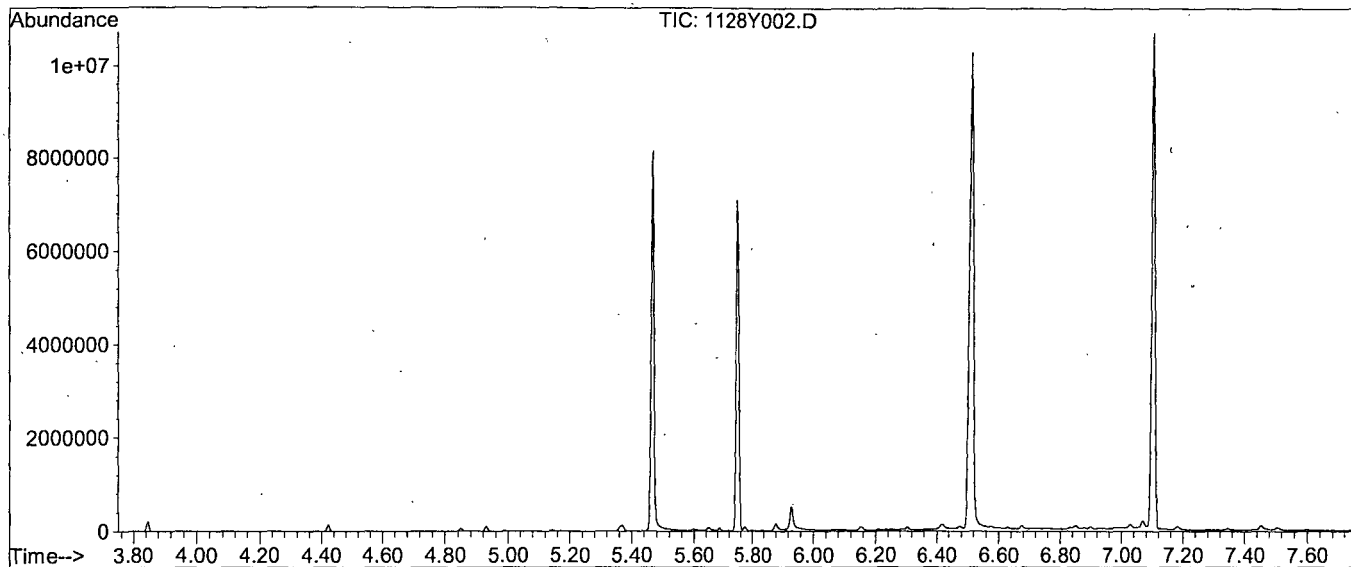
Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Fri Feb 08 09:02:12 2019  
Response via : Initial Calibration



Data File : M:\YODA\DATA\Y181128M\1128Y002.D  
 Acq On : 28 Nov 18 7:30  
 Sample : SV Tune 03/07/18  
 Misc :

Vial: 2  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C



AutoFind: Scans 865, 866, 867; Background Corrected with Scan 856

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	37.6	268391	PASS
68	69	0.00	2	0.0	0	PASS
70	69	0.00	2	0.4	1292	PASS
127	198	10	80	49.3	352384	PASS
197	198	0.00	2	0.0	0	PASS
198	198	100	100	100.0	714581	PASS
199	198	5	9	6.6	46827	PASS
275	198	10	60	27.6	197547	PASS
365	198	1	100	3.7	26576	PASS
441	442	0.01	24	15.6	116851	PASS
442	198	50	150	104.9	749675	PASS
443	442	15	24	19.5	145880	PASS

Data File Name: 1128Y002.D  
Data File Path: M:\YODA\DATA\Y181128M\  
Operator: MA  
Date Acquired: 28 Nov 2018 07:30  
Method File: DFTPP2.M  
Sample Name: SV Tune 03/07/18  
Vial Number: 2  
Instrument Name: Yoda

#	Name	Ret Time	Target Response
1)	DDT	7.10	75896800
2)	DDD	6.90	747340
3)	DDE	7.03	414795

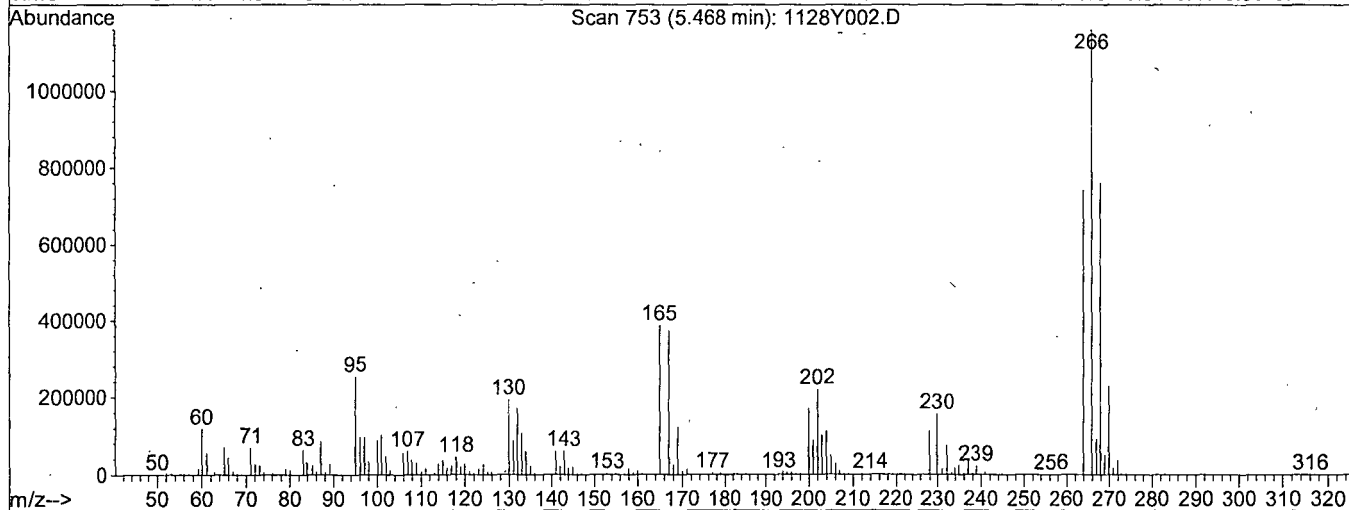
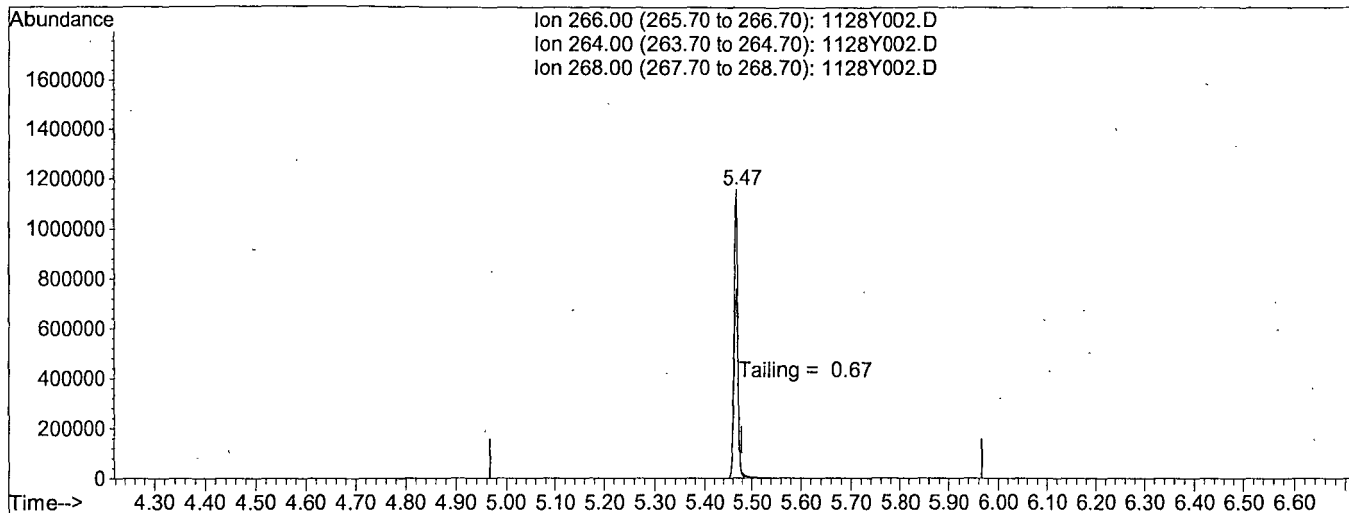
Breakdown 1.51

Quantitation Report

Data File : M:\YODA\DATA\Y181128M\1128Y002.D  
 Acq On : 28 Nov 18 7:30  
 Sample : SV Tune 03/07/18  
 Misc :  
 Quant Time: Nov 28 10:24 2018

Vial: 2  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00  
 Quant Results File: temp.res

Method : M:\YODA\DATA\Y181128M\DFTPP2.M (Chemstation Integrator)  
 Title :  
 Last Update : Wed Nov 28 10:24:36 2018  
 Response via : Single Level Calibration



TIC: 1128Y002.D

(5) Pentachlorophenol

5.47min 0.0000

response 7009891

Ion	Exp%	Act%
266.00	100	100
264.00	63.80	61.59
268.00	65.50	63.39
0.00	0.00	0.00

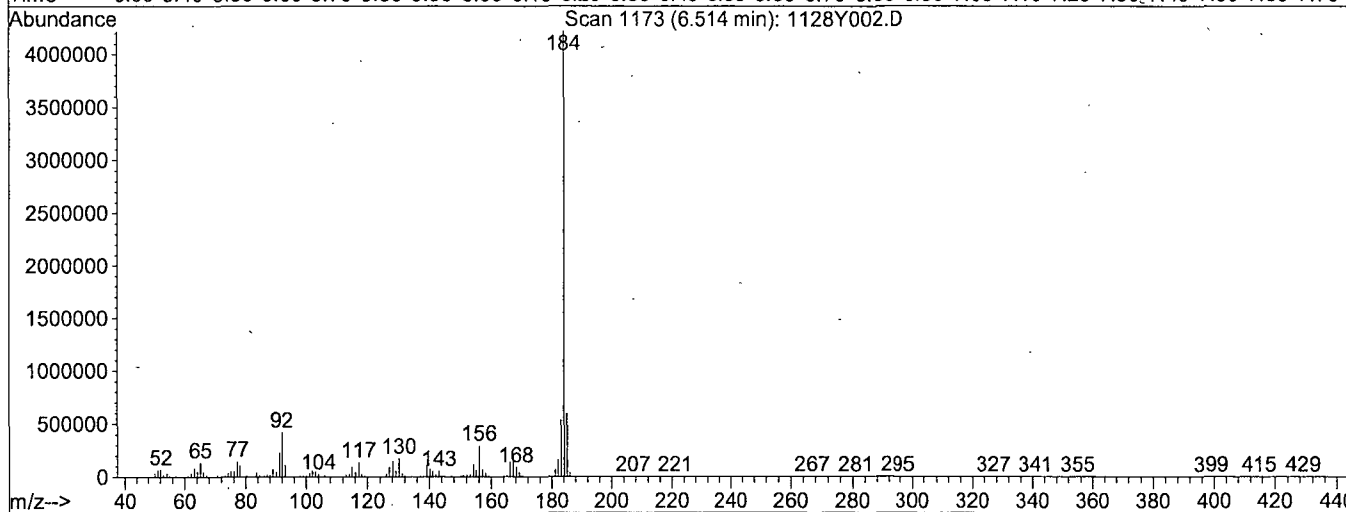
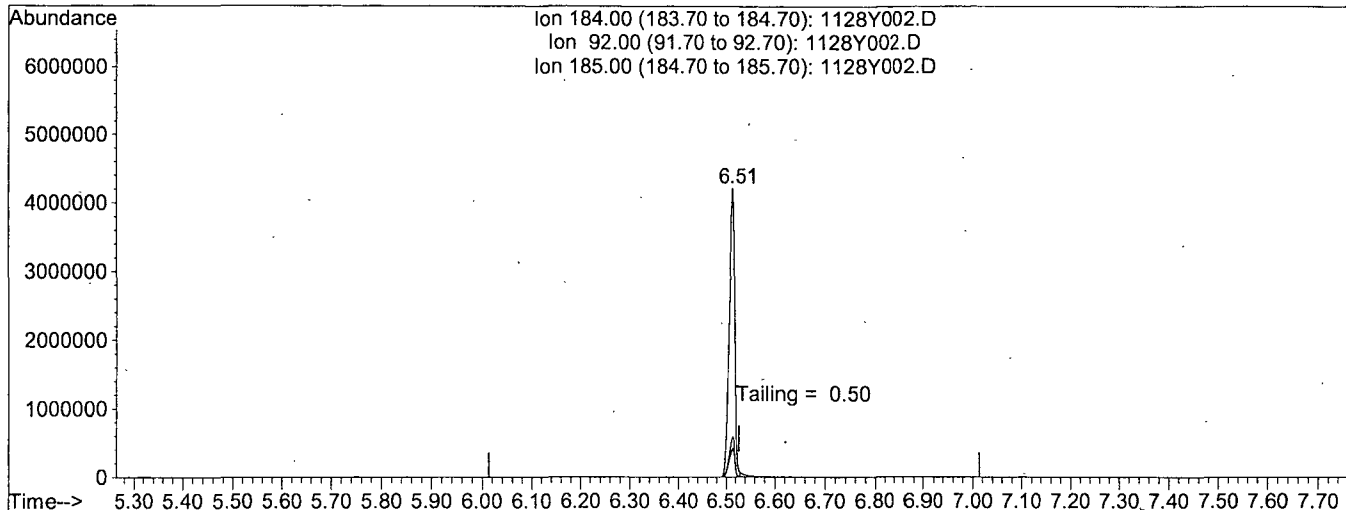


Quantitation Report

Data File : M:\YODA\DATA\Y181128M\1128Y002.D  
 Acq On : 28 Nov 18 7:30  
 Sample : SV Tune 03/07/18  
 Misc :  
 Quant Time: Nov 28 10:24 2018

Vial: 2  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00  
 Quant Results File: temp.res

Method : M:\YODA\DATA\Y181128M\DFTPP2.M (Chemstation Integrator)  
 Title :  
 Last Update : Wed Nov 28 10:24:36 2018  
 Response via : Single Level Calibration



TIC: 1128Y002.D

(6) Benzidine

6.52min 0.0000

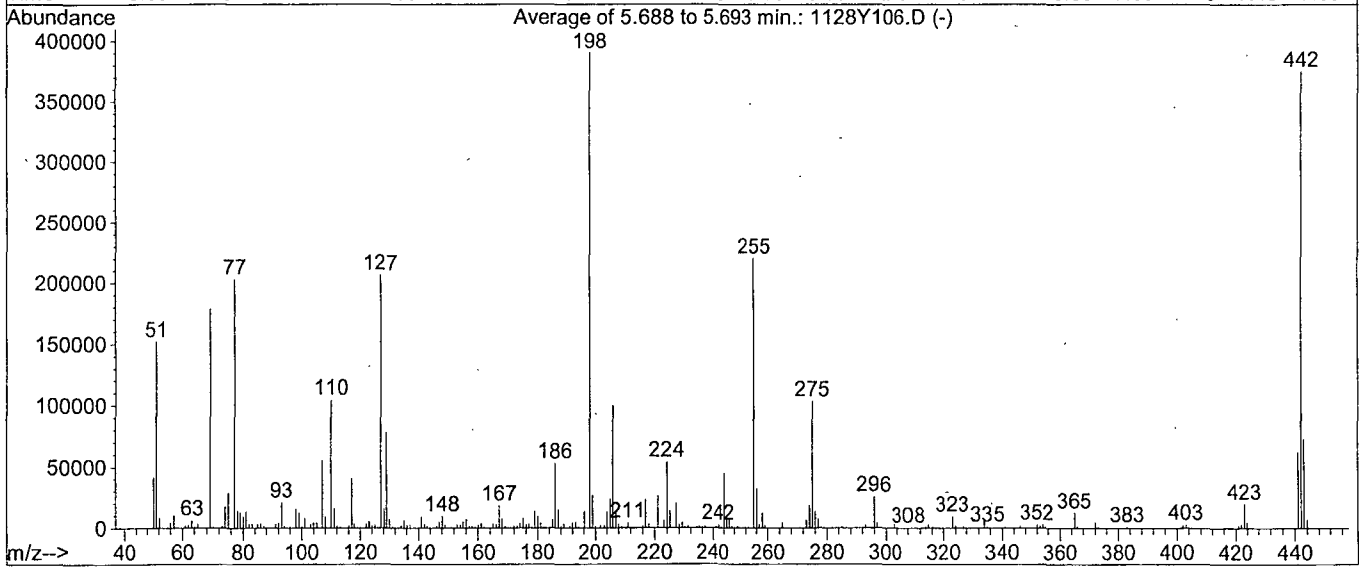
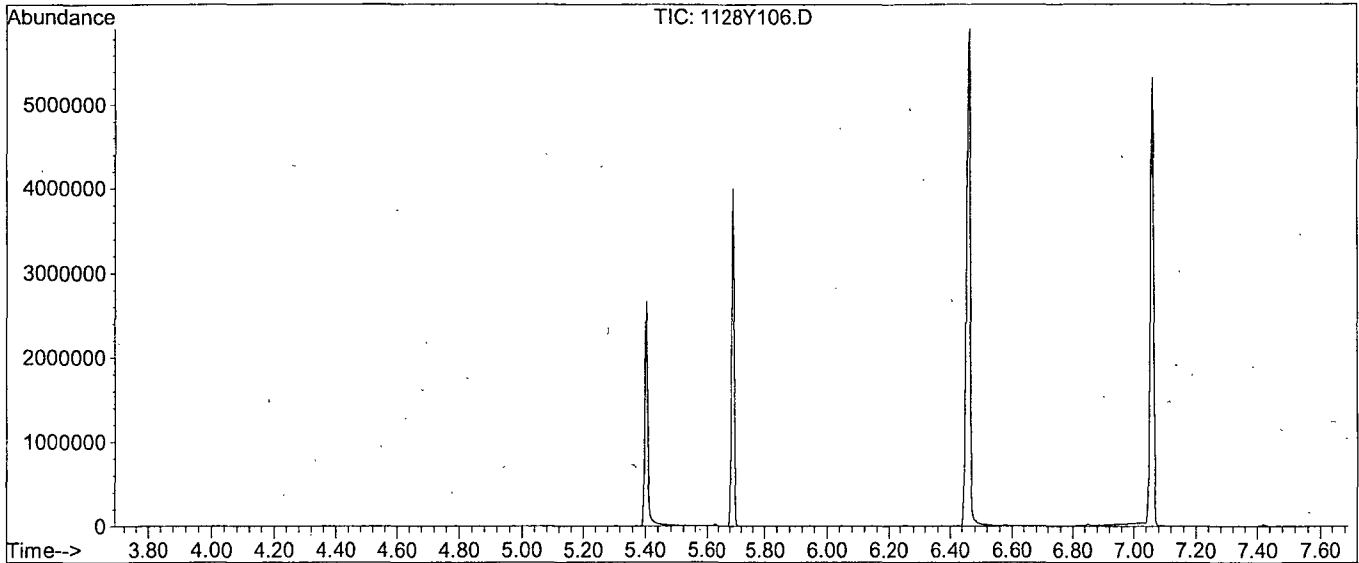
response 35701269

Ion	Exp%	Act%
184.00	100	100
92.00	9.90	10.15
185.00	14.00	14.16
0.00	0.00	0.00

Data File : M:\YODA\DATA\Y181128M\1128Y106.D  
 Acq On : 8 Feb 19 8:31  
 Sample : SV TUNE 11/10/18  
 Misc :

Vial: 85  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C



AutoFind: Scans 841, 842, 843; Background Corrected with Scan 832

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	38.9	152015	PASS
68	69	0.00	2	0.0	0	PASS
70	69	0.00	2	0.6	1105	PASS
127	198	10	80	53.0	206720	PASS
197	198	0.00	2	0.0	0	PASS
198	198	100	100	100.0	390400	PASS
199	198	5	9	6.8	26720	PASS
275	198	10	60	26.5	103416	PASS
365	198	1	100	3.2	12577	PASS
441	442	0.01	24	16.6	62293	PASS
442	198	50	150	96.0	374976	PASS
443	442	15	24	19.4	72877	PASS

Data File Name: 1128Y106.D  
Data File Path: M:\YODA\DATA\Y181128M\  
Operator: MA  
Date Acquired: 8 Feb 19 8:31  
Method File: DFTPP2.M  
Sample Name: SV TUNE 11/10/18  
Vial Number: 85  
Instrument Name: Yoda

#	Name	Ret Time	Target Response
1)	DDT	7.06	39156100
2)	DDD	6.85	196098
3)	DDE	6.98	61388

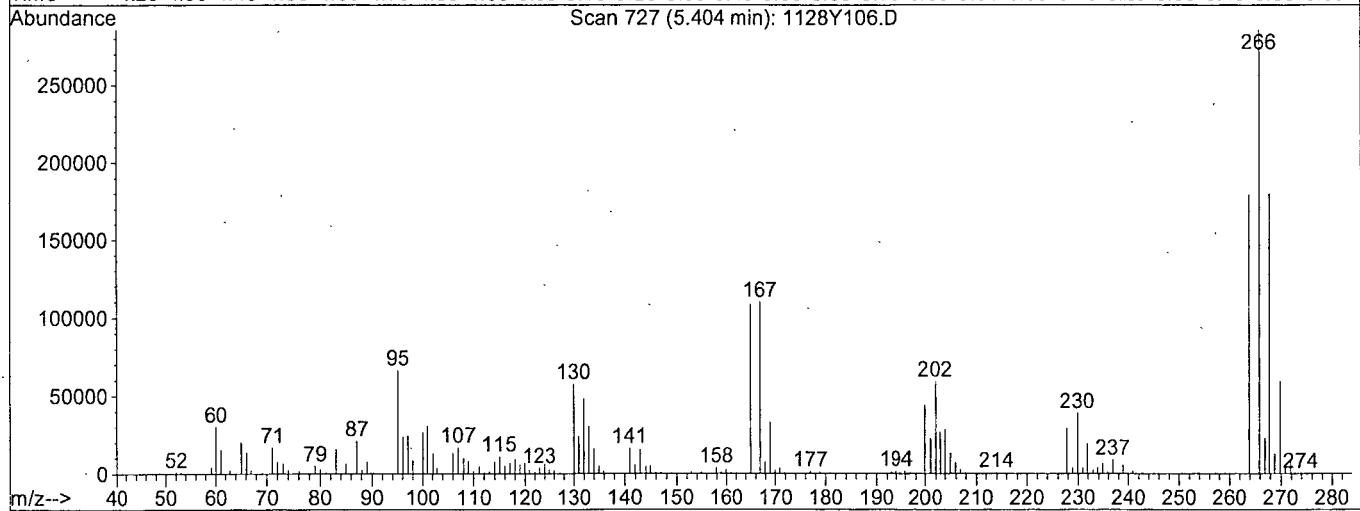
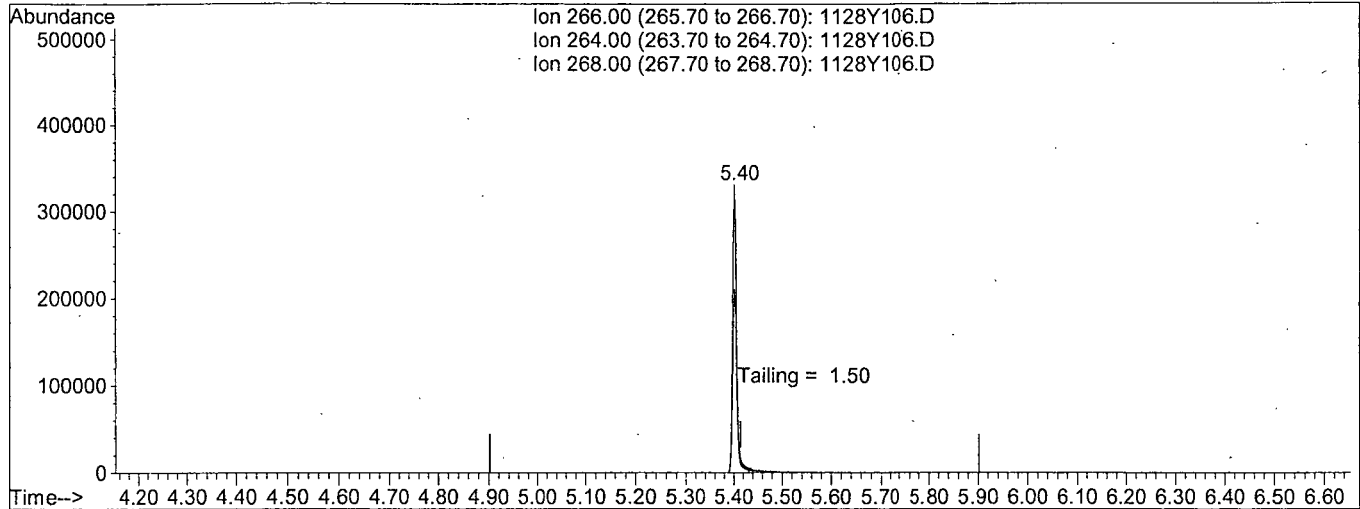
Breakdown 0.65

Quantitation Report

Data File : M:\YODA\DATA\Y181128M\1128Y106.D  
 Acq On : 8 Feb 19 8:31  
 Sample : SV TUNE 11/10/18  
 Misc :  
 Quant Time: Feb 8 15:14 2019

Vial: 85  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00  
 Quant Results File: temp.res

Method : M:\YODA\DATA\Y181128M\DFTPP2.M (Chemstation Integrator)  
 Title :  
 Last Update : Fri Feb 08 15:13:55 2019  
 Response via : Single Level Calibration



TIC: 1128Y106.D

(5) Pentachlorophenol

5.40min 0.0000

response 2067935

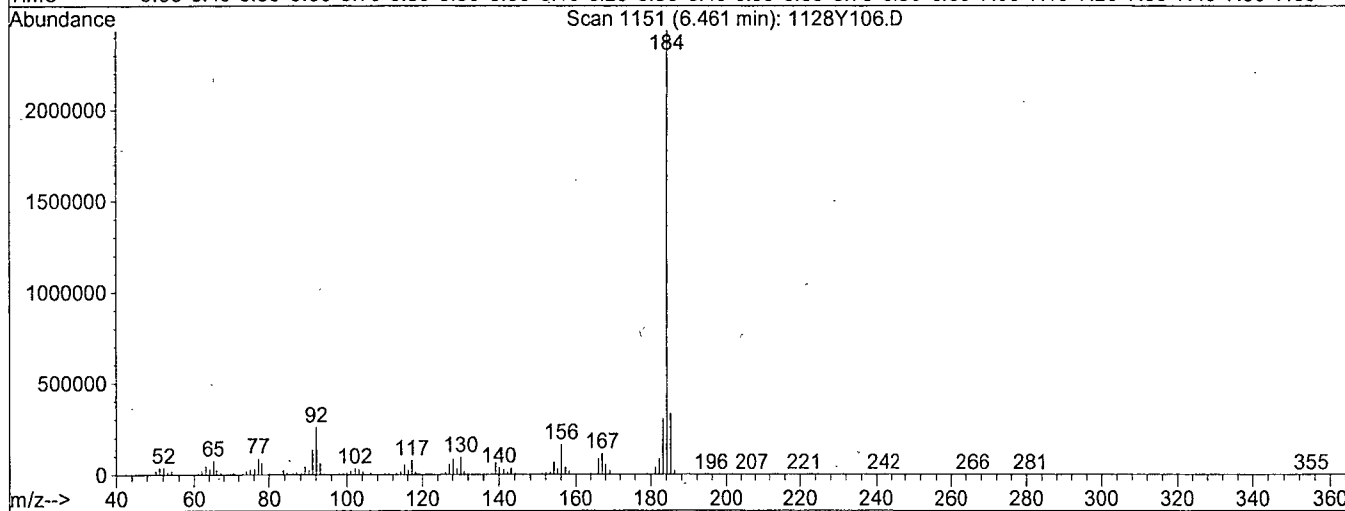
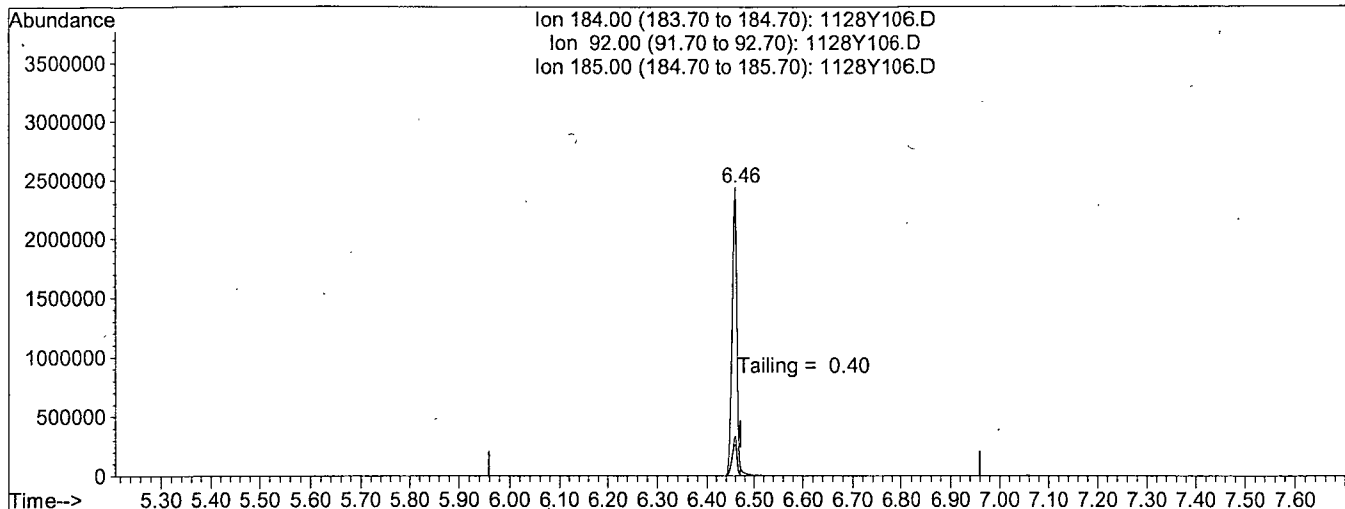
Ion	Exp%	Act%
266.00	100	100
264.00	62.90	61.99
268.00	63.40	63.05
0.00	0.00	0.00

Quantitation Report

Data File : M:\YODA\DATA\Y181128M\1128Y106.D  
 Acq On : 8 Feb 19 8:31  
 Sample : SV TUNE 11/10/18  
 Misc :  
 Quant Time: Feb 8 15:14 2019

Vial: 85  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00  
 Quant Results File: temp.res

Method : M:\YODA\DATA\Y181128M\DFTPP2.M (Chemstation Integrator)  
 Title :  
 Last Update : Fri Feb 08 15:13:55 2019  
 Response via : Single Level Calibration



TIC: 1128Y106.D

(6) Benzidine

6.46min 0.0000

response 17924370

Ion	Exp%	Act%
184.00	100	100
92.00	10.60	11.15
185.00	13.60	14.07
0.00	0.00	0.00

Methoxyethoxyethanol-Neat (MEE) SS Stock: 5/22/17-R.H. ex: 08/04/19						
STANDARD	INITIAL CONC.	SOURCE DATE	ALIQOT	FINAL VOL.	FINAL CONC.	SOLVENT /LOT#
MEE	Neat 99.5%	HEM SERVIC	0.1032g	10 mL	10320 ug/ml	MC
		Cat: N-12404-1G				#56258
		Lot: 5259000-37082				
		OP: 09/27/16				
		EXP: 7/31/22				

0.097ml were spiked in 500ml of water and extracted on 07/27/18. Final concentration is 2000ug/L  
 QC on 05/04/18

Name of Final Standard Diethylene Glycol

Prep'd By (Initials) GA

Prep Date 07/25/18

Exp Date 11/10/18

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
Diethylene glycol monomethyl ether	AccuStandard	72273	2000 ug/mL	216101007-37330 and 37331	10/03/18	2.0 mL	4 mL	Methanol #042317C	1000 ug/mL

Given to Extraction to do MEE M STD Stock (used for ICAL) Final concentration 2000ug/L APPL re-certified diethylene glycol monomethyl ether lot 216101007-37330 and 37331 and extended the expiration date to 11/10/18 per verification with a second source from ChemService lot 7079100-39417 Inj on Yoda 0801Y064

Methoxyethoxyethanol-Neat (MEE) SS Stock: 5/22/17-R.H. ex: 08/04/18						
STANDARD	INITIAL CONC.	SOURCE DATE	ALIQOT	FINAL VOL	FINAL CONC.	SOLVENT /LOT#
MEE	Neat 99.5%	HEM SERVICE	0.1032g	10 mL	10320 ug/ml	MC
		Cat: N-12404-1G				#56258
		Lot: 5259000-37082				
		OP: 09/27/16				
		EXP: 08/04/18				

0.097ml were spiked in 500ml of water and extracted on 06/07/17. Final concentration is 2000ug

APPL re-certified MEE SS stock Lot 5259000-37082 and extended the expiration date to 8/04/18 per verification with a different source Accu Standards Lot # 216101007-37334,5 injected on 05/04/18



Name of Final Standard **8270 Internal Standard (Ampule)**

Prep'd By (Initials)

OA

Prep Date **06/22/18**

Exp Date **06/22/19**

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
EPA 8270 Semivolatiles Internal Standard	RESTEK	CRM48902	2000 ug/mL	A0130603-38562	06/22/19	1000 uL	1 mL	NA	100ug/mL

Name of  
Final  
Standard

MEE CCV

Prep'd By (Initials)

OA

Prep Date 12/19/18

Exp Date 11/06/19

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
MEE M STD	APPL		2000 ug/mL	12/17/18	12/17/19	50 uL	200uL	Methanol. 150uL	500 ug/mL
SV Internal Standard	APPL	8270 I.S.	2000 ug/mL	11/29/18	11/06/19	4 uL	*	*	

Name of  
Final  
Standard Diethylene Glycol

Prep'd By (Initials) OA

Prep Date 12/17/18  
Exp Date 02/28/19

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
Diethylene glycol monomethyl ether	AccuStandard	72273	2000 ug/mL	216101007-37332 and 37333	02/28/19	2.0 mL	4 mL	Methanol #042317C	1000 ug/mL

Given to Extraction to do **MEE M STD Stock** (used for ICAL) Final concentration 2000ug/L  
 APPL re-certified diethylene glycol monomethyl ether lot 216101007-37330 and 37331 and extended the expiration date to 02/28/19 per verification with a second source from ChemService lot 7079100-39417  
 Inj on Yoda 1128Y014

Name of Final Standard MEE Curve Prep'd By (Initials) GA  
 Prep Date 08/01/18  
 Exp Date 02/28/19

Initial Standard Information						Final Standard Information			
MEE M STD Stock	APPL		200 ug/mL	07/27/18	02/28/19	5 uL	200uL	Methanol 195uL	50 ug/mL
SV Internal Standard	APPL	8270 I.S.	2000 ug/mL	06/22/18	06/22/19	4 uL	*	*	*
MEE M STD Stock	APPL		2000 ug/mL	07/27/18	02/28/19	5 uL	100uL	Methanol 95uL	100 ug/mL
SV Internal Standard	APPL	8270 I.S.	2000 ug/mL	06/22/18	06/22/19	2 uL	*	*	*
MEE M STD Stock	APPL		2000 ug/mL	07/27/18	02/28/19	10 uL	100uL	Methanol 90 uL	200 ug/mL
SV Internal Standard	APPL	8270 I.S.	2000 ug/mL	06/22/18	06/22/19	2 uL	*	*	*
MEE M STD Stock	APPL		2000 ug/mL	07/27/18	02/28/19	20 uL	100uL	Methanol 80 uL	400 ug/mL
SV Internal Standard	APPL	8270 I.S.	2000 ug/mL	06/22/18	06/22/19	2 uL	*	*	*
MEE M STD Stock	APPL		2000 ug/mL	07/27/18	02/28/19	50 uL	200 uL	Methanol 150 uL	500 ug/mL
SV Internal Standard	APPL	8270 I.S.	2000 ug/mL	06/22/18	06/22/19	4 uL	*	*	*
MEE M STD Stock	APPL		2000 ug/mL	07/27/18	02/28/19	30 uL	100uL	Methanol 70 uL	600 ug/mL
SV Internal Standard	APPL	8270 I.S.	2000 ug/mL	06/22/18	06/22/19	2 uL	*	*	*
MEE M STD Stock	APPL		2000 ug/mL	07/27/18	02/28/19	40 uL	100uL	Methanol 60 uL	800 ug/mL
SV Internal Standard	APPL	8270 I.S.	2000 ug/mL	06/22/18	06/22/19	2 uL	*	*	*
MEE M STD Stock	APPL		2000 ug/mL	07/27/18	02/28/19	50 uL	100uL	Methanol 50uL	1000 ug/mL
SV Internal Standard	APPL	8270 I.S.	2000 ug/mL	06/22/18	06/22/19	2 uL	*	*	*

Name of

Final

Standard

MEE Second Source

Prep'd By (Initials)

GA

Prep Date

08/01/18

Exp Date

06/22/19

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
MEE SS	APPL		2000 ug/mL	07/27/18	07/27/19	50 uL	200uL	Methanol 150uL	500 ug/mL
SV Internal Standard	APPL	8270 I.S.	2000 ug/mL	06/22/18	06/22/19	4 uL	*	*	*

# Organic Extraction Worksheet

<b>Method</b>	Solid Phase Extraction of 2MEE in Water	<b>Extraction Set</b>	190204A	<b>Extraction Method</b>	MWE2MEE	<b>Units</b>	mL
Spiked ID 1	Diethylene Glycol 12-17-18 EXP 2-28-19		Surrogate ID 1				
Spiked ID 2	2MEE SS 10320ug/mL 8-3-18 exp 8-3-19		Surrogate ID 2				
Spiked ID 3			Surrogate ID 3				
Spiked ID 4			Surrogate ID 4				
Spiked ID 5			Surrogate ID 5				
Spiked ID 6			Sufficient Vol for Matrix QC:		NO		
Spiked ID 7			Ext. Start Time:		02/04/19 7:40		
Spiked ID 8			Ext. End Time:		02/04/19 15:25		
			GC Requires Extract By:		02/06/19 0:00		
			pH1		Water Bath Temp Criteria		
			pH2				
			pH3				

Spiked By: DL

Date 02/04/19

Witnessed By: CFM

Date 02/04/19

Sample	Sample Container	Spike Amount	Spike ID	Surrogate Amount	Surrogate ID	Extract Amount	Final Volume	pH	Extract Date/Time	Comments
1	190204A Blk			NA	NA	500	2	7	02/04/19 7:40	
2	190204A LCS-1	0.040	1	NA	NA	500	2	7	02/04/19 7:40	
3	190204A LCSD-1	0.040	1	NA	NA	500	2	7	02/04/19 7:40	
4	AZ85763 AZ85763W05			NA	NA	500	2	7	02/04/19 7:40	87986
5	AZ85764 AZ85764W04			NA	NA	500	2	7	02/04/19 7:40	87986
6	AZ85766 AZ85766W18			NA	NA	500	2	7	02/04/19 7:40	87986
7	SS	0.097	2	NA	NA	500	2	7	02/04/19 7:40	

Key 2/4/19

Solvent and Lot#	
ENVI-Carb Plus 400MG/1ML	
Reverible Tube Lot:	11225702
PH Strip	HC 849161
Di Water	2-4-19
Dichloromethane	18G194011
Methanol	58179

Extraction COC Transfer	
Extraction lab employee Initials	KY
GC analyst's initials	OA
Date	02/06/18
Time	6:30
Refrigerator	Wheat

Technician's Initials	
Scanned By	DL
Sample Preparation	DL
Extraction	DL
Concentration	DL
Modified	02/04/19 9:06:49 AM

Reviewed By: *Key* Date: *2/4/19*

## Injection Log

Directory: M:\YODA\DATA\Y181128M\

Vial	FileName	Multiplier	SampleName	Misc Info	Injected
2	1128Y002.D	1	SV Tune 03/07/18		28 Nov 18 7:30
4	1128Y004.D	1	50ug/ml MEE 08/01/18	soil	28 Nov 18 8:08
5	1128Y005.D	1	100ug/ml MEE 08/01/18	soil	28 Nov 18 8:32
6	1128Y006.D	1	200ug/ml MEE 08/01/18	soil	28 Nov 18 8:55
7	1128Y007.D	1	400ug/ml MEE 08/01/18	soil	28 Nov 18 9:19
8	1128Y008.D	1	600ug/ml MEE 08/01/18	soil	28 Nov 18 9:43
9	1128Y009.D	1	800ug/ml MEE 08/01/18	soil	28 Nov 18 10:06
10	1128Y010.D	1	1000ug/ml MEE 08/01/18	soil	28 Nov 18 10:30
12	1128Y012.D	1	500ug/ml MEE 08/01/18	soil	28 Nov 18 11:17
14	1128Y014.D	1	SS ug/ml MEE 08/01/18	soil	28 Nov 18 12:26
85	1128Y106.D	1	SV TUNE 11/10/18		8 Feb 19 8:31
7	1128Y107.D	1	500ug/ml MEE 12/19/18	soil	8 Feb 19 8:51
8	1128Y108.D	1	190204A BLK 2/500	soil	8 Feb 19 9:24
9	1128Y109.D	1	190204A LCS-1 2/500	soil	8 Feb 19 9:47
10	1128Y110.D	1	190204A LCSD-1 2/500	soil	8 Feb 19 10:10
11	1128Y111.D	1	AZ85763W05 2/500	soil	8 Feb 19 10:34
12	1128Y112.D	1	AZ85764W04 2/500	soil	8 Feb 19 10:58
13	1128Y113.D	1	AZ85766W18 2/500	soil	8 Feb 19 11:21
14	1128Y114.D	1	500ug/ml MEE 12/19/18	soil	8 Feb 19 11:45

**ORGANICS**  
**Calibration Data**



VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

**Form 6**  
**Initial Calibration**

Lab Name: APPL, Inc. \_\_\_\_\_  
Case No: \_\_\_\_\_  
Matrix: water \_\_\_\_\_

SDG No: \_\_\_\_\_  
Initial Cal. Date: 02/01/19 \_\_\_\_\_  
Instrument: Loki \_\_\_\_\_

Initials: DG

0201L03.D    0201L04.D    0201L05.D    0201L06.D    0201L07.D    0201L08.D    0201L09.D    0201L10.D    0201L12.D    0201L11.D

1	2	3	4	5	6	7	8	9	8A	Avg	%RSD	Type	r <sup>2</sup>	Q	MRF		
1	I	Fluorobenzene (IS)															
2	TM	Freon 1113	0.0974	0.1089	0.1104	0.1028	0.0967	0.0917	0.0938	0.0917	0.0916	0.10	7.5	TM			
3	TM	Dichlorodifluoromethane	0.1427	0.1570	0.1644	0.1235	0.1352	0.1286	0.1333	0.1349	0.1397	0.14	9.4	TM			
4	TM	Freon 114	0.1546	0.1785	0.1663	0.1432	0.1672	0.1551	0.1556	0.1655	0.1612	0.16	6.3	TM			
5	TM**	Chloromethane	0.2484	0.2332	0.2238	0.2100	0.2095	0.1799	0.1747	0.1824	0.1802	0.20	13	TM**			
6	TM*	Vinyl chloride	0.1456	0.1415	0.1478	0.1398	0.1510	0.1380	0.1479	0.1561	0.1452	0.15	3.9	TM*			
7	TM	2-Chloro-1,1,1-trifluoroethane	0.1782	0.1859	0.1884	0.1693	0.1644	0.1489	0.1475	0.1273	0.1471	0.16	13	TM			
8	TM	Bromomethane		0.1473	0.1444	0.1342	0.1452	0.1206	0.1120		0.1103	0.13	12	TM			
9	TM	Chloroethane	0.0699	0.0807	0.0800	0.0757	0.0716	0.0727	0.0708	0.0691	0.0705	0.07	5.9	TM			
10	TM	Dichlorofluoromethane	0.2707	0.2887	0.2825	0.3038	0.2838	0.2711	0.2736	0.2771	0.2734	0.28	3.8	TM			
11	TM	Trichlorofluoromethane	0.3241	0.2861	0.2793	0.2605	0.2862	0.2549	0.2689	0.2765	0.2677	0.28	7.3	TM			
12	TM	Acrolein	0.0278	0.0296	0.0288	0.0269	0.0282	0.0265	0.0273	0.0276	0.0265	0.03	3.7	TM			
13	TML	Acetone		0.0675	0.0393	0.0486	0.0380	0.0369	0.0348			0.04	28	TML	0.998		
14	TM	Freon-113		0.1208	0.1471	0.1693	0.1480	0.1382	0.1358	0.1362	0.1394	0.14	9.3	TM			
15	TM*L	1,1-DCE		0.0589	0.0556	0.0401	0.0390	0.0411	0.0374	0.0369	0.0374	0.0386	0.04	20	TM*L	1.000	
16	TM	t-Butanol	0.0198	0.0207	0.0246	0.0232	0.0199	0.0211	0.0214	0.0225	0.0236	0.0211	0.02	7.4	TM		
17	TM	2-Propanol		0.0158	0.0155	0.0149	0.0126	0.0126	0.0126	0.0121	0.0128	0.0122	0.01	11	TM		
18	TM	Acetonitrile		0.0289	0.0287	0.0251	0.0235	0.0242	0.0235	0.0225	0.0231	0.0234	0.02	9.7	TM		
19	TML	Methyl Acetate			0.2051	0.1614	0.1553	0.1623	0.1320	0.1334	0.1297	0.1449	0.15	16	TML	0.997	
20	TML	Iodomethane		0.0314	0.0144	0.0233	0.0335	0.0420	0.0569	0.0690	0.0804	0.0722	0.05	50	TML	0.995	
21	TM	Acrylonitrile		0.0663	0.0957	0.0684	0.0769	0.0694	0.0610	0.0662	0.0644	0.0653	0.07	15	TM		
22	TML	Methylene chloride		0.2766	0.2727	0.1803	0.1855	0.1834	0.1646	0.1716	0.1635	0.1786	0.20	23	TML	0.998	
23	TM	Carbon disulfide		0.5168	0.4608	0.4378	0.4064	0.4271	0.3877	0.3922	0.4035	0.3927	0.42	9.9	TM		
24	TM	Methyl t-butyl ether (MtBE)		0.5905	0.5297	0.5445	0.5634	0.5603	0.5308	0.5430	0.5549	0.5361	0.55	3.5	TM		
25	TML	Trans-1,2-DCE		0.1223	0.0738	0.0792	0.0793	0.0852	0.0772	0.0785	0.0767	0.0755	0.08	18	TML	1.000	
26	TM	Diisopropyl Ether		0.5258	0.5039	0.4385	0.4973	0.4862	0.4473	0.4687	0.4858	0.4736	0.48	5.7	TM		
27	TM**	2,2-Dichloro-1,1,1-trifluoroethane				0.0102	0.0129	0.0134	0.0106	0.0108	0.0109	0.0112	0.01	11	TM**		
28	TM**	1,1-DCA		0.2861	0.3090	0.3105	0.3310	0.3264	0.2961	0.3005	0.3017	0.2940	0.31	4.8	TM**		
29	TML	Vinyl Acetate		0.1376	0.1428	0.1230	0.1207	0.1017	0.0893	0.0895	0.0923	0.0898	0.11	20	TML	0.999	
30	TM	Ethyl tert Butyl Ether		0.5043	0.4920	0.4579	0.5183	0.5304	0.5015	0.5091	0.5313	0.5097	0.51	4.4	TM		
31	TMQ	MEK (2-Butanone)			0.1286	0.1038	0.1015	0.1033	0.0950	0.0921	0.0900	0.0924	0.10	12	TMQ	1.000	
32	TM	Cis-1,2-DCE		0.2055	0.1903	0.2069	0.2356	0.2202	0.2021	0.2065	0.2100	0.2038	0.21	6.1	TM		
33	TM	2,2-Dichloropropane		0.3139	0.3248	0.3121	0.3234	0.3118	0.2734	0.2724	0.2753	0.2752	0.30	7.8	TM		
34	TM	2-Methylpentane													TM		
35	TML	3-Methylpentane													TML		

VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

**Form 6**  
**Initial Calibration**

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: water

SDG No: \_\_\_\_\_  
Initial Cal. Date: 02/01/19  
Instrument: Loki

Initials: DG

		Compound	1	2	3	4	5	6	7	8	9	8A	Avg	%RSD	Type	Q	MRF
36	TM*	Chloroform		0.3383	0.3775	0.3284	0.3729	0.3779	0.3331	0.3486	0.3438	0.3416	0.35	5.5	TM*		
37	TM	Bromochloromethane		0.0757	0.0678	0.0642	0.0575	0.0634	0.0564	0.0513	0.0497	0.0550	0.06	14	TM		
38	S	Dibromofluoromethane(S)	0.4523	0.4537	0.4278	0.4166	0.4428	0.4646	0.4536	0.4333	0.4250	0.4262	0.44	3.6	S		
39	TM	1,1,1-TCA		0.1670	0.1298	0.1429	0.1436	0.1528	0.1381	0.1403	0.1343	0.1321	0.14	8.1	TM		
40	TM	Cyclohexane		0.1308	0.1478	0.1325	0.1278	0.1229	0.1200	0.1181	0.1273	0.1193	0.13	7.2	TM		
41	TM	1,1-Dichloropropene		0.2329	0.2301	0.2100	0.2271	0.2348	0.2042	0.2291	0.2311	0.2203	0.22	4.8	TM		
42	TM	2,2,4-Trimethylpentane		0.4142	0.4004	0.4280	0.4111	0.4332	0.4112	0.4283	0.4618	0.4320	0.42	4.2	TM		
43	S	1,2-DCA-D4(S)	0.5096	0.5383	0.4864	0.4775	0.5002	0.5370	0.5128	0.5030	0.4799	0.4823	0.50	4.4	S		
44	TM	Carbon Tetrachloride		0.2809	0.2960	0.2974	0.2975	0.3001	0.2766	0.2923	0.2938	0.2893	0.29	2.7	TM		
45	TM	Tert Amyl Methyl Ether		0.5568	0.5835	0.4625	0.5594	0.5673	0.5339	0.5404	0.5733	0.5535	0.55	6.5	TM		
46	TM	Methylcyclopentane													TM		
47	TM	1,2-DCA		0.2725	0.3137	0.2590	0.3106	0.3003	0.2742	0.2803	0.2797	0.2786	0.29	6.5	TM		
48	TM	Benzene		0.7771	0.7752	0.7386	0.7617	0.7940	0.6973	0.7388	0.7246	0.7141	0.75	4.3	TM		
49	TM	TCE		0.1322	0.1656	0.1250	0.1437	0.1257	0.1133	0.1199	0.1224	0.1135	0.13	13	TM		
50	TM	2-Pentanone		0.1425	0.1621	0.1604	0.1528	0.1571	0.1572	0.1543	0.1596	0.1493	0.16	4.0	TM		
51	TM*	1,2-Dichloropropane		0.1853	0.2266	0.1921	0.2165	0.2026	0.1872	0.1869	0.1889	0.1874	0.20	7.6	TM*		
52	TM	Bromodichloromethane		0.1569	0.1970	0.1647	0.1754	0.1654	0.1499	0.1540	0.1504	0.1552	0.16	9.3	TM		
53	TM	Methyl Cyclohexane		0.2920	0.2582	0.2425	0.2478	0.2501	0.2325	0.2498	0.2719	0.2490	0.25	6.9	TM		
54	TM	Dibromomethane		0.1686	0.1441	0.1355	0.1578	0.1577	0.1478	0.1404	0.1413	0.1444	0.15	7.1	TM		
55	TM	2-Chloroethyl vinyl ether						0.0039	0.0045	0.0045	0.0050	0.0043	0.00	9.0	TM		
56	TM	MIBK (methyl isobutyl ketone)		0.1719	0.2236	0.2248	0.1947	0.1972	0.1847	0.1810	0.1948	0.1767	0.19	9.8	TM		
57	TM	1-Bromo-2-chloroethane		0.1384	0.1685	0.1512	0.1775	0.1633	0.1445	0.1527	0.1512	0.1491	0.16	7.9	TM		
58	TM	Cis-1,3-Dichloropropene		0.3777	0.3134	0.3095	0.3500	0.3400	0.3100	0.3297	0.3309	0.3260	0.33	6.6	TM		
59	TM*	Toluene		0.4649	0.4921	0.4568	0.4798	0.4776	0.4520	0.4657	0.4807	0.4569	0.47	2.9	TM*		
60	TM	Trans-1,3-Dichloropropene		0.3244	0.3291	0.3136	0.3366	0.3402	0.3148	0.3279	0.3201	0.3121	0.32	3.1	TM		
61	TM	1,1,2-TCA		0.1975	0.1763	0.1645	0.1853	0.1819	0.1646	0.1717	0.1647	0.1661	0.17	6.6	TM		
62	TM	2-Hexanone		0.1725	0.1480	0.1312	0.1394	0.1358	0.1345	0.1301	0.1395	0.1277	0.14	9.8	TM		
63	I	Chlorobenzene-D5 (IS)															
64	S	Toluene-D8(S)	2.189	2.182	1.765	1.791	1.978	2.016	2.055	2.017	2.021	1.925	2.0	7.0	S		
65	TM	1,2-EDB		0.1701	0.1311	0.1383	0.1699	0.1522	0.1453	0.1465	0.1470	0.1409	0.15	8.9	TM		
66	TM	Tetrachloroethene		0.2511	0.2038	0.1885	0.1901	0.1812	0.1709	0.1709	0.1802	0.1715	0.19	13	TM		
67	TML	1-Chlorohexane		0.4499	0.3525	0.3168	0.2587	0.2759	0.2725	0.2872	0.3109	0.2788	0.31	19	TML	0.997	
68	TM	1,1,1,2-Tetrachloroethane		0.4072	0.3180	0.3062	0.3301	0.3240	0.2884	0.3041	0.3077	0.2875	0.32	11	TM		
69	TM	m&p-Xylene		0.7668	0.6954	0.6836	0.7982	0.8002	0.8217	0.8935	0.9353	0.8638	0.81	10	TM		
70	TM	o-Xylene		0.2029	0.2265	0.2010	0.2184	0.2228	0.2275	0.2444	0.2724	0.2369	0.23	9.6	TM		

VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

**Form 6**  
**Initial Calibration**

Lab Name: APPL, Inc. \_\_\_\_\_  
Case No: \_\_\_\_\_  
Matrix: water \_\_\_\_\_

SDG No: \_\_\_\_\_  
Initial Cal. Date: 02/01/19 \_\_\_\_\_  
Instrument: Loki \_\_\_\_\_

Initials: DG \_\_\_\_\_

		Compound	1	2	3	4	5	6	7	8	9	8A	Avg	%RSD	Type	Q	MRF
71	TM	Styrene		0.6824	0.6395	0.6323	0.7003	0.7202	0.7368	0.7937	0.8361	0.7619	0.72	9.4	TM		
72	S	4-Bromofluorobenzene(S)	0.9854	0.8234	0.6591	0.6694	0.7612	0.7668	0.7871	0.7711	0.7776	0.7345	0.77	12	S		
73	TM	1,3-Dichloropropane		0.5156	0.3554	0.4249	0.4392	0.4030	0.3926	0.4131	0.4197	0.3989	0.42	10	TM		
74	TM	Dibromochloromethane		0.3779	0.2738	0.3460	0.3611	0.3304	0.3295	0.3287	0.3348	0.3188	0.33	8.7	TM		
75	TM**	Chlorobenzene		0.8315	0.7804	0.7139	0.7668	0.7454	0.7289	0.7458	0.7643	0.7206	0.76	4.8	TM**		
76	TM*	Ethylbenzene		0.6167	0.5465	0.6304	0.6213	0.6125	0.6137	0.6322	0.6797	0.6340	0.62	5.6	TM*		
77	TM**	Bromoform		0.2222	0.3005	0.2753	0.2986	0.2762	0.2631	0.2652	0.2745	0.2517	0.27	8.8	TM**		
78	I	1,4-Dichlorobenzene-D (IS)															
79	TM	Isopropylbenzene		1.840	1.673	1.768	1.946	1.949	1.923	2.039	1.995	2.052	1.9	6.6	TM		
80	TM**	1,1,2,2-Tetrachloroethane		0.6793	0.6292	0.7022	0.7170	0.6731	0.6435	0.6368	0.5913	0.6025	0.65	6.6	TM**		
81	TML	1,2,3-Trichloropropane		0.1512	0.0908	0.1475	0.1470	0.1324	0.1270	0.1234	0.1102	0.1052	0.13	17	TML	0.996	
82	TML	t-1,4-Dichloro-2-Butene		0.0608	0.1099	0.1275	0.1471	0.1378	0.1385	0.1380	0.1296	0.1407	0.13	21	TML	0.998	
83	TM	Bromobenzene		0.4222	0.3565	0.2924	0.3827	0.3425	0.3372	0.3386	0.3167	0.3315	0.35	11	TM		
84	TM	n-Propylbenzene		1.095	0.9254	1.028	1.179	1.216	1.197	1.328	1.282	1.302	1.2	11	TM		
85	TM	4-Ethyltoluene		1.716	1.507	1.534	1.758	1.886	1.887	2.073	2.046	2.043	1.8	12	TM		
86	TM	2-Chlorotoluene		0.7859	0.6956	0.6911	0.7599	0.7753	0.7569	0.7723	0.7461	0.7564	0.75	4.5	TM		
87	TML	1,3,5-Trimethylbenzene		1.168	1.213	1.233	1.499	1.598	1.608	1.746	1.721	1.751	1.5	16	TML	1.000	
88	TM	4-Chlorotoluene		0.8609	0.7398	0.7718	0.8696	0.9122	0.8447	0.9137	0.8978	0.8887	0.86	7.2	TM		
89	TM	Tert-Butylbenzene		1.606	1.497	1.465	1.612	1.720	1.648	1.763	1.723	1.756	1.6	6.6	TM		
90	TM	1,2,4-Trimethylbenzene		1.431	1.109	1.214	1.431	1.477	1.525	1.698	1.725	1.675	1.5	14	TM		
91	TM	Sec-Butylbenzene		1.915	1.723	1.746	1.996	2.029	2.006	2.153	2.115	2.107	2.0	7.8	TM		
92	TM	p-Isopropyltoluene		0.8124	0.6880	0.7144	0.9337	0.9542	0.9181	1.047	1.076	1.002	0.91	15	TM		
93	TM	Benzyl Chloride		0.9764	0.8184	0.7954	0.8569	0.8478	0.8482	0.8405	0.8867	0.8217	0.85	6.1	TM		
94	TM	1,3-DCB		0.6304	0.5514	0.5502	0.6379	0.6101	0.5805	0.6082	0.5834	0.5992	0.59	5.2	TM		
95	TM	1,4-DCB		1.176	1.125	1.103	1.259	1.197	1.146	1.179	1.131	1.132	1.2	4.1	TM		
96	TM	n-Butylbenzene		1.195	1.143	1.179	1.234	1.265	1.289	1.416	1.458	1.368	1.3	8.6	TM		
97	TM	1,2-DCB		1.255	1.172	1.122	1.204	1.178	1.137	1.176	1.114	1.109	1.2	4.1	TM		
98	TM	Hexachloroethane		0.3568	0.4192	0.4128	0.4528	0.4266	0.3987	0.3955	0.3886	0.3929	0.40	6.7	TM		
99	TM	1,2-Dibromo-3-chloropropane			0.1468	0.1377	0.1447	0.1390	0.1389	0.1370	0.1325	0.1358	0.14	3.3	TM		
100	TM	1,2,4-Trichlorobenzene		0.7366	0.6565	0.6493	0.7032	0.7369	0.7173	0.7812	0.8185	0.7720	0.73	7.7	TM		
101	TM	Hexachlorobutadiene		0.3406	0.3751	0.3803	0.4047	0.3965	0.3833	0.4019	0.4060	0.4040	0.39	5.5	TM		
102	TM	Naphthalene		1.637	1.413	1.240	1.450	1.522	1.611	1.771	1.891	1.833	1.6	13	TM		
103	TML	1,2,3-Trichlorobenzene		0.4961	0.2768	0.3021	0.3278	0.3421	0.3447	0.3869	0.3949	0.3797	0.36	18	TML	0.999	
104																	
105																	

Data File : M:\LOKI\DATA\190201\0201L03.D Vial: 2  
 Acq On : 1 Feb 19 11:44 Operator: PM,DG,SV,CMM,KV  
 Sample : 0.3ug/L VOC STD 02/01/19 Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Feb 4 12:25 2019 Quant Results File: L0201W.RES

Quant Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Mon Feb 04 12:05:25 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	324608	25.000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.96	117	272832	25.000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.53	152	143232	25.000	ppb	0.00
System Monitoring Compounds						
38) Dibromofluoromethane(S)	5.65	111	29364	5.145	ppb	0.00
Spiked Amount				25.000		
			Recovery	=	20.580%	
43) 1,2-DCA-D4(S)	6.07	65	33083	5.068	ppb	0.00
Spiked Amount				25.000		
			Recovery	=	20.272%	
64) Toluene-D8(S)	8.37	98	119434	5.489	ppb	0.00
Spiked Amount				25.000		
			Recovery	=	21.956%	
72) 4-Bromofluorobenzene(S)	11.26	95	53770	6.369	ppb	0.00
Spiked Amount				25.000		
			Recovery	=	25.476%	
Target Compounds						
16) t-Butanol	3.37	59	2566	9.067	ppb	Qvalue # 59

Quantitation Report

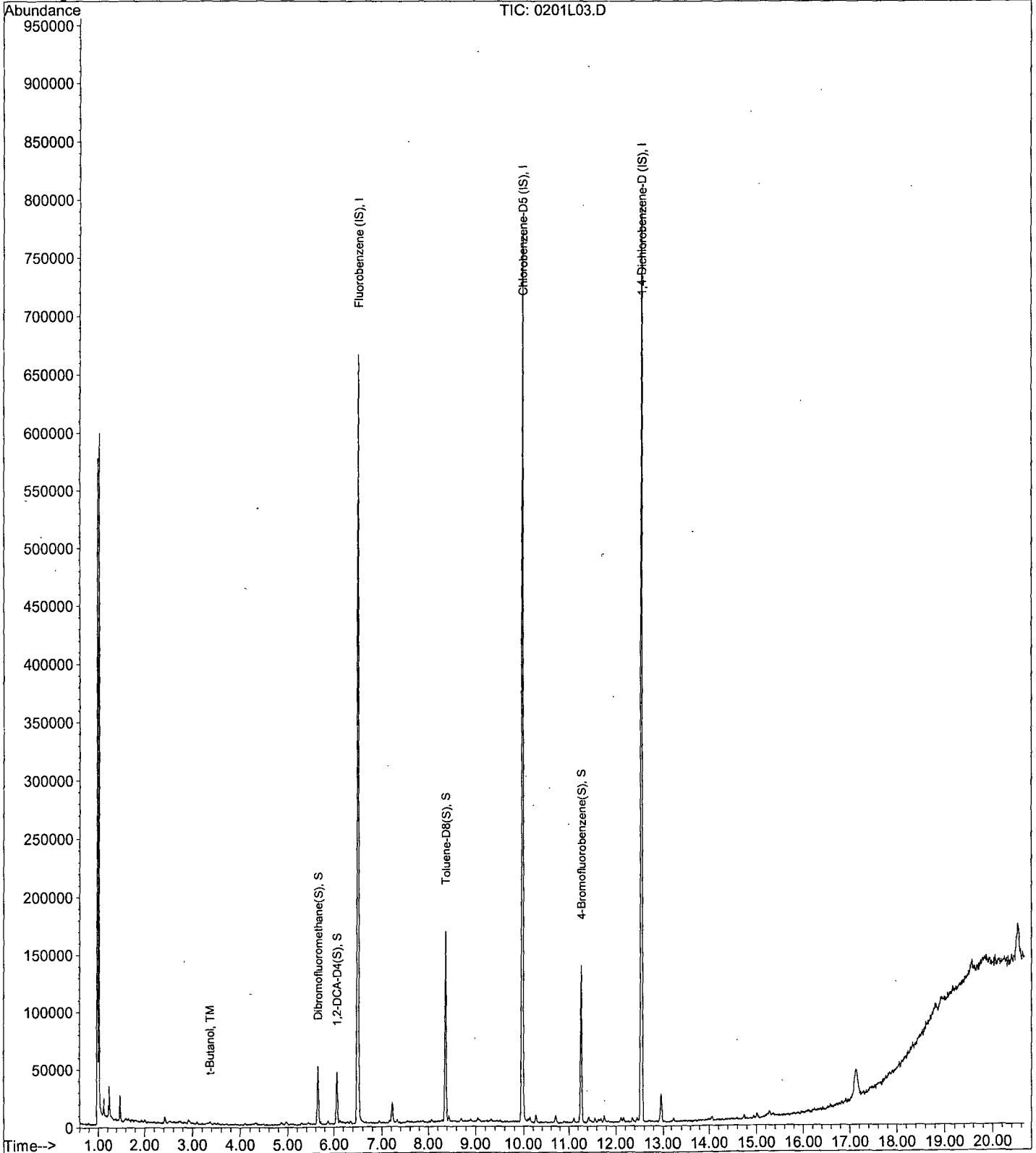
Data File : M:\LOKI\DATA\190201\0201L03.D  
Acq On : 1 Feb 19 11:44  
Sample : 0.3ug/L VOC STD 02/01/19  
Misc : IS&S 11/8/18

Vial: 2  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 4 12:25 2019

Quant Results File: L0201W.RES

Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Mon Feb 04 12:12:22 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190201\0201L04.D  
 Acq On : 1 Feb 19 12:13  
 Sample : 0.5ug/L VOC STD 02/01/19  
 Misc : IS&S 11/8/18

Vial: 3  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 4 12:08 2019

Quant Results File: L0201W.RES

Quant Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Mon Feb 04 12:05:25 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	304576	25.000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.97	117	243712	25.000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.53	152	129920	25.000	ppb	0.00
System Monitoring Compounds						
38) Dibromofluoromethane(S)	5.65	111	27635	5.160	ppb	0.00
Spiked Amount	25.000		Recovery	=	20.640%	
43) 1,2-DCA-D4(S)	6.07	65	32793	5.354	ppb	0.00
Spiked Amount	25.000		Recovery	=	21.416%	
64) Toluene-D8(S)	8.36	98	106355	5.472	ppb	0.00
Spiked Amount	25.000		Recovery	=	21.888%	
72) 4-Bromofluorobenzene(S)	11.26	95	40133	5.322	ppb	0.00
Spiked Amount	25.000		Recovery	=	21.288%	
Target Compounds						
2) Freon 1113	1.12	116	5931	4.951	ppb	# 85
3) Dichlorodifluoromethane	1.15	85	869	0.510	ppb	# 60
4) Freon 114	1.26	85	942	0.481	ppb	# 93
5) Chloromethane	1.29	50	1513	0.607	ppb	# 59
6) Vinyl chloride	1.38	62	887	0.499	ppb	# 96
7) 2-Chloro-1,1,1-trifluoroet	1.47	118	10856	5.504	ppb	# 99
8) Bromomethane	1.66	94	1099	0.691	ppb	# 86
9) Chloroethane	1.76	64	426	0.476	ppb	# 32
10) Dichlorofluoromethane	1.95	67	1649	0.483	ppb	# 98
11) Trichlorofluoromethane	2.00	101	1974	0.582	ppb	# 98
12) Acrolein	2.42	56	8454	25.069	ppb	# 96
13) Acetone	2.61	43	552	0.126	ppb	# 99
14) Freon-113	2.55	101	736	0.428	ppb	# 81
15) 1,1-DCE	2.51	63	359	0.398	ppb	# 49
16) t-Butanol	3.37	59	6307	23.753	ppb	# 90
17) 2-Propanol	2.82	45	964	5.883	ppb	# 1
18) Acetonitrile	2.92	41	8817	29.212	ppb	# 83
19) Methyl Acetate	3.01	43	1314	-0.523	ppb	# 94
20) Iodomethane	2.66	142	191	3.223	ppb	# 40
21) Acrylonitrile	3.44	52	404	0.471	ppb	# 62
23) Carbon disulfide	2.73	76	3148	0.608	ppb	# 83
24) Methyl t-butyl ether (MtBE)	3.53	73	3597	0.536	ppb	# 92
25) Trans-1,2-DCE	2.52	96	745	0.488	ppb	# 53
26) Diisopropyl Ether	4.31	45	3203	0.547	ppb	# 99
28) 1,1-DCA	4.11	63	1743	0.467	ppb	# 63
29) Vinyl Acetate	4.27	43	838	0.288	ppb	# 98
30) Ethyl tert Butyl Ether	4.85	59	3072	0.498	ppb	# 83
31) MEK (2-Butanone)	5.07	43	552	2639.693	ppb	# 45
32) Cis-1,2-DCE	4.99	96	1252	0.492	ppb	# 65
33) 2,2-Dichloropropane	4.97	77	1912	0.527	ppb	# 57
34) 2-Methylpentane	2.59	71	128	24.344	ppb	# 1
35) 3-Methylpentane	2.76	57	56	8.029	ppb	# 100
36) Chloroform	5.45	83	2061	0.482	ppb	# 85
37) Bromochloromethane	5.28	128	461	0.630	ppb	# 59
39) 1,1,1-TCA	5.65	97	1017	0.587	ppb	# 81
40) Cyclohexane	5.72	41	797	0.514	ppb	# 84
41) 1,1-Dichloropropene	5.87	75	1419	0.519	ppb	# 77
42) 2,2,4-Trimethylpentane	6.29	57	2523	0.488	ppb	# 67
44) Carbon Tetrachloride	5.87	117	1711	0.482	ppb	# 87

Data File : M:\LOKI\DATA\190201\0201L04.D  
 Acq On : 1 Feb 19 12:13  
 Sample : 0.5ug/L VOC STD 02/01/19  
 Misc : IS&S 11/8/18

Vial: 3  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 4 12:08 2019

Quant Results File: L0201W.RES

Quant Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Mon Feb 04 12:05:25 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
45) Tert Amyl Methyl Ether	6.36	73	3392	0.508	ppb	# 86
47) 1,2-DCA	6.16	62	1660	0.477	ppb	# 72
48) Benzene	6.13	78	4734	0.520	ppb	97
49) TCE	6.95	130	805	0.512	ppb	# 81
50) 2-Pentanone	7.22	43	43391	22.975	ppb	98
51) 1,2-Dichloropropane	7.20	63	1129	0.470	ppb	# 80
52) Bromodichloromethane	7.55	83	956	0.481	ppb	# 94
53) Methyl Cyclohexane	7.17	83	1779	0.573	ppb	# 71
54) Dibromomethane	7.34	93	1027	0.567	ppb	81
55) 2-Chloroethyl vinyl ether	7.95	43	167	3.094	ppb	# 25
56) MIBK (methyl isobutyl ket	8.28	43	1047	0.442	ppb	93
57) 1-Bromo-2-chloroethane	7.89	63	843	0.446	ppb	96
58) Cis-1,3-Dichloropropene	8.07	75	2301	0.569	ppb	91
59) Toluene	8.44	91	2832	0.495	ppb	99
60) Trans-1,3-Dichloropropene	8.70	75	1976	0.500	ppb	86
61) 1,1,2-TCA	8.90	83	1203	0.565	ppb	# 70
62) 2-Hexanone	9.21	43	1051	0.617	ppb	# 79
65) 1,2-EDB	9.44	107	829	0.571	ppb	97
66) Tetrachloroethene	9.05	166	1224	0.661	ppb	78
67) 1-Chlorohexane	9.99	91	2193	1.727	ppb	# 84
68) 1,1,1,2-Tetrachloroethane	10.09	131	1985	0.638	ppb	# 70
69) m&p-Xylene	10.26	91	7475	0.951	ppb	94
70) o-Xylene	10.70	106	989	0.445	ppb	99
71) Styrene	10.71	104	3326	0.472	ppb	95
73) 1,3-Dichloropropane	9.09	76	2513	0.617	ppb	97
74) Dibromochloromethane	9.33	129	1842	0.567	ppb	91
75) Chlorobenzene	9.99	112	4053	0.550	ppb	92
76) Ethylbenzene	10.13	91	3006	0.497	ppb	95
77) Bromoform	10.90	173	1083	0.412	ppb	81
79) Isopropylbenzene	11.11	105	4782	0.482	ppb	# 87
80) 1,1,2,2-Tetrachloroethane	11.43	83	1765	0.520	ppb	# 94
81) 1,2,3-Trichloropropane	11.47	110	393	-0.665	ppb	84
82) t-1,4-Dichloro-2-Butene	11.50	53	158	-0.415	ppb	# 14
83) Bromobenzene	11.42	156	1097	0.609	ppb	# 63
84) n-Propylbenzene	11.56	91	2844	0.467	ppb	86
85) 4-Ethyltoluene	11.68	105	4458	0.469	ppb	92
86) 2-Chlorotoluene	11.65	91	2042	0.525	ppb	94
87) 1,3,5-Trimethylbenzene	11.76	105	3034	0.825	ppb	99
88) 4-Chlorotoluene	11.77	91	2237	0.503	ppb	98
89) Tert-Butylbenzene	12.11	119	4172	0.489	ppb	96
90) 1,2,4-Trimethylbenzene	12.16	105	3719	0.485	ppb	# 75
91) Sec-Butylbenzene	12.35	105	4977	0.484	ppb	98
92) p-Isopropyltoluene	12.52	119	2111	0.449	ppb	# 80
93) Benzyl Chloride	12.72	91	2537	0.571	ppb	# 80
94) 1,3-DCB	12.47	146	1638	0.530	ppb	88
95) 1,4-DCB	12.56	146	3056	0.507	ppb	84
96) n-Butylbenzene	12.97	91	3105	0.466	ppb	# 88
97) 1,2-DCB	12.96	146	3262	0.540	ppb	97
98) Hexachloroethane	13.25	117	927	0.441	ppb	# 65
99) 1,2-Dibromo-3-chloropropan	13.82	75	456	0.631	ppb	# 56
100) 1,2,4-Trichlorobenzene	14.74	180	1914	0.504	ppb	86
101) Hexachlorobutadiene	14.93	225	885	0.439	ppb	98
102) Naphthalene	15.01	128	4253	0.513	ppb	98
103) 1,2,3-Trichlorobenzene	15.27	180	1289	1.550	ppb	# 71





Quantitation Report (Not Reviewed)

Data File : M:\LOKI\DATA\190201\0201L05.D  
 Acq On : 1 Feb 19 12:42  
 Sample : 1.0ug/L VOC STD 02/01/19  
 Misc : IS&S 11/8/18

Vial: 4  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 4 12:08 2019

Quant Results File: L0201W.RES

Quant Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Mon Feb 04 12:05:25 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	281664	25.000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.97	117	253440	25.000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.53	152	134016	25.000	ppb	0.00
<b>System Monitoring Compounds</b>						
38) Dibromofluoromethane(S)	5.65	111	48197	9.732	ppb	0.00
Spiked Amount	25.000		Recovery	=	38.928%	
43) 1,2-DCA-D4(S)	6.07	65	54806	9.677	ppb	0.00
Spiked Amount	25.000		Recovery	=	38.708%	
64) Toluene-D8(S)	8.37	98	178922	8.852	ppb	0.00
Spiked Amount	25.000		Recovery	=	35.408%	
72) 4-Bromofluorobenzene(S)	11.26	95	66821	8.521	ppb	0.00
Spiked Amount	25.000		Recovery	=	34.084%	
<b>Target Compounds</b>						
2) Freon 1113	1.12	116	12270	11.075	ppb	97
3) Dichlorodifluoromethane	1.14	85	1769	1.122	ppb	89
4) Freon 114	1.26	85	2011	1.110	ppb	97
5) Chloromethane	1.29	50	2627	1.139	ppb	# 85
6) Vinyl chloride	1.38	62	1594	0.970	ppb	99
7) 2-Chloro-1,1,1-trifluoroet	1.48	118	20944	11.483	ppb	95
8) Bromomethane	1.66	94	1660	1.128	ppb	93
9) Chloroethane	1.76	64	909	1.099	ppb	82
10) Dichlorofluoromethane	1.96	67	3253	1.029	ppb	98
11) Trichlorofluoromethane	2.00	101	3223	1.028	ppb	92
12) Acrolein	2.42	56	16673	53.463	ppb	85
13) Acetone	2.60	43	760	0.778	ppb	98
14) Freon-113	2.54	101	1657	1.042	ppb	92
15) 1,1-DCE	2.53	63	626	1.097	ppb	# 32
16) t-Butanol	3.37	59	13866	56.469	ppb	92
17) 2-Propanol	2.83	45	1742	11.497	ppb	# 1
18) Acetonitrile	2.92	41	16195	58.020	ppb	93
19) Methyl Acetate	3.01	43	2311	0.224	ppb	100
20) Iodomethane	2.67	142	162	3.206	ppb	# 7
21) Acrylonitrile	3.45	52	1078	1.359	ppb	76
22) Methylene chloride	3.09	84	3072	0.798	ppb	85
23) Carbon disulfide	2.73	76	5192	1.084	ppb	# 92
24) Methyl t-butyl ether (MtBE)	3.52	73	5968	0.963	ppb	98
25) Trans-1,2-DCE	2.51	96	831	0.653	ppb	# 82
26) Diisopropyl Ether	4.33	45	5677	1.048	ppb	90
28) 1,1-DCA	4.09	63	3481	1.009	ppb	89
29) Vinyl Acetate	4.32	43	1609	1.102	ppb	# 98
30) Ethyl tert Butyl Ether	4.86	59	5543	0.972	ppb	# 83
31) MEK (2-Butanone)	5.07	43	1449	0.868	ppb	# 45
32) Cis-1,2-DCE	4.99	96	2144	0.911	ppb	86
33) 2,2-Dichloropropane	4.96	77	3659	1.090	ppb	# 88
35) 3-Methylpentane	2.59	57	19	2.946	ppb	100
36) Chloroform	5.44	83	4253	1.074	ppb	97
37) Bromochloromethane	5.30	128	764	1.128	ppb	85
39) 1,1,1-TCA	5.66	97	1462	0.912	ppb	95
40) Cyclohexane	5.71	41	1665	1.160	ppb	78
41) 1,1-Dichloropropene	5.88	75	2592	1.025	ppb	90
42) 2,2,4-Trimethylpentane	6.28	57	4511	0.943	ppb	# 67
44) Carbon Tetrachloride	5.86	117	3335	1.015	ppb	89

Quantitation Report (Not Reviewed)

Data File : M:\LOKI\DATA\190201\0201L05.D  
 Acq On : 1 Feb 19 12:42  
 Sample : 1.0ug/L VOC STD 02/01/19  
 Misc : IS&S 11/8/18

Vial: 4  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 4 12:08 2019

Quant Results File: L0201W.RES

Quant Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Mon Feb 04 12:05:25 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
45) Tert Amyl Methyl Ether	6.36	73	6574	1.065	ppb	# 91
47) 1,2-DCA	6.16	62	3534	1.099	ppb	# 82
48) Benzene	6.13	78	8734	1.038	ppb	94
49) TCE	6.95	130	1866	1.284	ppb	# 78
50) 2-Pentanone	7.22	43	91302	52.276	ppb	97
51) 1,2-Dichloropropane	7.21	63	2553	1.150	ppb	# 93
52) Bromodichloromethane	7.55	83	2220	1.207	ppb	95
53) Methyl Cyclohexane	7.17	83	2909	1.013	ppb	82
54) Dibromomethane	7.33	93	1623	0.969	ppb	84
55) 2-Chloroethyl vinyl ether	7.87	43	202	4.047	ppb	# 25
56) MIBK (methyl isobutyl ket	8.28	43	2519	1.150	ppb	# 85
57) 1-Bromo-2-chloroethane	7.88	63	1898	1.086	ppb	94
58) Cis-1,3-Dichloropropene	8.07	75	3531	0.944	ppb	# 83
59) Toluene	8.44	91	5544	1.048	ppb	95
60) Trans-1,3-Dichloropropene	8.70	75	3708	1.015	ppb	98
61) 1,1,2-TCA	8.90	83	1986	1.009	ppb	82
62) 2-Hexanone	9.22	43	1668	1.059	ppb	# 95
65) 1,2-EDB	9.44	107	1329	0.880	ppb	# 72
66) Tetrachloroethene	9.05	166	2066	1.074	ppb	93
67) 1-Chlorohexane	10.00	91	3573	2.143	ppb	93
68) 1,1,1,2-Tetrachloroethane	10.09	131	3224	0.996	ppb	82
69) m&p-Xylene	10.26	91	14099	1.724	ppb	94
70) o-Xylene	10.70	106	2296	0.993	ppb	90
71) Styrene	10.71	104	6483	0.885	ppb	92
73) 1,3-Dichloropropane	9.08	76	3603	0.850	ppb	97
74) Dibromochloromethane	9.33	129	2776	0.821	ppb	99
75) Chlorobenzene	9.99	112	7911	1.033	ppb	86
76) Ethylbenzene	10.13	91	5540	0.880	ppb	99
77) Bromoform	10.89	173	3046	1.114	ppb	91
79) Isopropylbenzene	11.11	105	8966	0.876	ppb	93
80) 1,1,2,2-Tetrachloroethane	11.43	83	3373	0.964	ppb	97
81) 1,2,3-Trichloropropane	11.46	110	487	-0.525	ppb	# 44
82) t-1,4-Dichloro-2-Butene	11.48	53	589	0.189	ppb	# 52
83) Bromobenzene	11.42	156	1911	1.028	ppb	91
84) n-Propylbenzene	11.56	91	4961	0.789	ppb	97
85) 4-Ethyltoluene	11.69	105	8081	0.825	ppb	99
86) 2-Chlorotoluene	11.64	91	3729	0.929	ppb	98
87) 1,3,5-Trimethylbenzene	11.75	105	6505	1.187	ppb	# 76
88) 4-Chlorotoluene	11.76	91	3966	0.865	ppb	98
89) Tert-Butylbenzene	12.12	119	8023	0.911	ppb	86
90) 1,2,4-Trimethylbenzene	12.17	105	5945	0.751	ppb	94
91) Sec-Butylbenzene	12.35	105	9235	0.872	ppb	92
92) p-Isopropyltoluene	12.52	119	3688	0.760	ppb	# 87
93) Benzyl Chloride	12.71	91	4387	0.958	ppb	94
94) 1,3-DCB	12.46	146	2956	0.927	ppb	90
95) 1,4-DCB	12.56	146	6031	0.969	ppb	95
96) n-Butylbenzene	12.96	91	6127	0.891	ppb	85
97) 1,2-DCB	12.97	146	6281	1.008	ppb	92
98) Hexachloroethane	13.25	117	2247	1.035	ppb	# 77
99) 1,2-Dibromo-3-chloropropan	13.83	75	787	1.056	ppb	# 68
100) 1,2,4-Trichlorobenzene	14.74	180	3519	0.899	ppb	99
101) Hexachlorobutadiene	14.94	225	2011	0.967	ppb	93
102) Naphthalene	15.01	128	7572	0.885	ppb	94
103) 1,2,3-Trichlorobenzene	15.28	180	1484	1.622	ppb	91

Quantitation Report

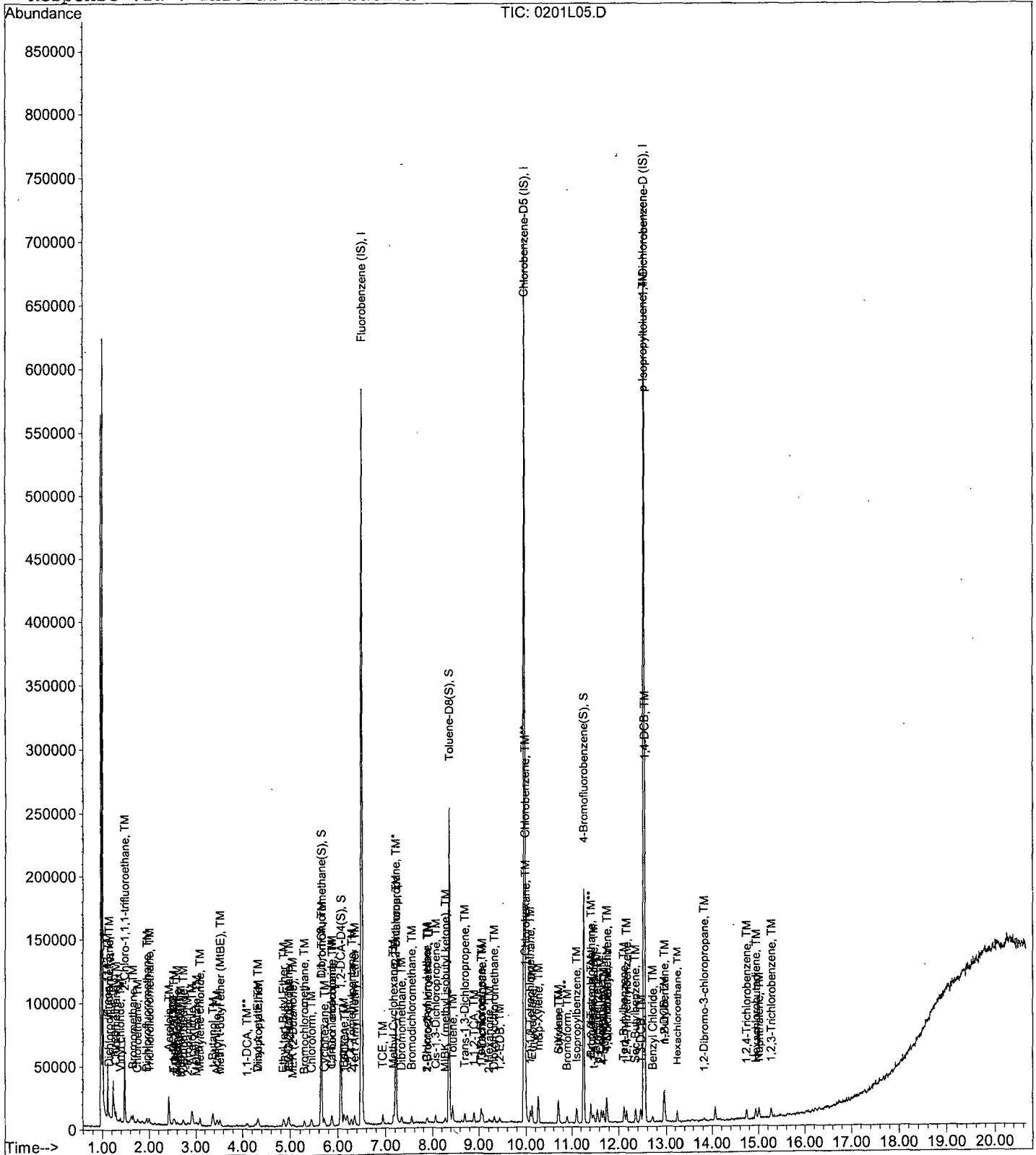
Data File : M:\LOKI\DATA\190201\0201L05.D  
Acq On : 1 Feb 19 12:42  
Sample : 1.0ug/L VOC STD 02/01/19  
Misc : IS&S 11/8/18

Vial: 4  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 4 12:08 2019

Quant Results File: L0201W.RES

Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Mon Feb 04 12:12:22 2019  
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : M:\LOKI\DATA\190201\0201L06.D  
 Acq On : 1 Feb 19 13:10  
 Sample : 2.0ug/L VOC STD 02/01/19  
 Misc : IS&S 11/8/18

Vial: 5  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 4 12:08 2019

Quant Results File: L0201W.RES

Quant Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Mon Feb 04 12:05:25 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	299264	25.000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.97	117	252608	25.000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.53	152	135872	25.000	ppb	0.00

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
38) Dibromofluoromethane(S)	5.65	111	49866	9.477	ppb	0.00
Spiked Amount				25.000		
Recovery					=	37.908%
43) 1,2-DCA-D4(S)	6.07	65	57162	9.499	ppb	0.00
Spiked Amount				25.000		
Recovery					=	37.996%
64) Toluene-D8(S)	8.37	98	180946	8.982	ppb	0.00
Spiked Amount				25.000		
Recovery					=	35.928%
72) 4-Bromofluorobenzene(S)	11.26	95	67642	8.654	ppb	0.00
Spiked Amount				25.000		
Recovery					=	34.616%

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Freon 1113	1.12	116	26428	22.452	ppb	98
3) Dichlorodifluoromethane	1.14	85	3935	2.350	ppb	# 74
4) Freon 114	1.25	85	3982	2.069	ppb	88
5) Chloromethane	1.29	50	5358	2.187	ppb	99
6) Vinyl chloride	1.38	62	3538	2.026	ppb	85
7) 2-Chloro-1,1,1-trifluoroet	1.48	118	45112	23.279	ppb	96
8) Bromomethane	1.66	94	3458	2.212	ppb	96
9) Chloroethane	1.76	64	1916	2.180	ppb	95
10) Dichlorofluoromethane	1.95	67	6764	2.014	ppb	95
11) Trichlorofluoromethane	2.00	101	6686	2.008	ppb	96
12) Acrolein	2.42	56	25818	77.919	ppb	100
13) Acetone	2.61	43	940	1.104	ppb	# 84
14) Freon-113	2.54	101	4053	2.399	ppb	# 72
15) 1,1-DCE	2.52	63	961	1.759	ppb	# 75
16) t-Butanol	3.37	59	20847	79.906	ppb	98
17) 2-Propanol	2.82	45	3556	22.088	ppb	# 82
18) Acetonitrile	2.91	41	22508	75.895	ppb	100
19) Methyl Acetate	3.01	43	3863	1.126	ppb	97
20) Iodomethane	2.67	142	559	3.607	ppb	# 83
21) Acrylonitrile	3.43	52	1638	1.943	ppb	# 66
22) Methylene chloride	3.10	84	4317	1.331	ppb	99
23) Carbon disulfide	2.73	76	10481	2.060	ppb	95
24) Methyl t-butyl ether (MtBE)	3.52	73	13036	1.979	ppb	96
25) Trans-1,2-DCE	2.52	96	1896	1.761	ppb	87
26) Diisopropyl Ether	4.32	45	10499	1.824	ppb	94
27) 2,2-Dichloro-1,1,1-trifluo	1.95	85	245	1.787	ppb	# 41
28) 1,1-DCA	4.10	63	7433	2.028	ppb	92
29) Vinyl Acetate	4.26	43	2945	2.237	ppb	# 87
30) Ethyl tert Butyl Ether	4.86	59	10962	1.810	ppb	90
31) MEK (2-Butanone)	5.07	43	2485	1.718	ppb	91
32) Cis-1,2-DCE	4.98	96	4954	1.980	ppb	94
33) 2,2-Dichloropropane	4.97	77	7472	2.095	ppb	# 91
35) 3-Methylpentane	2.42	57	837	122.132	ppb	# 100
36) Chloroform	5.45	83	7862	1.869	ppb	77
37) Bromochloromethane	5.30	128	1536	2.135	ppb	100
39) 1,1,1-TCA	5.65	97	3422	2.009	ppb	# 76
40) Cyclohexane	5.72	41	3173	2.081	ppb	82
41) 1,1-Dichloropropene	5.88	75	5027	1.871	ppb	97
42) 2,2,4-Trimethylpentane	6.28	57	10246	2.017	ppb	# 81

Quantitation Report (Not Reviewed)

Data File : M:\LOKI\DATA\190201\0201L06.D  
 Acq On : 1 Feb 19 13:10  
 Sample : 2.0ug/L VOC STD 02/01/19  
 Misc : IS&S 11/8/18

Vial: 5  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 4 12:08 2019

Quant Results File: L0201W.RES

Quant Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Mon Feb 04 12:05:25 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
44) Carbon Tetrachloride	5.87	117	7119	2.040	ppb	90
45) Tert Amyl Methyl Ether	6.36	73	11073	1.688	ppb #	96
47) 1,2-DCA	6.16	62	6200	1.815	ppb #	86
48) Benzene	6.13	78	17682	1.978	ppb	98
49) TCE	6.95	130	2993	1.938	ppb	95
50) 2-Pentanone	7.22	43	144005	77.602	ppb	97
51) 1,2-Dichloropropane	7.21	63	4599	1.950	ppb	100
52) Bromodichloromethane	7.54	83	3942	2.018	ppb #	90
53) Methyl Cyclohexane	7.17	83	5805	1.903	ppb	84
54) Dibromomethane	7.34	93	3244	1.823	ppb	93
55) 2-Chloroethyl vinyl ether	7.93	43	179	3.376	ppb #	25
56) MIBK (methyl isobutyl ket	8.28	43	5381	2.313	ppb #	84
57) 1-Bromo-2-chloroethane	7.88	63	3620	1.949	ppb	94
58) Cis-1,3-Dichloropropene	8.07	75	7410	1.865	ppb	94
59) Toluene	8.44	91	10936	1.945	ppb	89
60) Trans-1,3-Dichloropropene	8.70	75	7508	1.934	ppb	98
61) 1,1,2-TCA	8.90	83	3939	1.883	ppb	92
62) 2-Hexanone	9.22	43	3140	1.876	ppb	88
65) 1,2-EDB	9.44	107	2794	1.855	ppb #	81
66) Tetrachloroethene	9.05	166	3809	1.986	ppb	93
67) 1-Chlorohexane	9.99	91	6402	3.061	ppb	92
68) 1,1,1,2-Tetrachloroethane	10.09	131	6187	1.918	ppb	95
69) m&p-Xylene	10.26	91	27630	3.391	ppb	90
70) o-Xylene	10.70	106	4062	1.763	ppb	98
71) Styrene	10.71	104	12777	1.750	ppb	90
73) 1,3-Dichloropropane	9.08	76	8586	2.033	ppb	100
74) Dibromochloromethane	9.32	129	6993	2.075	ppb	95
75) Chlorobenzene	10.00	112	14426	1.890	ppb	93
76) Ethylbenzene	10.13	91	12739	2.031	ppb	96
77) Bromoform	10.90	173	5563	2.041	ppb	95
79) Isopropylbenzene	11.11	105	19217	1.852	ppb	97
80) 1,1,2,2-Tetrachloroethane	11.43	83	7633	2.152	ppb	91
81) 1,2,3-Trichloropropane	11.47	110	1603	1.344	ppb	90
82) t-1,4-Dichloro-2-Butene	11.50	53	1386	1.294	ppb #	73
83) Bromobenzene	11.43	156	3178	1.687	ppb	93
84) n-Propylbenzene	11.56	91	11176	1.754	ppb	95
85) 4-Ethyltoluene	11.69	105	16675	1.679	ppb	98
86) 2-Chlorotoluene	11.64	91	7512	1.846	ppb	94
87) 1,3,5-Trimethylbenzene	11.76	105	13401	1.908	ppb	99
88) 4-Chlorotoluene	11.76	91	8389	1.804	ppb #	83
89) Tert-Butylbenzene	12.11	119	15927	1.783	ppb	97
90) 1,2,4-Trimethylbenzene	12.17	105	13197	1.645	ppb	95
91) Sec-Butylbenzene	12.35	105	18981	1.767	ppb	95
92) p-Isopropyltoluene	12.52	119	7765	1.579	ppb #	84
93) Benzyl Chloride	12.71	91	8646	1.861	ppb #	93
94) 1,3-DCB	12.46	146	5981	1.851	ppb	90
95) 1,4-DCB	12.56	146	11985	1.900	ppb	97
96) n-Butylbenzene	12.97	91	12816	1.838	ppb	90
97) 1,2-DCB	12.97	146	12195	1.929	ppb	98
98) Hexachloroethane	13.25	117	4487	2.039	ppb #	70
99) 1,2-Dibromo-3-chloropropan	13.82	75	1497	1.981	ppb #	82
100) 1,2,4-Trichlorobenzene	14.74	180	7058	1.779	ppb	97
101) Hexachlorobutadiene	14.93	225	4134	1.960	ppb #	84
102) Naphthalene	15.01	128	13477	1.553	ppb	98

Quantitation Report (Not Reviewed)

Data File : M:\LOKI\DATA\190201\0201L06.D Vial: 5  
Acq On : 1 Feb 19 13:10 Operator: PM,DG,SV,CMM,KV  
Sample : 2.0ug/L VOC STD 02/01/19 Inst : Loki  
Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Feb 4 12:08 2019 Quant Results File: L0201W.RES

Quant Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Mon Feb 04 12:05:25 2019  
Response via : Initial Calibration  
DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc Unit	Qvalue
103) 1,2,3-Trichlorobenzene	15.27	180	3284	2.451 ppb	97

Quantitation Report

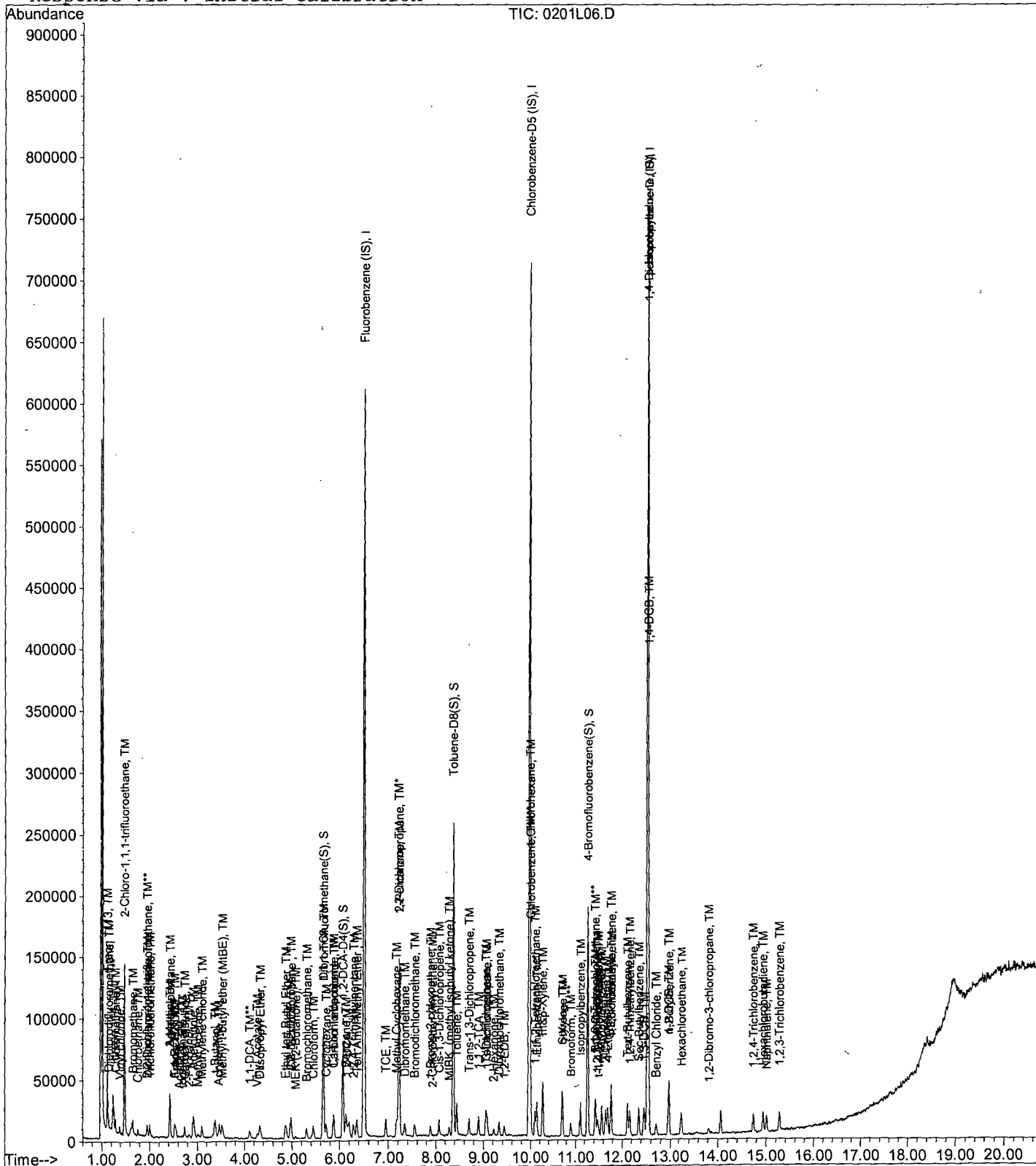
Data File : M:\LOKI\DATA\190201\0201L06.D  
Acq On : 1 Feb 19 13:10  
Sample : 2.0ug/L VOC STD 02/01/19  
Misc : IS&S 11/8/18

Vial: 5  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 4 12:08 2019

Quant Results File: L0201W.RES

Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Mon Feb 04 12:12:22 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190201\0201L07.D  
 Acq On : 1 Feb 19 13:39  
 Sample : 5.0ug/L VOC STD 02/01/19  
 Misc : IS&S 11/8/18

Vial: 6  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 4 12:08 2019

Quant Results File: L0201W.RES

Quant Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Mon Feb 04 12:05:25 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	295296	25.000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.97	117	249664	25.000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.53	152	136704	25.000	ppb	0.00

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
38) Dibromofluoromethane(S)	5.65	111	130766	25.185	ppb	0.00
Spiked Amount	25.000		Recovery	=	100.740%	
43) 1,2-DCA-D4(S)	6.07	65	147719	24.878	ppb	0.00
Spiked Amount	25.000		Recovery	=	99.512%	
64) Toluene-D8(S)	8.37	98	493864	24.803	ppb	0.00
Spiked Amount	25.000		Recovery	=	99.212%	
72) 4-Bromofluorobenzene(S)	11.26	95	190055	24.602	ppb	0.00
Spiked Amount	25.000		Recovery	=	98.408%	

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Freon 1113	1.12	116	48591	41.835	ppb	99
3) Dichlorodifluoromethane	1.14	85	7295	4.414	ppb	96
4) Freon 114	1.25	85	8459	4.453	ppb	75
5) Chloromethane	1.29	50	12405	5.131	ppb	92
6) Vinyl chloride	1.38	62	8256	4.791	ppb	84
7) 2-Chloro-1,1,1-trifluoroet	1.48	118	79976	41.825	ppb	97
8) Bromomethane	1.65	94	7928	5.140	ppb	86
9) Chloroethane	1.76	64	4473	5.157	ppb	83
10) Dichlorofluoromethane	1.95	67	17940	5.414	ppb	95
11) Trichlorofluoromethane	2.00	101	15384	4.681	ppb	97
12) Acrolein	2.43	56	31784	97.213	ppb	98
13) Acetone	2.61	43	2873	5.949	ppb	95
14) Freon-113	2.54	101	8741	5.244	ppb	84
15) 1,1-DCE	2.52	63	2303	4.831	ppb	96
16) t-Butanol	3.37	59	23521	91.367	ppb	100
17) 2-Propanol	2.83	45	5944	37.418	ppb	# 94
18) Acetonitrile	2.92	41	27779	94.927	ppb	98
19) Methyl Acetate	3.02	43	9169	4.606	ppb	99
20) Iodomethane	2.66	142	1978	5.106	ppb	92
21) Acrylonitrile	3.45	52	4543	5.462	ppb	76
22) Methylene chloride	3.09	84	10958	4.768	ppb	93
23) Carbon disulfide	2.73	76	24000	4.781	ppb	98
24) Methyl t-butyl ether (MtBE)	3.53	73	33272	5.118	ppb	98
25) Trans-1,2-DCE	2.52	96	4685	4.880	ppb	94
26) Diisopropyl Ether	4.33	45	29369	5.171	ppb	94
27) 2,2-Dichloro-1,1,1-trifluo	1.95	85	764	5.648	ppb	91
28) 1,1-DCA	4.10	63	19550	5.407	ppb	97
29) Vinyl Acetate	4.33	43	7131	6.171	ppb	# 98
30) Ethyl tert Butyl Ether	4.87	59	30609	5.121	ppb	93
31) MEK (2-Butanone)	5.06	43	5994	4.948	ppb	99
32) Cis-1,2-DCE	4.98	96	13916	5.637	ppb	88
33) 2,2-Dichloropropane	4.96	77	19097	5.425	ppb	92
36) Chloroform	5.45	83	22023	5.307	ppb	96
37) Bromochloromethane	5.29	128	3393	4.780	ppb	93
39) 1,1,1-TCA	5.65	97	8478	5.044	ppb	95
40) Cyclohexane	5.71	41	7545	5.014	ppb	88
41) 1,1-Dichloropropene	5.88	75	13410	5.059	ppb	91
42) 2,2,4-Trimethylpentane	6.28	57	24277	4.842	ppb	# 84
44) Carbon Tetrachloride	5.86	117	17572	5.102	ppb	95



Quantitation Report (Not Reviewed)

Data File : M:\LOKI\DATA\190201\0201L07.D  
 Acq On : 1 Feb 19 13:39  
 Sample : 5.0ug/L VOC STD 02/01/19  
 Misc : IS&S 11/8/18

Vial: 6  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 4 12:08 2019

Quant Results File: L0201W.RES

Quant Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Mon Feb 04 12:05:25 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
45) Tert Amyl Methyl Ether	6.36	73	33036	5.105	ppb	# 98
47) 1,2-DCA	6.16	62	18342	5.441	ppb	100
48) Benzene	6.13	78	44987	5.100	ppb	# 91
49) TCE	6.95	130	8488	5.569	ppb	90
50) 2-Pentanone	7.22	43	180488	98.570	ppb	97
51) 1,2-Dichloropropane	7.20	63	12784	5.492	ppb	96
52) Bromodichloromethane	7.54	83	10360	5.374	ppb	99
53) Methyl Cyclohexane	7.17	83	14633	4.861	ppb	99
54) Dibromomethane	7.34	93	9322	5.310	ppb	92
55) 2-Chloroethyl vinyl ether	7.93	43	262	5.007	ppb	# 25
56) MIBK (methyl isobutyl ket	8.28	43	11496	5.008	ppb	98
57) 1-Bromo-2-chloroethane	7.88	63	10484	5.721	ppb	93
58) Cis-1,3-Dichloropropene	8.07	75	20668	5.272	ppb	98
59) Toluene	8.44	91	28336	5.108	ppb	98
60) Trans-1,3-Dichloropropene	8.70	75	19877	5.189	ppb	98
61) 1,1,2-TCA	8.90	83	10943	5.302	ppb	91
62) 2-Hexanone	9.21	43	8234	4.984	ppb	# 81
65) 1,2-EDB	9.44	107	8483	5.700	ppb	95
66) Tetrachloroethene	9.05	166	9494	5.008	ppb	97
67) 1-Chlorohexane	10.00	91	12919	5.217	ppb	# 74
68) 1,1,1,2-Tetrachloroethane	10.09	131	16482	5.170	ppb	96
69) m&p-Xylene	10.26	91	79710	9.897	ppb	99
70) o-Xylene	10.70	106	10907	4.788	ppb	97
71) Styrene	10.71	104	34969	4.846	ppb	92
73) 1,3-Dichloropropane	9.08	76	21932	5.253	ppb	99
74) Dibromochloromethane	9.33	129	18030	5.414	ppb	100
75) Chlorobenzene	9.99	112	38287	5.076	ppb	90
76) Ethylbenzene	10.13	91	31024	5.004	ppb	98
77) Bromoform	10.90	173	14909	5.536	ppb	99
79) Isopropylbenzene	11.11	105	53211	5.096	ppb	99
80) 1,1,2,2-Tetrachloroethane	11.43	83	19604	5.492	ppb	98
81) 1,2,3-Trichloropropane	11.47	110	4020	5.377	ppb	100
82) t-1,4-Dichloro-2-Butene	11.50	53	4021	4.948	ppb	75
83) Bromobenzene	11.42	156	10463	5.519	ppb	90
84) n-Propylbenzene	11.56	91	32240	5.029	ppb	97
85) 4-Ethyltoluene	11.69	105	48074	4.810	ppb	97
86) 2-Chlorotoluene	11.64	91	20776	5.074	ppb	94
87) 1,3,5-Trimethylbenzene	11.76	105	40985	4.803	ppb	99
88) 4-Chlorotoluene	11.76	91	23776	5.083	ppb	94
89) Tert-Butylbenzene	12.11	119	44080	4.905	ppb	97
90) 1,2,4-Trimethylbenzene	12.17	105	39121	4.847	ppb	98
91) Sec-Butylbenzene	12.36	105	54585	5.050	ppb	95
92) p-Isopropyltoluene	12.52	119	25528	5.158	ppb	98
93) Benzyl Chloride	12.71	91	23428	5.013	ppb	97
94) 1,3-DCB	12.46	146	17440	5.364	ppb	98
95) 1,4-DCB	12.56	146	34409	5.420	ppb	95
96) n-Butylbenzene	12.97	91	33738	4.809	ppb	97
97) 1,2-DCB	12.97	146	32905	5.174	ppb	94
98) Hexachloroethane	13.26	117	12380	5.592	ppb	78
99) 1,2-Dibromo-3-chloropropan	13.82	75	3955	5.201	ppb	95
100) 1,2,4-Trichlorobenzene	14.74	180	19226	4.815	ppb	# 77
101) Hexachlorobutadiene	14.94	225	11064	5.214	ppb	92
102) Naphthalene	15.01	128	39640	4.541	ppb	# 86
103) 1,2,3-Trichlorobenzene	15.27	180	8961	5.068	ppb	99

Quantitation Report

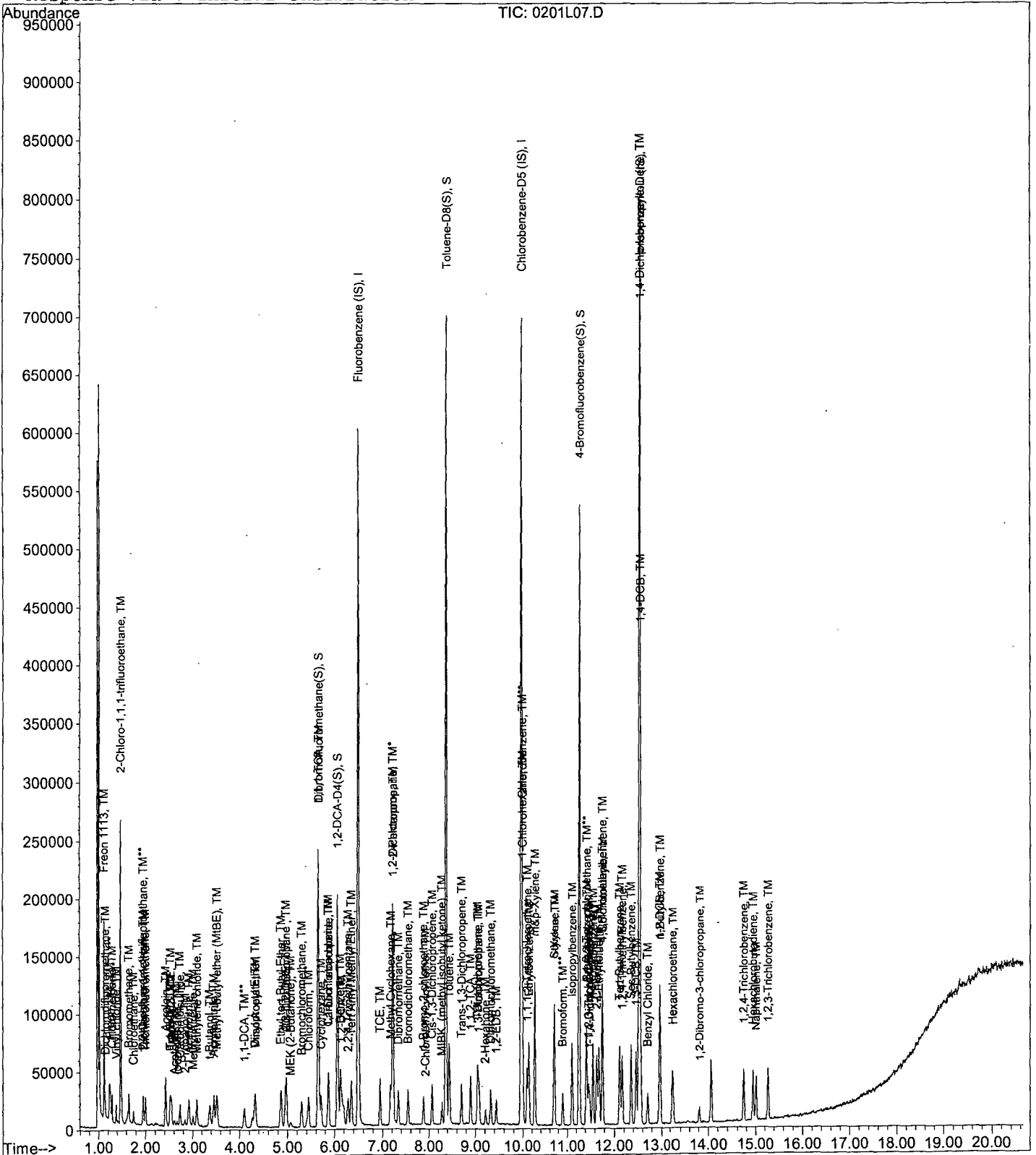
Data File : M:\LOKI\DATA\190201\0201L07.D  
Acq On : 1 Feb 19 13:39  
Sample : 5.0ug/L VOC STD 02/01/19  
Misc : IS&S 11/8/18

Vial: 6  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 4 12:08 2019

Quant Results File: L0201W.RES

Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Mon Feb 04 12:12:22 2019  
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : M:\LOKI\DATA\190201\0201L08.D  
 Acq On : 1 Feb 19 14:08  
 Sample : 10ug/L VOC STD 02/01/19  
 Misc : IS&S 11/8/18

Vial: 7  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 4 12:08 2019

Quant Results File: L0201W.RES

Quant Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Mon Feb 04 12:05:25 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	283840	25.000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.97	117	250496	25.000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.53	152	133824	25.000	ppb	0.00
System Monitoring Compounds						
38) Dibromofluoromethane(S)	5.65	111	131873	26.423	ppb	0.00
Spiked Amount	25.000		Recovery	=	105.692%	
43) 1,2-DCA-D4(S)	6.07	65	152419	26.705	ppb	0.00
Spiked Amount	25.000		Recovery	=	106.820%	
64) Toluene-D8(S)	8.37	98	504974	25.277	ppb	0.00
Spiked Amount	25.000		Recovery	=	101.108%	
72) 4-Bromofluorobenzene(S)	11.26	95	192078	24.781	ppb	0.00
Spiked Amount	25.000		Recovery	=	99.124%	
Target Compounds						Qvalue
2) Freon 1113	1.12	116	109801	98.350	ppb	100
3) Dichlorodifluoromethane	1.14	85	15347	9.661	ppb	100
4) Freon 114	1.25	85	18984	10.397	ppb	100
5) Chloromethane	1.29	50	23784	10.235	ppb	100
6) Vinyl chloride	1.38	62	17147	10.353	ppb	100
7) 2-Chloro-1,1,1-trifluoroet	1.48	118	186688	101.573	ppb	100
8) Bromomethane	1.65	94	16488	11.120	ppb	100
9) Chloroethane	1.75	64	8124	9.744	ppb	100
10) Dichlorofluoromethane	1.95	67	32218	10.116	ppb	100
11) Trichlorofluoromethane	1.99	101	32497	10.288	ppb	100
12) Acrolein	2.42	56	40028	127.369	ppb	100
13) Acetone	2.61	43	4319	9.985	ppb	100
14) Freon-113	2.54	101	15692	9.794	ppb	100
15) 1,1-DCE	2.52	63	4671	10.629	ppb	100
16) t-Butanol	3.38	59	29959	121.072	ppb	100
17) 2-Propanol	2.84	45	14306	93.691	ppb	# 100
18) Acetonitrile	2.92	41	34278	121.863	ppb	100
19) Methyl Acetate	3.01	43	18432	11.107	ppb	100
20) Iodomethane	2.66	142	4771	8.242	ppb	100
21) Acrylonitrile	3.45	52	7880	9.857	ppb	100
22) Methylene chloride	3.10	84	20818	10.258	ppb	100
23) Carbon disulfide	2.73	76	48487	10.049	ppb	100
24) Methyl t-butyl ether (MtBE)	3.52	73	63610	10.180	ppb	100
25) Trans-1,2-DCE	2.52	96	9675	10.843	ppb	100
26) Diisopropyl Ether	4.32	45	55204	10.113	ppb	100
27) 2,2-Dichloro-1,1,1-trifluo	1.95	85	1524	11.721	ppb	100
28) 1,1-DCA	4.10	63	37053	10.661	ppb	100
29) Vinyl Acetate	4.33	43	11546	10.715	ppb	100
30) Ethyl tert Butyl Ether	4.87	59	60224	10.482	ppb	100
31) MEK (2-Butanone)	5.07	43	11729	10.631	ppb	100
32) Cis-1,2-DCE	4.98	96	24995	10.534	ppb	100
33) 2,2-Dichloropropane	4.96	77	35397	10.462	ppb	100
34) 2-Methylpentane	2.58	71	49	10.000	ppb	100
35) 3-Methylpentane	2.61	57	65	10.000	ppb	100
36) Chloroform	5.44	83	42901	10.755	ppb	100
37) Bromochloromethane	5.29	128	7193	10.542	ppb	100
39) 1,1,1-TCA	5.65	97	17344	10.735	ppb	100
40) Cyclohexane	5.71	41	13956	9.649	ppb	100
41) 1,1-Dichloropropene	5.88	75	26656	10.463	ppb	100

Quantitation Report (Not Reviewed)

Data File : M:\LOKI\DATA\190201\0201L08.D  
 Acq On : 1 Feb 19 14:08  
 Sample : 10ug/L VOC STD 02/01/19  
 Misc : IS&S 11/8/18

Vial: 7  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 4 12:08 2019

Quant Results File: L0201W.RES

Quant Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Mon Feb 04 12:05:25 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
42) 2,2,4-Trimethylpentane	6.28	57	49182	10.2058	ppb	100
44) Carbon Tetrachloride	5.87	117	34074	10.2936	ppb	100
45) Tert Amyl Methyl Ether	6.35	73	64405	10.3545	ppb	100
46) Methylcyclopentane	3.91	56	50	10.0000	ppb	100
47) 1,2-DCA	6.16	62	34093	10.5207	ppb	100
48) Benzene	6.13	78	90153	10.6321	ppb	100
49) TCE	6.95	130	14270	9.7402	ppb	100
50) 2-Pentanone	7.22	43	222974	126.6872	ppb	100
51) 1,2-Dichloropropane	7.20	63	22997	10.2789	ppb	100
52) Bromodichloromethane	7.54	83	18776	10.1319	ppb	100
53) Methyl Cyclohexane	7.17	83	28397	9.8133	ppb	100
54) Dibromomethane	7.33	93	17905	10.6107	ppb	100
55) 2-Chloroethyl vinyl ether	7.93	43	439	8.7286	ppb	100
56) MIBK (methyl isobutyl ket	8.28	43	22386	10.1447	ppb	100
57) 1-Bromo-2-chloroethane	7.88	63	18544	10.5273	ppb	100
58) Cis-1,3-Dichloropropene	8.07	75	38599	10.2428	ppb	100
59) Toluene	8.44	91	54224	10.1700	ppb	100
60) Trans-1,3-Dichloropropene	8.70	75	38622	10.4891	ppb	100
61) 1,1,2-TCA	8.90	83	20652	10.4109	ppb	100
62) 2-Hexanone	9.22	43	15423	9.7127	ppb	100
65) 1,2-EDB	9.44	107	15251	10.2130	ppb	100
66) Tetrachloroethene	9.05	166	18160	9.5484	ppb	100
67) 1-Chlorohexane	10.00	91	27641	10.0014	ppb	100
68) 1,1,1,2-Tetrachloroethane	10.09	131	32467	10.1495	ppb	100
69) m&p-Xylene	10.26	91	160361	19.8444	ppb	100
70) o-Xylene	10.70	106	22320	9.7666	ppb	100
71) Styrene	10.71	104	72163	9.9673	ppb	100
73) 1,3-Dichloropropane	9.08	76	40380	9.6402	ppb	100
74) Dibromochloromethane	9.32	129	33110	9.9095	ppb	100
75) Chlorobenzene	10.00	112	74683	9.8687	ppb	100
76) Ethylbenzene	10.13	91	61376	9.8675	ppb	100
77) Bromoform	10.89	173	27677	10.2421	ppb	100
79) Isopropylbenzene	11.11	105	104323	10.2065	ppb	100
80) 1,1,2,2-Tetrachloroethane	11.43	83	36029	10.3111	ppb	100
81) 1,2,3-Trichloropropane	11.47	110	7089	10.7732	ppb	100
82) t-1,4-Dichloro-2-Butene	11.49	53	7374	9.8346	ppb	100
83) Bromobenzene	11.42	156	18336	9.8805	ppb	100
84) n-Propylbenzene	11.56	91	65086	10.3708	ppb	100
85) 4-Ethyltoluene	11.69	105	100982	10.3208	ppb	100
86) 2-Chlorotoluene	11.64	91	41504	10.3539	ppb	100
87) 1,3,5-Trimethylbenzene	11.76	105	85530	9.6850	ppb	100
88) 4-Chlorotoluene	11.76	91	48832	10.6635	ppb	100
89) Tert-Butylbenzene	12.11	119	92090	10.4685	ppb	100
90) 1,2,4-Trimethylbenzene	12.17	105	79053	10.0049	ppb	100
91) Sec-Butylbenzene	12.35	105	108601	10.2635	ppb	100
92) p-Isopropyltoluene	12.52	119	51080	10.5435	ppb	100
93) Benzyl Chloride	12.71	91	45383	9.9200	ppb	100
94) 1,3-DCB	12.46	146	32656	10.2601	ppb	100
95) 1,4-DCB	12.56	146	64090	10.3133	ppb	100
96) n-Butylbenzene	12.97	91	67726	9.8617	ppb	100
97) 1,2-DCB	12.97	146	63047	10.1276	ppb	100
98) Hexachloroethane	13.25	117	22836	10.5372	ppb	100
99) 1,2-Dibromo-3-chloropropan	13.82	75	7438	9.9926	ppb	100
100) 1,2,4-Trichlorobenzene	14.74	180	39445	10.0920	ppb	100

Quantitation Report (Not Reviewed)

Data File : M:\LOKI\DATA\190201\0201L08.D Vial: 7  
 Acq On : 1 Feb 19 14:08 Operator: PM,DG,SV,CMM,KV  
 Sample : 10ug/L VOC STD 02/01/19 Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Feb 4 12:08 2019 Quant Results File: L0201W.RES

Quant Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Mon Feb 04 12:05:25 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
101) Hexachlorobutadiene	14.94	225	21225	10.218	ppb	100
102) Naphthalene	15.01	128	81466	9.534	ppb	100
103) 1,2,3-Trichlorobenzene	15.27	180	18312	9.577	ppb	100

Quantitation Report

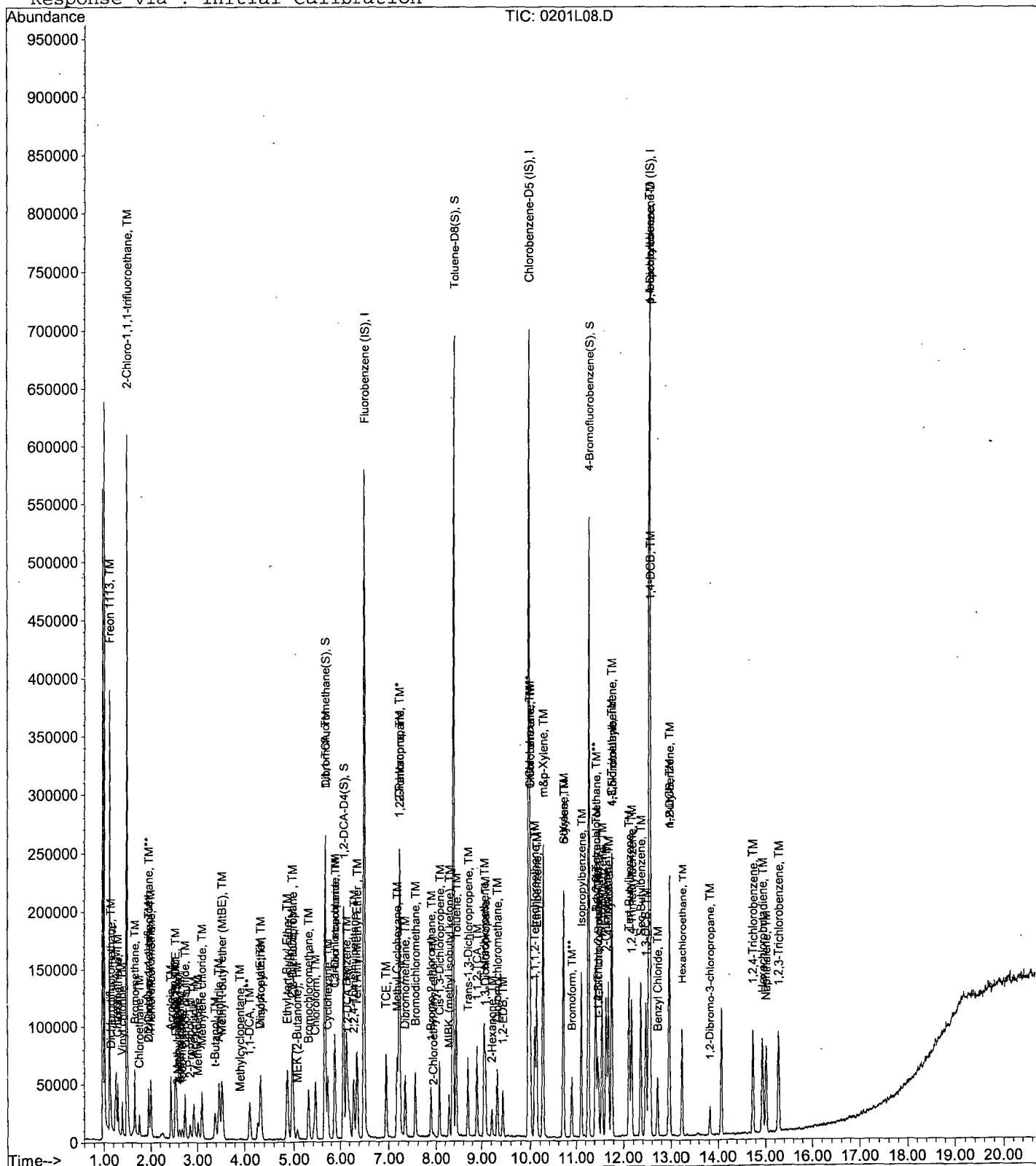
Data File : M:\LOKI\DATA\190201\0201L08.D  
Acq On : 1 Feb 19 14:08  
Sample : 10ug/L VOC STD 02/01/19  
Misc : IS&S 11/8/18

Vial: 7  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 4 12:08 2019

Quant Results File: L0201W.RES

Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Mon Feb 04 12:12:22 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190201\0201L09.D  
 Acq On : 1 Feb 19 14:36  
 Sample : 20ug/L VOC STD 02/01/19  
 Misc : IS&S 11/8/18

Vial: 8  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 4 12:08 2019

Quant Results File: L0201W.RES

Quant Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Mon Feb 04 12:05:25 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	306432	25.000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.97	117	256704	25.000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.53	152	141504	25.000	ppb	0.00

System Monitoring Compounds

38) Dibromofluoromethane(S)	5.65	111	277983	51.593	ppb	0.00
Spiked Amount 25.000			Recovery	=	206.372%	
43) 1,2-DCA-D4(S)	6.07	65	314246	50.999	ppb	0.00
Spiked Amount 25.000			Recovery	=	203.996%	
64) Toluene-D8(S)	8.37	98	1054806	51.523	ppb	0.00
Spiked Amount 25.000			Recovery	=	206.092%	
72) 4-Bromofluorobenzene(S)	11.26	95	404114	50.876	ppb	0.00
Spiked Amount 25.000			Recovery	=	203.504%	

Target Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Freon 1113	1.11	116	134934	111.951	ppb	99
3) Dichlorodifluoromethane	1.14	85	31517	18.378	ppb	98
4) Freon 114	1.25	85	38029	19.293	ppb	96
5) Chloromethane	1.29	50	44097	17.577	ppb	98
6) Vinyl chloride	1.38	62	33831	18.920	ppb	90
7) 2-Chloro-1,1,1-trifluoroet	1.47	118	218944	110.340	ppb	96
8) Bromomethane	1.65	94	29560	18.467	ppb	95
9) Chloroethane	1.75	64	17818	19.795	ppb	86
10) Dichlorofluoromethane	1.95	67	66460	19.329	ppb	92
11) Trichlorofluoromethane	2.00	101	62486	18.323	ppb	98
12) Acrolein	2.42	56	48680	143.479	ppb	# 96
13) Acetone	2.61	43	9043	20.498	ppb	98
14) Freon-113	2.54	101	33289	19.246	ppb	97
15) 1,1-DCE	2.52	63	9171	19.650	ppb	94
16) t-Butanol	3.38	59	39384	147.426	ppb	97
17) 2-Propanol	2.83	45	18544	112.492	ppb	# 75
18) Acetonitrile	2.92	41	43253	142.433	ppb	96
19) Methyl Acetate	3.01	43	32355	18.905	ppb	90
20) Iodomethane	2.66	142	13945	17.146	ppb	99
21) Acrylonitrile	3.44	52	14965	17.339	ppb	97
22) Methylene chloride	3.09	84	40363	19.103	ppb	96
23) Carbon disulfide	2.73	76	95038	18.245	ppb	97
24) Methyl t-butyl ether (MtBE)	3.53	73	130115	19.289	ppb	93
25) Trans-1,2-DCE	2.52	96	18920	19.895	ppb	93
26) Diisopropyl Ether	4.33	45	109646	18.606	ppb	97
27) 2,2-Dichloro-1,1,1-trifluo	1.95	85	2605	18.558	ppb	# 69
28) 1,1-DCA	4.10	63	72587	19.345	ppb	96
29) Vinyl Acetate	4.32	43	21896	19.176	ppb	# 99
30) Ethyl tert Butyl Ether	4.86	59	122933	19.819	ppb	98
31) MEK (2-Butanone)	5.06	43	23280	20.049	ppb	92
32) Cis-1,2-DCE	4.98	96	49547	19.341	ppb	97
33) 2,2-Dichloropropane	4.96	77	67018	18.347	ppb	96
35) 3-Methylpentane	2.61	57	130	18.525	ppb	# 100
36) Chloroform	5.45	83	81648	18.960	ppb	90
37) Bromochloromethane	5.30	128	13832	18.778	ppb	75
39) 1,1,1-TCA	5.65	97	33856	19.410	ppb	94
40) Cyclohexane	5.72	41	29422	18.843	ppb	89
41) 1,1-Dichloropropene	5.88	75	50055	18.199	ppb	96
42) 2,2,4-Trimethylpentane	6.28	57	100816	19.378	ppb	98

(#) = qualifier out of range (m) = manual integration

Quantitation Report (Not Reviewed)

Data File : M:\LOKI\DATA\190201\0201L09.D  
 Acq On : 1 Feb 19 14:36  
 Sample : 20ug/L VOC STD 02/01/19  
 Misc : IS&S 11/8/18

Vial: 8  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 4 12:08 2019

Quant Results File: L0201W.RES

Quant Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Mon Feb 04 12:05:25 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
44) Carbon Tetrachloride	5.87	117	67816	18.976	ppb	98
45) Tert Amyl Methyl Ether	6.36	73	130877	19.490	ppb	97
46) Methylcyclopentane	3.92	56	69	12.783	ppb	100
47) 1,2-DCA	6.16	62	67231	19.217	ppb	100
48) Benzene	6.13	78	170944	18.674	ppb	97
49) TCE	6.95	130	27784	17.566	ppb	96
50) 2-Pentanone	7.22	43	289004	152.097	ppb	99
51) 1,2-Dichloropropane	7.20	63	45896	19.002	ppb	97
52) Bromodichloromethane	7.54	83	36752	18.370	ppb	100
53) Methyl Cyclohexane	7.17	83	56991	18.243	ppb	95
54) Dibromomethane	7.33	93	36241	19.893	ppb	95
55) 2-Chloroethyl vinyl ether	7.94	43	1099	20.240	ppb	# 82
56) MIBK (methyl isobutyl ket	8.28	43	45285	19.009	ppb	96
57) 1-Bromo-2-chloroethane	7.88	63	35424	18.627	ppb	94
58) Cis-1,3-Dichloropropene	8.07	75	75993	18.679	ppb	97
59) Toluene	8.44	91	110816	19.252	ppb	99
60) Trans-1,3-Dichloropropene	8.70	75	77182	19.416	ppb	100
61) 1,1,2-TCA	8.90	83	40339	18.836	ppb	94
62) 2-Hexanone	9.21	43	32974	19.235	ppb	97
65) 1,2-EDB	9.44	107	29840	19.499	ppb	96
66) Tetrachloroethene	9.05	166	35104	18.011	ppb	93
67) 1-Chlorohexane	10.00	91	55969	18.793	ppb	97
68) 1,1,1,2-Tetrachloroethane	10.09	131	59227	18.067	ppb	98
69) m&p-Xylene	10.26	91	337475	40.752	ppb	99
70) o-Xylene	10.70	106	46712	19.946	ppb	98
71) Styrene	10.71	104	151312	20.394	ppb	100
73) 1,3-Dichloropropane	9.08	76	80628	18.783	ppb	99
74) Dibromochloromethane	9.32	129	67662	19.761	ppb	94
75) Chlorobenzene	9.99	112	149688	19.302	ppb	99
76) Ethylbenzene	10.13	91	126032	19.772	ppb	99
77) Bromoform	10.90	173	54029	19.510	ppb	99
79) Isopropylbenzene	11.11	105	217732	20.146	ppb	98
80) 1,1,2,2-Tetrachloroethane	11.43	83	72847	19.717	ppb	90
81) 1,2,3-Trichloropropane	11.47	110	14372	21.901	ppb	92
82) t-1,4-Dichloro-2-Butene	11.49	53	15684	20.436	ppb	93
83) Bromobenzene	11.42	156	38168	19.451	ppb	93
84) n-Propylbenzene	11.56	91	135527	20.423	ppb	98
85) 4-Ethyltoluene	11.69	105	213569	20.643	ppb	96
86) 2-Chlorotoluene	11.64	91	85688	20.216	ppb	96
87) 1,3,5-Trimethylbenzene	11.76	105	182048	19.000	ppb	100
88) 4-Chlorotoluene	11.76	91	95624	19.748	ppb	93
89) Tert-Butylbenzene	12.11	119	186515	20.052	ppb	98
90) 1,2,4-Trimethylbenzene	12.17	105	172682	20.668	ppb	99
91) Sec-Butylbenzene	12.35	105	227075	20.295	ppb	97
92) p-Isopropyltoluene	12.52	119	103936	20.289	ppb	99
93) Benzyl Chloride	12.71	91	96014	19.848	ppb	100
94) 1,3-DCB	12.46	146	65712	19.525	ppb	98
95) 1,4-DCB	12.56	146	129734	19.744	ppb	99
96) n-Butylbenzene	12.97	91	145904	20.092	ppb	98
97) 1,2-DCB	12.97	146	128716	19.554	ppb	97
98) Hexachloroethane	13.26	117	45133	19.695	ppb	93
99) 1,2-Dibromo-3-chloropropan	13.82	75	15728	19.983	ppb	89
100) 1,2,4-Trichlorobenzene	14.74	180	81199	19.647	ppb	92
101) Hexachlorobutadiene	14.94	225	43396	19.757	ppb	91



Quantitation Report (Not Reviewed)

Data File : M:\LOKI\DATA\190201\0201L09.D  
 Acq On : 1 Feb 19 14:36  
 Sample : 20ug/L VOC STD 02/01/19  
 Misc : IS&S 11/8/18

Vial: 8  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 4 12:08 2019

Quant Results File: L0201W.RES

Quant Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Mon Feb 04 12:05:25 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
102) Naphthalene	15.01	128	182351	20.182	ppb	97
103) 1,2,3-Trichlorobenzene	15.27	180	39024	18.365	ppb	99

Quantitation Report

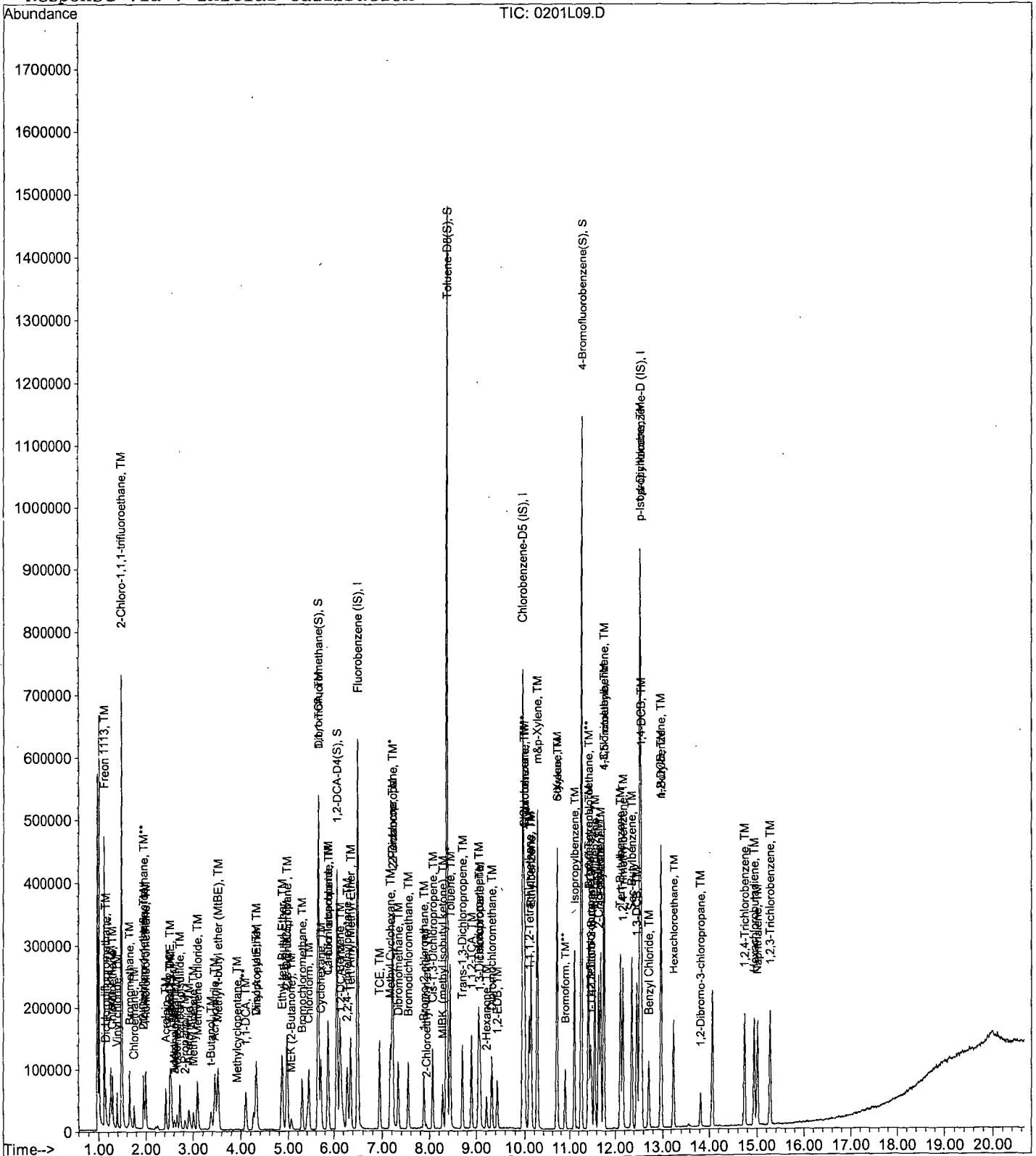
Data File : M:\LOKI\DATA\190201\0201L09.D  
Acq On : 1 Feb 19 14:36  
Sample : 20ug/L VOC STD 02/01/19  
Misc : IS&S 11/8/18

Vial: 8  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 4 12:08 2019

Quant Results File: L0201W.RES

Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Mon Feb 04 12:12:22 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190201\0201L10.D  
 Acq On : 1 Feb 19 15:05  
 Sample : 40ug/L VOC STD 02/01/19  
 Misc : IS&S 11/8/18

Vial: 9  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 4 12:08 2019

Quant Results File: L0201W.RES

Quant Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Mon Feb 04 12:05:25 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev (Min)
1) Fluorobenzene (IS)	6.50	96	303360	25.000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.97	117	251456	25.000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.53	152	140672	25.000	ppb	0.00

System Monitoring Compounds

38) Dibromofluoromethane(S)	5.65	111	262880	49.284	ppb	0.00
Spiked Amount 25.000			Recovery =	197.136%		
43) 1,2-DCA-D4(S)	6.07	65	305156	50.026	ppb	0.00
Spiked Amount 25.000			Recovery =	200.104%		
64) Toluene-D8(S)	8.37	98	1014425	50.584	ppb	0.00
Spiked Amount 25.000			Recovery =	202.336%		
72) 4-Bromofluorobenzene(S)	11.26	95	387808	49.842	ppb	0.00
Spiked Amount 25.000			Recovery =	199.368%		

Target Compounds

	R.T.	QIon	Response	Conc	Units	Qvalue
2) Freon 1113	1.12	116	159268	133.478	ppb	98
3) Dichlorodifluoromethane	1.14	85	64712	38.117	ppb	96
4) Freon 114	1.25	85	75526	38.704	ppb	87
5) Chloromethane	1.29	50	84803	34.145	ppb	93
6) Vinyl chloride	1.38	62	71808	40.565	ppb	98
7) 2-Chloro-1,1,1-trifluoroet	1.47	118	250496	127.520	ppb	99
8) Bromomethane	1.65	94	54344	34.294	ppb	93
9) Chloroethane	1.74	64	34346	38.544	ppb	86
10) Dichlorofluoromethane	1.95	67	132795	39.012	ppb	98
11) Trichlorofluoromethane	1.99	101	130494	38.652	ppb	99
12) Acrolein	2.42	56	57949	172.528	ppb	# 93
13) Acetone	2.61	43	16867	39.687	ppb	97
14) Freon-113	2.55	101	66110	38.608	ppb	94
15) 1,1-DCE	2.52	63	17912	39.147	ppb	97
16) t-Butanol	3.39	59	47797	180.731	ppb	100
17) 2-Propanol	2.85	45	20571	126.052	ppb	# 78
18) Acetonitrile	2.92	41	47794	158.980	ppb	96
19) Methyl Acetate	3.01	43	64763	39.603	ppb	95
20) Iodomethane	2.66	142	33504	37.290	ppb	98
21) Acrylonitrile	3.45	52	32137	37.611	ppb	98
22) Methylene chloride	3.09	84	83288	40.743	ppb	90
23) Carbon disulfide	2.73	76	190348	36.911	ppb	98
24) Methyl t-butyl ether (MtBE)	3.53	73	263547	39.464	ppb	94
25) Trans-1,2-DCE	2.52	96	38080	40.771	ppb	96
26) Diisopropyl Ether	4.33	45	227505	38.996	ppb	93
27) 2,2-Dichloro-1,1,1-trifluo	1.95	85	5261	37.858	ppb	# 64
28) 1,1-DCA	4.10	63	145837	39.259	ppb	97
29) Vinyl Acetate	4.33	43	43440	38.899	ppb	99
30) Ethyl tert Butyl Ether	4.86	59	247128	40.244	ppb	99
31) MEK (2-Butanone)	5.06	43	44719	39.688	ppb	98
32) Cis-1,2-DCE	4.98	96	100251	39.531	ppb	96
33) 2,2-Dichloropropane	4.96	77	132240	36.569	ppb	94
35) 3-Methylpentane	2.62	57	342	49.230	ppb	# 100
36) Chloroform	5.45	83	169182	39.684	ppb	97
37) Bromochloromethane	5.29	128	24920	34.173	ppb	76
39) 1,1,1-TCA	5.65	97	68088	39.431	ppb	93
40) Cyclohexane	5.71	41	57323	37.083	ppb	88
41) 1,1-Dichloropropene	5.88	75	111218	40.845	ppb	89
42) 2,2,4-Trimethylpentane	6.28	57	207870	40.360	ppb	97

(#) = qualifier out of range (m) = manual integration

Data File : M:\LOKI\DATA\190201\0201L10.D  
 Acq On : 1 Feb 19 15:05  
 Sample : 40ug/L VOC STD 02/01/19  
 Misc : IS&S 11/8/18

Vial: 9  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 4 12:08 2019

Quant Results File: L0201W.RES

Quant Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Mon Feb 04 12:05:25 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
44) Carbon Tetrachloride	5.86	117	141894	40.107	ppb	98
45) Tert Amyl Methyl Ether	6.36	73	262301	39.457	ppb	97
46) Methylcyclopentane	3.92	56	368	68.864	ppb	100
47) 1,2-DCA	6.16	62	136052	39.282	ppb	100
48) Benzene	6.13	78	358579	39.568	ppb	97
49) TCE	6.95	130	58208	37.174	ppb	96
50) 2-Pentanone	7.22	43	327555	174.132	ppb	99
51) 1,2-Dichloropropane	7.20	63	90721	37.940	ppb	95
52) Bromodichloromethane	7.54	83	74752	37.742	ppb	98
53) Methyl Cyclohexane	7.17	83	121255	39.206	ppb	97
54) Dibromomethane	7.34	93	68166	37.797	ppb	89
55) 2-Chloroethyl vinyl ether	7.93	43	2179	40.537	ppb	92
56) MIBK (methyl isobutyl ket	8.28	43	87863	37.255	ppb	98
57) 1-Bromo-2-chloroethane	7.88	63	74096	39.357	ppb	97
58) Cis-1,3-Dichloropropene	8.07	75	160043	39.737	ppb	98
59) Toluene	8.44	91	226048	39.669	ppb	99
60) Trans-1,3-Dichloropropene	8.70	75	159158	40.443	ppb	99
61) 1,1,2-TCA	8.90	83	83340	39.309	ppb	96
62) 2-Hexanone	9.21	43	63137	37.202	ppb	94
65) 1,2-EDB	9.44	107	58960	39.332	ppb	92
66) Tetrachloroethene	9.05	166	68768	36.020	ppb	93
67) 1-Chlorohexane	10.00	91	115553	38.511	ppb	98
68) 1,1,1,2-Tetrachloroethane	10.09	131	122366	38.107	ppb	100
69) m&p-Xylene	10.26	91	718974	88.632	ppb	99
70) o-Xylene	10.70	106	98344	42.868	ppb	100
71) Styrene	10.71	104	319320	43.937	ppb	99
73) 1,3-Dichloropropane	9.08	76	166215	39.530	ppb	100
74) Dibromochloromethane	9.32	129	132241	39.427	ppb	95
75) Chlorobenzene	9.99	112	300049	39.498	ppb	99
76) Ethylbenzene	10.13	91	254336	40.734	ppb	99
77) Bromoform	10.89	173	106713	39.339	ppb	98
79) Isopropylbenzene	11.11	105	458851	42.707	ppb	100
80) 1,1,2,2-Tetrachloroethane	11.43	83	143323	39.021	ppb	92
81) 1,2,3-Trichloropropane	11.47	110	27776	43.858	ppb	100
82) t-1,4-Dichloro-2-Butene	11.49	53	31070	41.365	ppb	93
83) Bromobenzene	11.42	156	76200	39.062	ppb	94
84) n-Propylbenzene	11.56	91	298930	45.313	ppb	100
85) 4-Ethyltoluene	11.69	105	466588	45.366	ppb	96
86) 2-Chlorotoluene	11.64	91	173815	41.251	ppb	100
87) 1,3,5-Trimethylbenzene	11.76	105	392997	40.686	ppb	99
88) 4-Chlorotoluene	11.76	91	205659	42.724	ppb	92
89) Tert-Butylbenzene	12.11	119	396901	42.922	ppb	99
90) 1,2,4-Trimethylbenzene	12.17	105	382193	46.015	ppb	98
91) Sec-Butylbenzene	12.35	105	484676	43.575	ppb	97
92) p-Isopropyltoluene	12.52	119	235584	46.260	ppb	99
93) Benzyl Chloride	12.71	91	189185	39.340	ppb	99
94) 1,3-DCB	12.46	146	136896	40.917	ppb	98
95) 1,4-DCB	12.56	146	265405	40.630	ppb	96
96) n-Butylbenzene	12.97	91	318643	44.140	ppb	99
97) 1,2-DCB	12.97	146	264634	40.440	ppb	98
98) Hexachloroethane	13.26	117	89011	39.073	ppb	94
99) 1,2-Dibromo-3-chloropropan	13.81	75	30845	39.422	ppb #	78
100) 1,2,4-Trichlorobenzene	14.74	180	175839	42.798	ppb	93
101) Hexachlorobutadiene	14.94	225	90454	41.425	ppb	94

Quantitation Report (Not Reviewed)

Data File : M:\LOKI\DATA\190201\0201L10.D Vial: 9  
 Acq On : 1 Feb 19 15:05 Operator: PM,DG,SV,CMM,KV  
 Sample : 40ug/L VOC STD 02/01/19 Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Feb 4 12:08 2019 Quant Results File: L0201W.RES

Quant Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Mon Feb 04 12:05:25 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
102) Naphthalene	15.01	128	398528	44.368	ppb	96
103) 1,2,3-Trichlorobenzene	15.27	180	87080	40.075	ppb	99

Quantitation Report

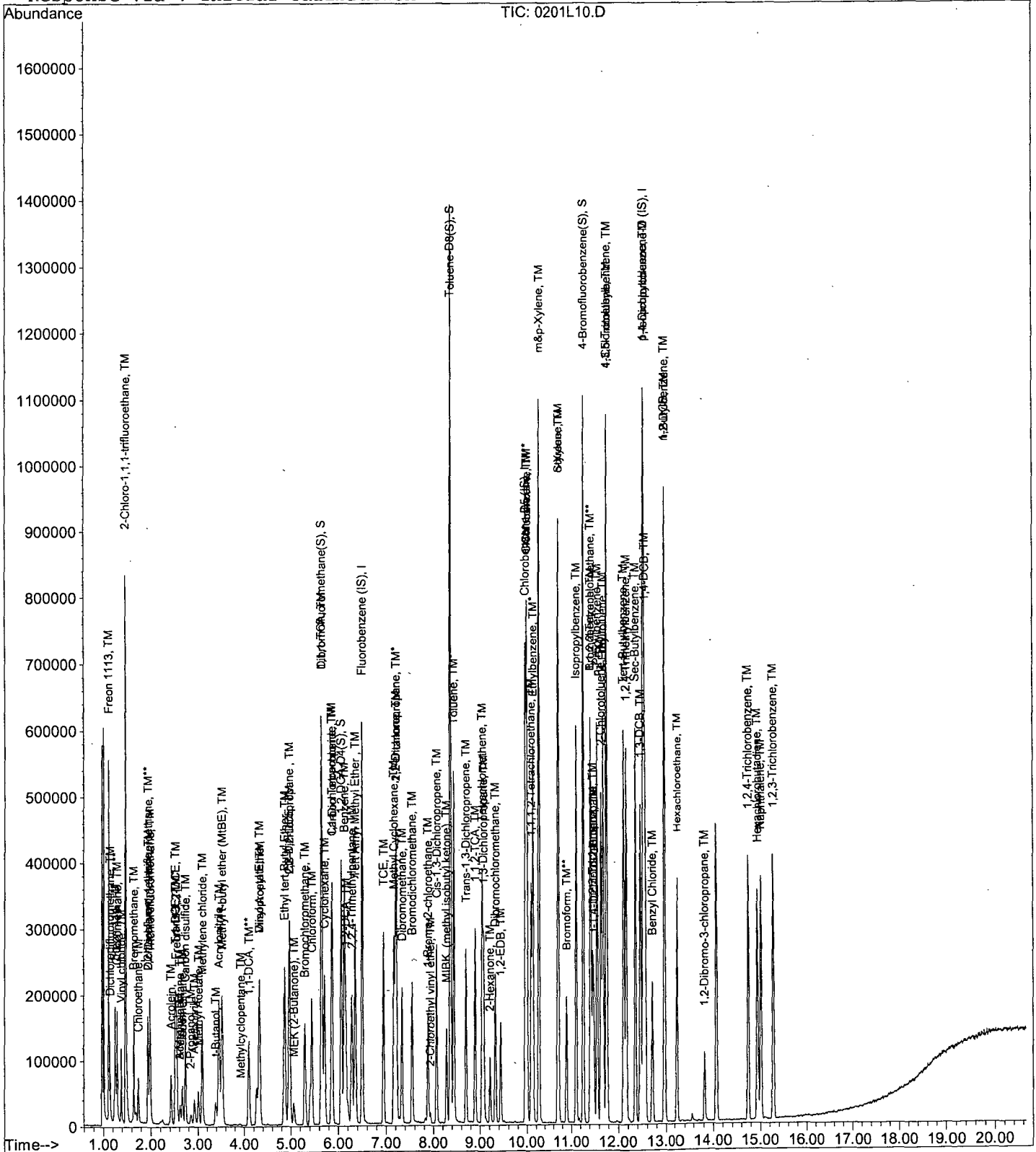
Data File : M:\LOKI\DATA\190201\0201L10.D  
 Acq On : 1 Feb 19 15:05  
 Sample : 40ug/L VOC STD 02/01/19  
 Misc : IS&S 11/8/18

Vial: 9  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 4 12:08 2019

Quant Results File: L0201W.RES

Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Mon Feb 04 12:12:22 2019  
 Response via : Initial Calibration



Data File : M:\LOKI\DATA\190201\0201L11.D  
 Acq On : 1 Feb 19 15:34  
 Sample : 50ug/L VOC STD 02/01/19  
 Misc : IS&S 11/8/18

Vial: 10  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 4 12:08 2019

Quant Results File: L0201W.RES

Quant Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Mon Feb 04 12:05:25 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	297600	25.000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.97	117	254144	25.000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.54	152	137472	25.000	ppb	0.00

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
38) Dibromofluoromethane(S)	5.65	111	507323	96.952	ppb	0.00
Spiked Amount				25.000		
				Recovery	=	387.808%
43) 1,2-DCA-D4(S)	6.07	65	574150	95.945	ppb	0.00
Spiked Amount				25.000		
				Recovery	=	383.780%
64) Toluene-D8(S)	8.37	98	1956649	96.536	ppb	0.00
Spiked Amount				25.000		
				Recovery	=	386.144%
72) 4-Bromofluorobenzene(S)	11.26	95	746683	94.950	ppb	0.00
Spiked Amount				25.000		
				Recovery	=	379.800%

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Freon 1113	1.12	116	163600	139.762	ppb	98
3) Dichlorodifluoromethane	1.14	85	83159	49.930	ppb	98
4) Freon 114	1.25	85	95952	50.123	ppb	89
5) Chloromethane	1.29	50	107266	44.025	ppb	96
6) Vinyl chloride	1.38	62	86429	49.770	ppb	99
7) 2-Chloro-1,1,1-trifluoroet	1.48	118	262720	136.331	ppb	98
8) Bromomethane	1.65	94	65680	42.250	ppb	90
9) Chloroethane	1.74	64	41933	47.969	ppb	92
10) Dichlorofluoromethane	1.95	67	162704	48.724	ppb	95
11) Trichlorofluoromethane	1.99	101	159316	48.103	ppb	99
12) Acrolein	2.43	56	63191	191.776	ppb	# 96
13) Acetone	2.61	43	17864	42.942	ppb	93
14) Freon-113	2.54	101	80511	47.928	ppb	97
15) 1,1-DCE	2.51	63	22952	51.253	ppb	92
16) t-Butanol	3.39	59	50270	193.761	ppb	97
17) 2-Propanol	2.85	45	21736	135.769	ppb	# 74
18) Acetonitrile	2.92	41	55610	188.560	ppb	91
19) Methyl Acetate	3.01	43	86233	54.235	ppb	94
20) Iodomethane	2.66	142	42992	47.844	ppb	98
21) Acrylonitrile	3.44	52	38863	46.363	ppb	93
22) Methylene chloride	3.09	84	106288	53.258	ppb	94
23) Carbon disulfide	2.73	76	233708	46.197	ppb	98
24) Methyl t-butyl ether (MtBE)	3.53	73	319107	48.709	ppb	93
25) Trans-1,2-DCE	2.52	96	44960	49.132	ppb	97
26) Diisopropyl Ether	4.32	45	281869	49.249	ppb	99
27) 2,2-Dichloro-1,1,1-trifluo	1.95	85	6659	48.845	ppb	# 85
28) 1,1-DCA	4.10	63	174995	48.020	ppb	98
29) Vinyl Acetate	4.33	43	53424	48.884	ppb	100
30) Ethyl tert Butyl Ether	4.87	59	303390	50.363	ppb	99
31) MEK (2-Butanone)	5.06	43	54984	50.075	ppb	98
32) Cis-1,2-DCE	4.98	96	121275	48.747	ppb	98
33) 2,2-Dichloropropane	4.96	77	163777	46.166	ppb	97
34) 2-Methylpentane	2.65	71	21	4.088	ppb	# 7
35) 3-Methylpentane	2.61	57	401	58.840	ppb	# 100
36) Chloroform	5.45	83	203337	48.619	ppb	92
37) Bromochloromethane	5.30	128	32720	45.737	ppb	85
39) 1,1,1-TCA	5.65	97	78608	46.404	ppb	92
40) Cyclohexane	5.71	41	70978	46.805	ppb	94
41) 1,1-Dichloropropene	5.87	75	131116	49.085	ppb	91

## Quantitation Report (Not Reviewed)

Data File : M:\LOKI\DATA\190201\0201L11.D  
 Acq On : 1 Feb 19 15:34  
 Sample : 50ug/L VOC STD 02/01/19  
 Misc : IS&S 11/8/18

Vial: 10  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 4 12:08 2019

Quant Results File: L0201W.RES

Quant Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Mon Feb 04 12:05:25 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
42) 2,2,4-Trimethylpentane	6.28	57	257114	50.887	ppb	97
44) Carbon Tetrachloride	5.86	117	172195	49.614	ppb	98
45) Tert Amyl Methyl Ether	6.35	73	329468	50.520	ppb	95
46) Methylcyclopentane	3.91	56	448	85.457	ppb	100
47) 1,2-DCA	6.16	62	165814	48.802	ppb	100
48) Benzene	6.13	78	425046	47.810	ppb	97
49) TCE	6.95	130	67560	43.982	ppb	97
50) 2-Pentanone	7.22	43	355507	192.649	ppb	99
51) 1,2-Dichloropropane	7.20	63	111544	47.551	ppb	94
52) Bromodichloromethane	7.54	83	92384	47.547	ppb	95
53) Methyl Cyclohexane	7.17	83	148215	48.851	ppb	97
54) Dibromomethane	7.33	93	85948	48.579	ppb	95
55) 2-Chloroethyl vinyl ether	7.93	43	2580	48.926	ppb	88
56) MIBK (methyl isobutyl ket	8.28	43	105165	45.454	ppb	98
57) 1-Bromo-2-chloroethane	7.88	63	88760	48.059	ppb	99
58) Cis-1,3-Dichloropropene	8.07	75	194027	49.107	ppb	95
59) Toluene	8.44	91	271936	48.645	ppb	99
60) Trans-1,3-Dichloropropene	8.70	75	185789	48.124	ppb	95
61) 1,1,2-TCA	8.90	83	98856	47.530	ppb	98
62) 2-Hexanone	9.21	43	75990	45.642	ppb	93
65) 1,2-EDB	9.44	107	71624	47.275	ppb	94
66) Tetrachloroethene	9.05	166	87176	45.178	ppb	96
67) 1-Chlorohexane	10.00	91	141709	46.517	ppb	96
68) 1,1,1,2-Tetrachloroethane	10.09	131	146117	45.022	ppb	97
69) m&p-Xylene	10.27	91	878144	107.109	ppb	99
70) o-Xylene	10.70	106	120408	51.931	ppb	98
71) Styrene	10.71	104	387240	52.719	ppb	99
73) 1,3-Dichloropropane	9.08	76	202754	47.710	ppb	99
74) Dibromochloromethane	9.32	129	162063	47.808	ppb	95
75) Chlorobenzene	9.99	112	366261	47.704	ppb	99
76) Ethylbenzene	10.13	91	322240	51.063	ppb	100
77) Bromoform	10.90	173	127930	46.662	ppb	98
79) Isopropylbenzene	11.11	105	564309	53.744	ppb	99
80) 1,1,2,2-Tetrachloroethane	11.43	83	165644	46.148	ppb	93
81) 1,2,3-Trichloropropane	11.47	110	28936	46.843	ppb	88
82) t-1,4-Dichloro-2-Butene	11.49	53	38678	52.870	ppb	86
83) Bromobenzene	11.42	156	91136	47.806	ppb	96
84) n-Propylbenzene	11.56	91	357849	55.507	ppb	98
85) 4-Ethyltoluene	11.69	105	561700	55.885	ppb	97
86) 2-Chlorotoluene	11.64	91	207975	50.506	ppb	99
87) 1,3,5-Trimethylbenzene	11.76	105	481453	50.880	ppb	99
88) 4-Chlorotoluene	11.76	91	244352	51.943	ppb	94
89) Tert-Butylbenzene	12.11	119	482749	53.421	ppb	99
90) 1,2,4-Trimethylbenzene	12.17	105	460416	56.724	ppb	94
91) Sec-Butylbenzene	12.35	105	579233	53.288	ppb	97
92) p-Isopropyltoluene	12.52	119	275456	55.349	ppb	99
93) Benzyl Chloride	12.71	91	225909	48.070	ppb	99
94) 1,3-DCB	12.46	146	164736	50.385	ppb	98
95) 1,4-DCB	12.56	146	311337	48.771	ppb	98
96) n-Butylbenzene	12.97	91	375993	53.296	ppb	99
97) 1,2-DCB	12.97	146	304997	47.693	ppb	97
98) Hexachloroethane	13.26	117	108013	48.518	ppb	94
99) 1,2-Dibromo-3-chloropropan	13.82	75	37344	48.839	ppb	# 77
100) 1,2,4-Trichlorobenzene	14.74	180	212249	52.863	ppb	91



Quantitation Report (Not Reviewed)

Data File : M:\LOKI\DATA\190201\0201L11.D Vial: 10  
 Acq On : 1 Feb 19 15:34 Operator: PM,DG,SV,CMM,KV  
 Sample : 50ug/L VOC STD 02/01/19 Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Feb 4 12:08 2019 Quant Results File: L0201W.RES

Quant Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Mon Feb 04 12:05:25 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
101) Hexachlorobutadiene	14.94	225	111086	52.058	ppb	93
102) Naphthalene	15.01	128	504028	57.420	ppb	94
103) 1,2,3-Trichlorobenzene	15.27	180	104400	48.955	ppb	98

Quantitation Report

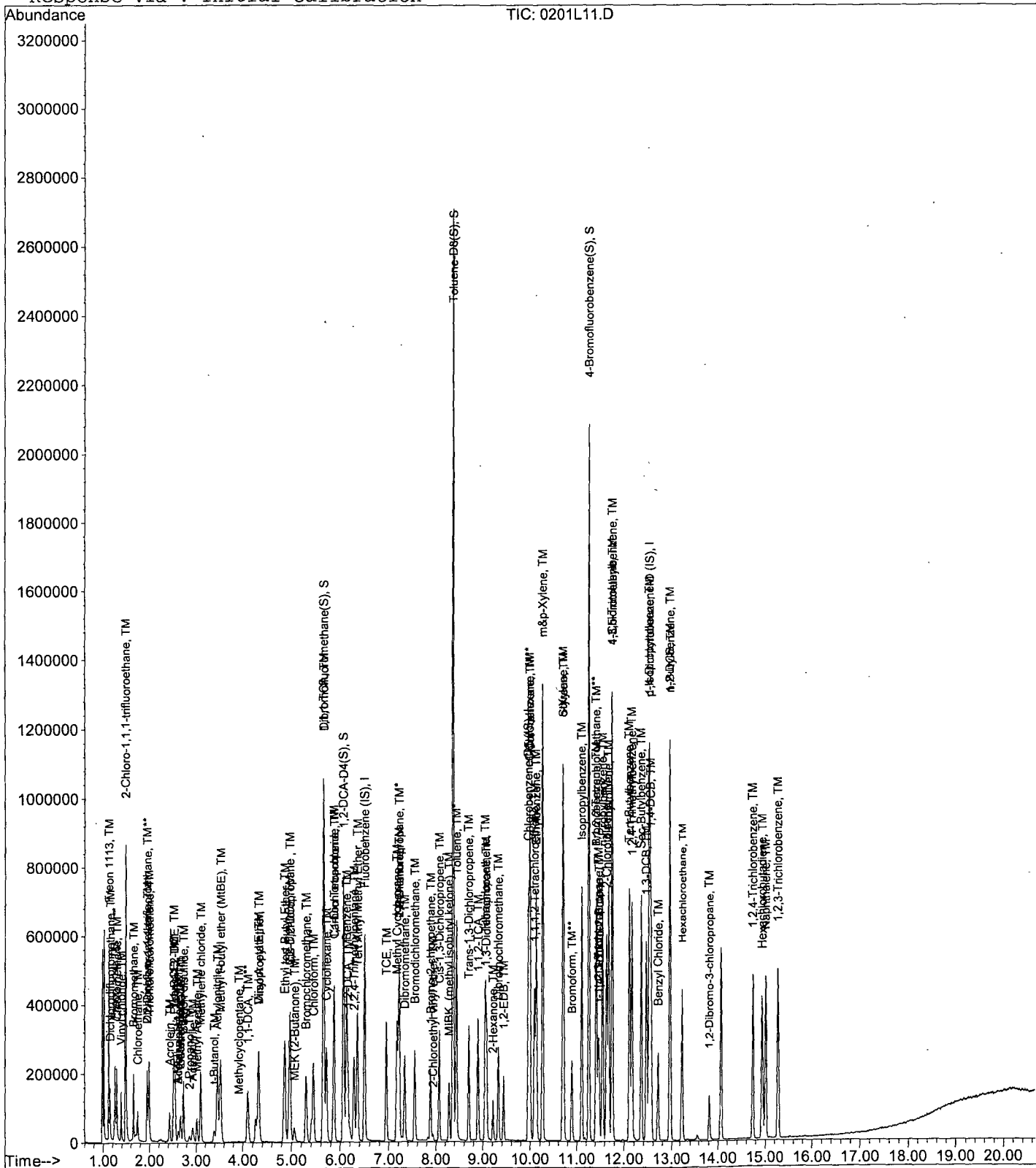
Data File : M:\LOKI\DATA\190201\0201L11.D
Acq On : 1 Feb 19 15:34
Sample : 50ug/L VOC STD 02/01/19
Misc : IS&S 11/8/18

Vial: 10
Operator: PM, DG, SV, CMM, KV
Inst : Loki
Multiplr: 1.00

Quant Time: Feb 4 12:08 2019

Quant Results File: L0201W.RES

Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)
Title : METHOD 8260B
Last Update : Mon Feb 04 12:12:22 2019
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : M:\LOKI\DATA\190201\0201L12.D  
 Acq On : 1 Feb 19 16:03  
 Sample : 100ug/L VOC STD 02/01/19  
 Misc : IS&S 11/8/18

Vial: 11  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 4 12:08 2019

Quant Results File: L0201W.RES

Quant Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Mon Feb 04 12:05:25 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	303040	25.000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.97	117	247488	25.000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.53	152	150912	25.000	ppb	0.00
System Monitoring Compounds						
38) Dibromofluoromethane(S)	5.65	111	515135	96.678	ppb	0.00
Spiked Amount	25.000		Recovery	=	386.712%	
43) 1,2-DCA-D4(S)	6.07	65	581674	95.457	ppb	0.00
Spiked Amount	25.000		Recovery	=	381.828%	
64) Toluene-D8(S)	8.37	98	2000856	101.372	ppb	0.00
Spiked Amount	25.000		Recovery	=	405.488%	
72) 4-Bromofluorobenzene(S)	11.26	95	769752	100.516	ppb	0.00
Spiked Amount	25.000		Recovery	=	402.064%	
Target Compounds						
2) Freon 1113	1.11	116	177798	149.165	ppb	97
3) Dichlorodifluoromethane	1.14	85	163482	96.396	ppb	99
4) Freon 114	1.25	85	200609	102.912	ppb	92
5) Chloromethane	1.29	50	221088	89.113	ppb	97
6) Vinyl chloride	1.38	62	189195	106.992	ppb	93
7) 2-Chloro-1,1,1-trifluoroet	1.48	118	246848	125.796	ppb	98
8) Bromomethane	1.65	94	129728	81.953	ppb	93
9) Chloroethane	1.74	64	83731	94.065	ppb	92
10) Dichlorofluoromethane	1.95	67	335942	98.796	ppb	94
11) Trichlorofluoromethane	1.99	101	335168	99.382	ppb	96
12) Acrolein	2.43	56	75244	224.256	ppb	# 90
13) Acetone	2.62	43	29752	71.002	ppb	100
14) Freon-113	2.54	101	168950	98.769	ppb	98
15) 1,1-DCE	2.52	63	45312	99.735	ppb	99
16) t-Butanol	3.41	59	64299	243.385	ppb	97
17) 2-Propanol	2.87	45	24882	152.630	ppb	# 71
18) Acetonitrile	2.93	41	63126	210.202	ppb	95
19) Methyl Acetate	3.02	43	157253	98.195	ppb	94
20) Iodomethane	2.66	142	97496	102.836	ppb	97
21) Acrylonitrile	3.45	52	78114	91.517	ppb	94
22) Methylene chloride	3.09	84	198236	98.257	ppb	95
23) Carbon disulfide	2.72	76	489111	94.946	ppb	97
24) Methyl t-butyl ether (MtBE)	3.53	73	672609	100.825	ppb	94
25) Trans-1,2-DCE	2.51	96	92952	100.076	ppb	96
26) Diisopropyl Ether	4.33	45	588895	101.047	ppb	96
27) 2,2-Dichloro-1,1,1-trifluo	1.95	85	13237	95.354	ppb	# 60
28) 1,1-DCA	4.10	63	365649	98.537	ppb	95
29) Vinyl Acetate	4.33	43	111880	101.029	ppb	# 99
30) Ethyl tert Butyl Ether	4.87	59	643976	104.981	ppb	100
31) MEK (2-Butanone)	5.07	43	109125	100.024	ppb	96
32) Cis-1,2-DCE	4.98	96	254561	100.484	ppb	99
33) 2,2-Dichloropropane	4.96	77	333649	92.363	ppb	96
34) 2-Methylpentane	2.64	71	108	20.644	ppb	# 33
35) 3-Methylpentane	2.62	57	605	87.180	ppb	# 100
36) Chloroform	5.45	83	416699	97.846	ppb	90
37) Bromochloromethane	5.30	128	60216	82.662	ppb	80
39) 1,1,1-TCA	5.65	97	162816	94.389	ppb	92
40) Cyclohexane	5.71	41	154320	99.937	ppb	93
41) 1,1-Dichloropropene	5.88	75	280179	103.005	ppb	91

Data File : M:\LOKI\DATA\190201\0201L12.D  
 Acq On : 1 Feb 19 16:03  
 Sample : 100ug/L VOC STD 02/01/19  
 Misc : IS&S 11/8/18

Vial: 11  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 4 12:08 2019

Quant Results File: L0201W.RES

Quant Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Mon Feb 04 12:05:25 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
42) 2,2,4-Trimethylpentane	6.28	57	559732	108.791	ppb	97
44) Carbon Tetrachloride	5.87	117	356183	100.783	ppb	99
45) Tert Amyl Methyl Ether	6.36	73	694906	104.643	ppb	94
46) Methylcyclopentane	3.92	56	718	134.502	ppb	100
47) 1,2-DCA	6.17	62	339001	97.983	ppb	100
48) Benzene	6.13	78	878372	97.027	ppb	97
49) TCE	6.95	130	148352	94.845	ppb	97
50) 2-Pentanone	7.23	43	435192	231.597	ppb	99
51) 1,2-Dichloropropane	7.20	63	229005	95.873	ppb	98
52) Bromodichloromethane	7.54	83	182336	92.158	ppb	96
53) Methyl Cyclohexane	7.17	83	329643	106.699	ppb	96
54) Dibromomethane	7.34	93	171239	95.049	ppb	92
55) 2-Chloroethyl vinyl ether	7.93	43	6031	112.317	ppb	95
56) MIBK (methyl isobutyl ket	8.28	43	236070	100.202	ppb	97
57) 1-Bromo-2-chloroethane	7.88	63	183232	97.429	ppb	98
58) Cis-1,3-Dichloropropene	8.07	75	401132	99.702	ppb	98
59) Toluene	8.44	91	582656	102.357	ppb	97
60) Trans-1,3-Dichloropropene	8.71	75	387991	98.696	ppb	97
61) 1,1,2-TCA	8.90	83	199593	94.242	ppb	96
62) 2-Hexanone	9.22	43	169079	99.732	ppb	# 94
65) 1,2-EDB	9.44	107	145536	98.644	ppb	91
66) Tetrachloroethene	9.05	166	178368	94.924	ppb	95
67) 1-Chlorohexane	10.00	91	307784	102.529	ppb	99
68) 1,1,1,2-Tetrachloroethane	10.09	131	304649	96.394	ppb	98
69) m&p-Xylene	10.26	91	1851713	231.932	ppb	98
70) o-Xylene	10.70	106	269632	119.417	ppb	96
71) Styrene	10.71	104	827700	115.713	ppb	98
73) 1,3-Dichloropropane	9.08	76	415439	100.386	ppb	100
74) Dibromochloromethane	9.33	129	331484	100.416	ppb	99
75) Chlorobenzene	9.99	112	756614	101.195	ppb	100
76) Ethylbenzene	10.13	91	672832	109.487	ppb	99
77) Bromoform	10.90	173	271723	101.776	ppb	99
79) Isopropylbenzene	11.11	105	1204086	104.463	ppb	98
80) 1,1,2,2-Tetrachloroethane	11.43	83	356925	90.582	ppb	95
81) 1,2,3-Trichloropropane	11.47	110	66528	99.593	ppb	94
82) t-1,4-Dichloro-2-Butene	11.49	53	78247	97.978	ppb	89
83) Bromobenzene	11.42	156	191168	91.348	ppb	95
84) n-Propylbenzene	11.56	91	773643	109.314	ppb	100
85) 4-Ethyltoluene	11.69	105	1235032	111.933	ppb	98
86) 2-Chlorotoluene	11.64	91	450402	99.638	ppb	99
87) 1,3,5-Trimethylbenzene	11.76	105	1038730	99.525	ppb	100
88) 4-Chlorotoluene	11.76	91	541952	104.946	ppb	96
89) Tert-Butylbenzene	12.11	119	1040324	104.869	ppb	100
90) 1,2,4-Trimethylbenzene	12.17	105	1041094	116.841	ppb	96
91) Sec-Butylbenzene	12.35	105	1276617	106.987	ppb	97
92) p-Isopropyltoluene	12.52	119	649536	118.891	ppb	99
93) Benzyl Chloride	12.71	91	535227	103.744	ppb	99
94) 1,3-DCB	12.46	146	352192	98.125	ppb	99
95) 1,4-DCB	12.56	146	682744	97.426	ppb	96
96) n-Butylbenzene	12.97	91	880260	113.663	ppb	99
97) 1,2-DCB	12.97	146	672619	95.812	ppb	97
98) Hexachloroethane	13.26	117	234557	95.976	ppb	96
99) 1,2-Dibromo-3-chloropropan	13.81	75	79976	95.278	ppb	# 83
100) 1,2,4-Trichlorobenzene	14.74	180	494084	112.098	ppb	91

Quantitation Report (Not Reviewed)

Data File : M:\LOKI\DATA\190201\0201L12.D Vial: 11  
 Acq On : 1 Feb 19 16:03 Operator: PM,DG,SV,CMM,KV  
 Sample : 100ug/L VOC STD 02/01/19 Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Feb 4 12:08 2019 Quant Results File: L0201W.RES

Quant Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Mon Feb 04 12:05:25 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
101) Hexachlorobutadiene	14.94	225	245090	104.628	ppb	93
102) Naphthalene	15.01	128	1141628	118.474	ppb	97
103) 1,2,3-Trichlorobenzene	15.27	180	238400	100.838	ppb	98

Quantitation Report

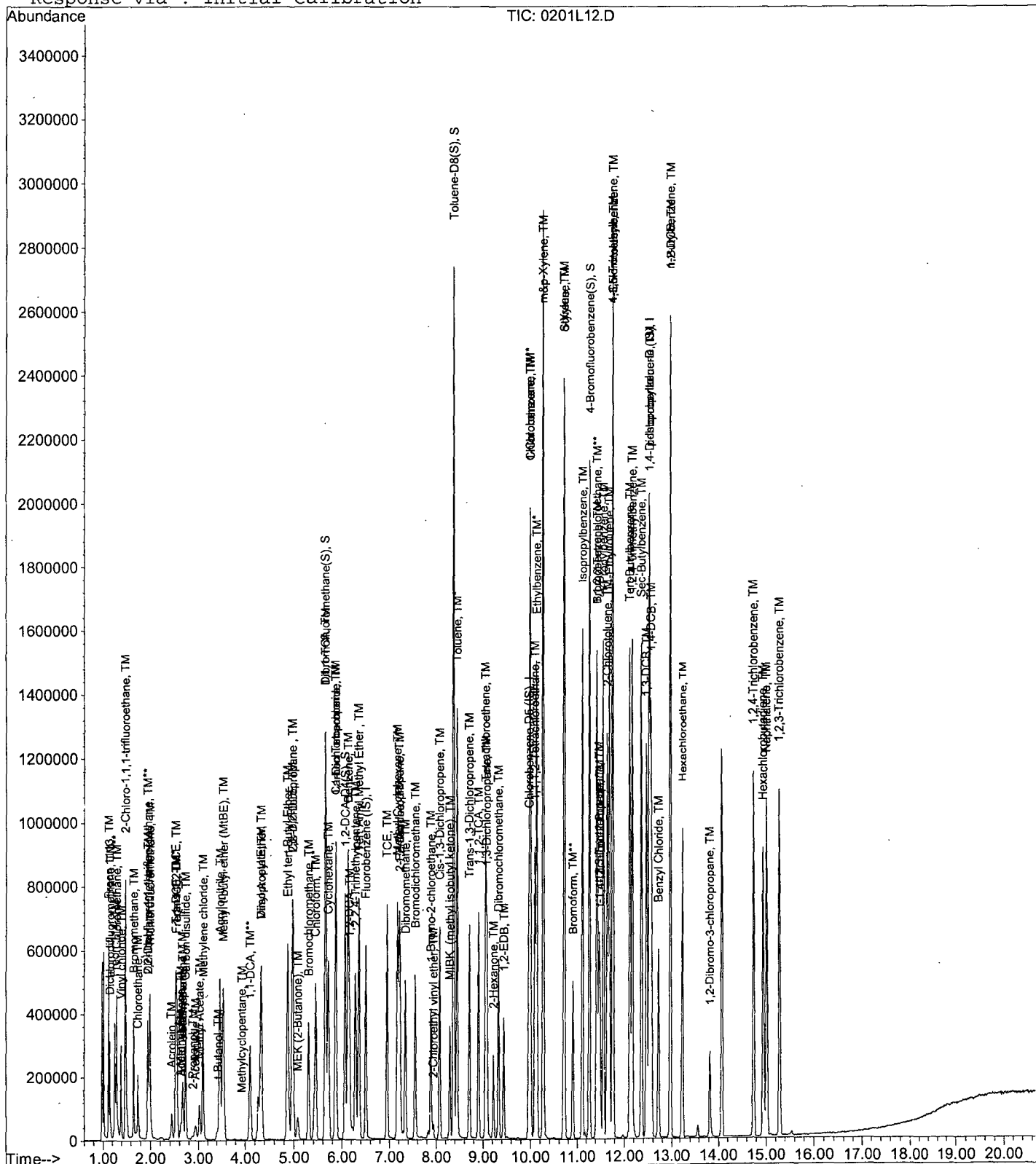
Data File : M:\LOKI\DATA\190201\0201L12.D  
Acq On : 1 Feb 19 16:03  
Sample : 100ug/L VOC STD 02/01/19  
Misc : IS&S 11/8/18

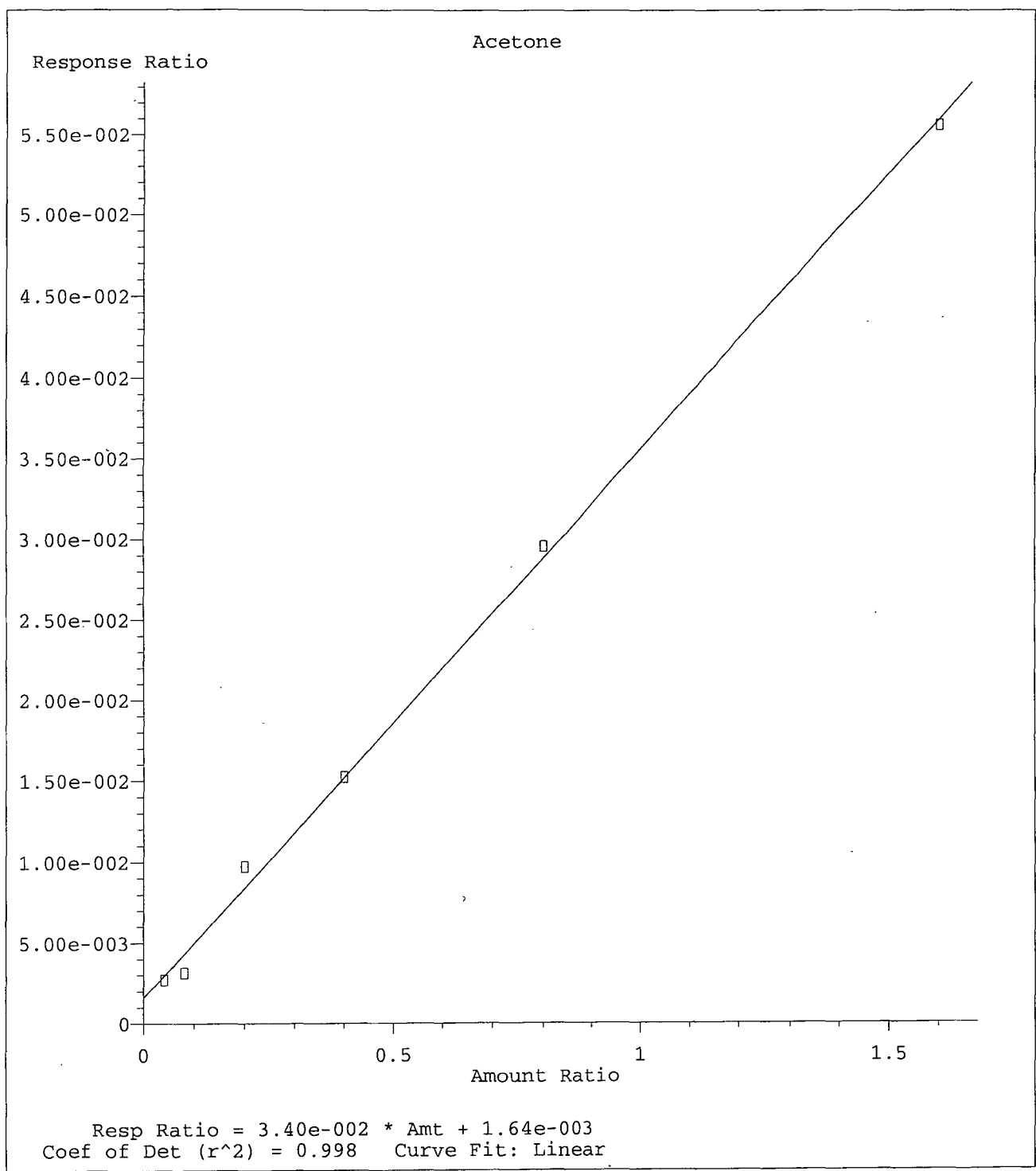
Vial: 11  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 4 12:08 2019

Quant Results File: L0201W.RES

Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Mon Feb 04 12:12:22 2019  
Response via : Initial Calibration

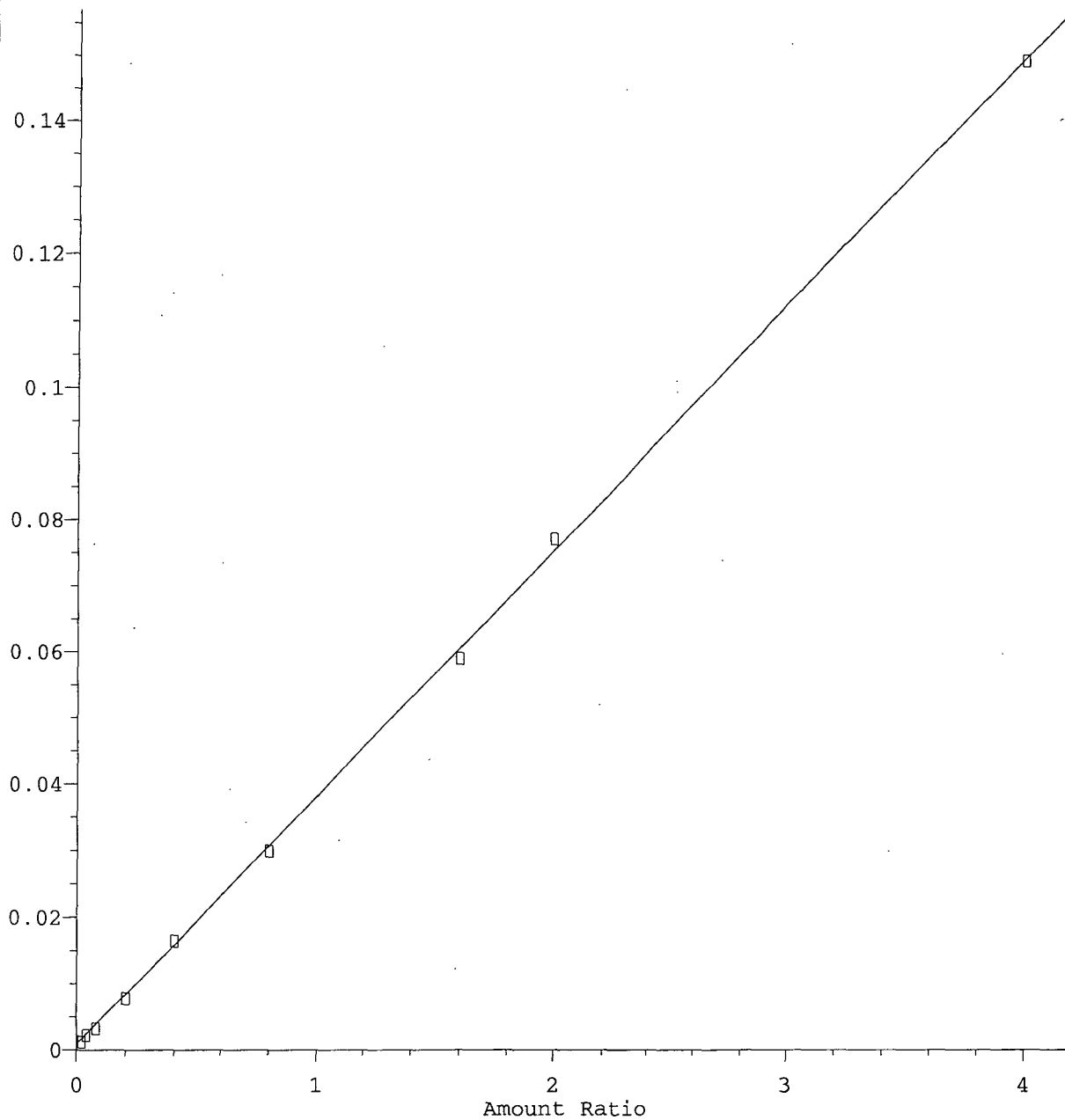




Method Name: M:\LOKI\DATA\190201\L0201W.M  
Calibration Table Last Updated: Mon Feb 04 12:12:22 2019

1,1-DCE

Response Ratio



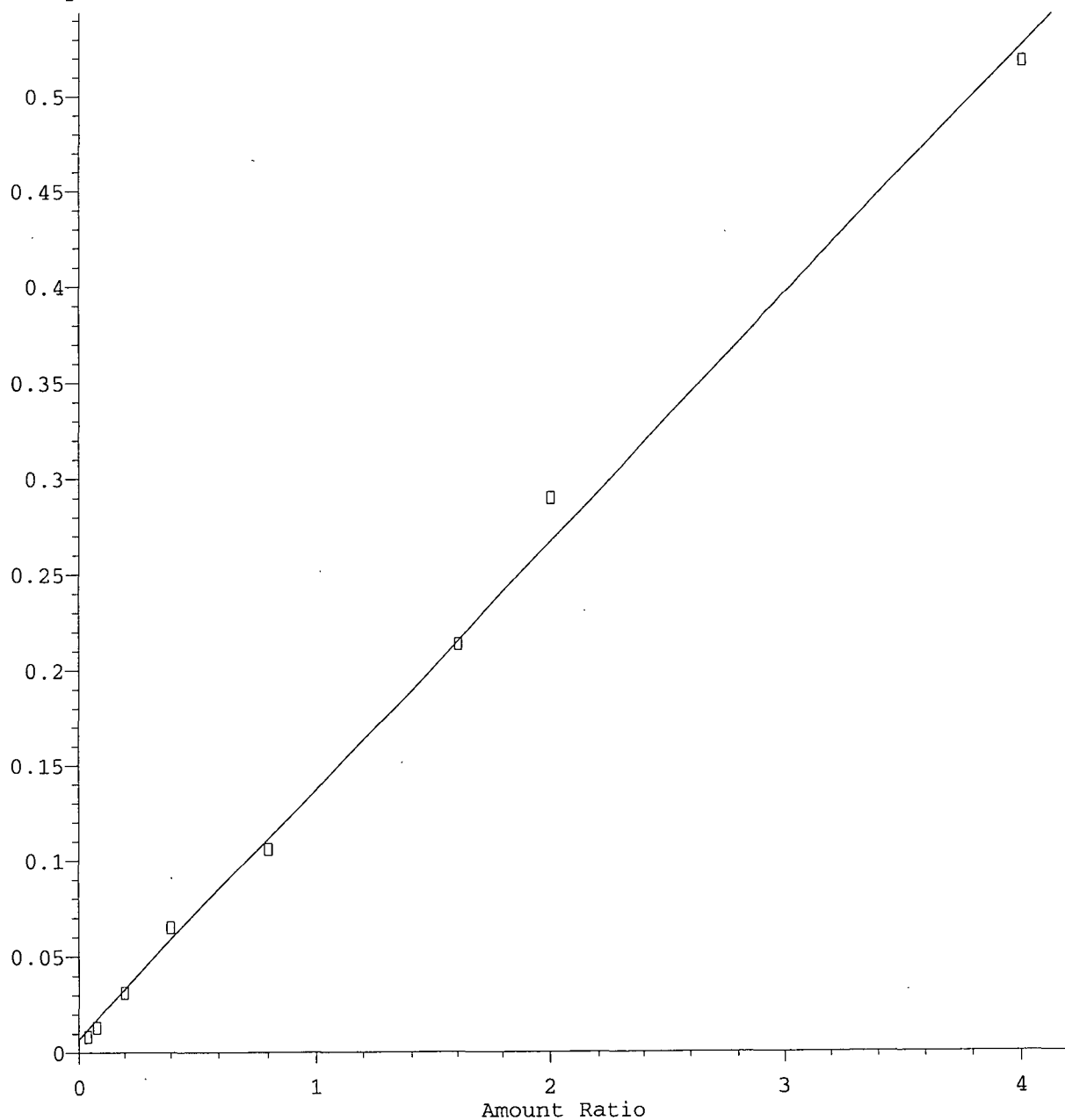
Resp Ratio =  $3.73e-002 * Amt + 5.84e-004$   
Coef of Det ( $r^2$ ) = 1.000 Curve Fit: Linear

Method Name: M:\LOKI\DATA\190201\L0201W.M  
Calibration Table Last Updated: Mon Feb 04 12:12:22 2019



Methyl Acetate

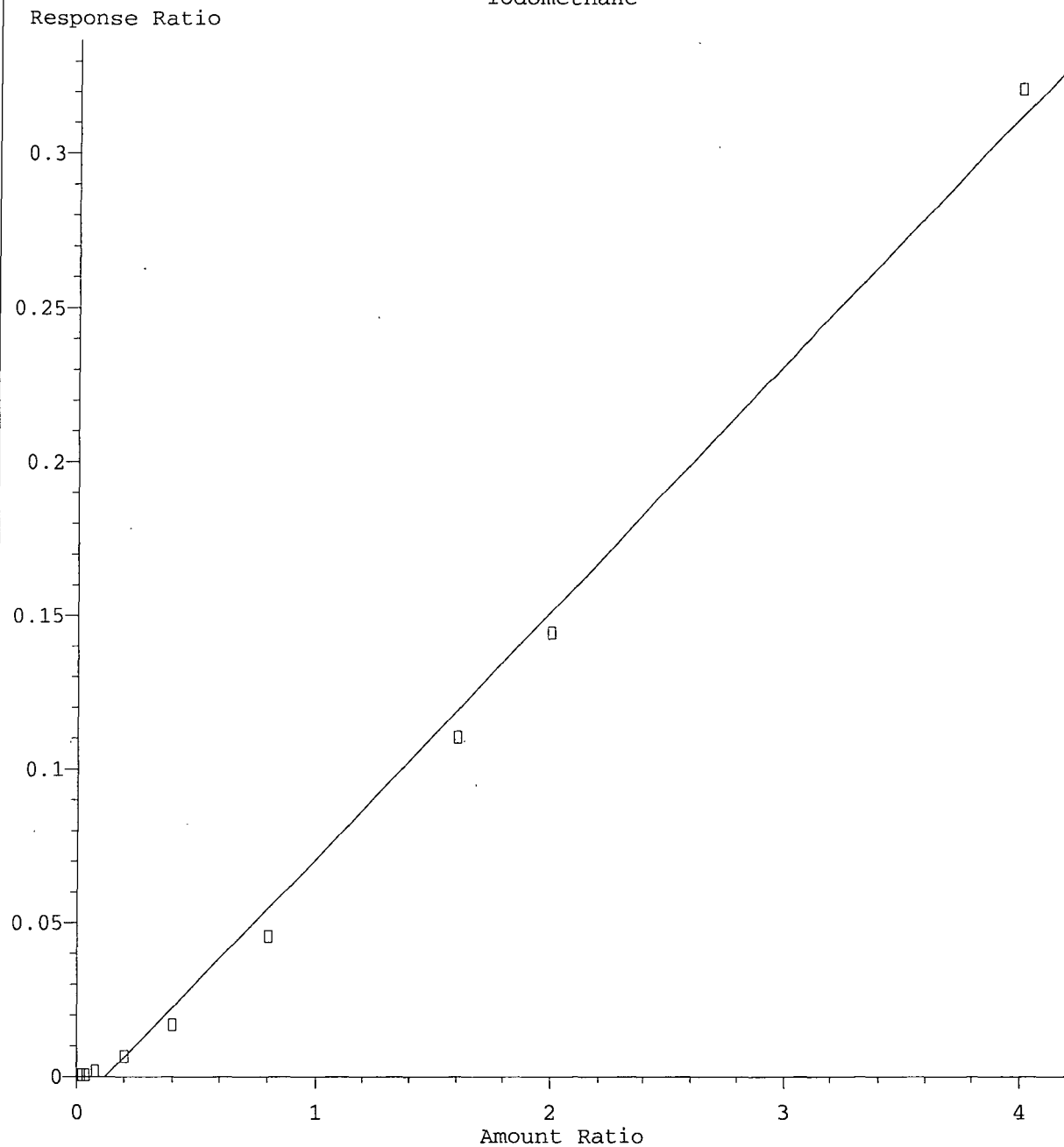
Response Ratio



Resp Ratio = 1.30e-001 \* Amt + 7.04e-003  
Coef of Det (r^2) = 0.997 Curve Fit: Linear

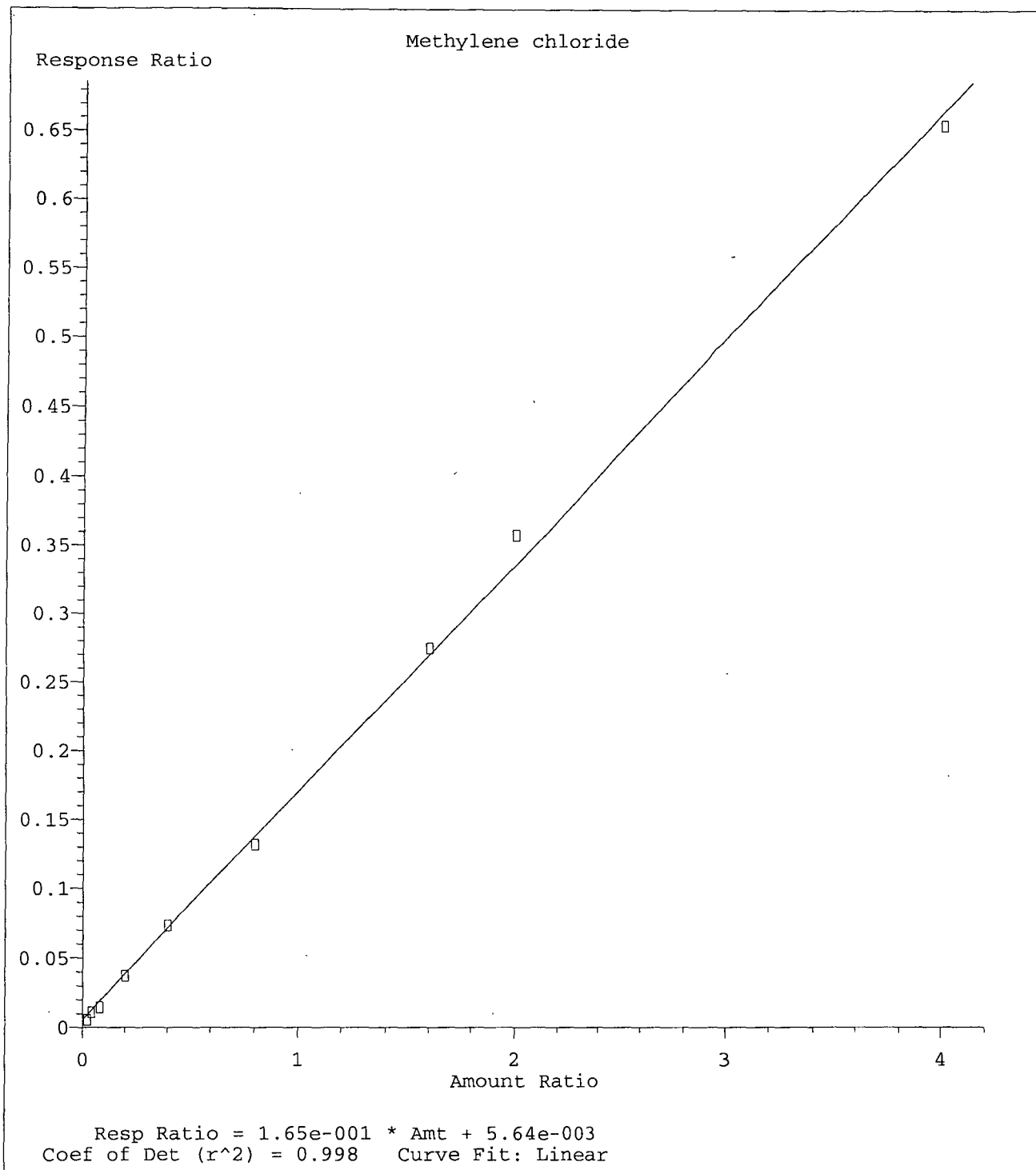
Method Name: M:\LOKI\DATA\190201\L0201W.M  
Calibration Table Last Updated: Mon Feb 04 12:12:22 2019

Iodomethane



Resp Ratio =  $8.06e-002 * Amt - 9.76e-003$   
Coef of Det ( $r^2$ ) = 0.995 Curve Fit: Linear

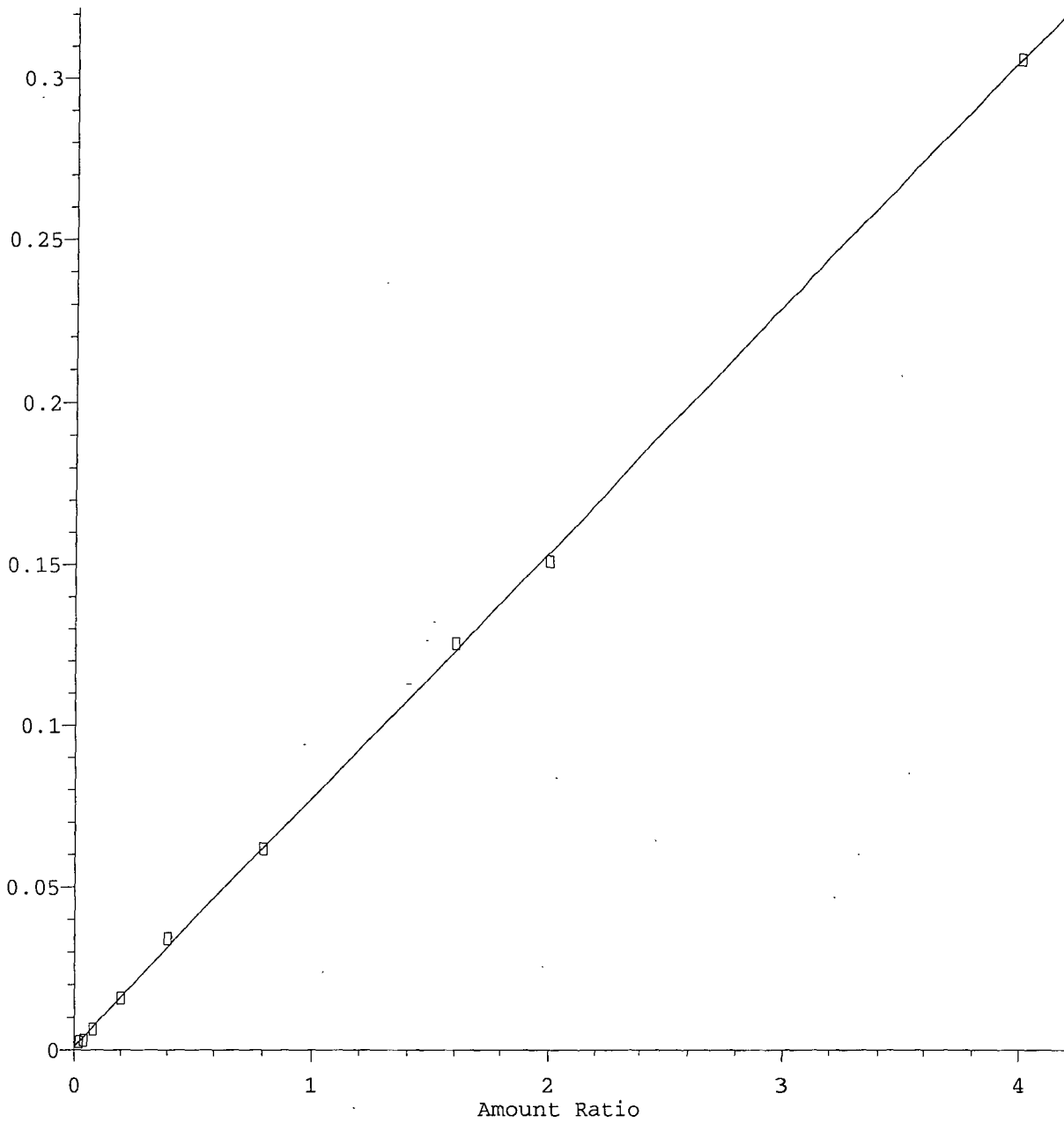
Method Name: M:\LOKI\DATA\190201\L0201W.M  
Calibration Table Last Updated: Mon Feb 04 12:12:22 2019



Method Name: M:\LOKI\DATA\190201\L0201W.M  
Calibration Table Last Updated: Mon Feb 04 12:12:22 2019

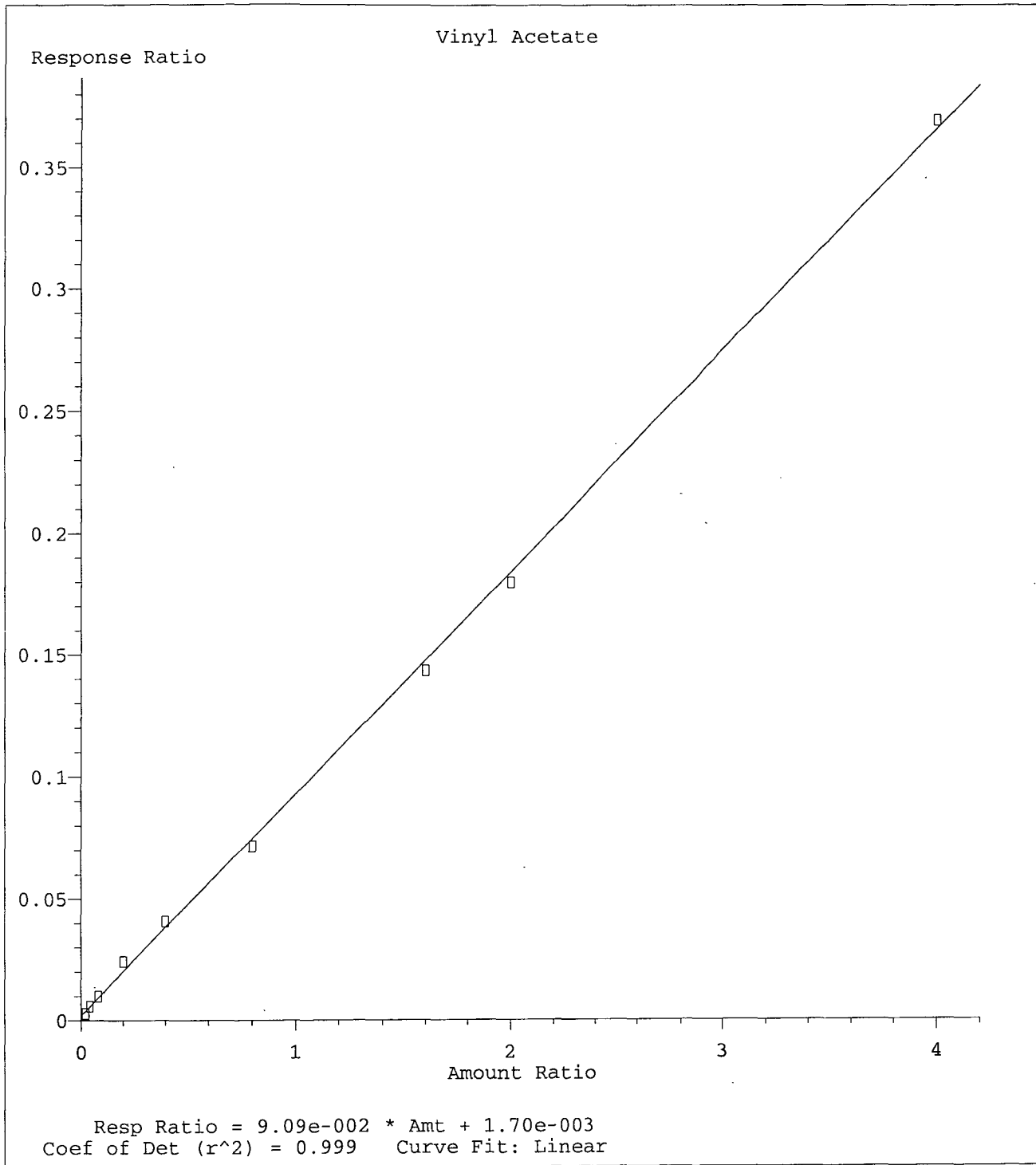
Trans-1,2-DCE

Response Ratio

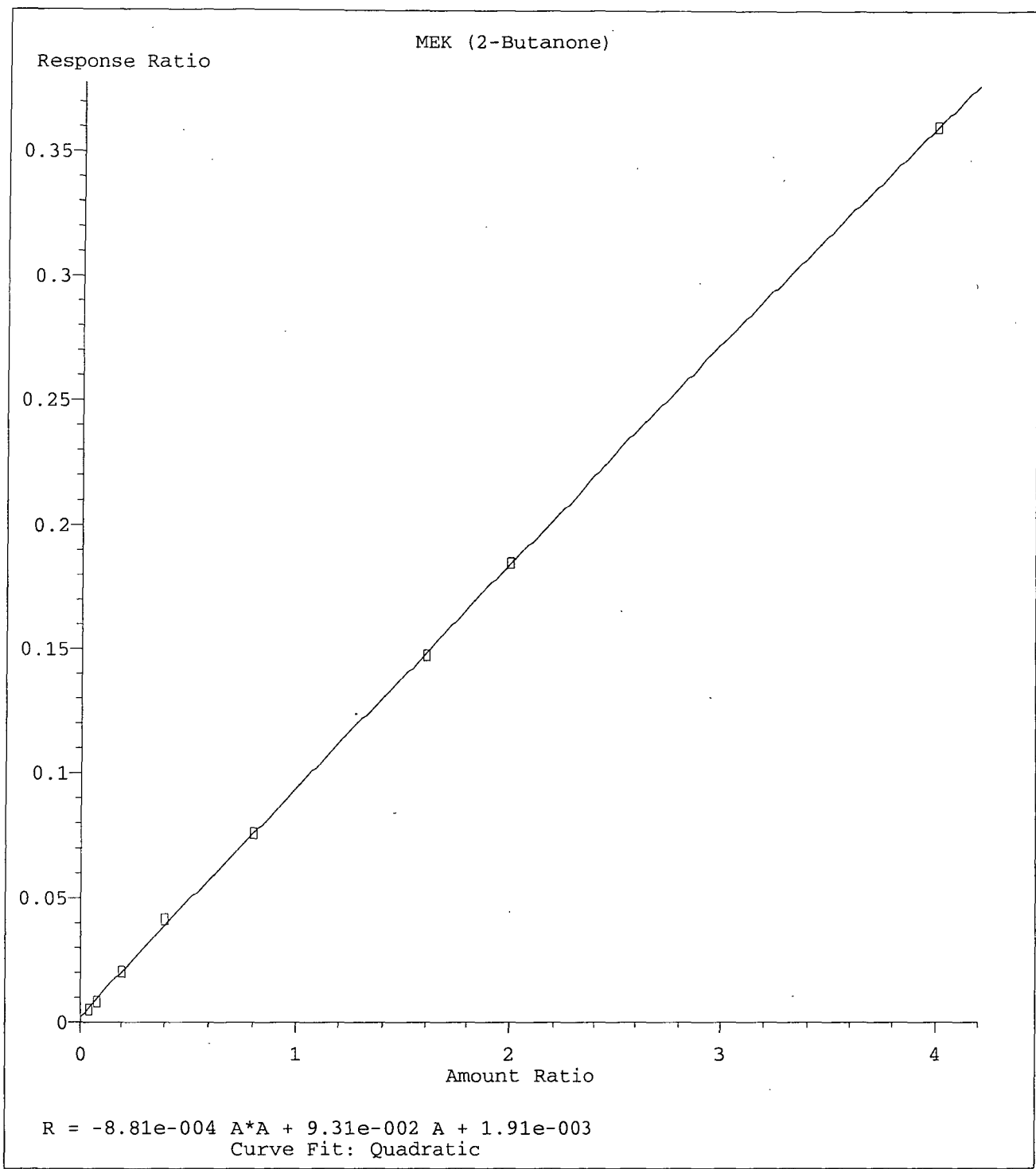


Resp Ratio =  $7.64e-002 * Amt + 9.55e-004$   
Coef of Det ( $r^2$ ) = 1.000 Curve Fit: Linear

Method Name: M:\LOKI\DATA\190201\L0201W.M  
Calibration Table Last Updated: Mon Feb 04 12:12:22 2019



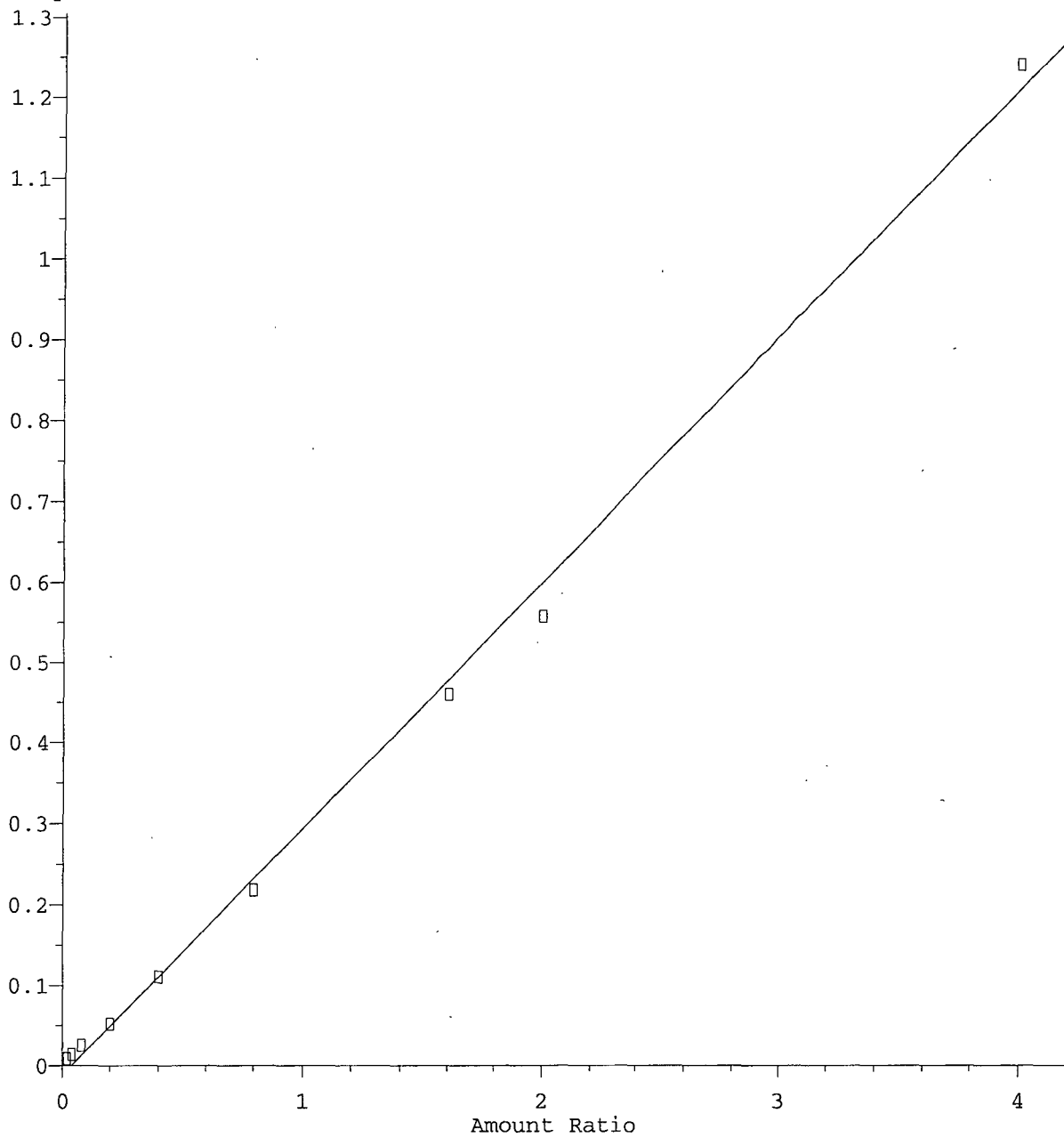
Method Name: M:\LOKI\DATA\190201\L0201W.M  
Calibration Table Last Updated: Mon Feb 04 12:12:22 2019



Method Name: M:\LOKI\DATA\190201\L0201W.M  
Calibration Table Last Updated: Mon Feb 04 12:12:22 2019

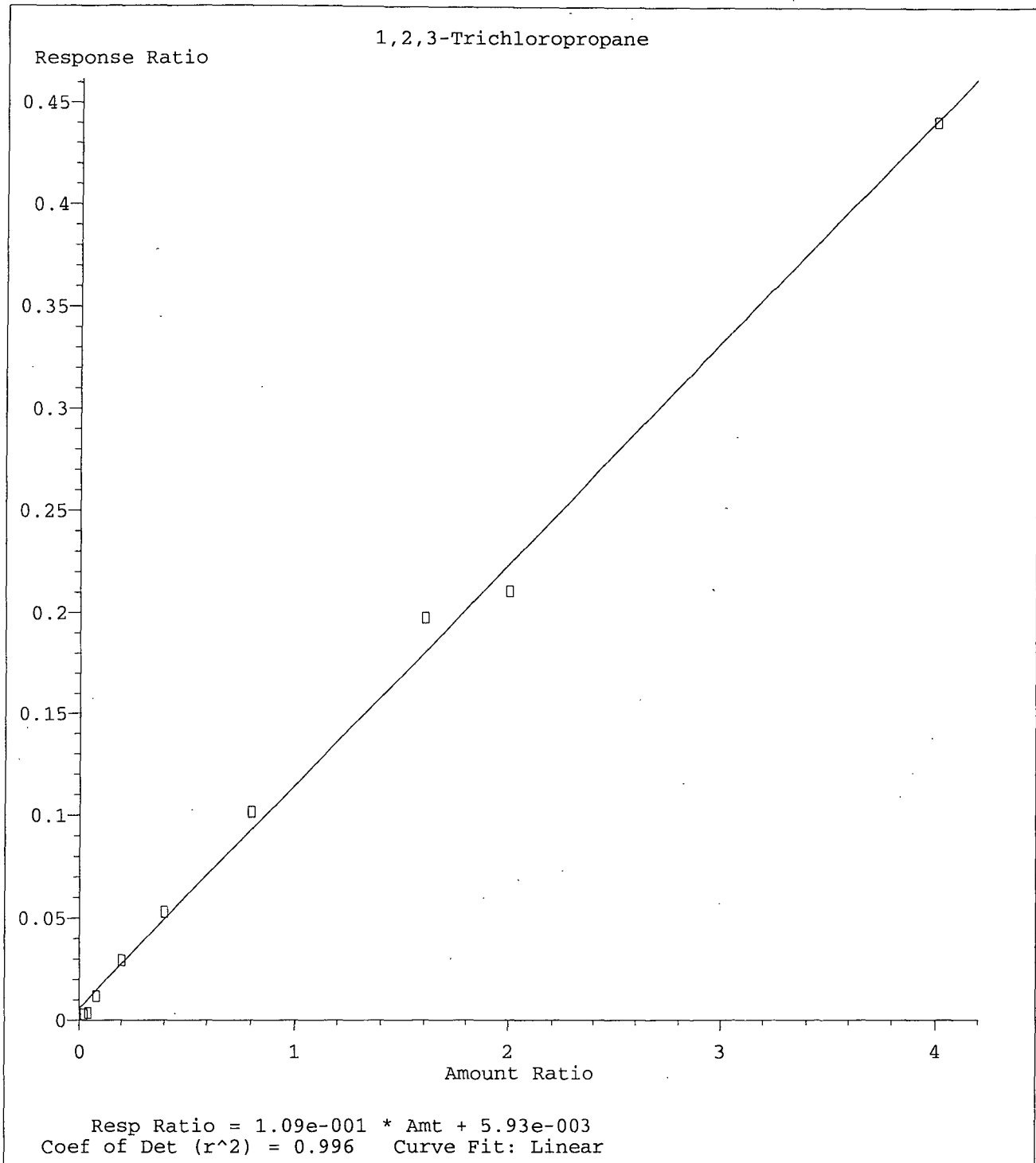
1-Chlorohexane

Response Ratio



Resp Ratio =  $3.06e-001 * Amt - 1.22e-002$   
Coef of Det ( $r^2$ ) = 0.997 Curve Fit: Linear

Method Name: M:\LOKI\DATA\190201\L0201W.M  
Calibration Table Last Updated: Mon Feb 04 12:12:22 2019

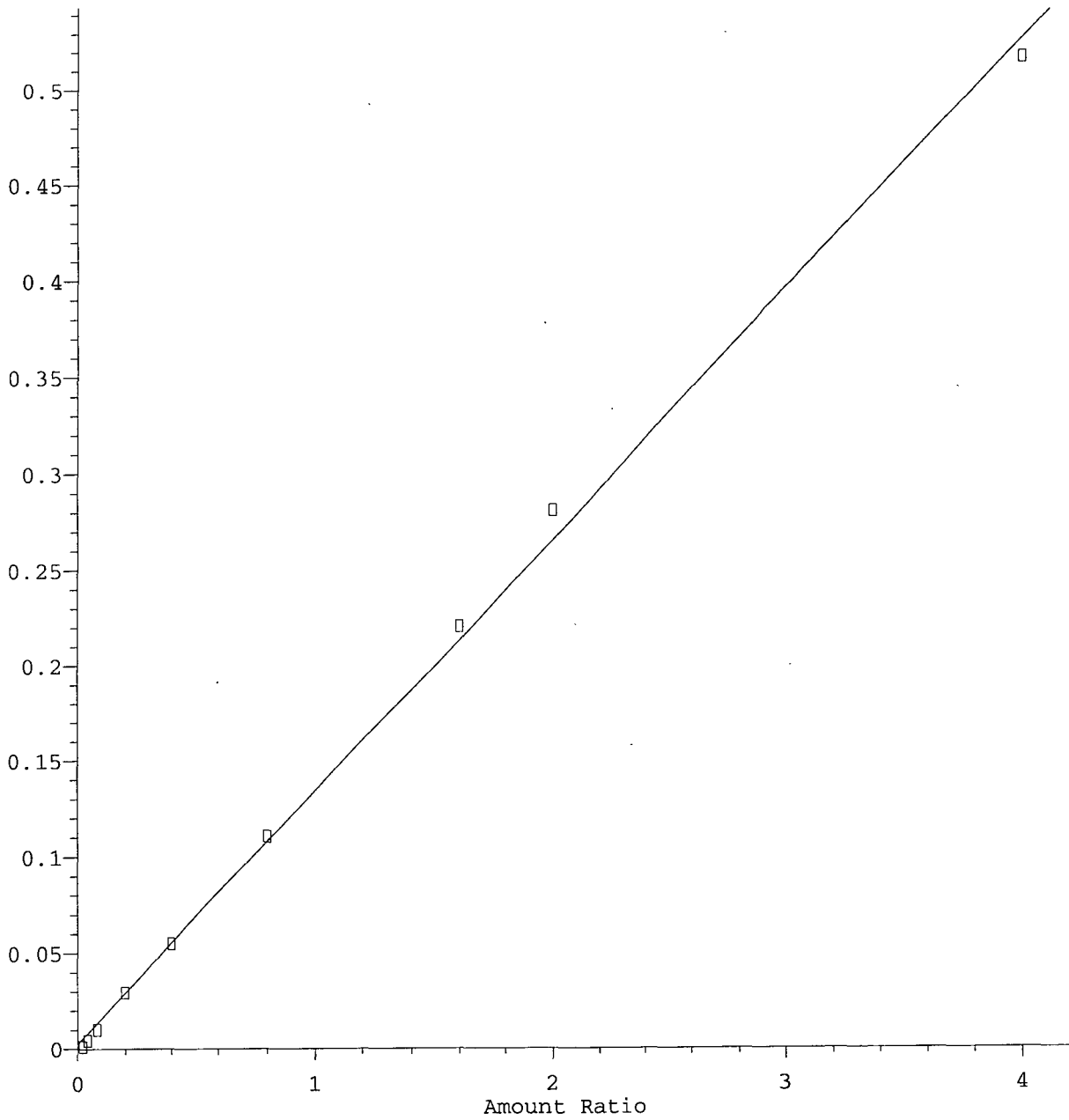


Method Name: M:\LOKI\DATA\190201\L0201W.M  
Calibration Table Last Updated: Mon Feb 04 12:12:22 2019



t-1,4-Dichloro-2-Butene

Response Ratio

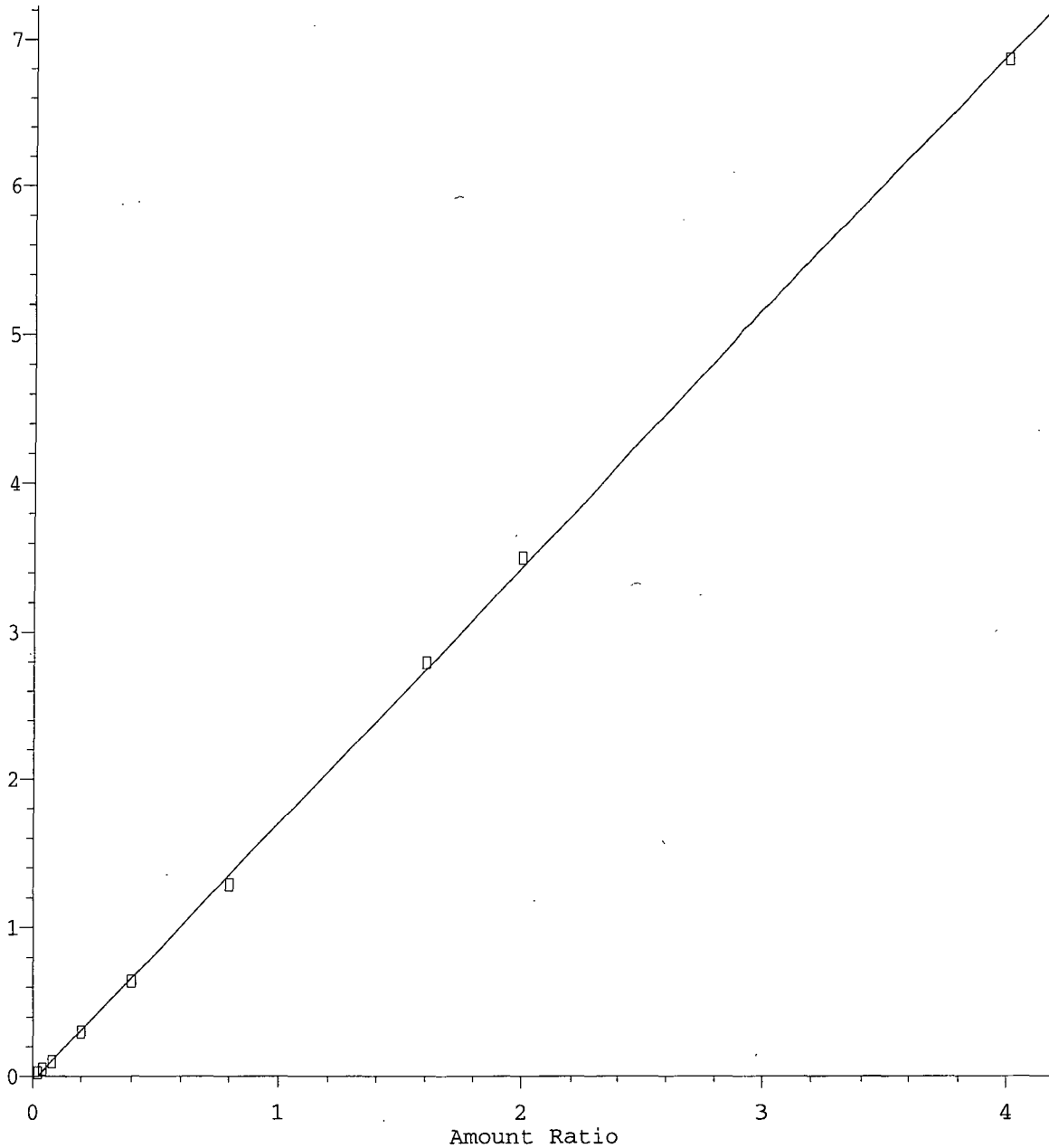


Resp Ratio = 1.31e-001 \* Amt + 3.40e-003  
Coef of Det (r^2) = 0.998 Curve Fit: Linear

Method Name: M:\LOKI\DATA\190201\L0201W.M  
Calibration Table Last Updated: Mon Feb 04 12:12:22 2019

1,3,5-Trimethylbenzene

Response Ratio

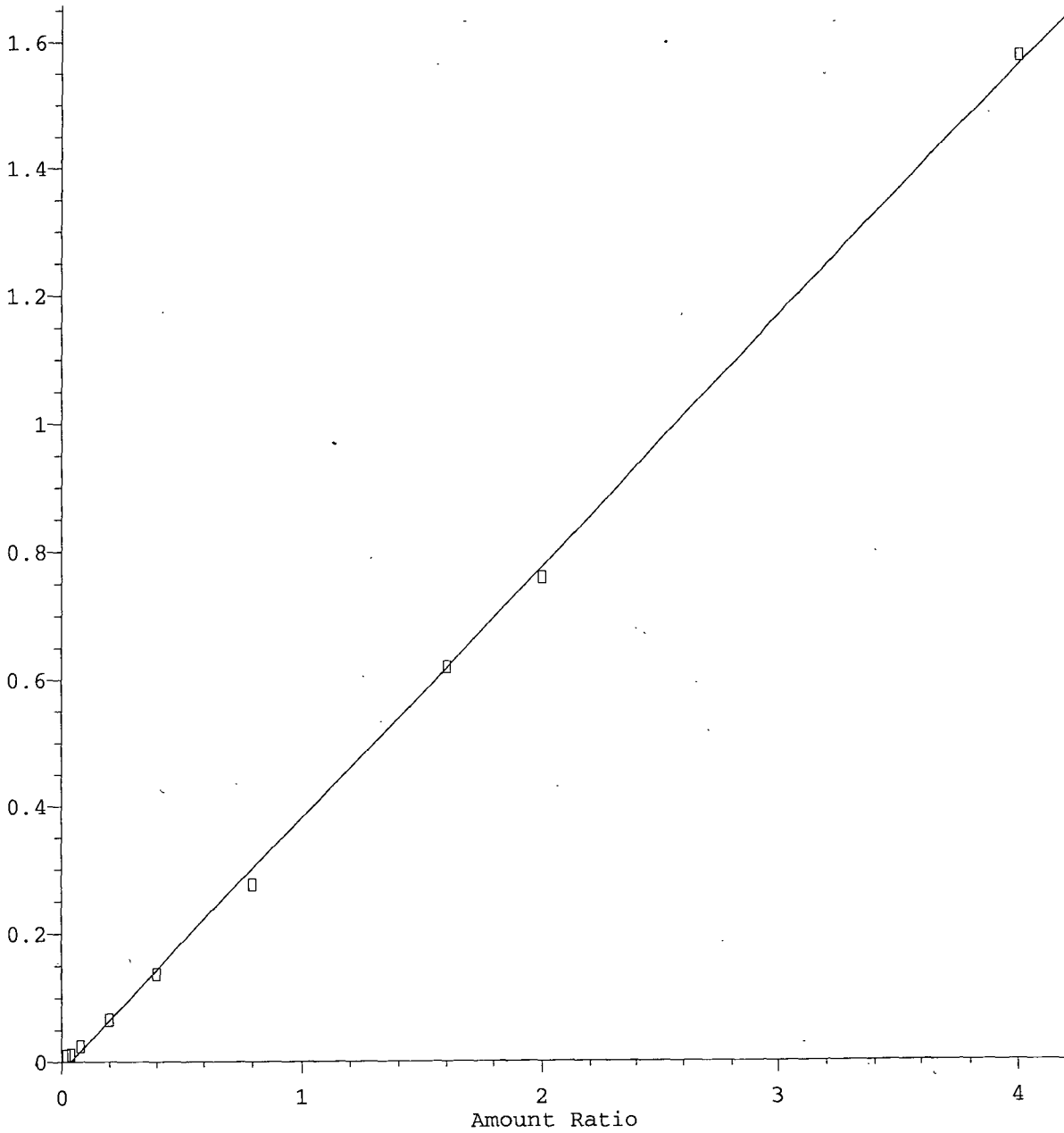


Resp Ratio = 1.74e+000 \* Amt - 3.40e-002  
Coef of Det (r^2) = 1.000 Curve Fit: Linear

Method Name: M:\LOKI\DATA\190201\L0201W.M  
Calibration Table Last Updated: Mon Feb 04 12:12:22 2019

1,2,3-Trichlorobenzene

Response Ratio



Resp Ratio =  $3.95e-001 * Amt - 1.46e-002$   
Coef of Det ( $r^2$ ) = 0.999 Curve Fit: Linear

Method Name: M:\LOKI\DATA\190201\L0201W.M  
Calibration Table Last Updated: Mon Feb 04 12:12:22 2019

VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 7

Second Source Calibration

Lab Name: APPL, Inc.

SDG No: \_\_\_\_\_

Case No: \_\_\_\_\_

Date Analyzed: 1 Feb 19 17:28

Matrix: water

Instrument: Loki

Initial Cal. Date: 02/01/19

Data File: 0201L15.D

		Compound	MEAN	CCRF	%D	%Drift
1	TM	Freon 1113	0.0983	0.1130	15	TM
2	TM	Dichlorodifluoromethane	0.1399	0.1525	9.0	TM
3	TM	Freon 114	0.1608	0.1730	7.6	TM
4	TM**	Chloromethane	0.2047	0.2064	0.83	TM**
5	TM*	Vinyl chloride	0.1459	0.1687	16	TM*
6	TM	2-Chloro-1,1,1-trifluoroethane	0.1619	0.1842	14	TM
7	TM	Bromomethane	0.1306	0.1497	15	TM
8	TM	Chloroethane	0.0734	0.0801	9.1	TM
9	TM	Dichlorofluoromethane	0.2805	0.3118	11	TM
10	TM	Trichlorofluoromethane	0.2782	0.2931	5.3	TM
11	TM	Acrolein	0.0277	0.0266	3.9	TM
12	TML	Acetone	0.0442	0.0339	23	TML 12
13	TM	Freon-113	0.1411	0.1441	2.1	TM
14	TM*L	1,1-DCE	0.0428	0.0436	1.8	TM*L 13
15	TM	t-Butanol	0.0218	0.0216	0.97	TM
16	TM	2-Propanol	0.0134	0.0128	4.9	TM
17	TM	Acetonitrile	0.0248	0.0239	3.4	TM
18	TML	Methyl Acetate	0.1530	0.1624	6.1	TML 11
19	TML	Iodomethane	0.0470	0.0508	8.0	TML 6.7
20	TM	Acrylonitrile	0.0704	0.0695	1.3	TM
21	TML	Methylene chloride	0.1974	0.1918	2.8	TML 7.7
22	TM	Carbon disulfide	0.4250	0.4375	2.9	TM
23	TM	Methyl t-butyl ether (MtBE)	0.5503	0.5793	5.3	TM
24	TML	Trans-1,2-DCE	0.0831	0.0851	2.4	TML 8.2
25	TM	Diisopropyl Ether	0.4808	0.4918	2.3	TM
26	TM**	2,2-Dichloro-1,1,1-trifluoroethane	0.0115	0.0129	13	TM**
27	TM**	1,1-DCA	0.3061	0.3298	7.7	TM**
28	TML	Vinyl Acetate	0.1096	0.0955	13	TML 0.38
29	TM	Ethyl tert Butyl Ether	0.5061	0.5405	6.8	TM
30	TMQ	MEK (2-Butanone)	0.1008	0.0874	13	TMQ 11
31	TM	Cis-1,2-DCE	0.2090	0.2242	7.3	TM
32	TM	2,2-Dichloropropane	0.2980	0.2981	0.03	TM
33	TML	3-Methylpentane	0.0000	0.0103	0.00	TML
34	TM*	Chloroform	0.3513	0.3918	12	TM*
35	TM	Bromochloromethane	0.0601	0.0605	0.71	TM
36	TM	1,1,1-TCA	0.1423	0.1505	5.7	TM
37	TM	Cyclohexane	0.1274	0.1368	7.4	TM
38	TM	1,1-Dichloropropene	0.2244	0.2391	6.5	TM
39	TM	2,2,4-Trimethylpentane	0.4244	0.4524	6.6	TM
40	TM	Carbon Tetrachloride	0.2916	0.3185	9.2	TM

Average

7.1

VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 7

Second Source Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: water

SDG No: \_\_\_\_\_  
Date Analyzed: 1 Feb 19 17:28  
Instrument: Loki  
Cal. Date: 02/01/19  
Data File: 0201L15.D

		Compound	MEAN	CCRF	%D	%Drift
41	TM	Tert Amyl Methyl Ether	0.5478	0.5802	5.9	TM
42	TM	Methylcyclopentane	0.0000	0.0002	0.00	TM
43	TM	1,2-DCA	0.2854	0.3104	8.8	TM
44	TM	Benzene	0.7468	0.7847	5.1	TM
45	TM	TCE	0.1290	0.1361	5.5	TM
46	TM	2-Pentanone	0.1550	0.1523	1.7	TM
47	TM*	1,2-Dichloropropane	0.1971	0.1999	1.4	TM*
48	TM	Bromodichloromethane	0.1632	0.1736	6.4	TM
49	TM	Methyl Cyclohexane	0.2549	0.2655	4.2	TM
50	TM	Dibromomethane	0.1486	0.1560	5.0	TM
51	TM	2-Chloroethyl vinyl ether	0.0044	0.0045	1.8	TM
52	TM	MIBK (methyl isobutyl ketone)	0.1944	0.1926	0.92	TM
53	TM	1-Bromo-2-chloroethane	0.1552	0.1667	7.4	TM
54	TM	Cis-1,3-Dichloropropene	0.3319	0.3364	1.4	TM
55	TM*	Toluene	0.4696	0.5250	12	TM*
56	TM	Trans-1,3-Dichloropropene	0.3243	0.3290	1.4	TM
57	TM	1,1,2-TCA	0.1747	0.1930	10	TM
58	TM	2-Hexanone	0.1399	0.1207	14	TM
59	TM	1,2-EDB	0.1490	0.1492	0.12	TM
60	TM	Tetrachloroethene	0.1898	0.1905	0.37	TM
61	TML	1-Chlorohexane	0.3115	0.3054	2.0	TML 9.6
62	TM	1,1,1,2-Tetrachloroethane	0.3193	0.3230	1.2	TM
63	TM	m&p-Xylene	0.8065	0.8888	10	TM
64	TM	o-Xylene	0.2281	0.2494	9.4	TM
65	TM	Styrene	0.7226	0.7832	8.4	TM
66	TM	1,3-Dichloropropane	0.4180	0.4393	5.1	TM
67	TM	Dibromochloromethane	0.3335	0.3450	3.5	TM
68	TM**	Chlorobenzene	0.7553	0.8005	6.0	TM**
69	TM*	Ethylbenzene	0.6208	0.6484	4.5	TM*
70	TM**	Bromoform	0.2697	0.2749	1.9	TM**
71	TM	Isopropylbenzene	1.909	2.103	10	TM
72	TM**	1,1,2,2-Tetrachloroethane	0.6528	0.6547	0.30	TM**
73	TML	1,2,3-Trichloropropane	0.1261	0.1357	7.6	TML 11
74	TML	t-1,4-Dichloro-2-Butene	0.1255	0.1343	7.0	TML 4.3
75	TM	Bromobenzene	0.3467	0.3844	11	TM
76	TM	n-Propylbenzene	1.172	1.311	12	TM
77	TM	4-Ethyltoluene	1.828	2.001	9.5	TM
78	TM	2-Chlorotoluene	0.7488	0.7963	6.3	TM
79	TML	1,3,5-Trimethylbenzene	1.504	1.675	11	TML 1.3
80	TM	4-Chlorotoluene	0.8555	0.9640	13	TM

Average

5.8

VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 7

Second Source Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: water

SDG No: \_\_\_\_\_  
Date Analyzed: 1 Feb 19 17:28  
Instrument: Loki  
Cal. Date: 02/01/19  
Data File: 0201L15.D

		Compound	MEAN	CCRF	%D	%Drift
81	TM	Tert-Butylbenzene	1.643	1.735	5.5	TM
82	TM	1,2,4-Trimethylbenzene	1.476	1.589	7.6	TM
83	TM	Sec-Butylbenzene	1.977	2.177	10	TM
84	TM	p-Isopropyltoluene	0.9050	0.9840	8.7	TM
85	TM	Benzyl Chloride	0.8547	0.7480	12	TM
86	TM	1,3-DCB	0.5946	0.6238	4.9	TM
87	TM	1,4-DCB	1.161	1.278	10	TM
88	TM	n-Butylbenzene	1.283	1.336	4.1	TM
89	TM	1,2-DCB	1.163	1.203	3.4	TM
90	TM	Hexachloroethane	0.4049	0.4447	9.8	TM
91	TM	1,2-Dibromo-3-chloropropane	0.1391	0.1385	0.38	TM
92	TM	1,2,4-Trichlorobenzene	0.7302	0.7815	7.0	TM
93	TM	Hexachlorobutadiene	0.3881	0.4041	4.1	TM
94	TM	Naphthalene	1.596	1.604	0.49	TM
95	TML	1,2,3-Trichlorobenzene	0.3612	0.3660	1.3	TML 1.8
96						
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120						

Average

6.0

Quantitation Report (Not Reviewed)

Data File : M:\LOKI\DATA\190201\0201L15.D  
 Acq On : 1 Feb 19 17:28  
 Sample : (SS)10ug/L VOC STD 02/01/19  
 Misc : IS&S 11/8/18

Vial: 14  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 4 12:08 2019

Quant Results File: L0201W.RES

Quant Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Mon Feb 04 12:05:25 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	287232	25.000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.97	117	240704	25.000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.53	152	133440	25.000	ppb	0.00

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
38) Dibromofluoromethane(S)	5.65	111	131341	26.006	ppb	0.00
Spiked Amount				25.000		
				Recovery	=	104.024%
43) 1,2-DCA-D4(S)	6.07	65	146696	25.399	ppb	0.00
Spiked Amount				25.000		
				Recovery	=	101.596%
64) Toluene-D8(S)	8.37	98	491243	25.590	ppb	0.00
Spiked Amount				25.000		
				Recovery	=	102.360%
72) 4-Bromofluorobenzene(S)	11.26	95	189040	25.381	ppb	0.00
Spiked Amount				25.000		
				Recovery	=	101.524%

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Freon 1113	1.12	116	129792	114.883	ppb	98
3) Dichlorodifluoromethane	1.15	85	17524	10.902	ppb	91
4) Freon 114	1.25	85	19878	10.759	ppb	88
5) Chloromethane	1.29	50	23712	10.083	ppb	96
6) Vinyl chloride	1.38	62	19377	11.561	ppb	98
7) 2-Chloro-1,1,1-trifluoroet	1.48	118	211648	113.793	ppb	99
8) Bromomethane	1.65	94	17200	11.464	ppb	93
9) Chloroethane	1.75	64	9206	10.911	ppb	97
10) Dichlorofluoromethane	1.95	67	35824	11.115	ppb	94
11) Trichlorofluoromethane	2.00	101	33676	10.535	ppb	96
12) Acrolein	2.42	56	38200	120.117	ppb	95
13) Acetone	2.61	43	3900	8.780	ppb	94
14) Freon-113	2.54	101	16558	10.213	ppb	89
15) 1,1-DCE	2.52	63	5006	11.280	ppb	91
16) t-Butanol	3.37	59	30997	123.787	ppb	97
17) 2-Propanol	2.83	45	14697	95.115	ppb	# 80
18) Acetonitrile	2.91	41	34358	120.705	ppb	96
19) Methyl Acetate	3.01	43	18657	11.110	ppb	98
20) Iodomethane	2.67	142	5836	9.331	ppb	91
21) Acrylonitrile	3.44	52	7984	9.869	ppb	97
22) Methylene chloride	3.09	84	22040	10.771	ppb	84
23) Carbon disulfide	2.73	76	50266	10.295	ppb	99
24) Methyl t-butyl ether (MtBE)	3.52	73	66552	10.525	ppb	95
25) Trans-1,2-DCE	2.52	96	9772	10.822	ppb	100
26) Diisopropyl Ether	4.33	45	56502	10.229	ppb	95
27) 2,2-Dichloro-1,1,1-trifluo	1.95	85	1484	11.278	ppb	# 91
28) 1,1-DCA	4.10	63	37891	10.773	ppb	98
29) Vinyl Acetate	4.33	43	10977	10.038	ppb	# 98
30) Ethyl tert Butyl Ether	4.86	59	62100	10.681	ppb	98
31) MEK (2-Butanone)	5.06	43	10041	8.908	ppb	99
32) Cis-1,2-DCE	4.98	96	25758	10.727	ppb	98
33) 2,2-Dichloropropane	4.96	77	34251	10.003	ppb	96
35) 3-Methylpentane	2.42	57	1179	179.243	ppb	# 100
36) Chloroform	5.45	83	45020	11.153	ppb	95
37) Bromochloromethane	5.30	128	6954	10.071	ppb	75
39) 1,1,1-TCA	5.65	97	17288	10.574	ppb	97
40) Cyclohexane	5.72	41	15718	10.739	ppb	91
41) 1,1-Dichloropropene	5.88	75	27470	10.655	ppb	89
42) 2,2,4-Trimethylpentane	6.29	57	51975	10.658	ppb	98

(#) = qualifier out of range (m) = manual integration  
 0201L15.D L0201W.M Mon Feb 04 12:23:52 2019 Page 450 of 703

Data File : M:\LOKI\DATA\190201\0201L15.D  
 Acq On : 1 Feb 19 17:28  
 Sample : (SS)10ug/L VOC STD 02/01/19  
 Misc : IS&S 11/8/18

Vial: 14  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 4 12:08 2019

Quant Results File: L0201W.RES

Quant Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Mon Feb 04 12:05:25 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
44) Carbon Tetrachloride	5.87	117	36596	10.925	ppb	98
45) Tert Amyl Methyl Ether	6.36	73	66658	10.590	ppb	99
46) Methylcyclopentane	3.86	56	20	3.953	ppb	100
47) 1,2-DCA	6.16	62	35667	10.876	ppb	97
48) Benzene	6.13	78	90153	10.507	ppb #	95
49) TCE	6.95	130	15637	10.547	ppb	93
50) 2-Pentanone	7.22	43	218791	122.843	ppb	98
51) 1,2-Dichloropropane	7.20	63	22965	10.143	ppb	95
52) Bromodichloromethane	7.54	83	19944	10.635	ppb	96
53) Methyl Cyclohexane	7.17	83	30507	10.418	ppb	95
54) Dibromomethane	7.33	93	17926	10.498	ppb	95
55) 2-Chloroethyl vinyl ether	7.93	43	518	10.178	ppb	87
56) MIBK (methyl isobutyl ket	8.28	43	22125	9.908	ppb	93
57) 1-Bromo-2-chloroethane	7.88	63	19152	10.744	ppb	92
58) Cis-1,3-Dichloropropene	8.07	75	38652	10.136	ppb	97
59) Toluene	8.44	91	60320	11.180	ppb	95
60) Trans-1,3-Dichloropropene	8.70	75	37795	10.143	ppb	100
61) 1,1,2-TCA	8.90	83	22174	11.046	ppb	91
62) 2-Hexanone	9.22	43	13867	8.630	ppb	97
65) 1,2-EDB	9.44	107	14366	10.012	ppb	91
66) Tetrachloroethene	9.05	166	18344	10.037	ppb	94
67) 1-Chlorohexane	10.00	91	29400	10.965	ppb	98
68) 1,1,1,2-Tetrachloroethane	10.09	131	31102	10.118	ppb	96
69) m&p-Xylene	10.26	91	171151	22.041	ppb	99
70) o-Xylene	10.70	106	24016	10.936	ppb	96
71) Styrene	10.71	104	75403	10.839	ppb	97
73) 1,3-Dichloropropane	9.08	76	42295	10.508	ppb	99
74) Dibromochloromethane	9.33	129	33216	10.346	ppb	95
75) Chlorobenzene	9.99	112	77070	10.598	ppb	99
76) Ethylbenzene	10.13	91	62432	10.446	ppb	99
77) Bromoform	10.90	173	26469	10.194	ppb	96
79) Isopropylbenzene	11.11	105	112268	11.015	ppb	98
80) 1,1,2,2-Tetrachloroethane	11.43	83	34947	10.030	ppb	94
81) 1,2,3-Trichloropropane	11.47	110	7242	11.071	ppb	95
82) t-1,4-Dichloro-2-Butene	11.49	53	7169	9.573	ppb	84
83) Bromobenzene	11.42	156	20520	11.089	ppb	85
84) n-Propylbenzene	11.56	91	69964	11.180	ppb	99
85) 4-Ethyltoluene	11.69	105	106812	10.948	ppb	97
86) 2-Chlorotoluene	11.64	91	42504	10.634	ppb	98
87) 1,3,5-Trimethylbenzene	11.75	105	89431	10.132	ppb	97
88) 4-Chlorotoluene	11.76	91	51456	11.269	ppb	98
89) Tert-Butylbenzene	12.11	119	92582	10.555	ppb	96
90) 1,2,4-Trimethylbenzene	12.17	105	84795	10.762	ppb	95
91) Sec-Butylbenzene	12.35	105	116210	11.014	ppb	99
92) p-Isopropyltoluene	12.52	119	52520	10.872	ppb	98
93) Benzyl Chloride	12.71	91	39927	8.752	ppb	97
94) 1,3-DCB	12.46	146	33296	10.491	ppb	98
95) 1,4-DCB	12.56	146	68188	11.004	ppb	95
96) n-Butylbenzene	12.97	91	71288	10.410	ppb	99
97) 1,2-DCB	12.97	146	64210	10.344	ppb	94
98) Hexachloroethane	13.26	117	23738	10.985	ppb	85
99) 1,2-Dibromo-3-chloropropan	13.82	75	7394	9.962	ppb	89
100) 1,2,4-Trichlorobenzene	14.74	180	41715	10.704	ppb	94
101) Hexachlorobutadiene	14.94	225	21567	10.412	ppb	92

(#) = qualifier out of range (m) = manual integration  
 0201L15.D L0201W.M Mon Feb 04 12:25:52 2019 Page 45 of 703



Data File : M:\LOKI\DATA\190201\0201L15.D Vial: 14  
 Acq On : 1 Feb 19 17:28 Operator: PM,DG,SV,CMM,KV  
 Sample : (SS)10ug/L VOC STD 02/01/19 Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Feb 4 12:08 2019 Quant Results File: L0201W.RES

Quant Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Mon Feb 04 12:05:25 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
102) Naphthalene	15.01	128	85622	10.049	ppb	94
103) 1,2,3-Trichlorobenzene	15.27	180	19536	10.182	ppb	99

Quantitation Report

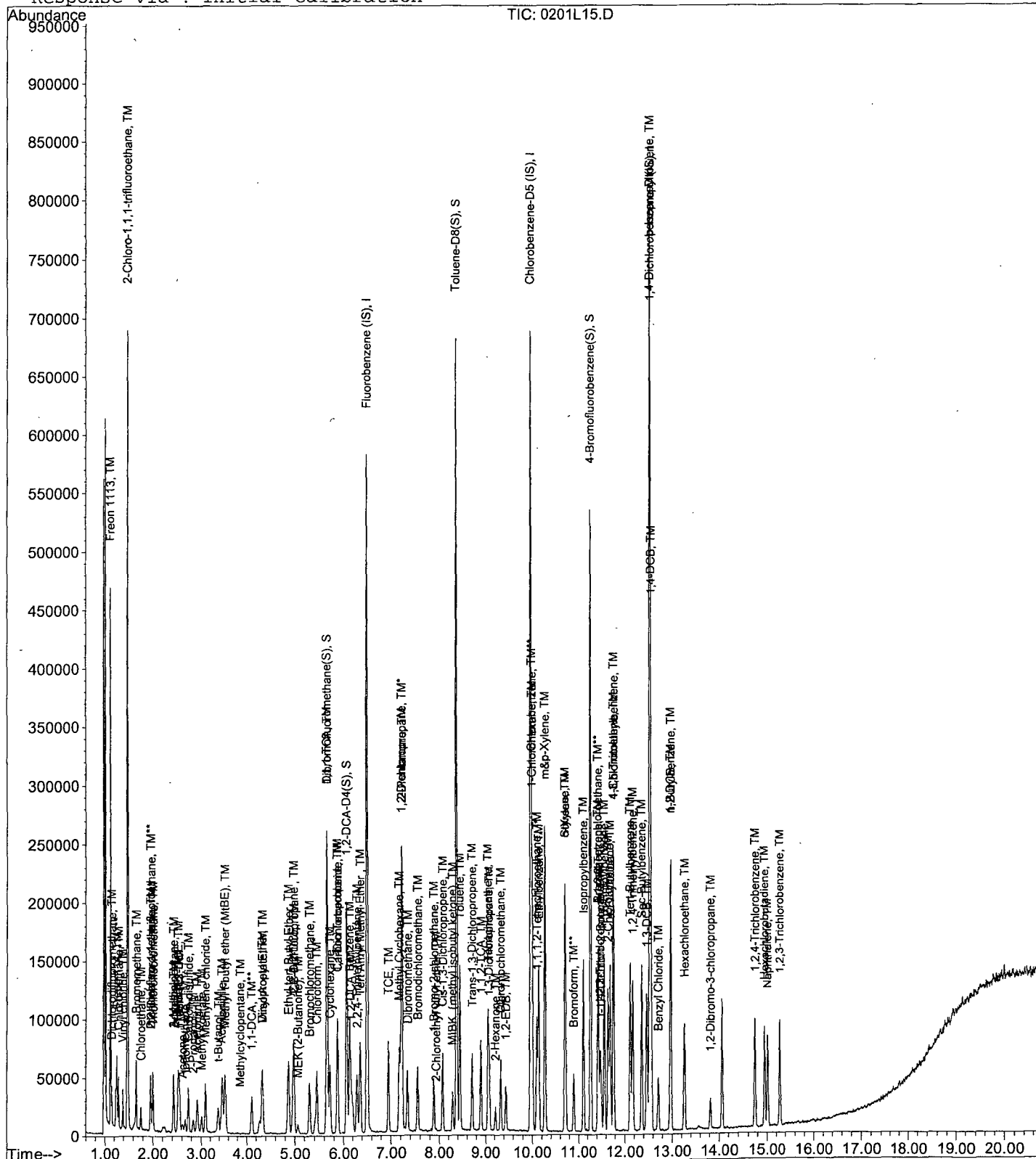
Data File : M:\LOKI\DATA\190201\0201L15.D  
Acq On : 1 Feb 19 17:28  
Sample : (SS)10ug/L VOC STD 02/01/19  
Misc : IS&S 11/8/18

Vial: 14  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 4 12:08 2019

Quant Results File: L0201W.RES

Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Mon Feb 04 12:12:22 2019  
Response via : Initial Calibration



VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 7

Continuing Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: water

SDG No: \_\_\_\_\_  
Date Analyzed: 2 Feb 19 13:12  
Instrument: Loki  
Initial Cal. Date: 02/01/19  
Data File: 0202L13.D

		Compound	MEAN	CCRF	%D	%Drift	
1	I	Fluorobenzene (IS)	ISTD				I
2	TM	Freon 1113	0.0983	0.1061	7.8		TM
3	TM	Dichlorodifluoromethane	0.1399	0.1658	18		TM
4	TM	Freon 114	0.1608	0.1804	12		TM
5	TM**	Chloromethane	0.2047	0.2281	11		TM**
6	TM*	Vinyl chloride	0.1459	0.1653	13		TM*
7	TM	2-Chloro-1,1,1-trifluoroethane	0.1619	0.1803	11		TM
8	TM	Bromomethane	0.1306	0.1664	27		TM
9	TM	Chloroethane	0.0734	0.0921	25		TM
10	TM	Dichlorofluoromethane	0.2805	0.3305	18		TM
11	TM	Trichlorofluoromethane	0.2782	0.3361	21		TM
12	TM	Acrolein	0.0277	0.0263	4.8		TM
13	TML	Acetone	0.0442	0.0396	10		TML 4.5
14	TM	Freon-113	0.1411	0.1568	11		TM
15	TM*L	1,1-DCE	0.0428	0.0434	1.5		TM*L 12
16	TM	t-Butanol	0.0218	0.0190	13		TM
17	TM	2-Propanol	0.0134	0.0115	14		TM
18	TM	Acetonitrile	0.0248	0.0259	4.6		TM
19	TML	Methyl Acetate	0.1530	0.1459	4.6		TML 1.5
20	TML	Iodomethane	0.0470	0.0303	36		TML 32
21	TM	Acrylonitrile	0.0704	0.0686	2.6		TM
22	TML	Methylene chloride	0.1974	0.1868	5.4		TML 4.6
23	TM	Carbon disulfide	0.4250	0.4511	6.2		TM
24	TM	Methyl t-butyl ether (MtBE)	0.5503	0.5879	6.8		TM
25	TML	Trans-1,2-DCE	0.0831	0.0878	5.7		TML 12
26	TM	Diisopropyl Ether	0.4808	0.5351	11		TM
27	TM**	2,2-Dichloro-1,1,1-trifluoroethane	0.0115	0.0094	18		TM**
28	TM**	1,1-DCA	0.3061	0.3536	15		TM**
29	TML	Vinyl Acetate	0.1096	0.1124	2.5		TML 19
30	TM	Ethyl tert Butyl Ether	0.5061	0.5726	13		TM
31	TMQ	MEK (2-Butanone)	0.1008	0.0974	3.4		TMQ 0.07
32	TM	Cis-1,2-DCE	0.2090	0.2302	10		TM
33	TM	2,2-Dichloropropane	0.2980	0.3492	17		TM
34	TML	3-Methylpentane	0.0000	0.0002	0.00		TML
35	TM*	Chloroform	0.3513	0.3962	13		TM*
36	TM	Bromochloromethane	0.0601	0.0568	5.5		TM
37	S	Dibromofluoromethane(S)	0.4396	0.4557	3.7		S
38	TM	1,1,1-TCA	0.1423	0.1702	20		TM
39	TM	Cyclohexane	0.1274	0.1461	15		TM
40	TM	1,1-Dichloropropene	0.2244	0.2570	15		TM

Average

11.6

VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 7

Continuing Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: water

SDG No: \_\_\_\_\_  
Date Analyzed: 2 Feb 19 13:12  
Instrument: Loki  
Cal. Date: 02/01/19  
Data File: 0202L13.D

		Compound	MEAN	CCRF	%D	%Drift	
41	TM	2,2,4-Trimethylpentane	0.4244	0.4749	12	TM	
42	S	1,2-DCA-D4(S)	0.5027	0.5787	15	S	
43	TM	Carbon Tetrachloride	0.2916	0.3482	19	TM	
44	TM	Tert Amyl Methyl Ether	0.5478	0.5783	5.6	TM	
45	TM	Methylcyclopentane	0.0000	0.0013	0.00	TM	
46	TM	1,2-DCA	0.2854	0.3401	19	TM	
47	TM	Benzene	0.7468	0.7652	2.5	TM	
48	TM	TCE	0.1290	0.1228	4.9	TM	
49	TM	2-Pentanone	0.1550	0.1488	4.0	TM	
50	TM*	1,2-Dichloropropane	0.1971	0.2023	2.6	TM*	
51	TM	Bromodichloromethane	0.1632	0.1726	5.7	TM	
52	TM	Methyl Cyclohexane	0.2549	0.2718	6.6	TM	
53	TM	Dibromomethane	0.1486	0.1495	0.55	TM	
54	TM	2-Chloroethyl vinyl ether	0.0044	0.0063	42	TM	*NT
55	TM	MIBK (methyl isobutyl ketone)	0.1944	0.1802	7.3	TM	
56	TM	1-Bromo-2-chloroethane	0.1552	0.1643	5.9	TM	
57	TM	Cis-1,3-Dichloropropene	0.3319	0.3433	3.4	TM	
58	TM*	Toluene	0.4696	0.5015	6.8	TM*	
59	TM	Trans-1,3-Dichloropropene	0.3243	0.3468	6.9	TM	
60	TM	1,1,2-TCA	0.1747	0.1630	6.7	TM	
61	TM	2-Hexanone	0.1399	0.1247	11	TM	
62	I	Chlorobenzene-D5 (IS)	ISTD			I	
63	S	Toluene-D8(S)	1.994	2.041	2.4	S	
64	TM	1,2-EDB	0.1490	0.1493	0.15	TM	
65	TM	Tetrachloroethene	0.1898	0.1788	5.8	TM	
66	TML	1-Chlorohexane	0.3115	0.2986	4.1	TML	7.4
67	TM	1,1,1,2-Tetrachloroethane	0.3193	0.3243	1.6	TM	
68	TM	m&p-Xylene	0.8065	0.9146	13	TM	
69	TM	o-Xylene	0.2281	0.2432	6.6	TM	
70	TM	Styrene	0.7226	0.7452	3.1	TM	
71	S	4-Bromofluorobenzene(S)	0.7736	0.7956	2.8	S	
72	TM	1,3-Dichloropropane	0.4180	0.4086	2.2	TM	
73	TM	Dibromochloromethane	0.3335	0.3438	3.1	TM	
74	TM**	Chlorobenzene	0.7553	0.7846	3.9	TM**	
75	TM*	Ethylbenzene	0.6208	0.6941	12	TM*	
76	TM**	Bromoform	0.2697	0.2652	1.7	TM**	
77	I	1,4-Dichlorobenzene-D (IS)	ISTD			I	
78	TM	Isopropylbenzene	1.909	2.235	17	TM	
79	TM**	1,1,2,2-Tetrachloroethane	0.6528	0.6009	7.9	TM**	
80	TML	1,2,3-Trichloropropane	0.1261	0.1278	1.3	TML	3.4

Average

7.3

VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 7

Continuing Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: water

SDG No: \_\_\_\_\_  
Date Analyzed: 2 Feb 19 13:12  
Instrument: Loki  
Cal. Date: 02/01/19  
Data File: 0202L13.D

		Compound	MEAN	CCRF	%D	%Drift
81	TML	t-1,4-Dichloro-2-Butene	0.1255	0.1369	9.0	TML 2.3
82	TM	Bromobenzene	0.3467	0.3676	6.0	TM
83	TM	n-Propylbenzene	1.172	1.305	11	TM
84	TM	4-Ethyltoluene	1.828	2.054	12	TM
85	TM	2-Chlorotoluene	0.7488	0.8792	17	TM
86	TML	1,3,5-Trimethylbenzene	1.504	1.684	12	TML 1.8
87	TM	4-Chlorotoluene	0.8555	0.9264	8.3	TM
88	TM	Tert-Butylbenzene	1.643	1.804	9.8	TM
89	TM	1,2,4-Trimethylbenzene	1.476	1.681	14	TM
90	TM	Sec-Butylbenzene	1.977	2.157	9.1	TM
91	TM	p-Isopropyltoluene	0.9050	1.026	13	TM
92	TM	Benzyl Chloride	0.8547	0.8620	0.86	TM
93	TM	1,3-DCB	0.5946	0.6341	6.6	TM
94	TM	1,4-DCB	1.161	1.215	4.7	TM
95	TM	n-Butylbenzene	1.283	1.380	7.6	TM
96	TM	1,2-DCB	1.163	1.220	4.9	TM
97	TM	Hexachloroethane	0.4049	0.4390	8.4	TM
98	TM	1,2-Dibromo-3-chloropropane	0.1391	0.1359	2.3	TM
99	TM	1,2,4-Trichlorobenzene	0.7302	0.7229	0.99	TM
100	TM	Hexachlorobutadiene	0.3881	0.4460	15	TM
101	TM	Naphthalene	1.596	1.446	9.4	TM
102	TML	1,2,3-Trichlorobenzene	0.3612	0.3402	5.8	TML 4.7
103						
104						
105						
106						
107						
108						
109						
110						
111						
112						
113						
114						
115						
116						
117						
118						
119						
120						

Average

8.5

Data File : M:\LOKI\DATA\190201\0202L13.D  
 Acq On : 2 Feb 19 13:12  
 Sample : 190202A CCV 10ug/L  
 Misc : IS&S 11/8/18

Vial: 2  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 4 12:09 2019

Quant Results File: L0201W.RES

Quant Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Mon Feb 04 12:05:25 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	214720	25.000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.97	117	175872	25.000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.53	152	94968	25.000	ppb	0.00
<b>System Monitoring Compounds</b>						
38) Dibromofluoromethane(S)	5.65	111	97843	25.916	ppb	0.00
Spiked Amount	25.000		Recovery	=	103.664%	
43) 1,2-DCA-D4(S)	6.07	65	124268	28.782	ppb	0.00
Spiked Amount	25.000		Recovery	=	115.128%	
64) Toluene-D8(S)	8.37	98	358907	25.588	ppb	0.00
Spiked Amount	25.000		Recovery	=	102.352%	
72) 4-Bromofluorobenzene(S)	11.26	95	139924	25.712	ppb	0.00
Spiked Amount	25.000		Recovery	=	102.848%	
<b>Target Compounds</b>						
2) Freon 1113	1.12	116	91084	107.847	ppb	93
3) Dichlorodifluoromethane	1.15	85	14237	11.848	ppb	97
4) Freon 114	1.25	85	15492	11.216	ppb	84
5) Chloromethane	1.29	50	19592	11.145	ppb	97
6) Vinyl chloride	1.38	62	14196	11.330	ppb	91
7) 2-Chloro-1,1,1-trifluoroet	1.48	118	154880	111.393	ppb	98
8) Bromomethane	1.65	94	14290	12.741	ppb	100
9) Chloroethane	1.75	64	7908	12.538	ppb	94
10) Dichlorofluoromethane	1.95	67	28383	11.780	ppb	98
11) Trichlorofluoromethane	2.00	101	28868	12.081	ppb	100
12) Acrolein	2.42	56	28284	118.971	ppb	99
13) Acetone	2.61	43	3404	10.453	ppb	# 87
14) Freon-113	2.55	101	13467	11.111	ppb	95
15) 1,1-DCE	2.52	63	3729	11.238	ppb	91
16) t-Butanol	3.37	59	20429	109.135	ppb	95
17) 2-Propanol	2.83	45	9892	85.638	ppb	# 76
18) Acetonitrile	2.92	41	27822	130.751	ppb	94
19) Methyl Acetate	3.01	43	12534	9.848	ppb	86
20) Iodomethane	2.66	142	2604	6.790	ppb	96
21) Acrylonitrile	3.44	52	5893	9.744	ppb	93
22) Methylene chloride	3.09	84	16041	10.465	ppb	86
23) Carbon disulfide	2.73	76	38748	10.616	ppb	99
24) Methyl t-butyl ether (MtBE)	3.53	73	50490	10.682	ppb	97
25) Trans-1,2-DCE	2.52	96	7540	11.180	ppb	98
26) Diisopropyl Ether	4.33	45	45960	11.130	ppb	93
27) 2,2-Dichloro-1,1,1-trifluo	1.95	85	811	8.245	ppb	# 19
28) 1,1-DCA	4.10	63	30368	11.550	ppb	89
29) Vinyl Acetate	4.32	43	9655	11.894	ppb	# 98
30) Ethyl tert Butyl Ether	4.86	59	49181	11.315	ppb	95
31) MEK (2-Butanone)	5.06	43	8367	9.993	ppb	85
32) Cis-1,2-DCE	4.98	96	19775	11.017	ppb	95
33) 2,2-Dichloropropane	4.96	77	29995	11.719	ppb	96
35) 3-Methylpentane	2.73	57	20	4.067	ppb	# 100
36) Chloroform	5.44	83	34031	11.278	ppb	87
37) Bromochloromethane	5.30	128	4877	9.449	ppb	# 67
39) 1,1,1-TCA	5.65	97	14614	11.957	ppb	91
40) Cyclohexane	5.71	41	12551	11.471	ppb	97
41) 1,1-Dichloropropene	5.88	75	22077	11.455	ppb	92
42) 2,2,4-Trimethylpentane	6.29	57	40785	11.188	ppb	98

(#) = qualifier out of range (m) = manual integration

Data File : M:\LOKI\DATA\190201\0202L13.D  
 Acq On : 2 Feb 19 13:12  
 Sample : 190202A CCV 10ug/L  
 Misc : IS&S 11/8/18

Vial: 2  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 4 12:09 2019

Quant Results File: L0201W.RES

Quant Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Mon Feb 04 12:05:25 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
44) Carbon Tetrachloride	5.87	117	29903	11.941	ppb	94
45) Tert Amyl Methyl Ether	6.35	73	49667	10.556	ppb	95
46) Methylcyclopentane	3.92	56	110	29.082	ppb	100
47) 1,2-DCA	6.16	62	29209	11.915	ppb	94
48) Benzene	6.13	78	65719	10.245	ppb #	93
49) TCE	6.95	130	10545	9.515	ppb	95
50) 2-Pentanone	7.22	43	159716	119.958	ppb	93
51) 1,2-Dichloropropane	7.21	63	17371	10.264	ppb	97
52) Bromodichloromethane	7.54	83	14820	10.572	ppb	100
53) Methyl Cyclohexane	7.17	83	23345	10.664	ppb	96
54) Dibromomethane	7.34	93	12836	10.055	ppb	94
55) 2-Chloroethyl vinyl ether	7.93	43	542	14.246	ppb #	25
56) MIBK (methyl isobutyl ket	8.28	43	15480	9.273	ppb #	91
57) 1-Bromo-2-chloroethane	7.88	63	14110	10.589	ppb	100
58) Cis-1,3-Dichloropropene	8.07	75	29486	10.343	ppb	89
59) Toluene	8.44	91	43072	10.679	ppb	100
60) Trans-1,3-Dichloropropene	8.70	75	29784	10.693	ppb	98
61) 1,1,2-TCA	8.90	83	13996	9.327	ppb	92
62) 2-Hexanone	9.21	43	10708	8.914	ppb #	84
65) 1,2-EDB	9.44	107	10500	10.015	ppb	99
66) Tetrachloroethene	9.05	166	12581	9.422	ppb	88
67) 1-Chlorohexane	9.99	91	21005	10.743	ppb #	86
68) 1,1,1,2-Tetrachloroethane	10.09	131	22813	10.158	ppb	99
69) m&p-Xylene	10.26	91	128686	22.682	ppb	95
70) o-Xylene	10.70	106	17112	10.665	ppb	98
71) Styrene	10.71	104	52427	10.314	ppb	91
73) 1,3-Dichloropropane	9.08	76	28747	9.775	ppb	95
74) Dibromochloromethane	9.33	129	24183	10.309	ppb	94
75) Chlorobenzene	10.00	112	55195	10.388	ppb	97
76) Ethylbenzene	10.13	91	48832	11.182	ppb	99
77) Bromoform	10.90	173	18653	9.832	ppb	97
79) Isopropylbenzene	11.11	105	84888	11.703	ppb	95
80) 1,1,2,2-Tetrachloroethane	11.43	83	22827	9.206	ppb #	92
81) 1,2,3-Trichloropropane	11.47	110	4853	10.345	ppb	99
82) t-1,4-Dichloro-2-Butene	11.50	53	5199	9.767	ppb #	71
83) Bromobenzene	11.42	156	13966	10.605	ppb	93
84) n-Propylbenzene	11.56	91	49562	11.128	ppb	98
85) 4-Ethyltoluene	11.69	105	78009	11.235	ppb	100
86) 2-Chlorotoluene	11.64	91	33400	11.741	ppb	97
87) 1,3,5-Trimethylbenzene	11.76	105	63984	10.183	ppb	98
88) 4-Chlorotoluene	11.76	91	35192	10.829	ppb	94
89) Tert-Butylbenzene	12.11	119	68521	10.976	ppb	97
90) 1,2,4-Trimethylbenzene	12.17	105	63873	11.391	ppb	98
91) Sec-Butylbenzene	12.35	105	81927	10.910	ppb	98
92) p-Isopropyltoluene	12.52	119	38976	11.337	ppb	97
93) Benzyl Chloride	12.71	91	32745	10.086	ppb	100
94) 1,3-DCB	12.46	146	24088	10.665	ppb	100
95) 1,4-DCB	12.56	146	46164	10.468	ppb	94
96) n-Butylbenzene	12.97	91	52418	10.756	ppb	100
97) 1,2-DCB	12.97	146	46337	10.489	ppb	94
98) Hexachloroethane	13.26	117	16678	10.844	ppb	95
99) 1,2-Dibromo-3-chloropropan	13.82	75	5162	9.772	ppb #	83
100) 1,2,4-Trichlorobenzene	14.74	180	27461	9.901	ppb	99
101) Hexachlorobutadiene	14.93	225	16941	11.492	ppb	86

(#) = qualifier out of range (m) = manual integration

0202L13.D L0201W.M

Mon Feb 04 12:23:52 2019

Data File : M:\LOKI\DATA\190201\0202L13.D  
 Acq On : 2 Feb 19 13:12  
 Sample : 190202A CCV 10ug/L  
 Misc : IS&S 11/8/18

Vial: 2  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 4 12:09 2019

Quant Results File: L0201W.RES

Quant Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Mon Feb 04 12:05:25 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
102) Naphthalene	15.01	128	54941	9.060	ppb	97
103) 1,2,3-Trichlorobenzene	15.27	180	12925	9.530	ppb	98

(#) = qualifier out of range (m) = manual integration



Quantitation Report

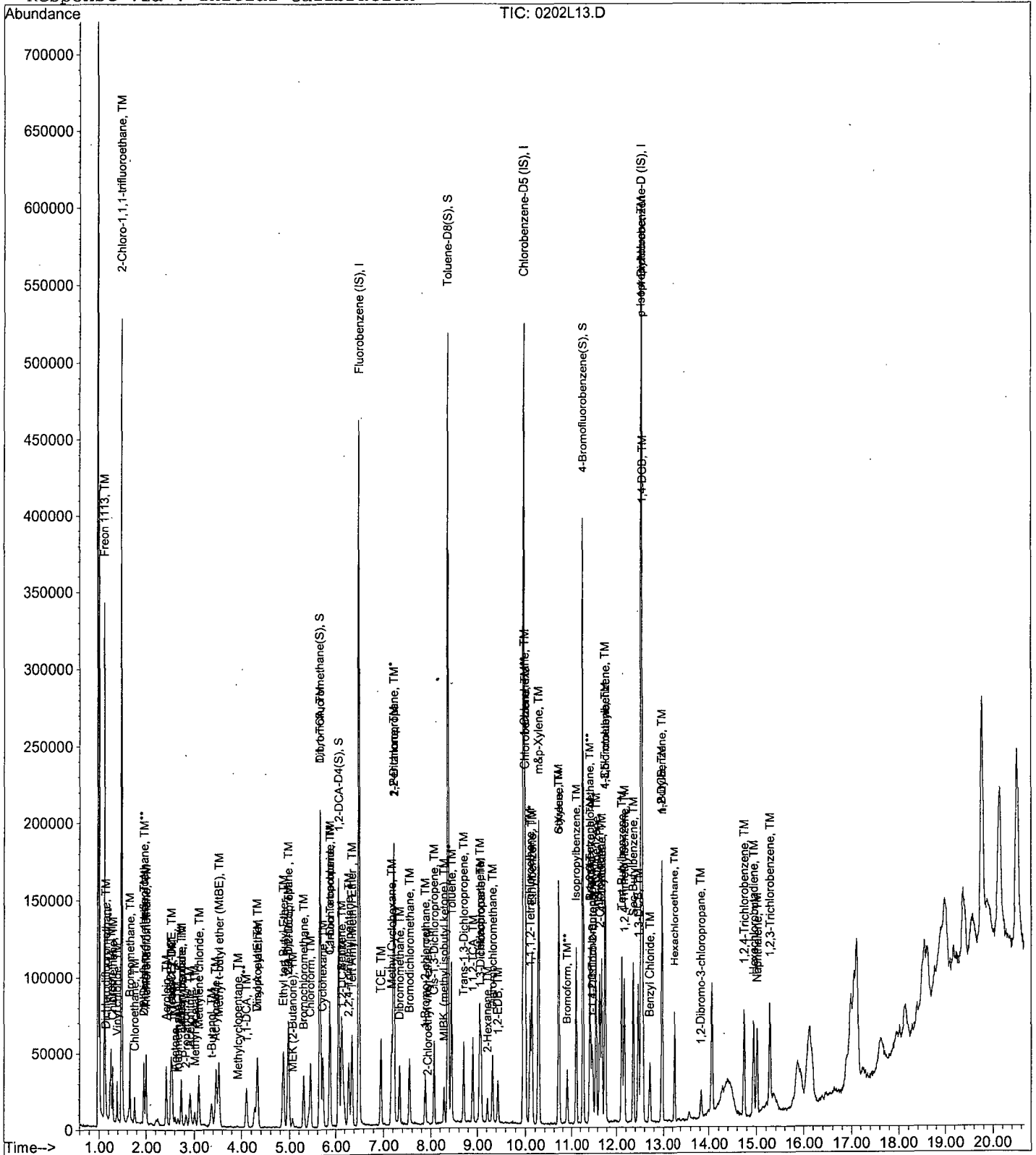
Data File : M:\LOKI\DATA\190201\0202L13.D  
Acq On : 2 Feb 19 13:12  
Sample : 190202A CCV 10ug/L  
Misc : IS&S 11/8/18

Vial: 2  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 4 12:09 2019

Quant Results File: L0201W.RES

Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Mon Feb 04 12:12:22 2019  
Response via : Initial Calibration



VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 7

Ending Continuing Calibration

Lab Name: APPL, Inc.

SDG No: \_\_\_\_\_

Case No: \_\_\_\_\_

Date Analyzed: 2 Feb 19 19:52

Matrix: water

Instrument: Loki

Initial Cal. Date: 02/01/19

Data File: 0202L27.D

	Compound	MEAN	CCRF	%D	%Drift
1	I Fluorobenzene (IS)	ISTD			I
2	TM Freon 1113	0.0983	0.1003	2.0	TM
3	TM Dichlorodifluoromethane	0.1399	0.1586	13	TM
4	TM Freon 114	0.1608	0.1826	14	TM
5	TM** Chloromethane	0.2047	0.2128	4.0	TM**
6	TM* Vinyl chloride	0.1459	0.1590	9.0	TM*
7	TM 2-Chloro-1,1,1-trifluoroethane	0.1619	0.1804	11	TM
8	TM Bromomethane	0.1306	0.1487	14	TM
9	TM Chloroethane	0.0734	0.0769	4.7	TM
10	TM Dichlorofluoromethane	0.2805	0.3311	18	TM
11	TM Trichlorofluoromethane	0.2782	0.3280	18	TM
12	TM Acrolein	0.0277	0.0244	12	TM
13	TML Acetone	0.0442	0.0354	20	TML 7.9
14	TM Freon-113	0.1411	0.1460	3.5	TM
15	TM*L 1,1-DCE	0.0428	0.0436	1.9	TM*L 13
16	TM t-Butanol	0.0218	0.0211	3.2	TM
17	TM 2-Propanol	0.0134	0.0111	17	TM
18	TM Acetonitrile	0.0248	0.0245	1.1	TM
19	TML Methyl Acetate	0.1530	0.1331	13	TML 11
20	TML Iodomethane	0.0470	0.0279	41	TML 35
21	TM Acrylonitrile	0.0704	0.0569	19	TM
22	TML Methylene chloride	0.1974	0.1819	7.9	TML 1.7
23	TM Carbon disulfide	0.4250	0.4325	1.8	TM
24	TM Methyl t-butyl ether (MtBE)	0.5503	0.5863	6.5	TM
25	TML Trans-1,2-DCE	0.0831	0.0837	0.80	TML 6.5
26	TM Diisopropyl Ether	0.4808	0.5007	4.1	TM
27	TM** 2,2-Dichloro-1,1,1-trifluoroethane	0.0115	0.0139	22	TM**
28	TM** 1,1-DCA	0.3061	0.3361	9.8	TM**
29	TML Vinyl Acetate	0.1096	0.1096	0.00	TML 16
30	TM Ethyl tert Butyl Ether	0.5061	0.5600	11	TM
31	TMQ MEK (2-Butanone)	0.1008	0.0925	8.2	TMQ 5.3
32	TM Cis-1,2-DCE	0.2090	0.2311	11	TM
33	TM 2,2-Dichloropropane	0.2980	0.3217	8.0	TM
34	TML 3-Methylpentane	0.0000	0.0003	0.00	TML
35	TM* Chloroform	0.3513	0.3967	13	TM*
36	TM Bromochloromethane	0.0601	0.0607	1.0	TM
37	S Dibromofluoromethane(S)	0.4396	0.4472	1.7	S
38	TM 1,1,1-TCA	0.1423	0.1744	23	TM
39	TM Cyclohexane	0.1274	0.1390	9.1	TM
40	TM 1,1-Dichloropropene	0.2244	0.2491	11	TM

Average

10.0

VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 7

Ending Continuing Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: water

SDG No: \_\_\_\_\_  
Date Analyzed: 2 Feb 19 19:52  
Instrument: Loki  
Cal. Date: 02/01/19  
Data File: 0202L27.D

		Compound	MEAN	CCRF	%D	%Drift
41	TM	2,2,4-Trimethylpentane	0.4244	0.4259	0.35	TM
42	S	1,2-DCA-D4(S)	0.5027	0.6023	20	S
43	TM	Carbon Tetrachloride	0.2916	0.3549	22	TM
44	TM	Tert Amyl Methyl Ether	0.5478	0.5753	5.0	TM
45	TM	Methylcyclopentane	0.0000	0.0003	0.00	TM
46	TM	1,2-DCA	0.2854	0.3423	20	TM
47	TM	Benzene	0.7468	0.7451	0.23	TM
48	TM	TCE	0.1290	0.1335	3.5	TM
49	TM	2-Pentanone	0.1550	0.1432	7.6	TM
50	TM*	1,2-Dichloropropane	0.1971	0.1902	3.5	TM*
51	TM	Bromodichloromethane	0.1632	0.1841	13	TM
52	TM	Methyl Cyclohexane	0.2549	0.2562	0.52	TM
53	TM	Dibromomethane	0.1486	0.1497	0.71	TM
54	TM	2-Chloroethyl vinyl ether	0.0044	0.0036	19	TM
55	TM	MIBK (methyl isobutyl ketone)	0.1944	0.1730	11	TM
56	TM	1-Bromo-2-chloroethane	0.1552	0.1457	6.1	TM
57	TM	Cis-1,3-Dichloropropene	0.3319	0.3334	0.44	TM
58	TM*	Toluene	0.4696	0.4777	1.7	TM*
59	TM	Trans-1,3-Dichloropropene	0.3243	0.3513	8.3	TM
60	TM	1,1,2-TCA	0.1747	0.1647	5.7	TM
61	TM	2-Hexanone	0.1399	0.1227	12	TM
62	I	Chlorobenzene-D5 (IS)	ISTD			I
63	S	Toluene-D8(S)	1.994	2.003	0.46	S
64	TM	1,2-EDB	0.1490	0.1491	0.04	TM
65	TM	Tetrachloroethene	0.1898	0.1819	4.2	TM
66	TML	1-Chlorohexane	0.3115	0.2923	6.1	TML 5.4
67	TM	1,1,1,2-Tetrachloroethane	0.3193	0.3229	1.2	TM
68	TM	m&p-Xylene	0.8065	0.8941	11	TM
69	TM	o-Xylene	0.2281	0.2258	0.98	TM
70	TM	Styrene	0.7226	0.7296	0.97	TM
71	S	4-Bromofluorobenzene(S)	0.7736	0.7496	3.1	S
72	TM	1,3-Dichloropropane	0.4180	0.4291	2.6	TM
73	TM	Dibromochloromethane	0.3335	0.3585	7.5	TM
74	TM**	Chlorobenzene	0.7553	0.7439	1.5	TM**
75	TM*	Ethylbenzene	0.6208	0.6469	4.2	TM*
76	TM**	Bromoform	0.2697	0.2625	2.7	TM**
77	I	1,4-Dichlorobenzene-D (IS)	ISTD			I
78	TM	Isopropylbenzene	1.909	2.082	9.0	TM
79	TM**	1,1,1,2-Tetrachloroethane	0.6528	0.5487	16	TM**
80	TML	1,2,3-Trichloropropane	0.1261	0.1021	19	TML 20

Average

6.6

VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 7

Ending Continuing Calibration

Lab Name: APPL, Inc.

SDG No: \_\_\_\_\_

Case No: \_\_\_\_\_

Date Analyzed: 2 Feb 19 19:52

Matrix: water

Instrument: Loki

Cal. Date: 02/01/19

Data File: 0202L27.D

		Compound	MEAN	CCRF	%D	%Drift
81	TML	t-1,4-Dichloro-2-Butene	0.1255	0.1374	9.4	TML 1.9
82	TM	Bromobenzene	0.3467	0.3451	0.46	TM
83	TM	n-Propylbenzene	1.172	1.217	3.8	TM
84	TM	4-Ethyltoluene	1.828	1.846	1.0	TM
85	TM	2-Chlorotoluene	0.7488	0.7712	3.0	TM
86	TML	1,3,5-Trimethylbenzene	1.504	1.627	8.2	TML 1.5
87	TM	4-Chlorotoluene	0.8555	0.8685	1.5	TM
88	TM	Tert-Butylbenzene	1.643	1.622	1.3	TM
89	TM	1,2,4-Trimethylbenzene	1.476	1.526	3.4	TM
90	TM	Sec-Butylbenzene	1.977	2.025	2.5	TM
91	TM	p-Isopropyltoluene	0.9050	0.9369	3.5	TM
92	TM	Benzyl Chloride	0.8547	0.6392	25	TM
93	TM	1,3-DCB	0.5946	0.6022	1.3	TM
94	TM	1,4-DCB	1.161	1.193	2.8	TM
95	TM	n-Butylbenzene	1.283	1.255	2.2	TM
96	TM	1,2-DCB	1.163	1.129	2.9	TM
97	TM	Hexachloroethane	0.4049	0.4070	0.52	TM
98	TM	1,2-Dibromo-3-chloropropane	0.1391	0.1435	3.2	TM
99	TM	1,2,4-Trichlorobenzene	0.7302	0.6838	6.3	TM
100	TM	Hexachlorobutadiene	0.3881	0.4013	3.4	TM
101	TM	Naphthalene	1.596	1.337	16	TM
102	TML	1,2,3-Trichlorobenzene	0.3612	0.3022	16	TML 14
103						
104						
105						
106						
107						
108						
109						
110						
111						
112						
113						
114						
115						
116						
117						
118						
119						
120						

Average

5.3

Data File : M:\LOKI\DATA\190201\0202L27.D  
 Acq On : 2 Feb 19 19:52  
 Sample : Ending CCV 10ug/L 02/02/19  
 Misc : IS&S 11/8/18

Vial: 16  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 4 12:09 2019

Quant Results File: L0201W.RES

Quant Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Mon Feb 04 12:05:25 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	190720	25.000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.97	117	158144	25.000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.53	152	89232	25.000	ppb	0.00

System Monitoring Compounds

38) Dibromofluoromethane(S)	5.65	111	85283	25.431	ppb	0.00
Spiked Amount						Recovery = 101.724%
43) 1,2-DCA-D4(S)	6.07	65	114874	29.954	ppb	0.00
Spiked Amount						Recovery = 119.816%
64) Toluene-D8(S)	8.37	98	316759	25.115	ppb	0.00
Spiked Amount						Recovery = 100.460%
72) 4-Bromofluorobenzene(S)	11.26	95	118548	24.226	ppb	0.00
Spiked Amount						Recovery = 96.904%

Target Compounds

	R.T.	QIon	Response	Conc	Units	Qvalue
2) Freon 1113	1.12	116	76516	101.999	ppb	95
3) Dichlorodifluoromethane	1.15	85	12100	11.336	ppb	91
4) Freon 114	1.25	85	13931	11.355	ppb	95
5) Chloromethane	1.29	50	16232	10.396	ppb	99
6) Vinyl chloride	1.38	62	12130	10.899	ppb	90
7) 2-Chloro-1,1,1-trifluoroet	1.48	118	137600	111.419	ppb	97
8) Bromomethane	1.65	94	11343	11.386	ppb	98
9) Chloroethane	1.75	64	5868	10.475	ppb	92
10) Dichlorofluoromethane	1.95	67	25258	11.803	ppb	96
11) Trichlorofluoromethane	2.00	101	25023	11.789	ppb	97
12) Acrolein	2.42	56	23303	110.354	ppb	93
13) Acetone	2.61	43	2702	9.213	ppb	91
14) Freon-113	2.54	101	11141	10.349	ppb	93
15) 1,1-DCE	2.52	63	3326	11.287	ppb	95
16) t-Butanol	3.36	59	20112	120.962	ppb	93
17) 2-Propanol	2.83	45	8465	82.506	ppb	# 84
18) Acetonitrile	2.92	41	23369	123.644	ppb	97
19) Methyl Acetate	3.01	43	10154	8.863	ppb	99
20) Iodomethane	2.67	142	2130	6.493	ppb	# 73
21) Acrylonitrile	3.44	52	4344	8.087	ppb	77
22) Methylene chloride	3.10	84	13873	10.167	ppb	79
23) Carbon disulfide	2.73	76	32994	10.177	ppb	98
24) Methyl t-butyl ether (MtBE)	3.52	73	44725	10.653	ppb	97
25) Trans-1,2-DCE	2.52	96	6388	10.650	ppb	90
26) Diisopropyl Ether	4.32	45	38195	10.413	ppb	98
27) 2,2-Dichloro-1,1,1-trifluo	1.96	85	1062	12.156	ppb	# 61
28) 1,1-DCA	4.10	63	25640	10.979	ppb	96
29) Vinyl Acetate	4.32	43	8364	11.588	ppb	# 98
30) Ethyl tert Butyl Ether	4.86	59	42724	11.067	ppb	98
31) MEK (2-Butanone)	5.06	43	7060	9.465	ppb	93
32) Cis-1,2-DCE	4.98	96	17627	11.056	ppb	95
33) 2,2-Dichloropropane	4.96	77	24545	10.796	ppb	# 95
35) 3-Methylpentane	2.63	57	21	4.808	ppb	# 100
36) Chloroform	5.44	83	30261	11.290	ppb	94
37) Bromochloromethane	5.29	128	4631	10.101	ppb	96
39) 1,1,1-TCA	5.65	97	13307	12.258	ppb	90
40) Cyclohexane	5.72	41	10605	10.912	ppb	91
41) 1,1-Dichloropropene	5.88	75	19005	11.102	ppb	88
42) 2,2,4-Trimethylpentane	6.28	57	32494	10.035	ppb	# 85

(#) = qualifier out of range (m) = manual integration

Data File : M:\LOKI\DATA\190201\0202L27.D  
 Acq On : 2 Feb 19 19:52  
 Sample : Ending CCV 10ug/L 02/02/19  
 Misc : IS&S 11/8/18

Vial: 16  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 4 12:09 2019

Quant Results File: L0201W.RES

Quant Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Mon Feb 04 12:05:25 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
44) Carbon Tetrachloride	5.86	117	27077	12.174	ppb	97
45) Tert Amyl Methyl Ether	6.36	73	43886	10.501	ppb	96
46) Methylcyclopentane	3.90	56	21	6.251	ppb	100
47) 1,2-DCA	6.17	62	26110	11.991	ppb	94
48) Benzene	6.13	78	56841	9.977	ppb #	89
49) TCE	6.95	130	10185	10.346	ppb	90
50) 2-Pentanone	7.22	43	136569	115.480	ppb	96
51) 1,2-Dichloropropane	7.20	63	14511	9.653	ppb	100
52) Bromodichloromethane	7.54	83	14041	11.276	ppb #	88
53) Methyl Cyclohexane	7.17	83	19544	10.052	ppb	83
54) Dibromomethane	7.34	93	11419	10.071	ppb	95
55) 2-Chloroethyl vinyl ether	7.93	43	274	8.108	ppb #	25
56) MIBK (methyl isobutyl ket	8.28	43	13196	8.900	ppb	98
57) 1-Bromo-2-chloroethane	7.88	63	11115	9.391	ppb	96
58) Cis-1,3-Dichloropropene	8.07	75	25432	10.044	ppb #	83
59) Toluene	8.44	91	36440	10.172	ppb	95
60) Trans-1,3-Dichloropropene	8.70	75	26800	10.832	ppb	97
61) 1,1,2-TCA	8.90	83	12567	9.428	ppb	95
62) 2-Hexanone	9.21	43	9362	8.774	ppb #	86
65) 1,2-EDB	9.44	107	9431	10.004	ppb	98
66) Tetrachloroethene	9.05	166	11506	9.583	ppb	94
67) 1-Chlorohexane	10.00	91	18493	10.540	ppb	90
68) 1,1,1,2-Tetrachloroethane	10.09	131	20428	10.115	ppb	97
69) m&p-Xylene	10.26	91	113114	22.172	ppb	95
70) o-Xylene	10.70	106	14286	9.902	ppb	94
71) Styrene	10.71	104	46153	10.097	ppb	90
73) 1,3-Dichloropropane	9.08	76	27144	10.265	ppb	92
74) Dibromochloromethane	9.33	129	22681	10.752	ppb	94
75) Chlorobenzene	9.99	112	47059	9.850	ppb	95
76) Ethylbenzene	10.13	91	40920	10.421	ppb	94
77) Bromoform	10.90	173	16607	9.734	ppb	96
79) Isopropylbenzene	11.11	105	74309	10.903	ppb	95
80) 1,1,2,2-Tetrachloroethane	11.43	83	19586	8.406	ppb	95
81) 1,2,3-Trichloropropane	11.47	110	3643	7.992	ppb	98
82) t-1,4-Dichloro-2-Butene	11.49	53	4904	9.807	ppb	99
83) Bromobenzene	11.42	156	12317	9.954	ppb	93
84) n-Propylbenzene	11.56	91	43429	10.378	ppb	99
85) 4-Ethyltoluene	11.69	105	65900	10.101	ppb	94
86) 2-Chlorotoluene	11.64	91	27528	10.299	ppb	100
87) 1,3,5-Trimethylbenzene	11.76	105	58079	9.854	ppb	94
88) 4-Chlorotoluene	11.76	91	31000	10.152	ppb	92
89) Tert-Butylbenzene	12.11	119	57907	9.872	ppb	96
90) 1,2,4-Trimethylbenzene	12.17	105	54480	10.341	ppb	98
91) Sec-Butylbenzene	12.35	105	72295	10.247	ppb	99
92) p-Isopropyltoluene	12.52	119	33440	10.352	ppb	97
93) Benzyl Chloride	12.71	91	22816	7.479	ppb	96
94) 1,3-DCB	12.46	146	21496	10.129	ppb	97
95) 1,4-DCB	12.56	146	42596	10.280	ppb	91
96) n-Butylbenzene	12.97	91	44806	9.785	ppb	97
97) 1,2-DCB	12.97	146	40311	9.711	ppb	97
98) Hexachloroethane	13.26	117	14526	10.052	ppb	94
99) 1,2-Dibromo-3-chloropropan	13.82	75	5121	10.318	ppb	94
100) 1,2,4-Trichlorobenzene	14.74	180	24408	9.366	ppb	90
101) Hexachlorobutadiene	14.94	225	14323	10.341	ppb	98

(#) = qualifier out of range (m) = manual integration

0202L27.D L0201W.M

Mon Feb 04 12:24:04 2019

Data File : M:\LOKI\DATA\190201\0202L27.D Vial: 16  
 Acq On : 2 Feb 19 19:52 Operator: PM,DG,SV,CMM,KV  
 Sample : Ending CCV 10ug/L 02/02/19 Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Feb 4 12:09 2019 Quant Results File: L0201W.RES

Quant Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Mon Feb 04 12:05:25 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
102) Naphthalene	15.01	128	47726	8.376	ppb	93
103) 1,2,3-Trichlorobenzene	15.28	180	10786	8.567	ppb	98

Quantitation Report

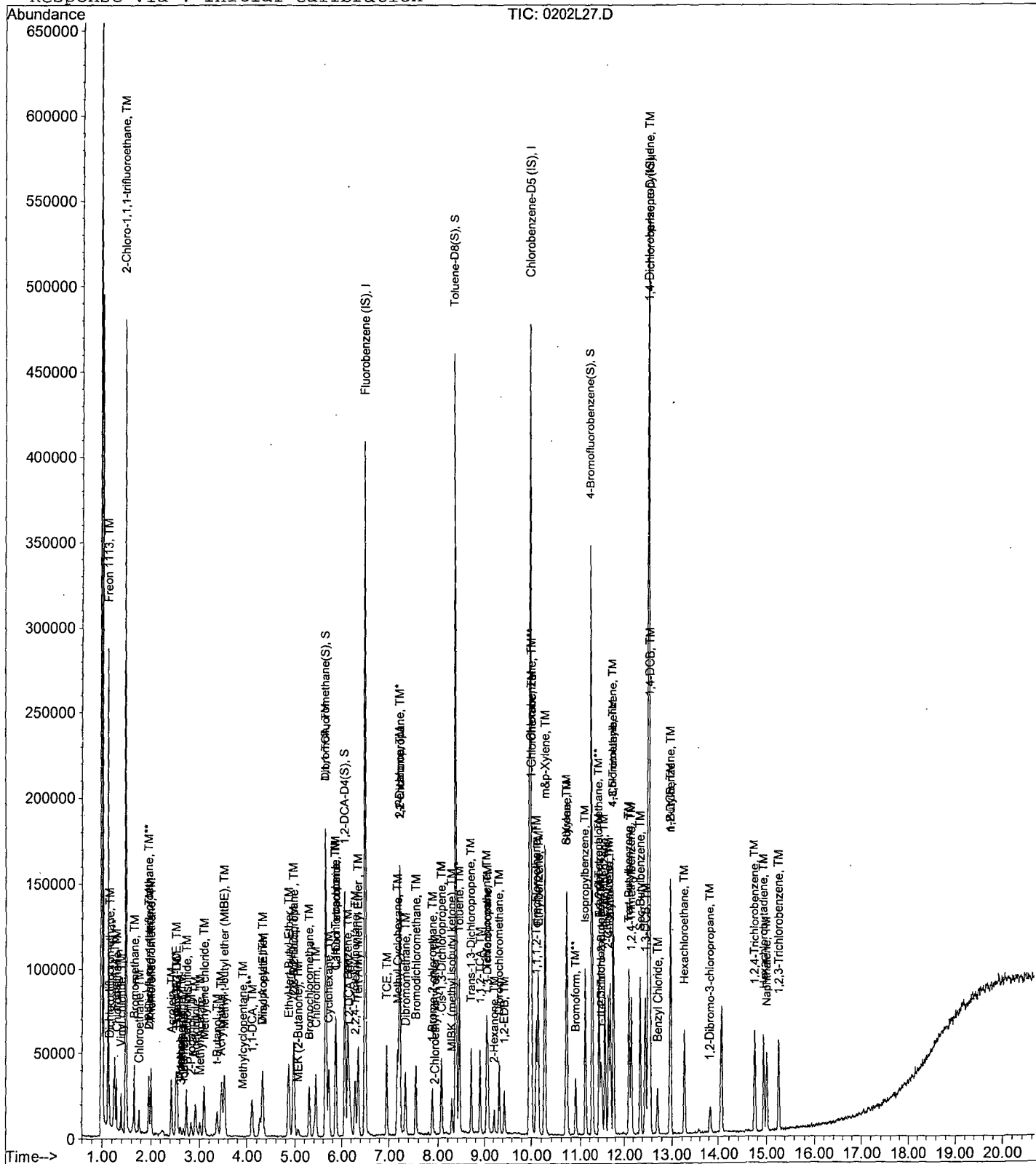
Data File : M:\LOKI\DATA\190201\0202L27.D  
Acq On : 2 Feb 19 19:52  
Sample : Ending CCV 10ug/L 02/02/19  
Misc : IS&S 11/8/18

Vial: 16  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 4 12:09 2019

Quant Results File: L0201W.RES

Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Mon Feb 04 12:12:22 2019  
Response via : Initial Calibration





**ORGANICS**  
**Raw Data**

Data File : M:\LOKI\DATA\190201\0202L23.D  
 Acq On : 2 Feb 19 17:58  
 Sample : AZ85762W02  
 Misc : IS&S 11/8/18

Vial: 12  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 5 10:49 2019

Quant Results File: L0201W.RES

Quant Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Mon Feb 04 12:05:25 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	186048	25.0000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.97	117	157376	25.0000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.53	152	79384	25.0000	ppb	0.00
System Monitoring Compounds						
38) Dibromofluoromethane(S)	5.65	111	87646	26.7924	ppb	0.00
Spiked Amount	25.000				Recovery = 107.168%	
43) 1,2-DCA-D4(S)	6.06	65	113993	30.4707	ppb	0.00
Spiked Amount	25.000				Recovery = 121.884%	
64) Toluene-D8(S)	8.37	98	316405	25.2094	ppb	0.00
Spiked Amount	25.000				Recovery = 100.836%	
72) 4-Bromofluorobenzene(S)	11.26	95	118471	24.3284	ppb	0.00
Spiked Amount	25.000				Recovery = 97.312%	

Target Compounds

Qvalue

Quantitation Report

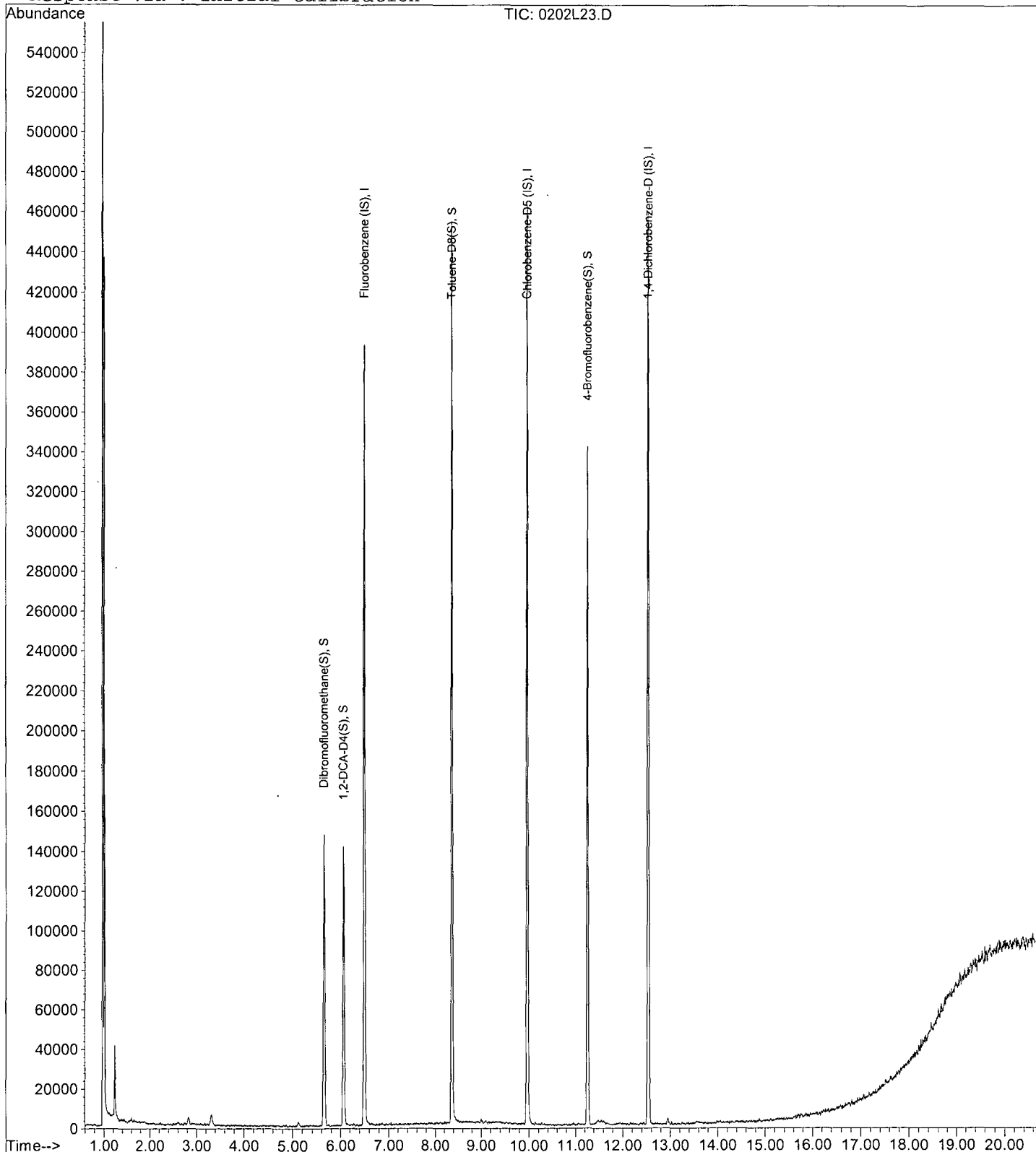
Data File : M:\LOKI\DATA\190201\0202L23.D  
Acq On : 2 Feb 19 17:58  
Sample : AZ85762W02  
Misc : IS&S 11/8/18

Vial: 12  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 5 10:49 2019

Quant Results File: L0201W.RES

Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Mon Feb 04 12:12:22 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190201\0202L24.D  
 Acq On : 2 Feb 19 18:26  
 Sample : AZ85763W02  
 Misc : IS&S 11/8/18

Vial: 13  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 5 10:50 2019

Quant Results File: L0201W.RES

Quant Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Mon Feb 04 12:05:25 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	190080	25.0000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.96	117	155712	25.0000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.53	152	78000	25.0000	ppb	0.00
System Monitoring Compounds						
38) Dibromofluoromethane(S)	5.65	111	87486	26.1762	ppb	0.00
Spiked Amount				25.000		
					Recovery =	104.704%
43) 1,2-DCA-D4(S)	6.07	65	116232	30.4102	ppb	0.00
Spiked Amount				25.000		
					Recovery =	121.640%
64) Toluene-D8(S)	8.37	98	318104	25.6156	ppb	0.00
Spiked Amount				25.000		
					Recovery =	102.464%
72) 4-Bromofluorobenzene(S)	11.26	95	119669	24.8370	ppb	0.00
Spiked Amount				25.000		
					Recovery =	99.348%

Target Compounds

Qvalue

Quantitation Report

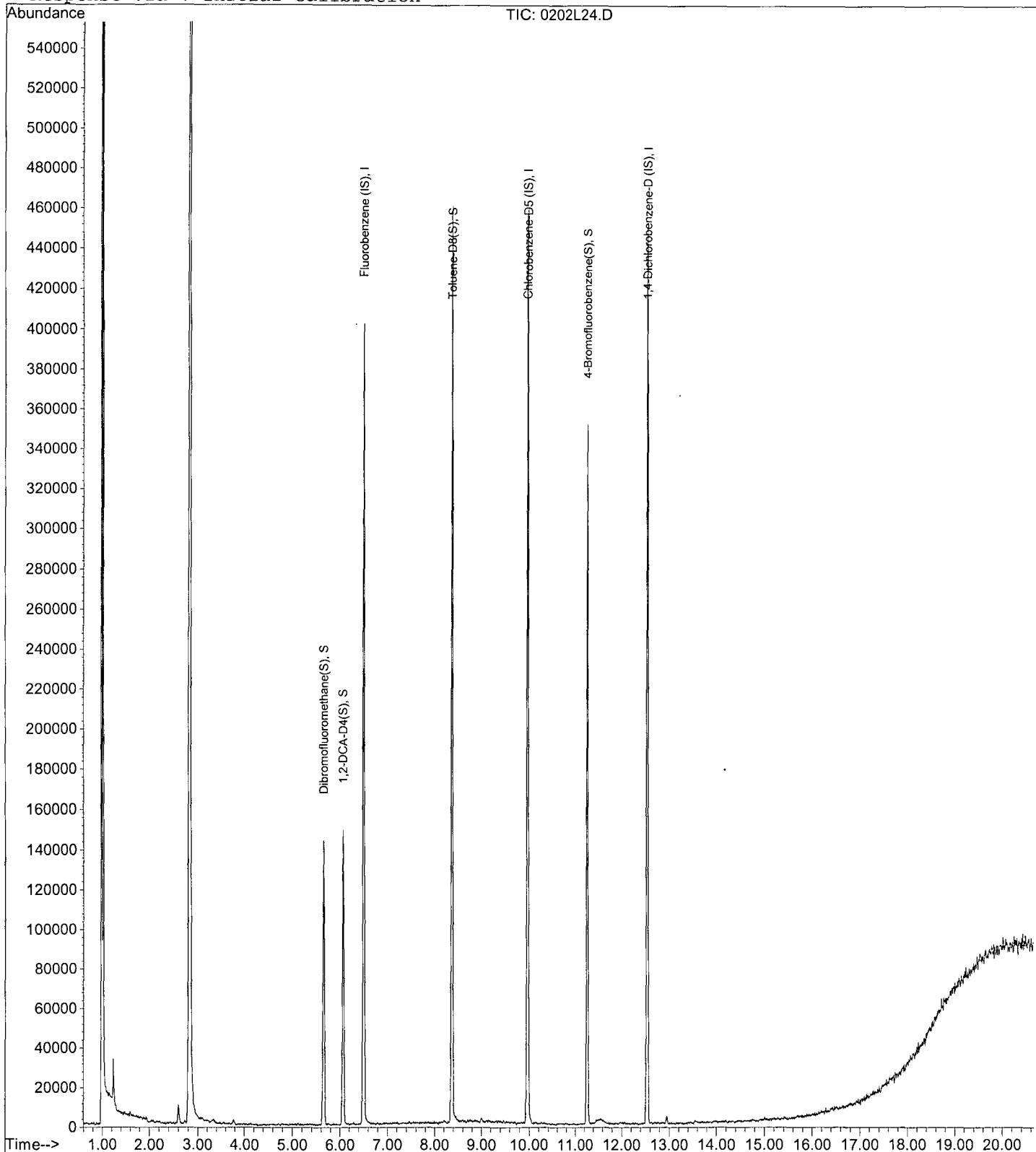
Data File : M:\LOKI\DATA\190201\0202L24.D  
Acq On : 2 Feb 19 18:26  
Sample : AZ85763W02  
Misc : IS&S 11/8/18

Vial: 13  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 5 10:50 2019

Quant Results File: L0201W.RES

Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Mon Feb 04 12:12:22 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190201\0202L25.D  
 Acq On : 2 Feb 19 18:55  
 Sample : AZ85764W02  
 Misc : IS&S 11/8/18

Vial: 14  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 5 10:52 2019

Quant Results File: L0201W.RES

Quant Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Mon Feb 04 12:05:25 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	175872	25.0000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.97	117	141184	25.0000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.53	152	80168	25.0000	ppb	0.00

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
38) Dibromofluoromethane(S)	5.65	111	82390	26.6430	ppb	0.00
Spiked Amount				25.000		
					Recovery = 106.572%	
43) 1,2-DCA-D4(S)	6.07	65	107029	30.2646	ppb	0.00
Spiked Amount				25.000		
					Recovery = 121.060%	
64) Toluene-D8(S)	8.37	98	300184	26.6600	ppb	0.00
Spiked Amount				25.000		
					Recovery = 106.640%	
72) 4-Bromofluorobenzene(S)	11.26	95	111372	25.4936	ppb	0.00
Spiked Amount				25.000		
					Recovery = 101.976%	

Target Compounds Qvalue

Quantitation Report

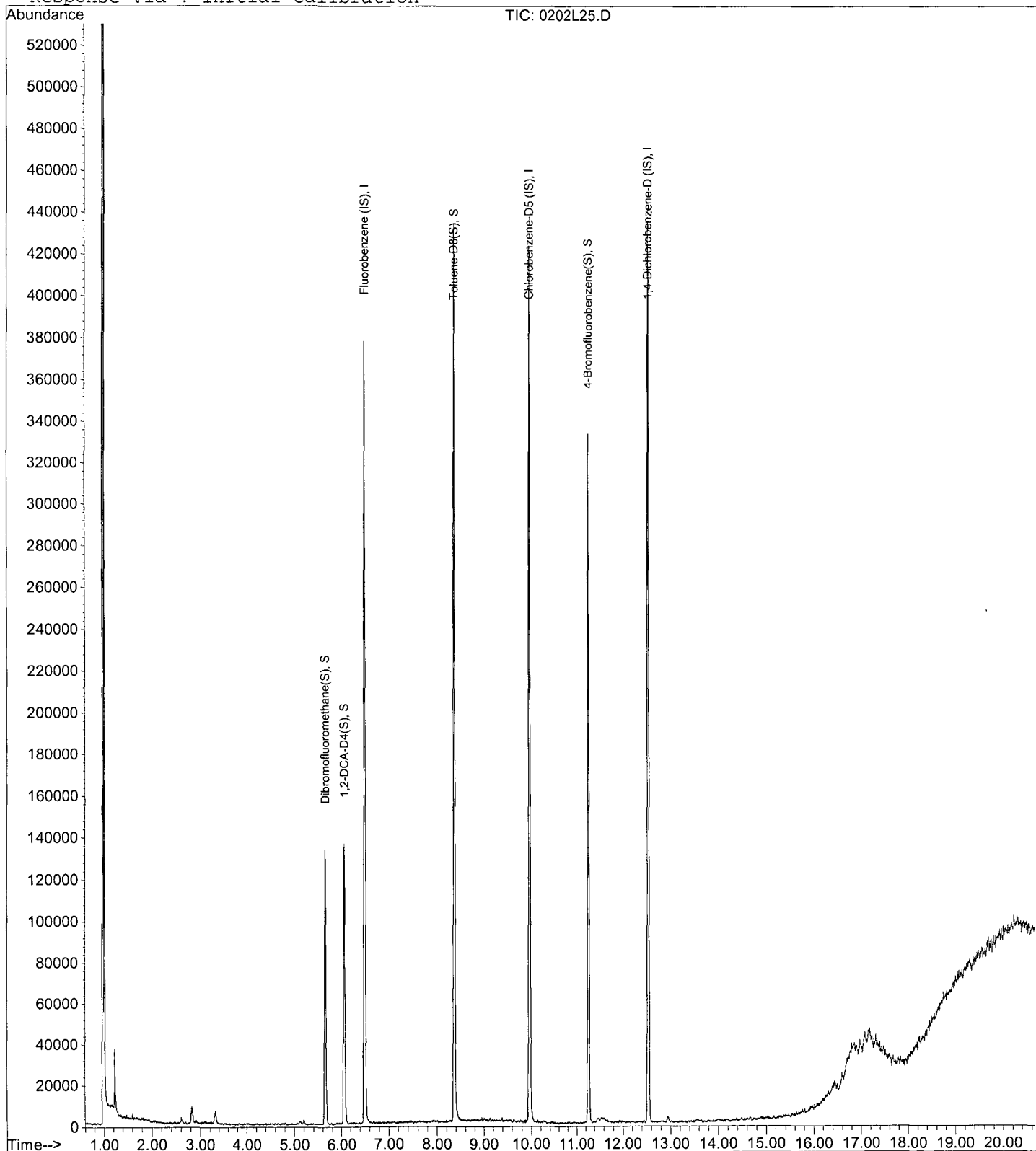
Data File : M:\LOKI\DATA\190201\0202L25.D  
Acq On : 2 Feb 19 18:55  
Sample : AZ85764W02  
Misc : IS&S 11/8/18

Vial: 14  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 5 10:52 2019

Quant Results File: L0201W.RES

Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Mon Feb 04 12:12:22 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190201\0202L22.D  
 Acq On : 2 Feb 19 17:29  
 Sample : AZ85765W02  
 Misc : IS&S 11/8/18

Vial: 11  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 5 10:49 2019

Quant Results File: L0201W.RES

Quant Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Mon Feb 04 12:05:25 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	195520	25.0000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.97	117	161536	25.0000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.53	152	83872	25.0000	ppb	0.00

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
38) Dibromofluoromethane(S)	5.65	111	92189	26.8159	ppb	0.00
Spiked Amount 25.000			Recovery = 107.264%			
43) 1,2-DCA-D4 (S)	6.07	65	119047	30.2801	ppb	0.00
Spiked Amount 25.000			Recovery = 121.120%			
64) Toluene-D8 (S)	8.37	98	334704	25.9806	ppb	0.00
Spiked Amount 25.000			Recovery = 103.924%			
72) 4-Bromofluorobenzene(S)	11.26	95	125497	25.1075	ppb	0.00
Spiked Amount 25.000			Recovery = 100.432%			

Target Compounds Qvalue



Quantitation Report

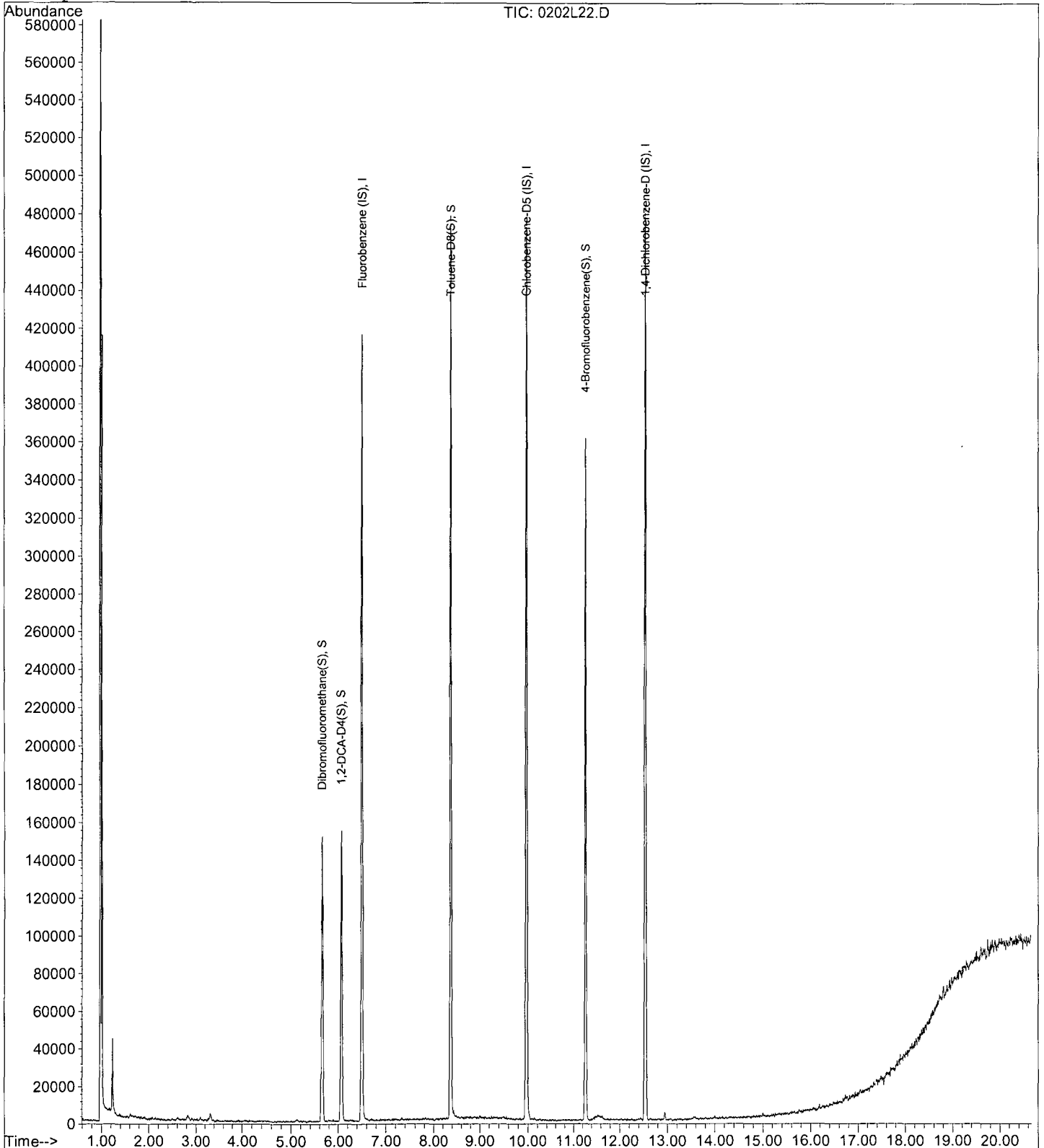
Data File : M:\LOKI\DATA\190201\0202L22.D  
Acq On : 2 Feb 19 17:29  
Sample : AZ85765W02  
Misc : IS&S 11/8/18

Vial: 11  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 5 10:49 2019

Quant Results File: L0201W.RES

Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Mon Feb 04 12:12:22 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190201\0202L26.D  
 Acq On : 2 Feb 19 19:23  
 Sample : AZ85766W02  
 Misc : IS&S 11/8/18

Vial: 15  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 5 10:53 2019

Quant Results File: L0201W.RES

Quant Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Mon Feb 04 12:05:25 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	188288	25.0000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.97	117	158976	25.0000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.53	152	83368	25.0000	ppb	0.00

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
38) Dibromofluoromethane(S)	5.65	111	86704	26.1892	ppb	0.00
Spiked Amount				25.000		
					Recovery =	104.756%
43) 1,2-DCA-D4(S)	6.07	65	111549	29.4627	ppb	0.00
Spiked Amount				25.000		
					Recovery =	117.852%
64) Toluene-D8(S)	8.37	98	314370	24.7952	ppb	0.00
Spiked Amount				25.000		
					Recovery =	99.180%
72) 4-Bromofluorobenzene(S)	11.26	95	113661	23.1058	ppb	0.00
Spiked Amount				25.000		
					Recovery =	92.424%

Target Compounds Qvalue

Quantitation Report

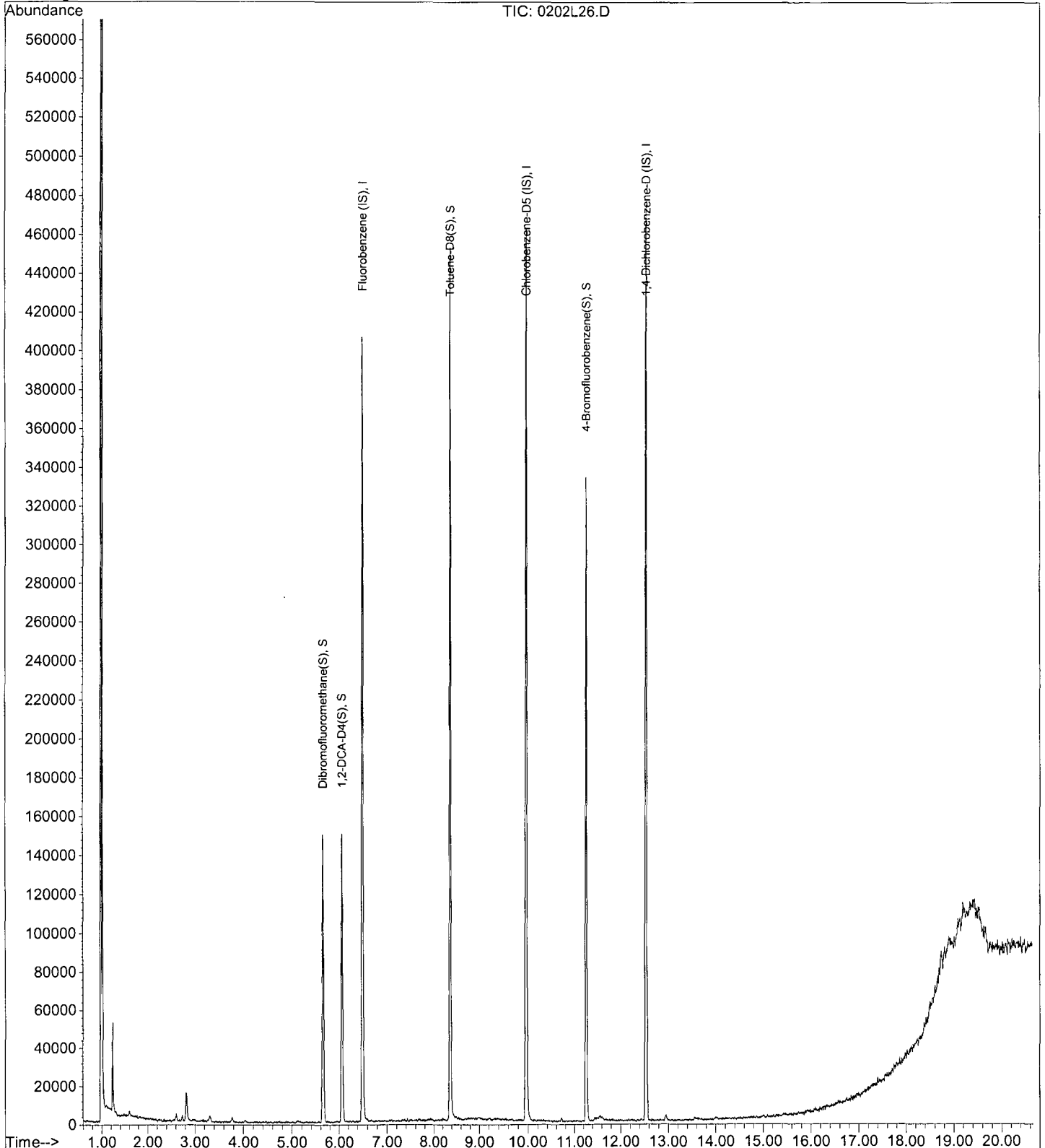
Data File : M:\LOKI\DATA\190201\0202L26.D  
Acq On : 2 Feb 19 19:23  
Sample : AZ85766W02  
Misc : IS&S 11/8/18

Vial: 15  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 5 10:53 2019

Quant Results File: L0201W.RES

Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Mon Feb 04 12:12:22 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190201\0202L21.D Vial: 10  
 Acq On : 2 Feb 19 17:01 Operator: PM, DG, SV, CMM, KV  
 Sample : 190202A blk Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Feb 5 10:48 2019 Quant Results File: L0201W.RES

Quant Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Mon Feb 04 12:05:25 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	183936	25.0000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.97	117	152384	25.0000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.53	152	79728	25.0000	ppb	0.00

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
38) Dibromofluoromethane(S)	5.65	111	85164	26.3326	ppb	0.00
Spiked Amount				25.000		
					Recovery = 105.332%	
43) 1,2-DCA-D4(S)	6.07	65	114718	31.0166	ppb	0.00
Spiked Amount				25.000		
					Recovery = 124.068%	
64) Toluene-D8(S)	8.37	98	317319	26.1105	ppb	0.00
Spiked Amount				25.000		
					Recovery = 104.440%	
72) 4-Bromofluorobenzene(S)	11.26	95	121566	25.7818	ppb	0.00
Spiked Amount				25.000		
					Recovery = 103.128%	

Target Compounds Qvalue

Quantitation Report

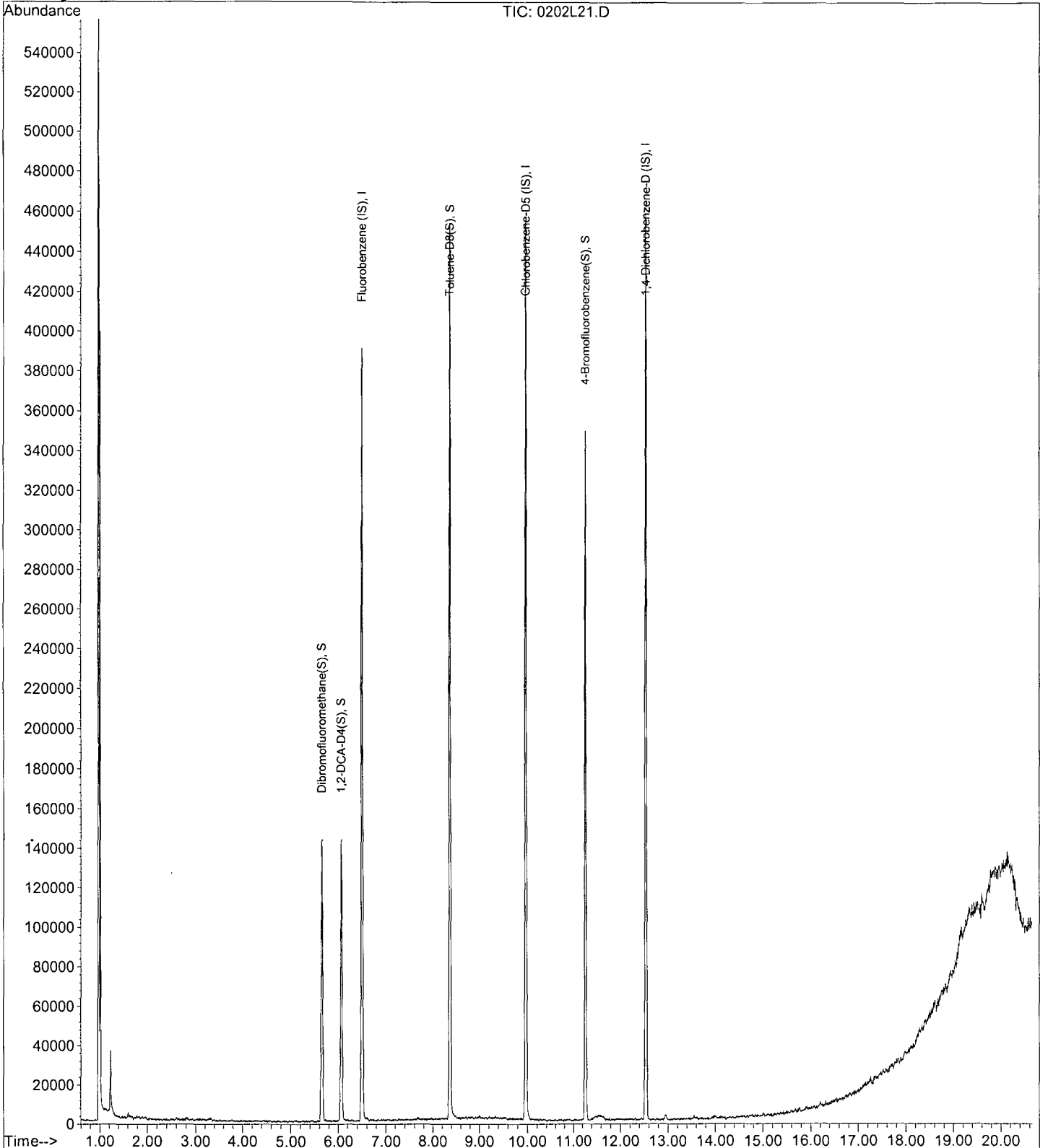
Data File : M:\LOKI\DATA\190201\0202L21.D  
Acq On : 2 Feb 19 17:01  
Sample : 190202A blk  
Misc : IS&S 11/8/18

Vial: 10  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 5 10:48 2019

Quant Results File: L0201W.RES

Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Mon Feb 04 12:12:22 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190201\0202L14.D  
 Acq On : 2 Feb 19 13:40  
 Sample : 190202A LCS 10ug/L  
 Misc : IS&S 11/8/18

Vial: 3  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 4 12:09 2019

Quant Results File: L0201W.RES

Quant Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Mon Feb 04 12:05:25 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	207104	25.000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.97	117	175680	25.000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.53	152	97056	25.000	ppb	0.00
System Monitoring Compounds						
38) Dibromofluoromethane(S)	5.65	111	93958	25.802	ppb	0.00
Spiked Amount	25.000		Recovery	=	103.208%	
43) 1,2-DCA-D4(S)	6.07	65	129445	31.083	ppb	0.00
Spiked Amount	25.000		Recovery	=	124.332%	
64) Toluene-D8(S)	8.37	98	361513	25.802	ppb	0.00
Spiked Amount	25.000		Recovery	=	103.208%	
72) 4-Bromofluorobenzene(S)	11.26	95	137555	25.304	ppb	0.00
Spiked Amount	25.000		Recovery	=	101.216%	
Target Compounds						
2) Freon 1113	1.12	116	91527	112.357	ppb	96
3) Dichlorodifluoromethane	1.14	85	13723	11.840	ppb	93
4) Freon 114	1.25	85	14671	11.012	ppb	87
5) Chloromethane	1.29	50	17368	10.243	ppb	96
6) Vinyl chloride	1.38	62	13738	11.368	ppb	95
7) 2-Chloro-1,1,1-trifluoroet	1.48	118	147584	110.049	ppb	97
8) Bromomethane	1.65	94	11960	11.055	ppb	100
9) Chloroethane	1.75	64	6502	10.688	ppb	93
10) Dichlorofluoromethane	1.95	67	29078	12.513	ppb	93
11) Trichlorofluoromethane	2.00	101	27445	11.907	ppb	96
12) Acrolein	2.42	56	29957	130.642	ppb	92
13) Acetone	2.61	43	3446	11.031	ppb	93
14) Freon-113	2.54	101	13603	11.636	ppb	90
15) 1,1-DCE	2.52	63	3514	10.971	ppb	96
16) t-Butanol	3.37	59	21098	116.854	ppb	97
17) 2-Propanol	2.83	45	11057	99.244	ppb	# 88
18) Acetonitrile	2.92	41	28746	140.061	ppb	95
19) Methyl Acetate	3.01	43	12782	10.489	ppb	96
20) Iodomethane	2.67	142	3185	7.799	ppb	98
21) Acrylonitrile	3.44	52	5129	8.793	ppb	90
22) Methylene chloride	3.10	84	14997	10.117	ppb	95
23) Carbon disulfide	2.73	76	36543	10.380	ppb	94
24) Methyl t-butyl ether (MtBE)	3.53	73	51052	11.198	ppb	# 93
25) Trans-1,2-DCE	2.52	96	7425	11.421	ppb	96
26) Diisopropyl Ether	4.32	45	45835	11.508	ppb	100
27) 2,2-Dichloro-1,1,1-trifluo	1.96	85	825	8.696	ppb	# 38
28) 1,1-DCA	4.10	63	28340	11.175	ppb	96
29) Vinyl Acetate	4.27	43	10149	13.004	ppb	# 72
30) Ethyl tert Butyl Ether	4.86	59	50346	12.009	ppb	95
31) MEK (2-Butanone)	5.06	43	8661	10.765	ppb	99
32) Cis-1,2-DCE	4.98	96	17858	10.315	ppb	96
33) 2,2-Dichloropropane	4.97	77	28939	11.722	ppb	93
35) 3-Methylpentane	2.66	57	67	14.127	ppb	100
36) Chloroform	5.44	83	34316	11.790	ppb	99
37) Bromochloromethane	5.29	128	4749	9.539	ppb	80
39) 1,1,1-TCA	5.65	97	14355	12.177	ppb	# 79
40) Cyclohexane	5.72	41	12954	12.275	ppb	88
41) 1,1-Dichloropropene	5.88	75	22021	11.846	ppb	92
42) 2,2,4-Trimethylpentane	6.29	57	40362	11.479	ppb	# 84

(#) = qualifier out of range (m) = manual integration

0202L14.D L0201W.M Mon Feb 04 12:23:56 2019

Data File : M:\LOKI\DATA\190201\0202L14.D  
 Acq On : 2 Feb 19 13:40  
 Sample : 190202A LCS 10ug/L  
 Misc : IS&S 11/8/18

Vial: 3  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 4 12:09 2019

Quant Results File: L0201W.RES

Quant Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Mon Feb 04 12:05:25 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
44) Carbon Tetrachloride	5.87	117	28614	11.847	ppb	100
45) Tert Amyl Methyl Ether	6.35	73	50850	11.204	ppb	96
46) Methylcyclopentane	4.08	56	78	21.380	ppb	100
47) 1,2-DCA	6.16	62	29297	12.390	ppb	98
48) Benzene	6.13	78	62712	10.136	ppb #	94
49) TCE	6.95	130	10990	10.281	ppb	93
50) 2-Pentanone	7.22	43	166721	129.824	ppb	91
51) 1,2-Dichloropropane	7.20	63	16681	10.218	ppb	97
52) Bromodichloromethane	7.54	83	15146	11.201	ppb	91
53) Methyl Cyclohexane	7.17	83	21970	10.405	ppb	99
54) Dibromomethane	7.34	93	13554	11.008	ppb	97
55) 2-Chloroethyl vinyl ether	7.93	43	521	14.197	ppb #	57
56) MIBK (methyl isobutyl ket	8.28	43	16004	9.940	ppb	94
57) 1-Bromo-2-chloroethane	7.88	63	13581	10.566	ppb	98
58) Cis-1,3-Dichloropropene	8.07	75	30832	11.213	ppb	90
59) Toluene	8.44	91	41832	10.753	ppb	95
60) Trans-1,3-Dichloropropene	8.70	75	28828	10.730	ppb	99
61) 1,1,2-TCA	8.90	83	14431	9.970	ppb	88
62) 2-Hexanone	9.21	43	11612	10.022	ppb	90
65) 1,2-EDB	9.44	107	10108	9.652	ppb	89
66) Tetrachloroethene	9.05	166	13459	10.090	ppb	96
67) 1-Chlorohexane	10.00	91	21253	10.869	ppb	94
68) 1,1,1,2-Tetrachloroethane	10.09	131	22201	9.896	ppb	93
69) m&p-Xylene	10.26	91	127283	22.459	ppb	94
70) o-Xylene	10.70	106	18032	11.250	ppb	97
71) Styrene	10.71	104	54760	10.785	ppb	100
73) 1,3-Dichloropropane	9.08	76	30865	10.507	ppb	100
74) Dibromochloromethane	9.33	129	23627	10.083	ppb	97
75) Chlorobenzene	10.00	112	54911	10.346	ppb	94
76) Ethylbenzene	10.13	91	48648	11.152	ppb	98
77) Bromoform	10.89	173	19584	10.334	ppb	93
79) Isopropylbenzene	11.11	105	82081	11.073	ppb	99
80) 1,1,2,2-Tetrachloroethane	11.43	83	23828	9.403	ppb	95
81) 1,2,3-Trichloropropane	11.47	110	4287	8.758	ppb	91
82) t-1,4-Dichloro-2-Butene	11.49	53	5018	9.188	ppb	92
83) Bromobenzene	11.42	156	14184	10.539	ppb	99
84) n-Propylbenzene	11.56	91	50153	11.019	ppb	98
85) 4-Ethyltoluene	11.69	105	76463	10.775	ppb	99
86) 2-Chlorotoluene	11.64	91	31880	10.966	ppb	99
87) 1,3,5-Trimethylbenzene	11.76	105	64359	10.030	ppb	98
88) 4-Chlorotoluene	11.76	91	38024	11.449	ppb	99
89) Tert-Butylbenzene	12.11	119	73316	11.492	ppb	98
90) 1,2,4-Trimethylbenzene	12.17	105	62256	10.864	ppb	100
91) Sec-Butylbenzene	12.35	105	85979	11.204	ppb	98
92) p-Isopropyltoluene	12.52	119	40320	11.475	ppb	98
93) Benzyl Chloride	12.71	91	33559	10.114	ppb	93
94) 1,3-DCB	12.46	146	24584	10.650	ppb	98
95) 1,4-DCB	12.56	146	46725	10.367	ppb	99
96) n-Butylbenzene	12.97	91	55401	11.123	ppb	98
97) 1,2-DCB	12.97	146	45850	10.155	ppb	98
98) Hexachloroethane	13.26	117	15746	10.018	ppb	91
99) 1,2-Dibromo-3-chloropropan	13.82	75	5415	10.031	ppb	86
100) 1,2,4-Trichlorobenzene	14.74	180	30550	10.777	ppb	92
101) Hexachlorobutadiene	14.94	225	15860	10.528	ppb	94

(#) = qualifier out of range (m) = manual integration

Data File : M:\LOKI\DATA\190201\0202L14.D Vial: 3  
 Acq On : 2 Feb 19 13:40 Operator: PM,DG,SV,CMM,KV  
 Sample : 190202A LCS 10ug/L Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Feb 4 12:09 2019 Quant Results File: L0201W.RES

Quant Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Mon Feb 04 12:05:25 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
102) Naphthalene	15.01	128	60777	9.807	ppb	99
103) 1,2,3-Trichlorobenzene	15.27	180	13400	9.654	ppb	99

(#) = qualifier out of range (m) = manual integration



Quantitation Report

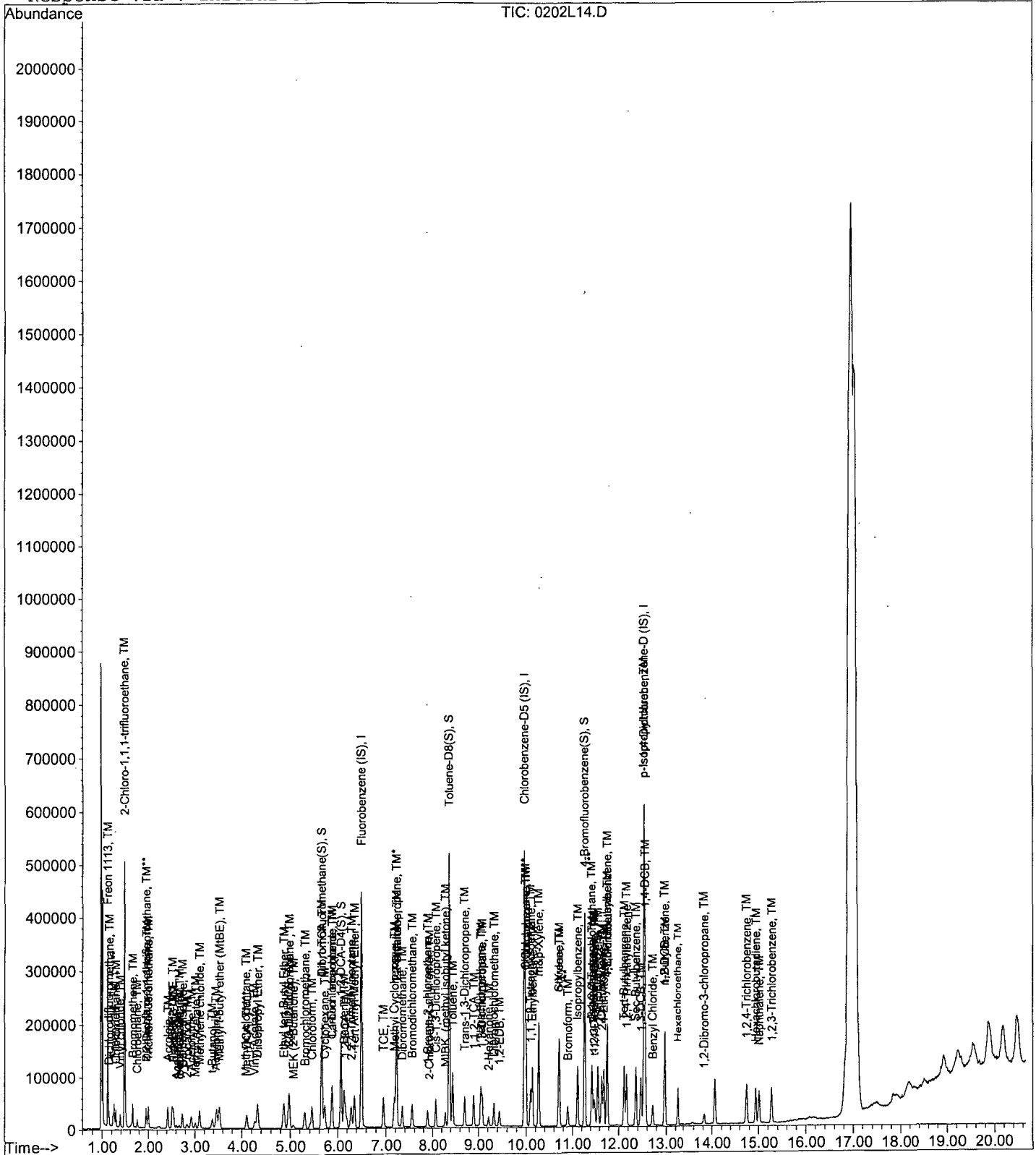
Data File : M:\LOKI\DATA\190201\0202L14.D  
Acq On : 2 Feb 19 13:40  
Sample : 190202A LCS 10ug/L  
Misc : IS&S 11/8/18

Vial: 3  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 4 12:09 2019

Quant Results File: L0201W.RES

Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Mon Feb 04 12:12:22 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190201\0202L15.D  
 Acq On : 2 Feb 19 14:09  
 Sample : 190202A LCSD 10ug/L  
 Misc : IS&S 11/8/18

Vial: 4  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 4 12:09 2019

Quant Results File: L0201W.RES

Quant Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Mon Feb 04 12:05:25 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	212160	25.000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.97	117	177280	25.000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.53	152	99664	25.000	ppb	0.00

System Monitoring Compounds

38) Dibromofluoromethane(S)	5.65	111	96366	25.832	ppb	0.00
Spiked Amount 25.000			Recovery =	103.328%		
43) 1,2-DCA-D4(S)	6.07	65	125258	29.361	ppb	0.00
Spiked Amount 25.000			Recovery =	117.444%		
64) Toluene-D8(S)	8.37	98	362199	25.618	ppb	0.00
Spiked Amount 25.000			Recovery =	102.472%		
72) 4-Bromofluorobenzene(S)	11.26	95	140609	25.633	ppb	0.00
Spiked Amount 25.000			Recovery =	102.532%		

Target Compounds

	R.T.	QIon	Response	Conc	Units	Qvalue
2) Freon 1113	1.12	116	93382	111.902	ppb	93
3) Dichlorodifluoromethane	1.14	85	13561	11.421	ppb	96
4) Freon 114	1.26	85	15275	11.193	ppb	83
5) Chloromethane	1.29	50	19592	11.279	ppb	96
6) Vinyl chloride	1.38	62	14647	11.831	ppb	92
7) 2-Chloro-1,1,1-trifluoroet	1.48	118	159808	116.324	ppb	97
8) Bromomethane	1.65	94	13077	11.800	ppb	95
9) Chloroethane	1.75	64	7089	11.375	ppb	93
10) Dichlorofluoromethane	1.95	67	27049	11.362	ppb	99
11) Trichlorofluoromethane	2.00	101	29820	12.630	ppb	98
12) Acrolein	2.42	56	29144	124.068	ppb	98
13) Acetone	2.60	43	4164	13.229	ppb	95
14) Freon-113	2.54	101	13824	11.543	ppb	91
15) 1,1-DCE	2.52	63	4291	13.152	ppb	81
16) t-Butanol	3.37	59	23341	126.196	ppb	94
17) 2-Propanol	2.83	45	10968	96.099	ppb	# 95
18) Acetonitrile	2.91	41	28775	136.861	ppb	95
19) Methyl Acetate	3.01	43	11673	9.204	ppb	87
20) Iodomethane	2.67	142	3449	8.071	ppb	95
21) Acrylonitrile	3.45	52	5818	9.736	ppb	93
22) Methylene chloride	3.09	84	14851	9.751	ppb	88
23) Carbon disulfide	2.73	76	37984	10.532	ppb	97
24) Methyl t-butyl ether (MtBE)	3.53	73	53230	11.397	ppb	96
25) Trans-1,2-DCE	2.52	96	7634	11.464	ppb	100
26) Diisopropyl Ether	4.32	45	47918	11.744	ppb	95
27) 2,2-Dichloro-1,1,1-trifluo	1.95	85	1085	11.164	ppb	# 74
28) 1,1-DCA	4.10	63	30558	11.762	ppb	92
29) Vinyl Acetate	4.27	43	9863	12.312	ppb	# 71
30) Ethyl tert Butyl Ether	4.86	59	50295	11.711	ppb	94
31) MEK (2-Butanone)	5.06	43	7757	9.342	ppb	98
32) Cis-1,2-DCE	4.98	96	19574	11.036	ppb	95
33) 2,2-Dichloropropane	4.96	77	30980	12.250	ppb	97
34) 2-Methylpentane	2.47	71	47	12.833	ppb	# 1
35) 3-Methylpentane	2.62	57	155	31.903	ppb	# 100
36) Chloroform	5.44	83	32908	11.037	ppb	100
37) Bromochloromethane	5.29	128	4735	9.284	ppb	74
39) 1,1,1-TCA	5.65	97	13411	11.105	ppb	87
40) Cyclohexane	5.72	41	12757	11.800	ppb	85
41) 1,1-Dichloropropene	5.88	75	23632	12.410	ppb	84

(#) = qualifier out of range (m) = manual integration

Data File : M:\LOKI\DATA\190201\0202L15.D  
 Acq On : 2 Feb 19 14:09  
 Sample : 190202A LCSD 10ug/L  
 Misc : IS&S 11/8/18

Vial: 4  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 4 12:09 2019

Quant Results File: L0201W.RES

Quant Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Mon Feb 04 12:05:25 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
42) 2,2,4-Trimethylpentane	6.29	57	42958	11.926	ppb	# 87
44) Carbon Tetrachloride	5.87	117	29642	11.980	ppb	95
45) Tert Amyl Methyl Ether	6.35	73	50817	10.930	ppb	97
46) Methylcyclopentane	3.91	56	67	17.927	ppb	100
47) 1,2-DCA	6.16	62	27974	11.549	ppb	95
48) Benzene	6.13	78	64931	10.245	ppb	# 92
49) TCE	6.95	130	11432	10.439	ppb	94
50) 2-Pentanone	7.22	43	165886	126.095	ppb	96
51) 1,2-Dichloropropane	7.20	63	15936	9.529	ppb	# 91
52) Bromodichloromethane	7.54	83	15117	10.914	ppb	98
53) Methyl Cyclohexane	7.17	83	23844	11.024	ppb	97
54) Dibromomethane	7.33	93	13072	10.364	ppb	99
55) 2-Chloroethyl vinyl ether	7.93	43	403	10.720	ppb	98
56) MIBK (methyl isobutyl ket	8.28	43	15759	9.554	ppb	94
57) 1-Bromo-2-chloroethane	7.88	63	13155	9.991	ppb	89
58) Cis-1,3-Dichloropropene	8.07	75	31662	11.241	ppb	91
59) Toluene	8.44	91	43048	10.802	ppb	98
60) Trans-1,3-Dichloropropene	8.71	75	31476	11.436	ppb	99
61) 1,1,2-TCA	8.90	83	14780	9.968	ppb	97
62) 2-Hexanone	9.21	43	11292	9.514	ppb	91
65) 1,2-EDB	9.44	107	10447	9.885	ppb	81
66) Tetrachloroethene	9.05	166	13696	10.175	ppb	95
67) 1-Chlorohexane	10.00	91	21974	11.112	ppb	86
68) 1,1,1,2-Tetrachloroethane	10.09	131	22397	9.893	ppb	80
69) m&p-Xylene	10.26	91	132134	23.104	ppb	95
70) o-Xylene	10.70	106	19240	11.896	ppb	88
71) Styrene	10.71	104	54815	10.698	ppb	92
73) 1,3-Dichloropropane	9.08	76	31143	10.506	ppb	98
74) Dibromochloromethane	9.32	129	25171	10.645	ppb	99
75) Chlorobenzene	9.99	112	56010	10.458	ppb	97
76) Ethylbenzene	10.13	91	48440	11.004	ppb	97
77) Bromoform	10.90	173	19635	10.267	ppb	91
79) Isopropylbenzene	11.11	105	85110	11.181	ppb	100
80) 1,1,2,2-Tetrachloroethane	11.43	83	24168	9.287	ppb	90
81) 1,2,3-Trichloropropane	11.47	110	4555	9.109	ppb	95
82) t-1,4-Dichloro-2-Butene	11.49	53	5499	9.848	ppb	95
83) Bromobenzene	11.42	156	14534	10.516	ppb	88
84) n-Propylbenzene	11.56	91	52214	11.171	ppb	98
85) 4-Ethyltoluene	11.69	105	80468	11.043	ppb	99
86) 2-Chlorotoluene	11.64	91	32744	10.968	ppb	96
87) 1,3,5-Trimethylbenzene	11.76	105	67009	10.163	ppb	97
88) 4-Chlorotoluene	11.76	91	35880	10.521	ppb	95
89) Tert-Butylbenzene	12.11	119	72988	11.141	ppb	98
90) 1,2,4-Trimethylbenzene	12.17	105	64421	10.948	ppb	94
91) Sec-Butylbenzene	12.35	105	88962	11.289	ppb	98
92) p-Isopropyltoluene	12.52	119	40376	11.191	ppb	96
93) Benzyl Chloride	12.71	91	32662	9.586	ppb	96
94) 1,3-DCB	12.46	146	24120	10.176	ppb	97
95) 1,4-DCB	12.56	146	46055	9.951	ppb	97
96) n-Butylbenzene	12.97	91	55951	10.940	ppb	98
97) 1,2-DCB	12.97	146	46011	9.924	ppb	95
98) Hexachloroethane	13.26	117	15253	9.451	ppb	98
99) 1,2-Dibromo-3-chloropropan	13.82	75	5558	10.026	ppb	87
100) 1,2,4-Trichlorobenzene	14.74	180	29293	10.063	ppb	94

(#) = qualifier out of range (m) = manual integration

Data File : M:\LOKI\DATA\190201\0202L15.D  
 Acq On : 2 Feb 19 14:09  
 Sample : 190202A LCSD 10ug/L  
 Misc : IS&S 11/8/18

Vial: 4  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 4 12:09 2019

Quant Results File: L0201W.RES

Quant Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Mon Feb 04 12:05:25 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
101) Hexachlorobutadiene	14.94	225	16542	10.693	ppb	87
102) Naphthalene	15.01	128	63075	9.912	ppb	93
103) 1,2,3-Trichlorobenzene	15.27	180	13555	9.524	ppb	96

Quantitation Report

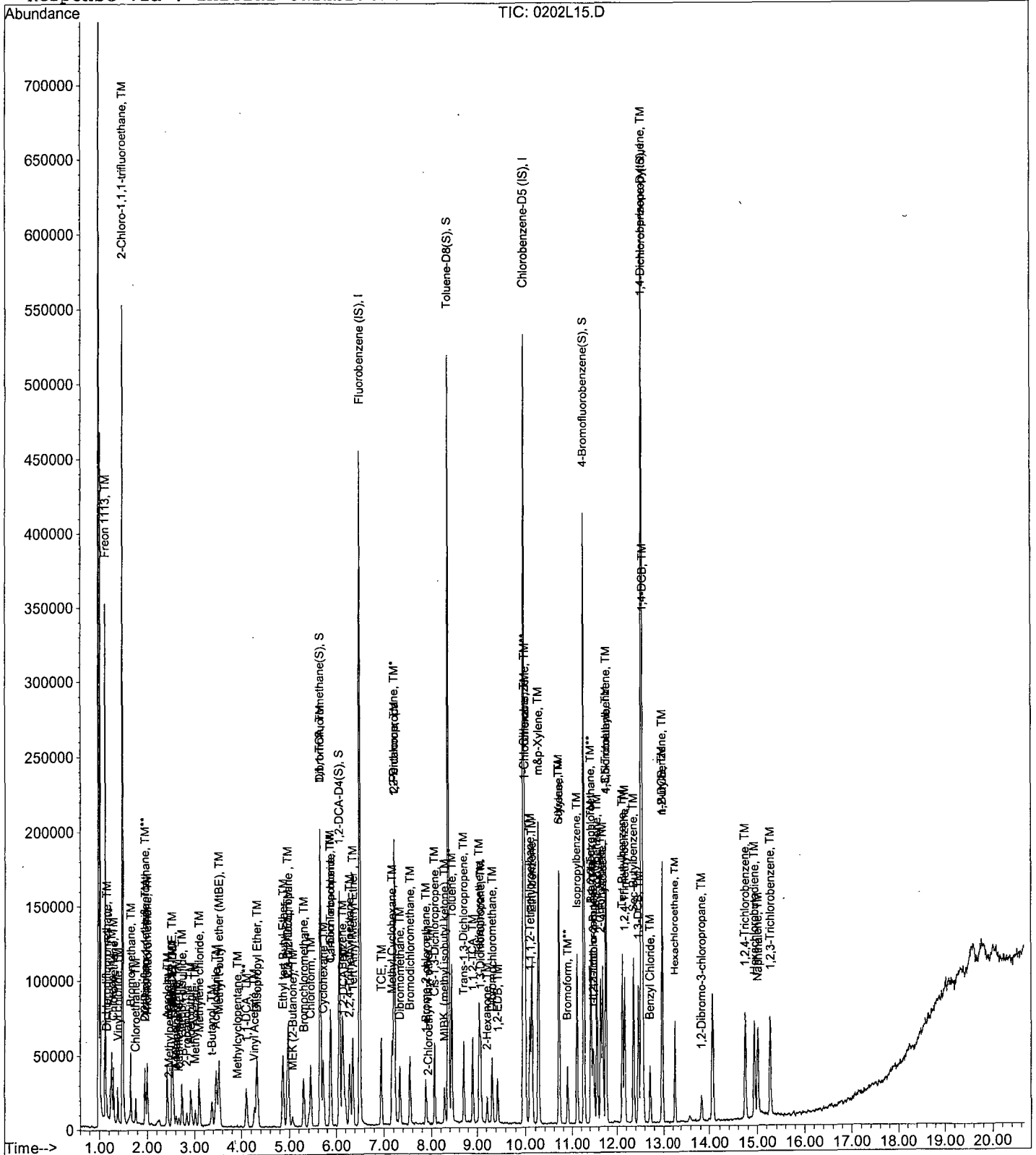
Data File : M:\LOKI\DATA\190201\0202L15.D  
Acq On : 2 Feb 19 14:09  
Sample : 190202A LCSD 10ug/L  
Misc : IS&S 11/8/18

Vial: 4  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 4 12:09 2019

Quant Results File: L0201W.RES

Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Mon Feb 04 12:12:22 2019  
Response via : Initial Calibration

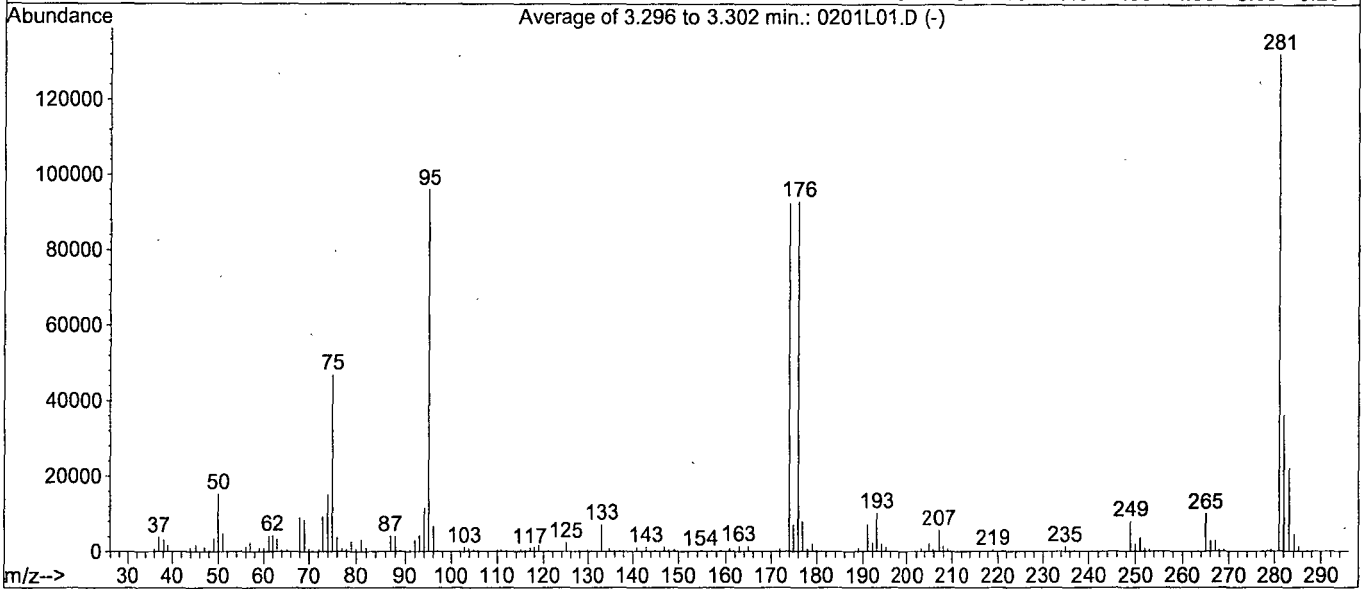
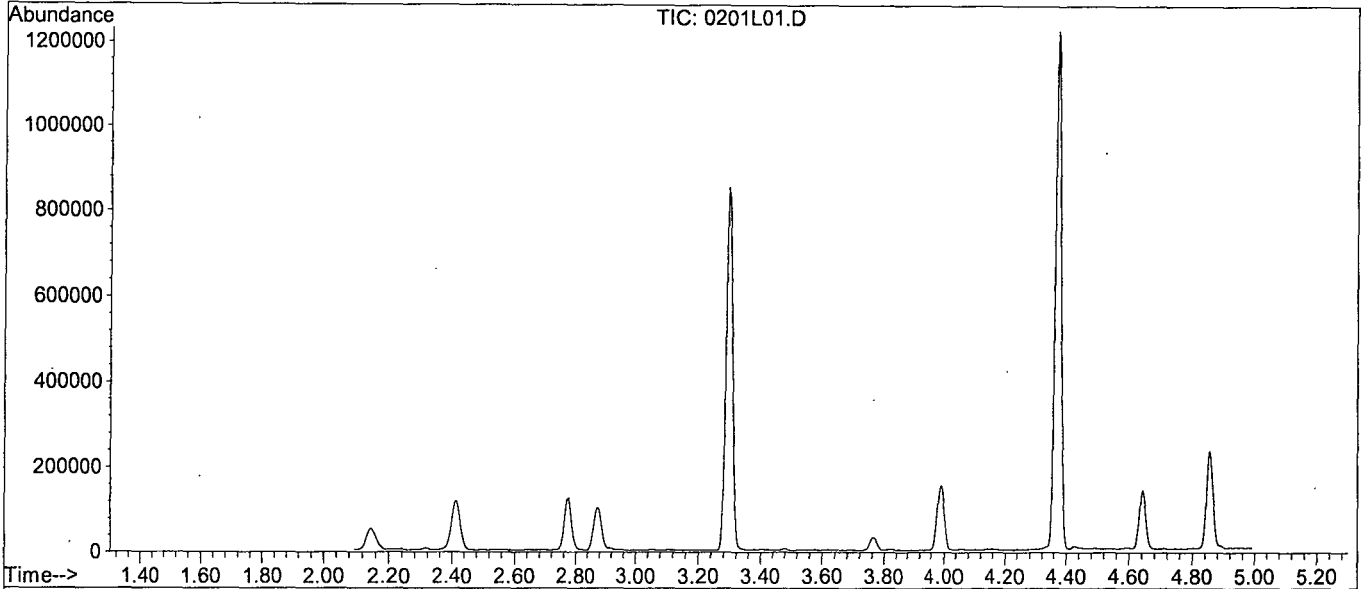


BFB

Data File : M:\LOKI\DATA\190201\0201L01.D  
Acq On : 1 Feb 19 11:00  
Sample : 25ug/L BFB STD 1/18/19  
Misc : 2ul

Vial: 1  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
Title : METHOD 8260B



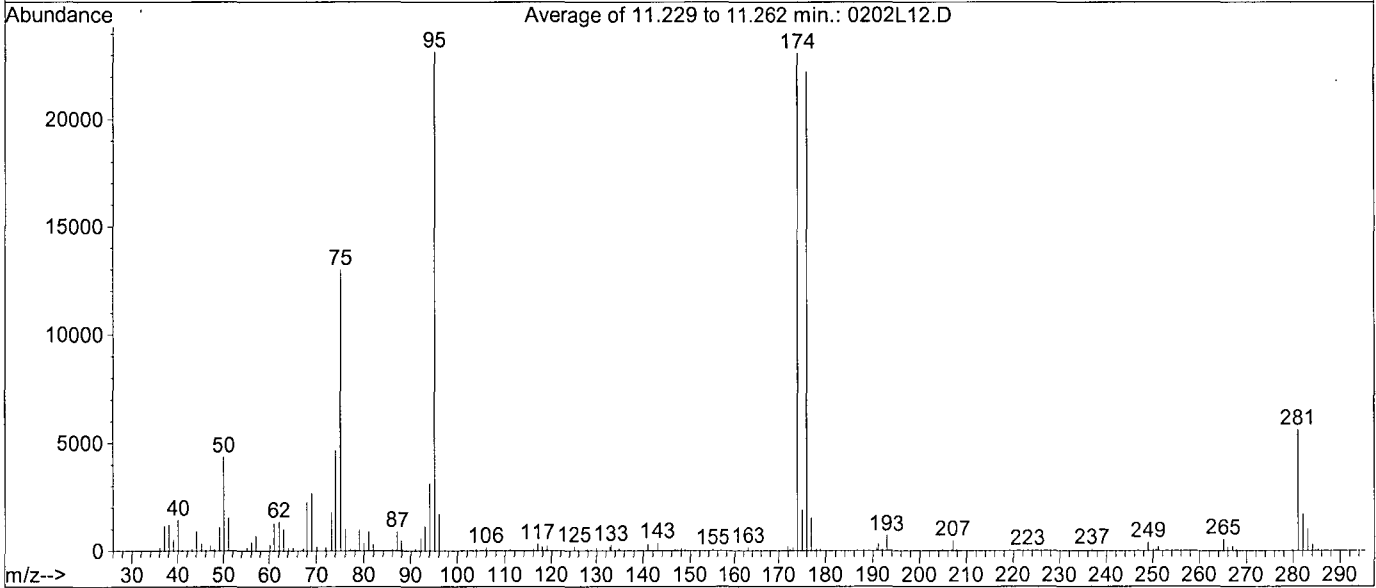
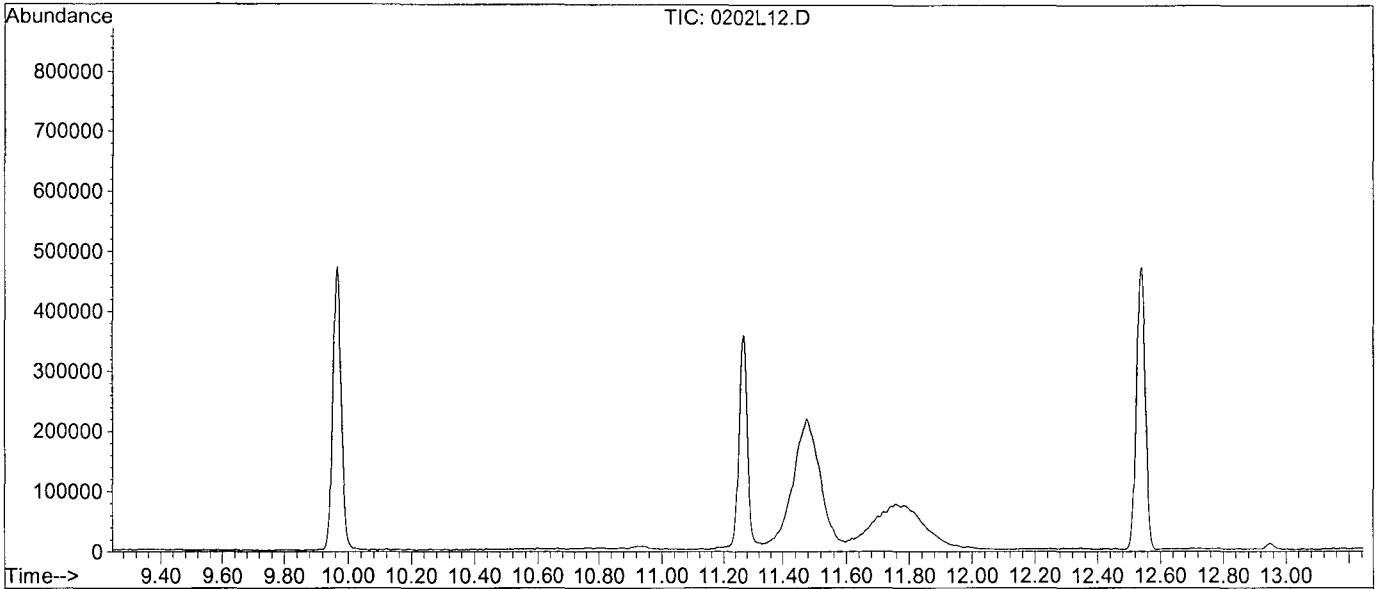
AutoFind: Scans 375, 376, 377; Background Corrected with Scan 365

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	15.9	15313	PASS
75	95	30	60	48.8	46872	PASS
95	95	100	100	100.0	96008	PASS
96	95	5	9	7.0	6750	PASS
173	174	0.00	2	0.0	0	PASS
174	95	50	100	96.1	92243	PASS
175	174	5	9	7.8	7157	PASS
176	174	95	101	100.7	92845	PASS
177	176	5	9	8.7	8101	PASS

Data File : M:\LOKI\DATA\190201\0202L12.D  
 Acq On : 2 Feb 19 12:43  
 Sample : 25ug/L BFB STD 1/18/19  
 Misc : IS&S 11/8/18

Vial: 1  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Method : M:\LOKI\DATA\190201\L0201W.M (RTE Integrator)  
 Title : METHOD 8260B



Spectrum Information: Average of 11.229 to 11.262 min.

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	18.8	4351	PASS
75	95	30	60	56.0	12973	PASS
95	95	100	100	100.0	23153	PASS
96	95	5	9	7.3	1689	PASS
173	174	0.00	2	0.6	132	PASS
174	95	50	100	99.7	23078	PASS
175	174	5	9	8.2	1895	PASS
176	174	95	101	96.3	22217	PASS
177	176	5	9	6.8	1517	PASS

## Loki 8260 Standard Prep

Loki 8260 Water Calibration Curve										
<b>0.3ug/L</b>					Prepared By (Initials): <u>PC</u>					
Prepared: 02/01/19										
Expires: 03/03/19										
Initial Standard Information					Final Standard Information					
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 9	O2SI	0.3ug/L	5	Prepared 01/28/19	02/01/19	N/A	3uL	50mL	P&T Water	0.3
VOA STD. 10	O2SI		5	Prepared 01/28/19	03/29/19	N/A	3uL			0.3
VOA STD. 12	O2SI		5	Prepared 01/28/19	03/29/19	N/A	3uL			0.3
VOA STD. TBA	Various		250	Prepared 01/28/19	02/01/19	N/A	2uL			10
<b>0.5ug/L</b>										
Prepared: 02/01/19										
Expires: 03/03/19										
Initial Standard Information					Final Standard Information					
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 9	O2SI	0.5ug/L	5	Prepared 01/28/19	02/01/19	N/A	5uL	50mL	P&T Water	0.5
VOA STD. 10	O2SI		5	Prepared 01/28/19	03/29/19	N/A	5uL			0.5
VOA STD. 12	O2SI		5	Prepared 01/28/19	03/29/19	N/A	5uL			0.5
VOA STD. TBA	Various		250	Prepared 01/28/19	02/01/19	N/A	5uL			25
<b>1.0ug/L</b>										
Prepared: 02/01/19										
Expires: 03/03/19										
Initial Standard Information					Final Standard Information					
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 9	O2SI	1.0ug/L	5	Prepared 01/28/19	02/01/19	N/A	10uL	50mL	P&T Water	1
VOA STD. 10	O2SI		5	Prepared 01/28/19	03/29/19	N/A	10uL			1
VOA STD. 12	O2SI		5	Prepared 01/28/19	03/29/19	N/A	10uL			1
VOA STD. TBA	Various		250	Prepared 01/28/19	02/01/19	N/A	10uL			50
<b>2.0ug/L</b>										
Prepared: 02/01/19										
Expires: 03/03/19										
Initial Standard Information					Final Standard Information					
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 9	O2SI	2.0ug/L	5	Prepared 01/28/19	02/01/19	N/A	20uL	50mL	P&T Water	2
VOA STD. 10	O2SI		5	Prepared 01/28/19	03/29/19	N/A	20uL			2
VOA STD. 12	O2SI		5	Prepared 01/28/19	03/29/19	N/A	20uL			2
VOA STD. TBA	Various		250	Prepared 01/28/19	02/01/19	N/A	15uL			75
<b>5ug/L</b>										
Prepared: 02/01/19										
Expires: 03/03/19										
Initial Standard Information					Final Standard Information					
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 7	Various	5ug/L	50	Prepared 01/28/19	03/29/19	N/A	5uL	50mL	P&T Water	5
VOA STD. 8	Phenova		50	Prepared 01/28/19	02/01/19	N/A	5uL			5
VOA STD. 1	O2SI		50	Prepared 01/28/19	03/29/19	N/A	5uL			5
VOA STD. 2	O2SI		50	Prepared 01/28/19	03/29/19	N/A	5uL			5
VOA STD. TBA	Various		250	Prepared 01/28/19	02/01/19	N/A	20uL			100
<b>10ug/L</b>										
Prepared: 02/01/19										
Expires: 03/03/19										
Initial Standard Information					Final Standard Information					
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 7	Various	10ug/L	50	Prepared 01/28/19	03/29/19	N/A	10uL	50mL	P&T Water	10
VOA STD. 8	Phenova		50	Prepared 01/28/19	02/01/19	N/A	10uL			10
VOA STD. 1	O2SI		50	Prepared 01/28/19	03/29/19	N/A	10uL			10
VOA STD. 2	O2SI		50	Prepared 01/28/19	03/29/19	N/A	10uL			10
VOA STD. TBA	Various		250	Prepared 01/28/19	02/01/19	N/A	25uL			125



20ug/L										
Prepared: 02/01/19										
Expires: 03/03/19										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 7	Various	20ug/L	50	Prepared 01/28/19	03/29/19	N/A	20uL	50mL	P&T Water	20
VOA STD. 8	Phenova		50	Prepared 01/28/19	02/01/19	N/A	20uL			20
VOA STD. 1	O2SI		50	Prepared 01/28/19	03/29/19	N/A	20uL			20
VOA STD. 2	O2SI		50	Prepared 01/28/19	03/29/19	N/A	20uL			20
VOA STD. TBA	Various		250	Prepared 01/28/19	02/01/19	N/A	30uL			150
40ug/L										
Prepared: 02/01/19										
Expires: 03/03/19										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 7	Various	40ug/L	50	Prepared 01/28/19	03/29/19	N/A	40uL	50mL	P&T Water	40
VOA STD. 8	Phenova		50	Prepared 01/28/19	02/01/19	N/A	40uL			40
VOA STD. 1	O2SI		50	Prepared 01/28/19	03/29/19	N/A	40uL			40
VOA STD. 2	O2SI		50	Prepared 01/28/19	03/29/19	N/A	40uL			40
VOA STD. TBA	Various		250	Prepared 01/28/19	02/01/19	N/A	35uL			175
100ug/L										
Prepared: 02/01/19										
Expires: 03/03/19										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 7	Various	100ug/L	50	Prepared 01/28/19	03/29/19	N/A	100uL	50mL	P&T Water	100
VOA STD. 8	Phenova		50	Prepared 01/28/19	02/01/19	N/A	100uL			100
VOA STD. 1	O2SI		50	Prepared 01/28/19	03/29/19	N/A	100uL			100
VOA STD. 2	O2SI		50	Prepared 01/28/19	03/29/19	N/A	100uL			100
VOA STD. TBA	Various		250	Prepared 01/28/19	02/01/19	N/A	40uL			200
Loki 8260 Water Second Source (SS)										
Prepared: 02/01/19										
Expires: 03/03/19										
						Prepared By (Initials): PC				
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 4	Phenova	8260 Water SS	50	Prepared 01/28/19	03/29/19	N/A	10uL	50mL	P&T Water	10
VOA STD. 5	O2SI	8260 Water SS	50	Prepared 01/28/19	03/29/19	N/A	10uL			10
VOA STD. 6	Various	8260 Water SS	50	Prepared 01/28/19	02/13/19	N/A	10uL			10
VOA STD. TBA	Various	8260 Water SS	250	Prepared 01/28/19	02/13/19	N/A	25uL			250
VOA STD. 7	Various	8260 Water SS	50	Prepared 01/28/19	03/29/19	N/A	10uL			10
8260 Water Continuing Calibrations (CCV)/ Lab Control Spikes (LCS)										
Prepared: 02/01/19										
Expires: 02/02/19										
						Prepared By (Initials): PC				
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 7	Various	CCV/ LCS	50	Prepared 01/28/19	03/29/19	N/A	10uL	50mL	P&T Water	10
VOA STD. 8	Phenova	CCV/ LCS	50	Prepared 01/28/19	02/01/19	N/A	10uL			10
VOA STD. 1	O2SI	CCV/ LCS	50	Prepared 01/28/19	03/29/19	N/A	10uL			10
VOA STD. 2	O2SI	CCV/ LCS	50	Prepared 01/28/19	03/29/19	N/A	10uL			10
VOA STD. TBA	Various	CCV/ LCS	250	Prepared 01/28/19	02/01/19	N/A	25uL			125
LCS (X4 Ketones)										
Prepared: 02/01/19										
Expires: 02/02/19										
						Prepared By (Initials): PC				
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 7	Various	LCS X4 Ketones	50	Prepared 01/28/19	03/29/19	N/A	10uL	50mL	P&T Water	10
VOA STD. 8	Phenova	LCS X4 Ketones	50	Prepared 01/28/19	02/01/19	N/A	10uL			10
VOA STD. 1	O2SI	LCS X4 Ketones	50	Prepared 01/28/19	03/29/19	N/A	10uL			10
VOA STD. 2	O2SI	LCS X4 Ketones	50	Prepared 01/28/19	03/29/19	N/A	40uL			40
VOA STD. TBA	Various	LCS X4 Ketones	250	Prepared 01/28/19	02/01/19	N/A	25uL			125

Loki 8260 Water Surrogate										
Prepared: 12/13/18						Prepared By (Initials): <u>DG</u>				
Expires: 04/02/19										
Methanol Lot No: 202404-9077										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr.)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
8260 Surrogate Solution	O2SI	120002-01	2,000	275545-36335	07/28/19	04/02/19	375uL	15mL	Methanol	50
Loki 8260 Water Internal Standard										
Prepared: 11/08/18						Prepared By (Initials): <u>DG</u>				
Expires: 10/05/19										
Methanol Lot No: 202404-9077										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr.)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
Internal Standard Solution	O2SI	120004-02	2,000	326533-38441	10/05/19	04/27/21	375uL	15mL	Methanol	50

### Primary and Secondary Working Standards

Primary Standards										
VOA STD 7										
Prepared: 01/28/19 E										
Expires: 03/29/19										
Prepared By (Initials): PC										
Methanol Lot No. 907702-202404										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
VOA Gasses STD	Phenova	ALO-101206	2,000	CL12966-39990	10/31/23	10/31/23	100uL	4mL	Methanol	50
Hexachloroethane	Absolute	70199	1,000	091818-40038	01/17/20	09/18/23	200uL			50
Benzyl Chloride	O2SI	020228-02	1,000	082218-39817	01/17/20	12/04/19	200uL			50
VOA STD 8										
Prepared: 01/28/19 F										
Expires: 02/01/19										
Prepared By (Initials): PC										
Methanol Lot No. 907702-202404										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
VOA Additions STD	Phenova	ALO-130175	2,000	CL39322-39479	01/17/20	06/30/20	100uL	4mL	Methanol	50
502.2 Cal. Std.	Phenova	ALO-101200	2,000	CL12490-39491	01/17/20	05/31/23	100uL			50
Vinyl Acetate	Phenova	ALO-101228	2,000	CL13125-40120	02/01/19	02/01/19	100uL			50
VOA STD 8B										
Prepared: 01/28/19 G										
Expires: 02/01/19										
Prepared By (Initials): PC										
Methanol Lot No. 907702-202404										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
Custom VOC Mix	Phenova	ALO-130176	2,000	CL12542-39530	01/17/20	05/31/20	500uL	4mL	Methanol	250
Acrolein	Phenova	ALO-130549	10,000	CL13149-40121	02/01/19	02/01/19	100uL			250
VOA STD 1										
Prepared: 01/28/19 H										
Expires: 03/29/19										
Prepared By (Initials): PC										
Methanol Lot No. 907702-202404										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
2-CEVE	O2SI	020145-02	2,000	071018-39809	07/10/21	11/12/19	50	2mL	Methanol	50
VOA STD 2										
Prepared: 01/28/19 I										
Expires: 03/29/19										
Prepared By (Initials): PC										
Methanol Lot No. 907702-202404										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
Ketones Std.	Phenova	ALO-109211	2,000	CL10956-39506	01/17/20	08/30/23	100	4mL	Methanol	50
VOA STD 9										
Prepared: 01/28/19 J										
Expires: 02/01/19										
Prepared By (Initials): PC										
Methanol Lot No. 907702-202404										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
VOA STD. 7		VOA STD. 9	50	Prepared 01/28/19	12/04/19	N/A	200uL	2mL	Methanol	5
VOA STD. 8		VOA STD. 9	50	Prepared 01/28/19	02/01/19	N/A	200uL			5
VOA STD. 10										
Prepared: 01/28/19 K										
Expires: 03/29/19										
Prepared By (Initials): PC										
Methanol Lot No. 907702-202404										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
VOA STD. 1		VOA STD. 10	50	Prepared 01/28/19	01/17/20	N/A	200uL	2mL	Methanol	5
VOA STD. 12										
Prepared: 01/28/19 L										
Expires: 03/29/19										
Prepared By (Initials): PC										
Methanol Lot No. 907702-202404										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
VOA STD. 2		VOA STD. 12	50	Prepared 01/28/19	01/17/20	N/A	200uL	2mL	Methanol	5

Second Source (SS) Standards											
VOA STD. 3											
Prepared: 01/28/19 M											
Expires: 03/29/19											
Methanol Lot No. 907702-202404											
Prepared By (Initials): PC											
Initial Standard Information						Final Standard Information					
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)	
Ketones Standard	Phenova	ALO-101211	2,000	CL12730-39671	01/17/20	08/31/28	50uL	2mL	Methanol	50	
VOA STD. 5											
Prepared: 01/28/19 N											
Expires: 03/29/19											
Methanol Lot No. 907702-202404											
Prepared By (Initials): PC											
Initial Standard Information						Final Standard Information					
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)	
8260 Gases (SS)	Phenova	ALO-101206	2,000	CL12965-39986	10/31/23	10/31/23	50uL	2mL	Methanol	50	
2-CEVE (SS)	Absolute	82408	2,000	112917-402102	11/29/20	07/10/21	50uL			50	
VOA STD. 6											
Prepared: 01/28/19 O											
Expires: 02/13/19											
Methanol Lot No. 907702-202404											
Prepared By (Initials): PC											
Initial Standard Information						Final Standard Information					
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)	
502.2 Calibration STD. (54-compounds)	Phenova	ALO-101200	2,000	CL12489-39970	01/17/20	05/31/23	50uL	2mL	Methanol	50	
Vinyl Acetate	Phenova	ALO-101228	2,000	CL13145-40120	01/17/20	02/13/19	50uL			50	
Hexachloroethane	Accustan	AS-E0011	1,000	218051281-39858	01/02/20	05/14/28	100uL			50	
Benzyl Chloride	Accustan	M-8010-01	200	214101335-04-39960	01/17/20	10/18/20	500uL			50	
VOA STD. TBA											
Prepared: 01/28/19 P											
Expires: 02/13/19											
Methanol Lot No. 907702-202404											
Prepared By (Initials): PC											
Initial Standard Information						Final Standard Information					
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)	
Custom VOA Mix (4-3)	Phenova	ALO-130176	2,000	CL12542-39679	01/17/20	05/31/20	250uL	2mL	Methanol	250	
Acrolein	Phenova	ALO-101224	10,000	CL13181-40203	02/13/19	02/13/19	50uL			250	
VOA STD. 0											
Prepared: 01/28/19 Q											
Expires: 03/29/19											
Methanol Lot No. 907702-202404											
Prepared By (Initials): PC											
Initial Standard Information						Final Standard Information					
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)	
VOA Addition STD.	Phenova	ALO-130175	2,000	CL12744-40002	01/17/20	08/30/20	50uL	2mL	Methanol	50	
BFB Tune											
Prepared: 01/18/19											
Expires: 12/12/19											
Methanol Lot No. 202404-00945											
Prepared By (Initials): DG											
Initial Standard Information						Final Standard Information					
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)	
4-Bromofluorobenzene	O2Si	020135-03	2,500	342387-39075	12/12/19	01/19/21	20uL	2mL	Methanol	25	

## Injection Log

Directory: M:\LOKIDATA\190201\

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1	1	0201L01.D	1	25ug/L BFB STD 1/18/19	2ul	1 Feb 19 11:00
2	2	0201L03.D	1	0.3ug/L VOC STD 02/01/19	IS&S 11/8/18	1 Feb 19 11:44
3	3	0201L04.D	1	0.5ug/L VOC STD 02/01/19	IS&S 11/8/18	1 Feb 19 12:13
4	4	0201L05.D	1	1.0ug/L VOC STD 02/01/19	IS&S 11/8/18	1 Feb 19 12:42
5	5	0201L06.D	1	2.0ug/L VOC STD 02/01/19	IS&S 11/8/18	1 Feb 19 13:10
6	6	0201L07.D	1	5.0ug/L VOC STD 02/01/19	IS&S 11/8/18	1 Feb 19 13:39
7	7	0201L08.D	1	10ug/L VOC STD 02/01/19	IS&S 11/8/18	1 Feb 19 14:08
8	8	0201L09.D	1	20ug/L VOC STD 02/01/19	IS&S 11/8/18	1 Feb 19 14:36
9	9	0201L10.D	1	40ug/L VOC STD 02/01/19	IS&S 11/8/18	1 Feb 19 15:05
10	10	0201L11.D	1	50ug/L VOC STD 02/01/19	IS&S 11/8/18	1 Feb 19 15:34
11	11	0201L12.D	1	100ug/L VOC STD 02/01/19	IS&S 11/8/18	1 Feb 19 16:03
12	14	0201L15.D	1	(SS)10ug/L VOC STD 02/01/19	IS&S 11/8/18	1 Feb 19 17:28
13	1	0202L12.D	1	25ug/L BFB STD 1/18/19	IS&S 11/8/18	2 Feb 19 12:43
14	2	0202L13.D	1	190202A CCV 10ug/L	IS&S 11/8/18	2 Feb 19 13:12
15	3	0202L14.D	1	190202A LCS 10ug/L	IS&S 11/8/18	2 Feb 19 13:40
16	4	0202L15.D	1	190202A LCSD 10ug/L	IS&S 11/8/18	2 Feb 19 14:09
17	10	0202L21.D	1	190202A blk	IS&S 11/8/18	2 Feb 19 17:01
18	11	0202L22.D	1	AZ85765W02	IS&S 11/8/18	2 Feb 19 17:29
19	12	0202L23.D	1	AZ85762W02	IS&S 11/8/18	2 Feb 19 17:58
20	13	0202L24.D	1	AZ85763W02	IS&S 11/8/18	2 Feb 19 18:26
21	14	0202L25.D	1	AZ85764W02	IS&S 11/8/18	2 Feb 19 18:55
22	15	0202L26.D	1	AZ85766W02	IS&S 11/8/18	2 Feb 19 19:23
23	16	0202L27.D	1	Ending CCV 10ug/L 02/02/19	IS&S 11/8/18	2 Feb 19 19:52

**ORGANICS**  
**Calibration Data**

VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 6  
Initial Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: water

SDG No: \_\_\_\_\_  
Initial Cal. Date: 02/01/19  
Instrument: Loki

Initials: DG

0201L03.D    0201L04.D    0201L05.D    0201L06.D    0201L07.D    0201L08.D    0201L09.D    0201L10.D    0201L12.D    0201L11.D

	Compound	1	2	3	4	5	6	7	8	9	8A	Avg	%RSD	Type	r <sup>2</sup>	Q	MRF
1	I Fluorobenzene (IS)																
2	S Dibromofluoromethane(S)	0.4523	0.4537	0.4278	0.4166	0.4428	0.4646	0.4536	0.4333	0.4250	0.4262	0.44	3.6	S			
3	S 1,2-DCA-D4(S)	0.5096	0.5383	0.4864	0.4775	0.5002	0.5370	0.5128	0.5030	0.4799	0.4823	0.50	4.4	S			
4	I Chlorobenzene-D5 (IS)																
5	S Toluene-D8(S)	2.189	2.182	1.765	1.791	1.978	2.016	2.055	2.017	2.021	1.925	2.0	7.0	S			
6	S 4-Bromofluorobenzene(S)	0.9854	0.8234	0.6591	0.6694	0.7612	0.7668	0.7871	0.7711	0.7776	0.7345	0.77	12	S			
7	I 1,4-Dichlorobenzene-D (IS)																
8																	
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Quantitation Report (Not Reviewed)

Data File : M:\LOKI\DATA\190201\0201L03.D Vial: 2  
 Acq On : 1 Feb 19 11:44 Operator: PM, DG, SV, CMM, KV  
 Sample : 0.3ug/L VOC STD 02/01/19 Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Feb 2 11:59 2019 Quant Results File: LSUR201W.RES

Quant Method : M:\LOKI\DATA\190201\LSUR201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 10:34:35 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	324608	25.000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.96	117	272832	25.000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.53	152	143232	25.000	ppb	0.00
System Monitoring Compounds						
2) Dibromofluoromethane(S)	5.65	111	29364	5.145	ppb	0.00
Spiked Amount	25.000		Recovery	=	20.580%	
3) 1,2-DCA-D4(S)	6.07	65	33083	5.068	ppb	0.00
Spiked Amount	25.000		Recovery	=	20.272%	
5) Toluene-D8(S)	8.37	98	119434	5.489	ppb	0.00
Spiked Amount	25.000		Recovery	=	21.956%	
6) 4-Bromofluorobenzene(S)	11.26	95	53770	6.369	ppb	0.00
Spiked Amount	25.000		Recovery	=	25.476%	

Target Compounds Qvalue



Quantitation Report

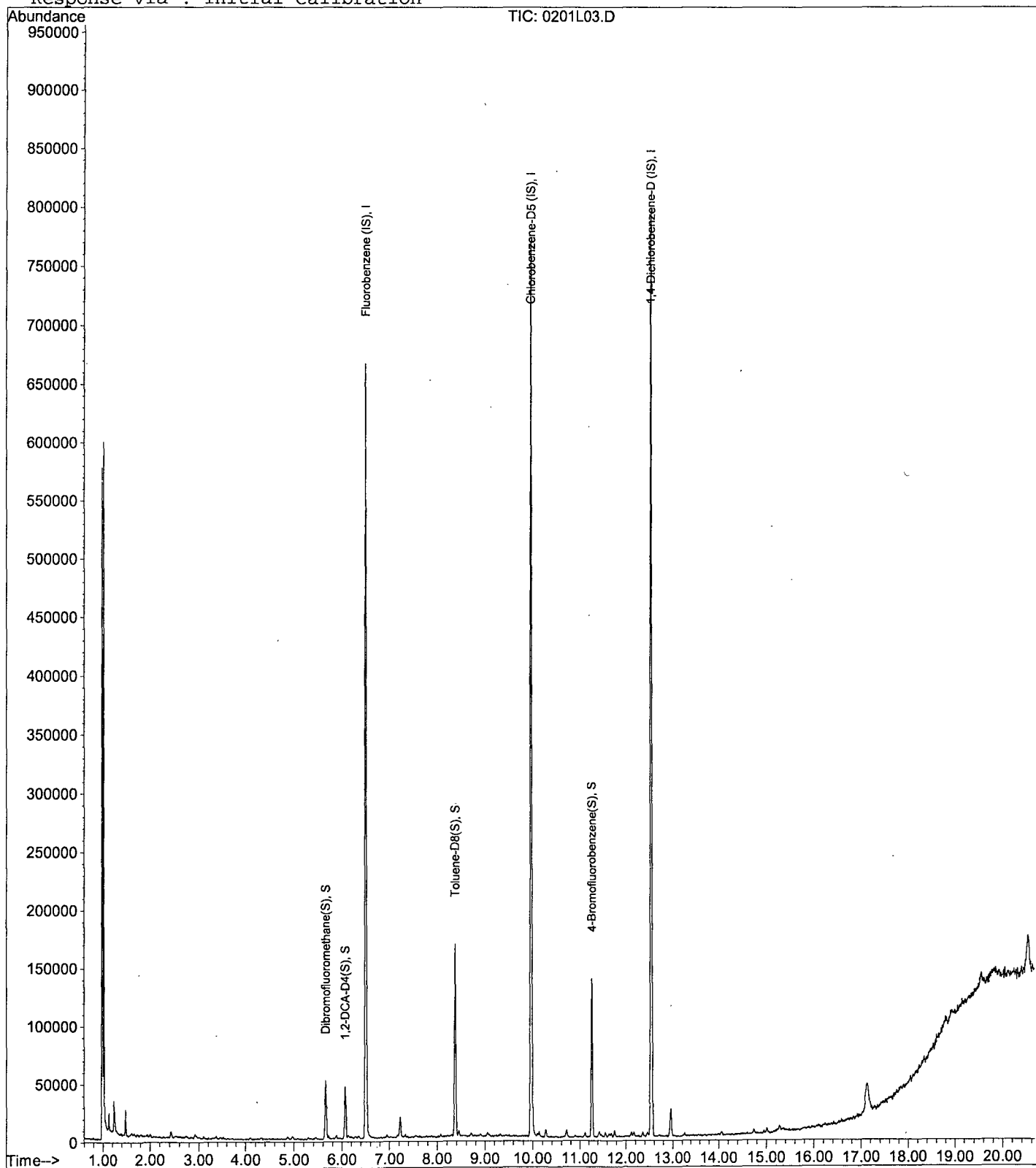
Data File : M:\LOKI\DATA\190201\0201L03.D  
Acq On : 1 Feb 19 11:44  
Sample : 0.3ug/L VOC STD 02/01/19  
Misc : IS&S 11/8/18

Vial: 2  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 2 11:59 2019

Quant Results File: LSUR201W.RES

Method : M:\LOKI\DATA\190201\LSUR201W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Sat Feb 02 10:34:35 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190201\0201L04.D Vial: 3  
 Acq On : 1 Feb 19 12:13 Operator: PM,DG,SV,CMM,KV  
 Sample : 0.5ug/L VOC STD 02/01/19 Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Feb 2 11:59 2019 Quant Results File: LSUR201W.RES

Quant Method : M:\LOKI\DATA\190201\LSUR201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 10:34:35 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	304576	25.000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	243712	25.000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.53	152	129920	25.000	ppb	0.00
System Monitoring Compounds						
2) Dibromofluoromethane(S)	5.65	111	27635	5.160	ppb	0.00
Spiked Amount 25.000			Recovery =	20.640%		
3) 1,2-DCA-D4(S)	6.07	65	32793	5.354	ppb	0.00
Spiked Amount 25.000			Recovery =	21.416%		
5) Toluene-D8(S)	8.36	98	106355	5.472	ppb	0.00
Spiked Amount 25.000			Recovery =	21.888%		
6) 4-Bromofluorobenzene(S)	11.26	95	40133	5.322	ppb	0.00
Spiked Amount 25.000			Recovery =	21.288%		

Target Compounds Qvalue

Quantitation Report

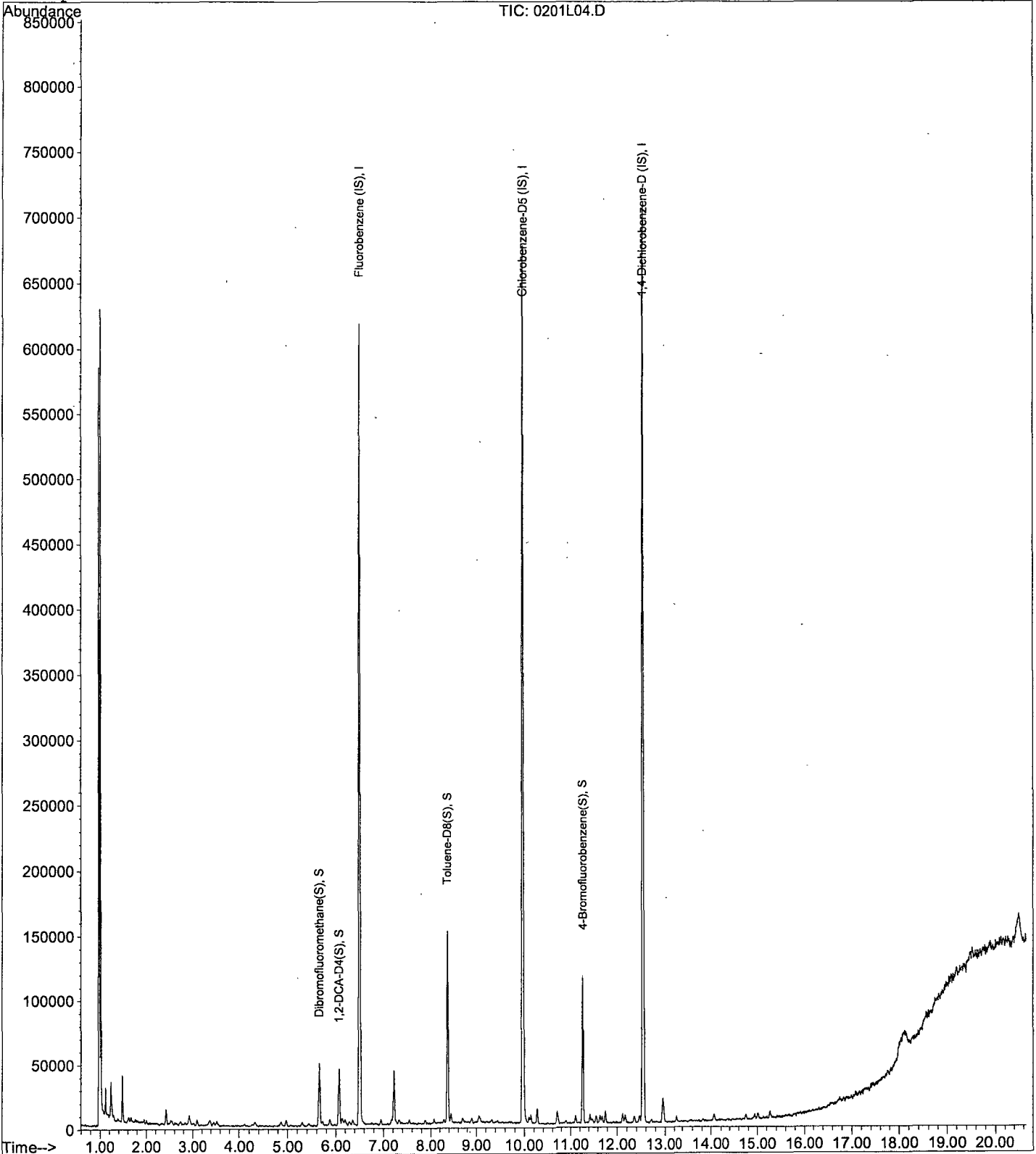
Data File : M:\LOKI\DATA\190201\0201L04.D  
Acq On : 1 Feb 19 12:13  
Sample : 0.5ug/L VOC STD 02/01/19  
Misc : IS&S 11/8/18

Vial: 3  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 2 11:59 2019

Quant Results File: LSUR201W.RES

Method : M:\LOKI\DATA\190201\LSUR201W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Sat Feb 02 10:34:35 2019  
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : M:\LOKI\DATA\190201\0201L05.D Vial: 4  
 Acq On : 1 Feb 19 12:42 Operator: PM, DG, SV, CMM, KV  
 Sample : 1.0ug/L VOC STD 02/01/19 Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Feb 2 11:59 2019 Quant Results File: LSUR201W.RES

Quant Method : M:\LOKI\DATA\190201\LSUR201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 10:34:35 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	281664	25.000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	253440	25.000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.53	152	134016	25.000	ppb	0.00
System Monitoring Compounds						
2) Dibromofluoromethane(S)	5.65	111	48197	9.732	ppb	0.00
Spiked Amount	25.000		Recovery	=	38.928%	
3) 1,2-DCA-D4(S)	6.07	65	54806	9.677	ppb	0.00
Spiked Amount	25.000		Recovery	=	38.708%	
5) Toluene-D8(S)	8.37	98	178922	8.852	ppb	0.00
Spiked Amount	25.000		Recovery	=	35.408%	
6) 4-Bromofluorobenzene(S)	11.26	95	66821	8.521	ppb	0.00
Spiked Amount	25.000		Recovery	=	34.084%	

Target Compounds Qvalue

Quantitation Report

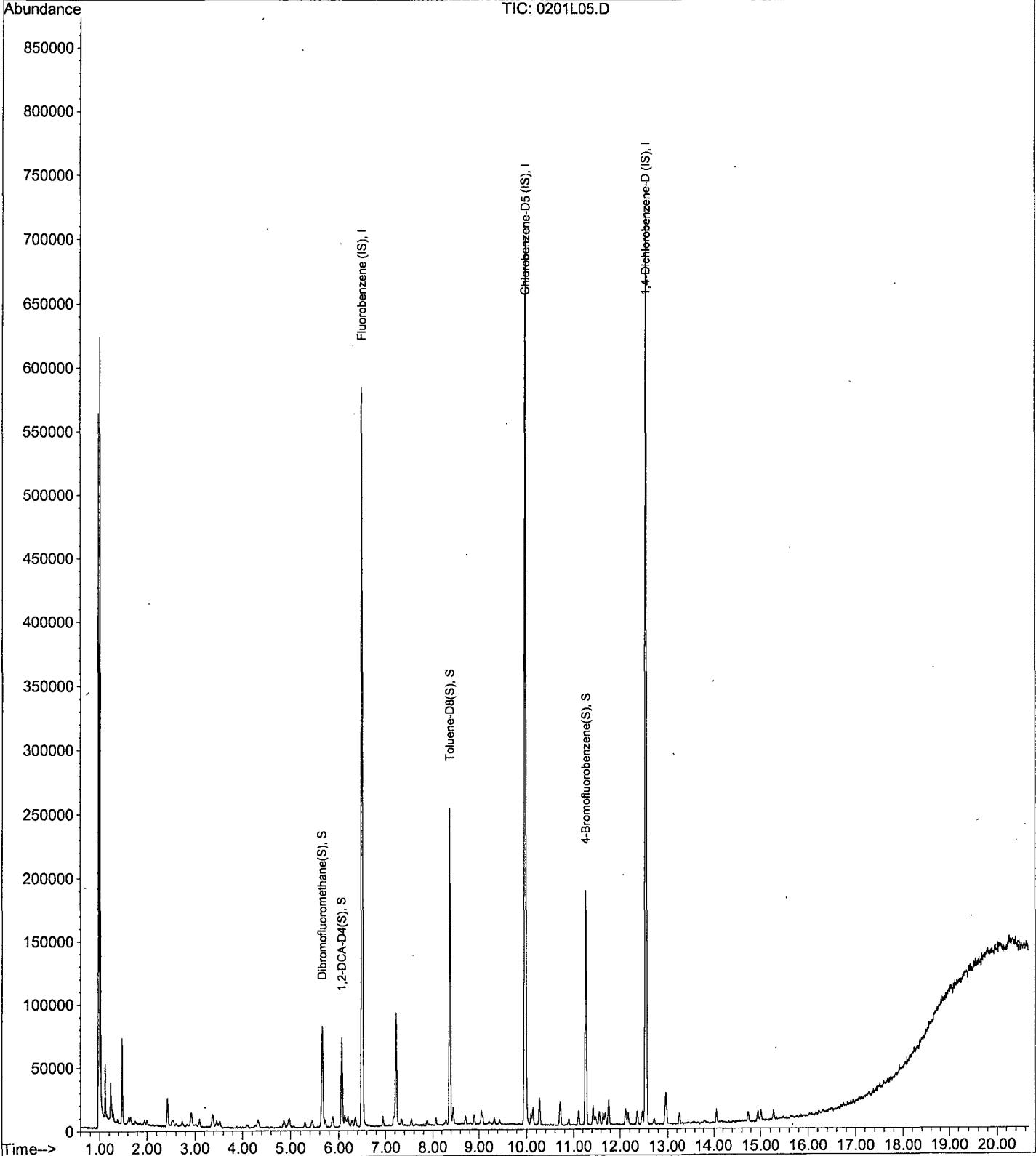
Data File : M:\LOKI\DATA\190201\0201L05.D  
Acq On : 1 Feb 19 12:42  
Sample : 1.0ug/L VOC STD 02/01/19  
Misc : IS&S 11/8/18

Vial: 4  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 2 11:59 2019

Quant Results File: LSUR201W.RES

Method : M:\LOKI\DATA\190201\LSUR201W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Sat Feb 02 10:34:35 2019  
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : M:\LOKI\DATA\190201\0201L06.D Vial: 5  
 Acq On : 1 Feb 19 13:10 Operator: PM, DG, SV, CMM, KV  
 Sample : 2.0ug/L VOC STD 02/01/19 Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Feb 2 11:59 2019

Quant Results File: LSUR201W.RES

Quant Method : M:\LOKI\DATA\190201\LSUR201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 10:34:35 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	299264	25.000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	252608	25.000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.53	152	135872	25.000	ppb	0.00
System Monitoring Compounds						
2) Dibromofluoromethane(S)	5.65	111	49866	9.477	ppb	0.00
Spiked Amount	25.000		Recovery	=	37.908%	
3) 1,2-DCA-D4(S)	6.07	65	57162	9.499	ppb	0.00
Spiked Amount	25.000		Recovery	=	37.996%	
5) Toluene-D8(S)	8.37	98	180946	8.982	ppb	0.00
Spiked Amount	25.000		Recovery	=	35.928%	
6) 4-Bromofluorobenzene(S)	11.26	95	67642	8.654	ppb	0.00
Spiked Amount	25.000		Recovery	=	34.616%	

Target Compounds

Qvalue

(#) = qualifier out of range (m) = manual integration

Quantitation Report

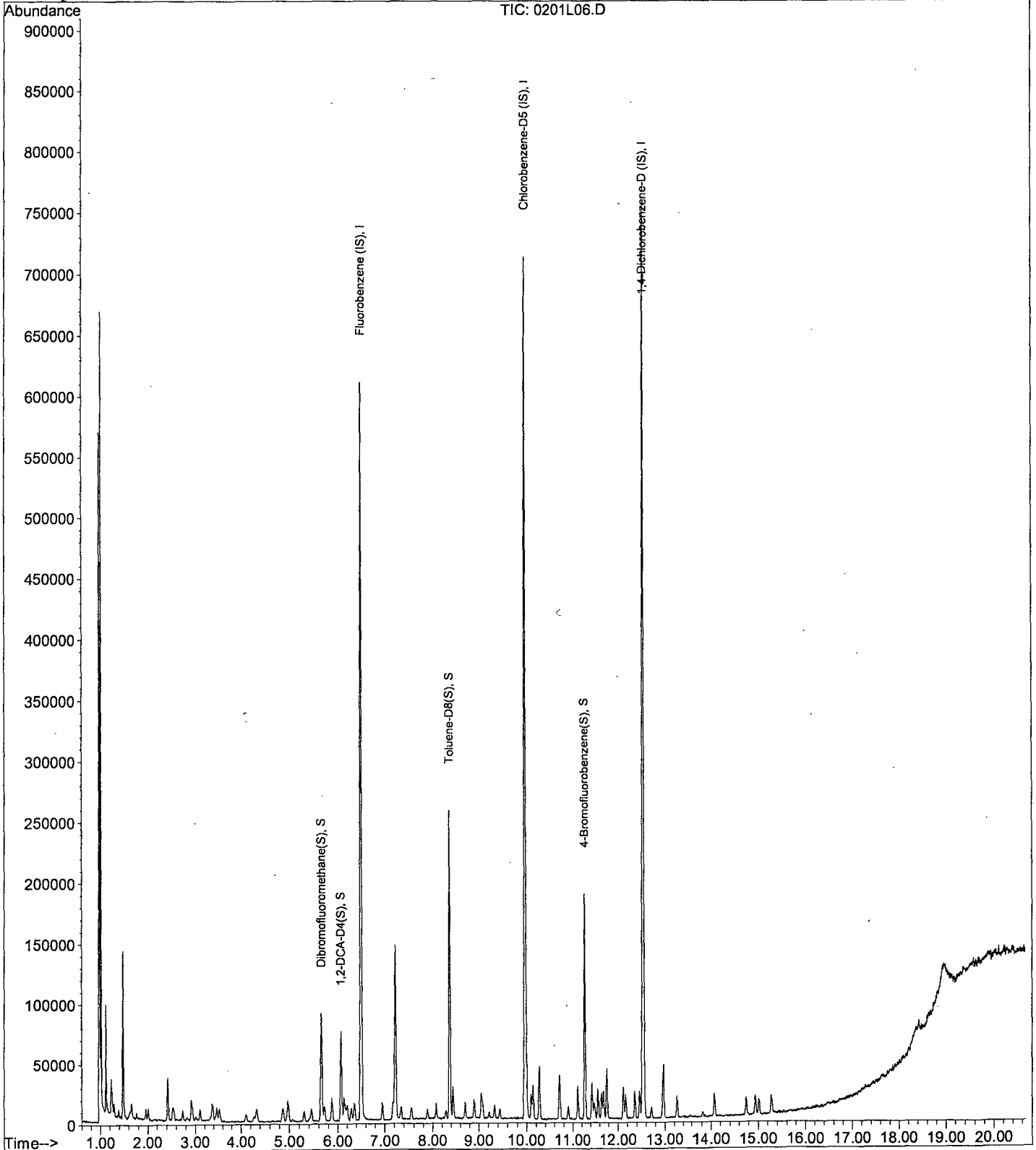
Data File : M:\LOKI\DATA\190201\0201L06.D  
Acq On : 1 Feb 19 13:10  
Sample : 2.0ug/L VOC STD 02/01/19  
Misc : IS&S 11/8/18

Vial: 5  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 2 11:59 2019

Quant Results File: LSUR201W.RES

Method : M:\LOKI\DATA\190201\LSUR201W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Sat Feb 02 10:34:35 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190201\0201L07.D Vial: 6  
 Acq On : 1 Feb 19 13:39 Operator: PM,DG,SV,CMM,KV  
 Sample : 5.0ug/L VOC STD 02/01/19 Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Feb 2 11:59 2019 Quant Results File: LSUR201W.RES

Quant Method : M:\LOKI\DATA\190201\LSUR201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 10:34:35 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	295296	25.000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	249664	25.000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.53	152	136704	25.000	ppb	0.00
System Monitoring Compounds						
2) Dibromofluoromethane(S)	5.65	111	130766	25.185	ppb	0.00
Spiked Amount	25.000		Recovery	=	100.740%	
3) 1,2-DCA-D4(S)	6.07	65	147719	24.878	ppb	0.00
Spiked Amount	25.000		Recovery	=	99.512%	
5) Toluene-D8(S)	8.37	98	493864	24.803	ppb	0.00
Spiked Amount	25.000		Recovery	=	99.212%	
6) 4-Bromofluorobenzene(S)	11.26	95	190055	24.602	ppb	0.00
Spiked Amount	25.000		Recovery	=	98.408%	

Target Compounds Qvalue



Quantitation Report

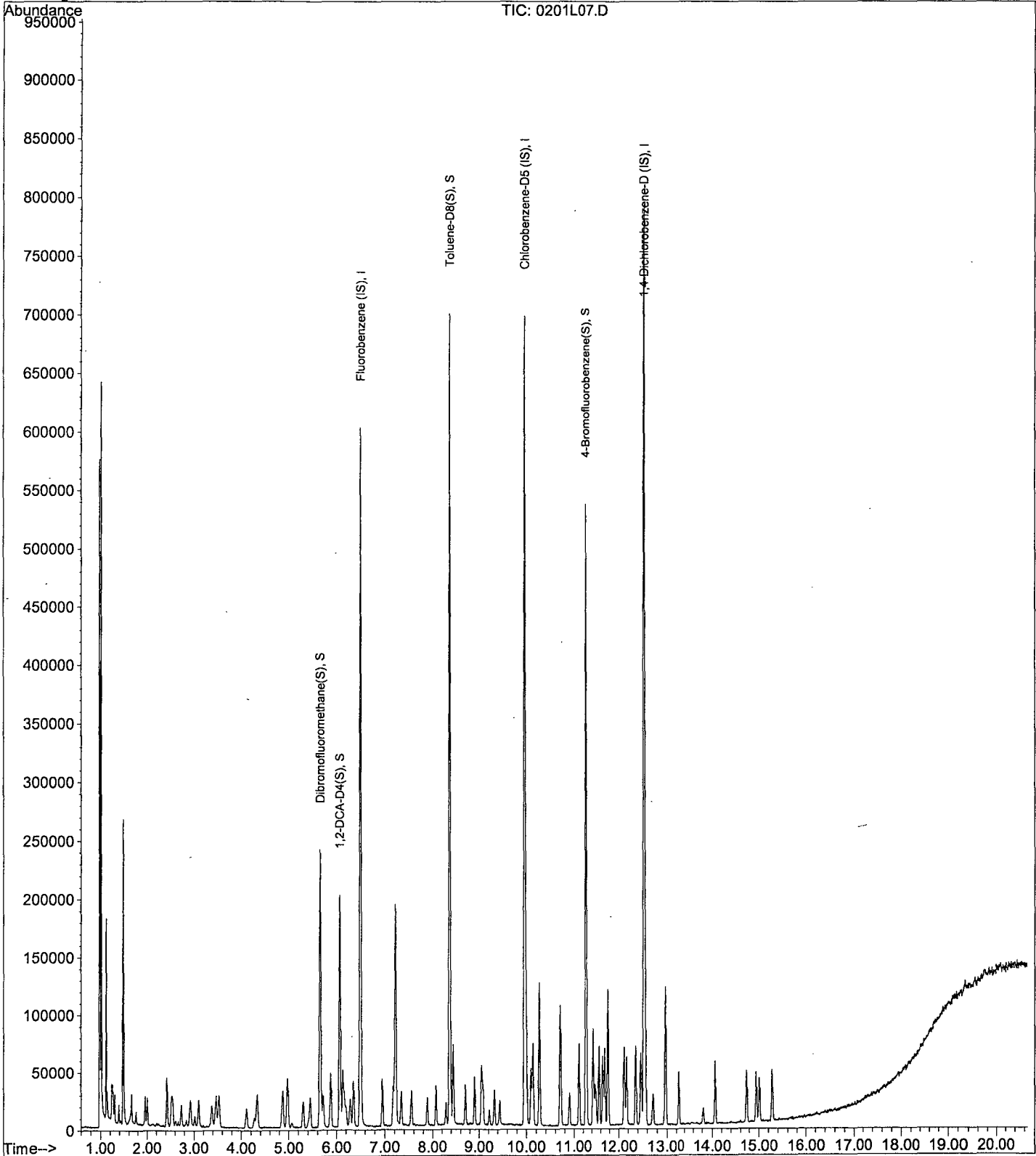
Data File : M:\LOKI\DATA\190201\0201L07.D  
Acq On : 1 Feb 19 13:39  
Sample : 5.0ug/L VOC STD 02/01/19  
Misc : IS&S 11/8/18

Vial: 6  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 2 11:59 2019

Quant Results File: LSUR201W.RES

Method : M:\LOKI\DATA\190201\LSUR201W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Sat Feb 02 10:34:35 2019  
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : M:\LOKI\DATA\190201\0201L08.D Vial: 7  
 Acq On : 1 Feb 19 14:08 Operator: PM,DG,SV,CMM,KV  
 Sample : 10ug/L VOC STD 02/01/19 Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Feb 2 11:59 2019 Quant Results File: LSUR201W.RES

Quant Method : M:\LOKI\DATA\190201\LSUR201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 10:34:35 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	283840	25.000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	250496	25.000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.53	152	133824	25.000	ppb	0.00
System Monitoring Compounds						
2) Dibromofluoromethane(S)	5.65	111	131873	26.423	ppb	0.00
Spiked Amount	25.000		Recovery	=	105.692%	
3) 1,2-DCA-D4(S)	6.07	65	152419	26.705	ppb	0.00
Spiked Amount	25.000		Recovery	=	106.820%	
5) Toluene-D8(S)	8.37	98	504974	25.277	ppb	0.00
Spiked Amount	25.000		Recovery	=	101.108%	
6) 4-Bromofluorobenzene(S)	11.26	95	192078	24.781	ppb	0.00
Spiked Amount	25.000		Recovery	=	99.124%	

Target Compounds Qvalue

Quantitation Report

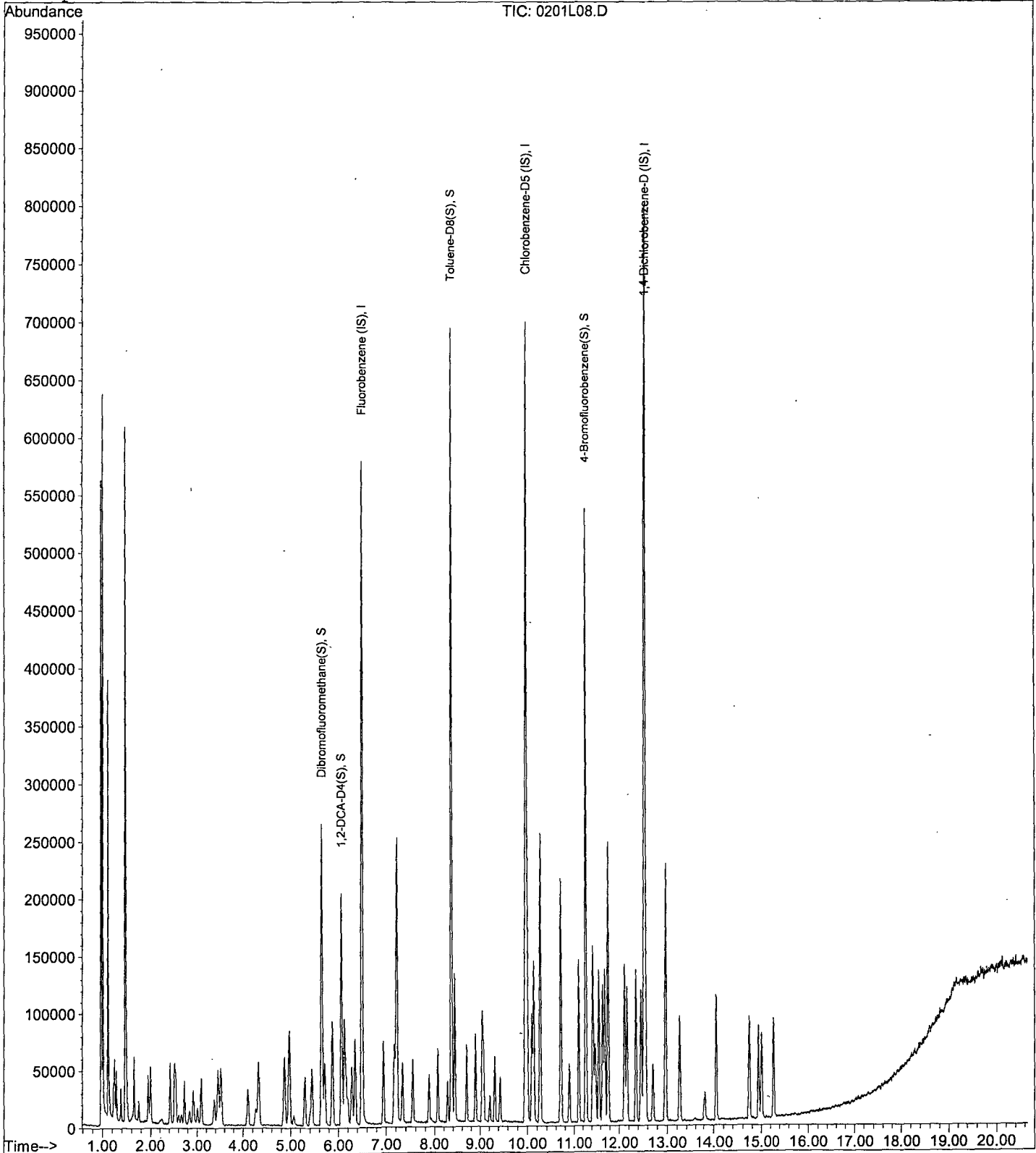
Data File : M:\LOKI\DATA\190201\0201L08.D  
Acq On : 1 Feb 19 14:08  
Sample : 10ug/L VOC STD 02/01/19  
Misc : IS&S 11/8/18

Vial: 7  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 2 11:59 2019

Quant Results File: LSUR201W.RES

Method : M:\LOKI\DATA\190201\LSUR201W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Sat Feb 02 10:34:35 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190201\0201L09.D Vial: 8  
 Acq On : 1 Feb 19 14:36 Operator: PM, DG, SV, CMM, KV  
 Sample : 20ug/L VOC STD 02/01/19 Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Feb 2 11:59 2019 Quant Results File: LSUR201W.RES

Quant Method : M:\LOKI\DATA\190201\LSUR201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 10:34:35 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	306432	25.000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	256704	25.000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.53	152	141504	25.000	ppb	0.00
System Monitoring Compounds						
2) Dibromofluoromethane(S)	5.65	111	277983	51.593	ppb	0.00
Spiked Amount	25.000		Recovery	=	206.372%	
3) 1,2-DCA-D4(S)	6.07	65	314246	50.999	ppb	0.00
Spiked Amount	25.000		Recovery	=	203.996%	
5) Toluene-D8(S)	8.37	98	1054806	51.523	ppb	0.00
Spiked Amount	25.000		Recovery	=	206.092%	
6) 4-Bromofluorobenzene(S)	11.26	95	404114	50.876	ppb	0.00
Spiked Amount	25.000		Recovery	=	203.504%	

Target Compounds Qvalue

Quantitation Report

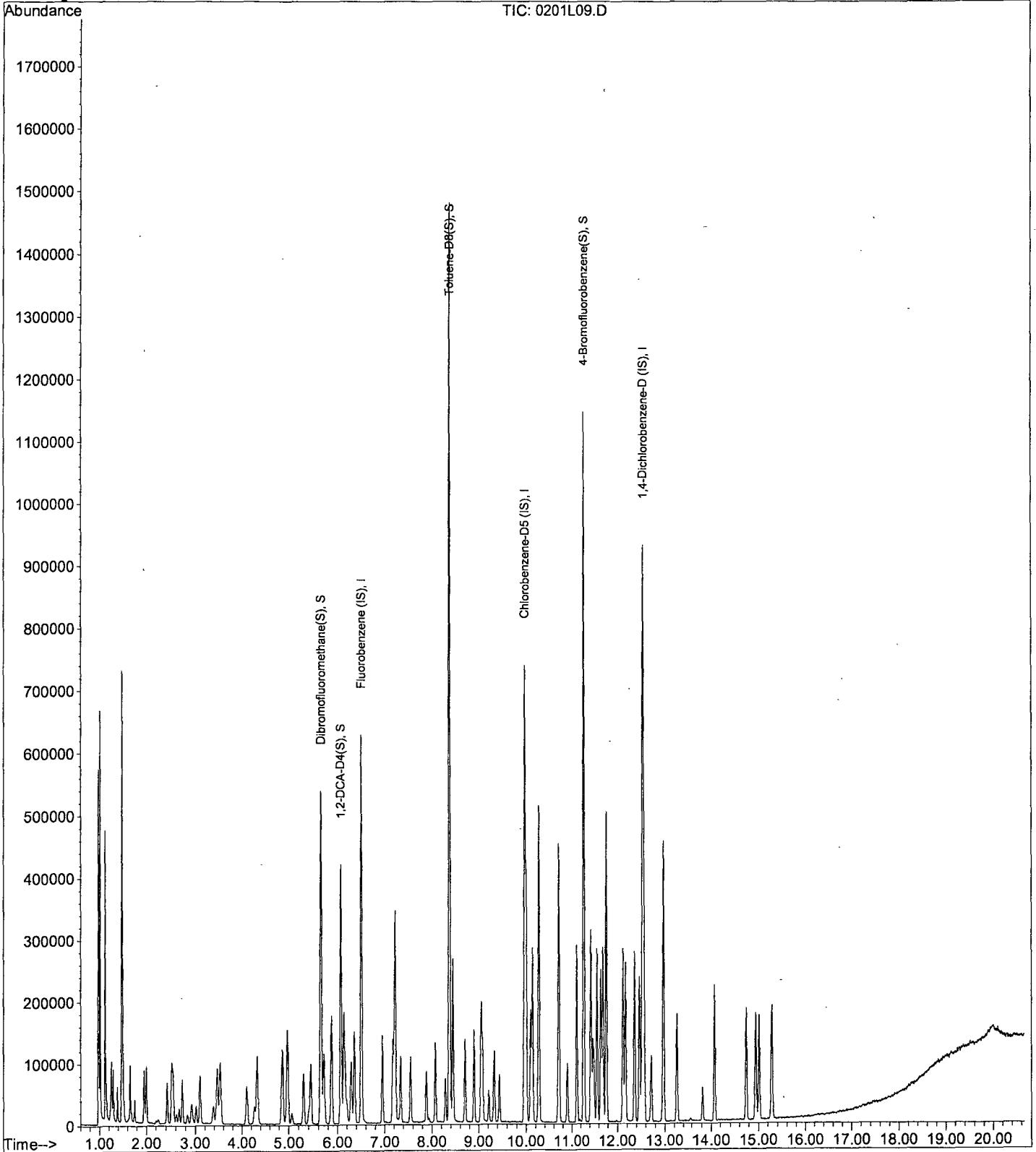
Data File : M:\LOKI\DATA\190201\0201L09.D  
Acq On : 1 Feb 19 14:36  
Sample : 20ug/L VOC STD 02/01/19  
Misc : IS&S 11/8/18

Vial: 8  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 2 11:59 2019

Quant Results File: LSUR201W.RES

Method : M:\LOKI\DATA\190201\LSUR201W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Sat Feb 02 10:34:35 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190201\0201L10.D Vial: 9  
 Acq On : 1 Feb 19 15:05 Operator: PM, DG, SV, CMM, KV  
 Sample : 40ug/L VOC STD 02/01/19 Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Feb 2 11:59 2019 Quant Results File: LSUR201W.RES

Quant Method : M:\LOKI\DATA\190201\LSUR201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 10:34:35 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	303360	25.000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	251456	25.000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.53	152	140672	25.000	ppb	0.00
System Monitoring Compounds						
2) Dibromofluoromethane(S)	5.65	111	262880	49.284	ppb	0.00
Spiked Amount	25.000		Recovery	=	197.136%	
3) 1,2-DCA-D4(S)	6.07	65	305156	50.026	ppb	0.00
Spiked Amount	25.000		Recovery	=	200.104%	
5) Toluene-D8(S)	8.37	98	1014425	50.584	ppb	0.00
Spiked Amount	25.000		Recovery	=	202.336%	
6) 4-Bromofluorobenzene(S)	11.26	95	387808	49.842	ppb	0.00
Spiked Amount	25.000		Recovery	=	199.368%	

Target Compounds Qvalue

Quantitation Report

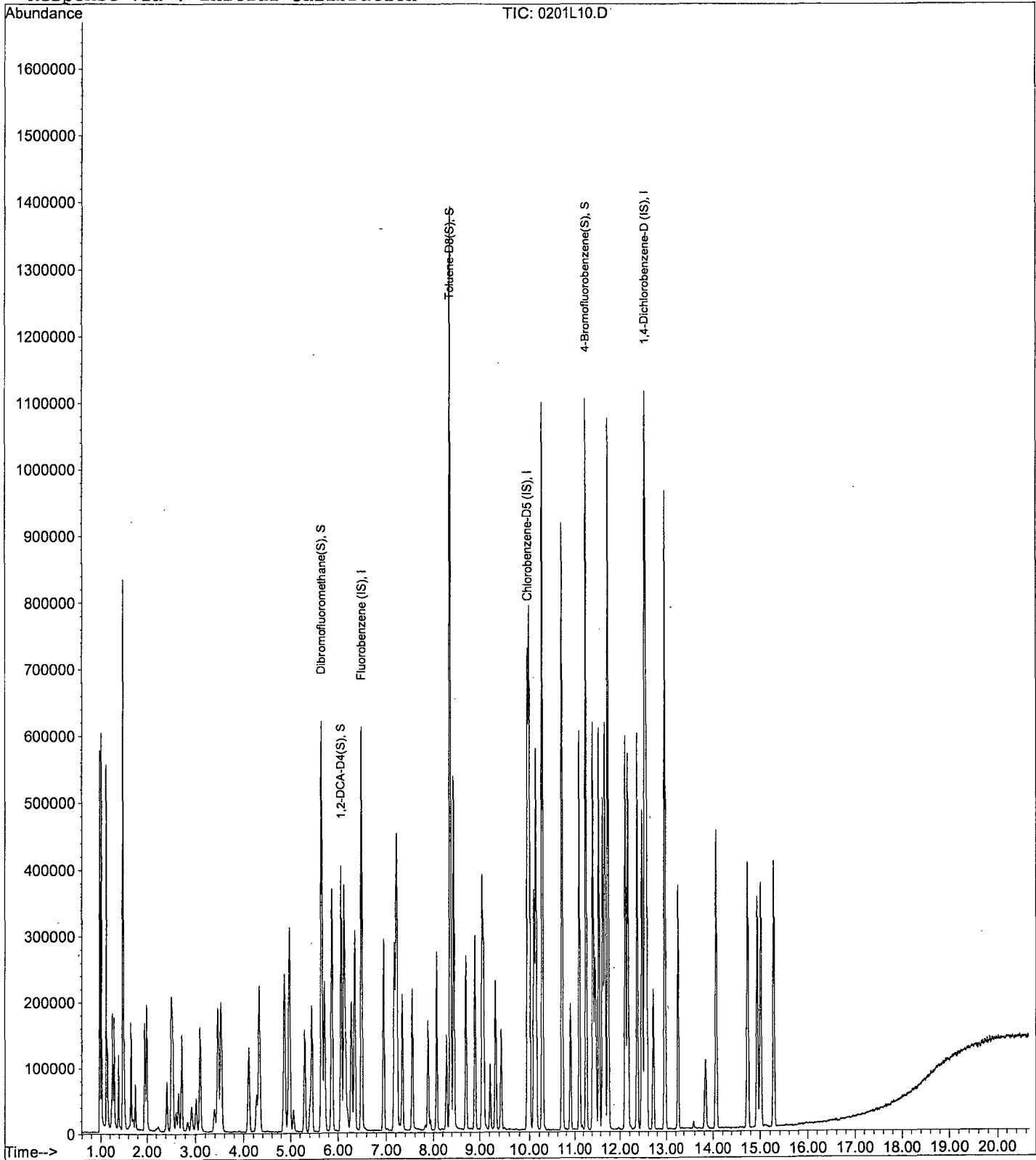
Data File : M:\LOKI\DATA\190201\0201L10.D  
Acq On : 1 Feb 19 15:05  
Sample : 40ug/L VOC STD 02/01/19  
Misc : IS&S 11/8/18

Vial: 9  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 2 11:59 2019

Quant Results File: LSUR201W.RES

Method : M:\LOKI\DATA\190201\LSUR201W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Sat Feb 02 10:34:35 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190201\0201L11.D Vial: 10  
 Acq On : 1 Feb 19 15:34 Operator: PM,DG,SV,CMM,KV  
 Sample : 50ug/L VOC STD 02/01/19 Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Feb 2 11:59 2019 Quant Results File: LSUR201W.RES

Quant Method : M:\LOKI\DATA\190201\LSUR201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 10:34:35 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	297600	25.000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	254144	25.000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.54	152	137472	25.000	ppb	0.00
System Monitoring Compounds						
2) Dibromofluoromethane(S)	5.65	111	507323	96.952	ppb	0.00
Spiked Amount	25.000		Recovery	=	387.808%	
3) 1,2-DCA-D4(S)	6.07	65	574150	95.945	ppb	0.00
Spiked Amount	25.000		Recovery	=	383.780%	
5) Toluene-D8(S)	8.37	98	1956649	96.536	ppb	0.00
Spiked Amount	25.000		Recovery	=	386.144%	
6) 4-Bromofluorobenzene(S)	11.26	95	746683	94.950	ppb	0.00
Spiked Amount	25.000		Recovery	=	379.800%	
Target Compounds						Qvalue



Quantitation Report

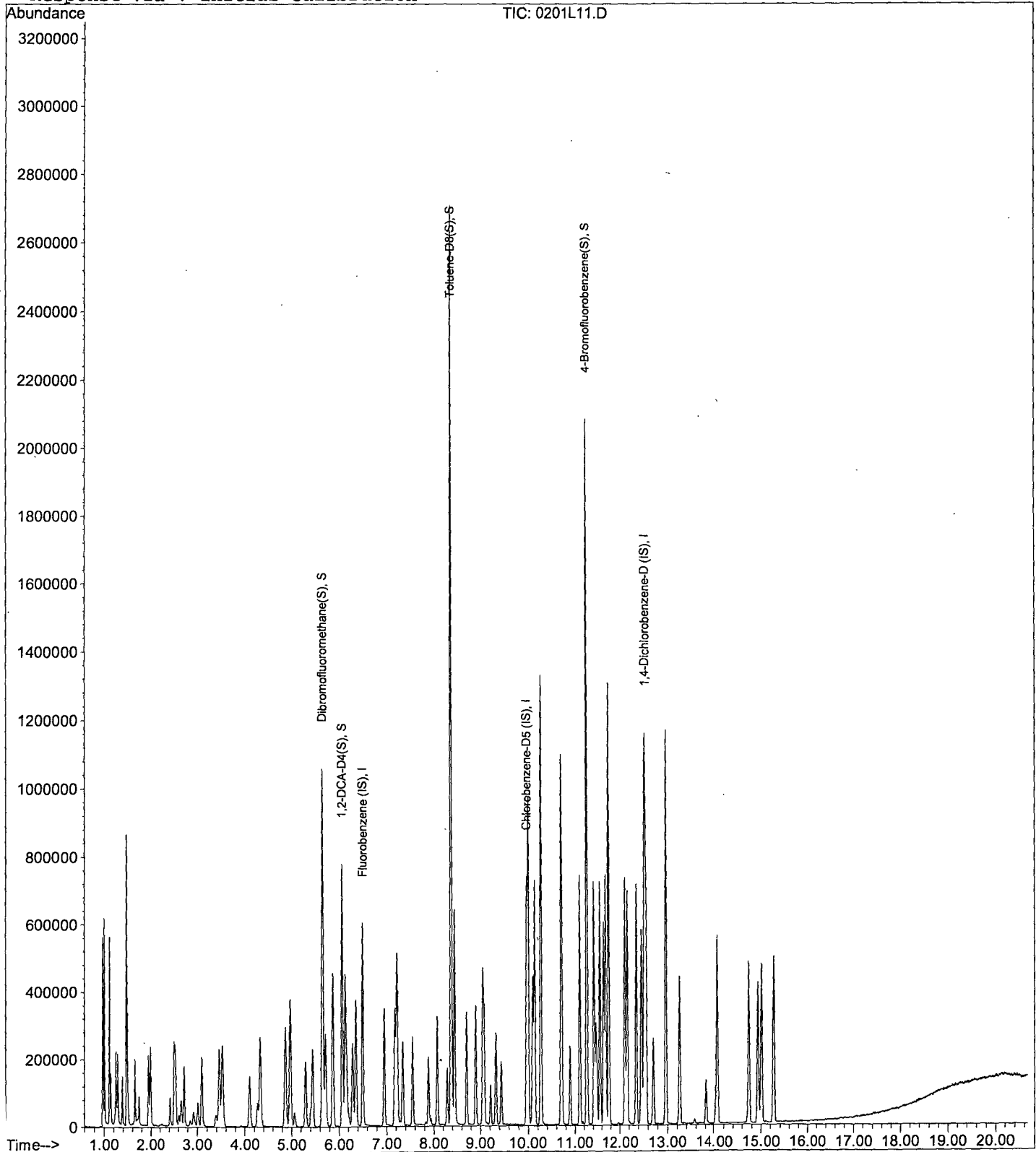
Data File : M:\LOKI\DATA\190201\0201L11.D  
Acq On : 1 Feb 19 15:34  
Sample : 50ug/L VOC STD 02/01/19  
Misc : IS&S 11/8/18

Vial: 10  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 2 11:59 2019

Quant Results File: LSUR201W.RES

Method : M:\LOKI\DATA\190201\LSUR201W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Sat Feb 02 10:34:35 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190201\0201L12.D  
 Acq On : 1 Feb 19 16:03  
 Sample : 100ug/L VOC STD 02/01/19  
 Misc : IS&S 11/8/18

Vial: 11  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 2 11:59 2019

Quant Results File: LSUR201W.RES

Quant Method : M:\LOKI\DATA\190201\LSUR201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 10:34:35 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	303040	25.000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	247488	25.000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.53	152	150912	25.000	ppb	0.00
System Monitoring Compounds						
2) Dibromofluoromethane(S)	5.65	111	515135	96.678	ppb	0.00
Spiked Amount	25.000					
					Recovery = 386.712%	
3) 1,2-DCA-D4(S)	6.07	65	581674	95.457	ppb	0.00
Spiked Amount	25.000					
					Recovery = 381.828%	
5) Toluene-D8(S)	8.37	98	2000856	101.372	ppb	0.00
Spiked Amount	25.000					
					Recovery = 405.488%	
6) 4-Bromofluorobenzene(S)	11.26	95	769752	100.516	ppb	0.00
Spiked Amount	25.000					
					Recovery = 402.064%	

Target Compounds

Qvalue

Quantitation Report

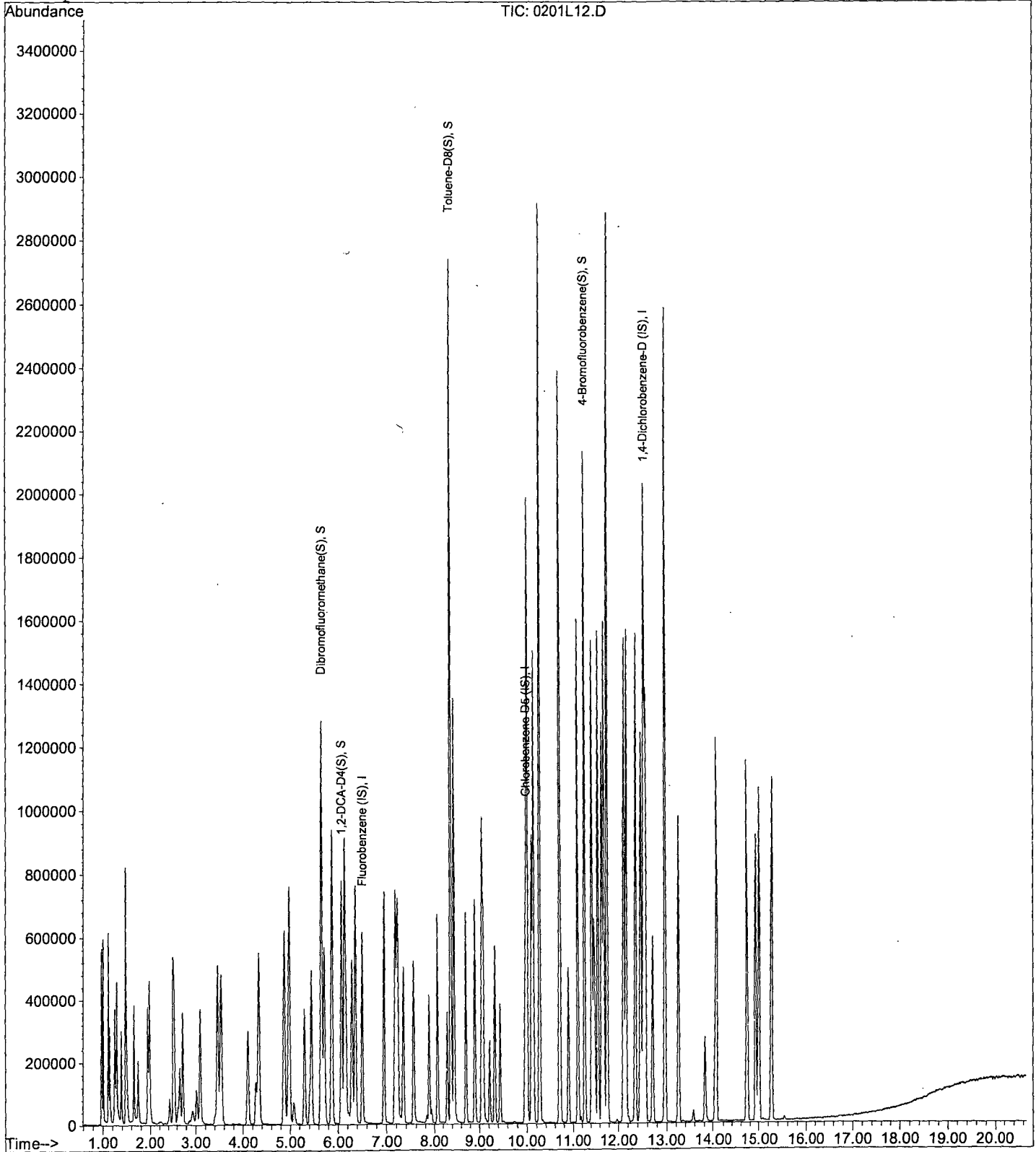
Data File : M:\LOKI\DATA\190201\0201L12.D  
Acq On : 1 Feb 19 16:03  
Sample : 100ug/L VOC STD 02/01/19  
Misc : IS&S 11/8/18

Vial: 11  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 2 11:59 2019

Quant Results File: LSUR201W.RES

Method : M:\LOKI\DATA\190201\LSUR201W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Sat Feb 02 10:34:35 2019  
Response via : Initial Calibration



VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

**Form 6**  
**Initial Calibration**

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: water

SDG No: \_\_\_\_\_  
Initial Cal. Date: 02/01/19  
Instrument: Loki

Initials:   DG  

0201L16.D    0201L17.D    0201L18.D    0201L19.D    0201L20.D    0201L21.D    0201L22.D

	Compound	1	2	3	4	5	6	7				Avg	%RSD	Type	r^2	Q	MRF
1	I Fluorobenzene (IS)																
2	TMHBL Gasoline C6-C10	13.3	5.607	3.065	1.335	0.9075	0.7942	0.7307				3.7	125	TMHBL	1.000		
3	I Chlorobenzene-D5 (IS)																
4	I 1,4-Dichlorobenzene-D (IS)																
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Data File : M:\LOKI\DATA\190201\0201L16.D  
 Acq On : 1 Feb 19 17:57  
 Sample : 20ug/L GAS STD 02/01/19  
 Misc : IS&S 11/8/18

Vial: 15  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 2 10:56 2019

Quant Results File: LGAS0201.RES

Quant Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 10:55:51 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	570211	25.000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.97	TIC	653665	25.000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.53	TIC	672792	25.000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Gasoline C6-C10	8.37	TIC	6069555m	22.625	ppb	100

Quantitation Report

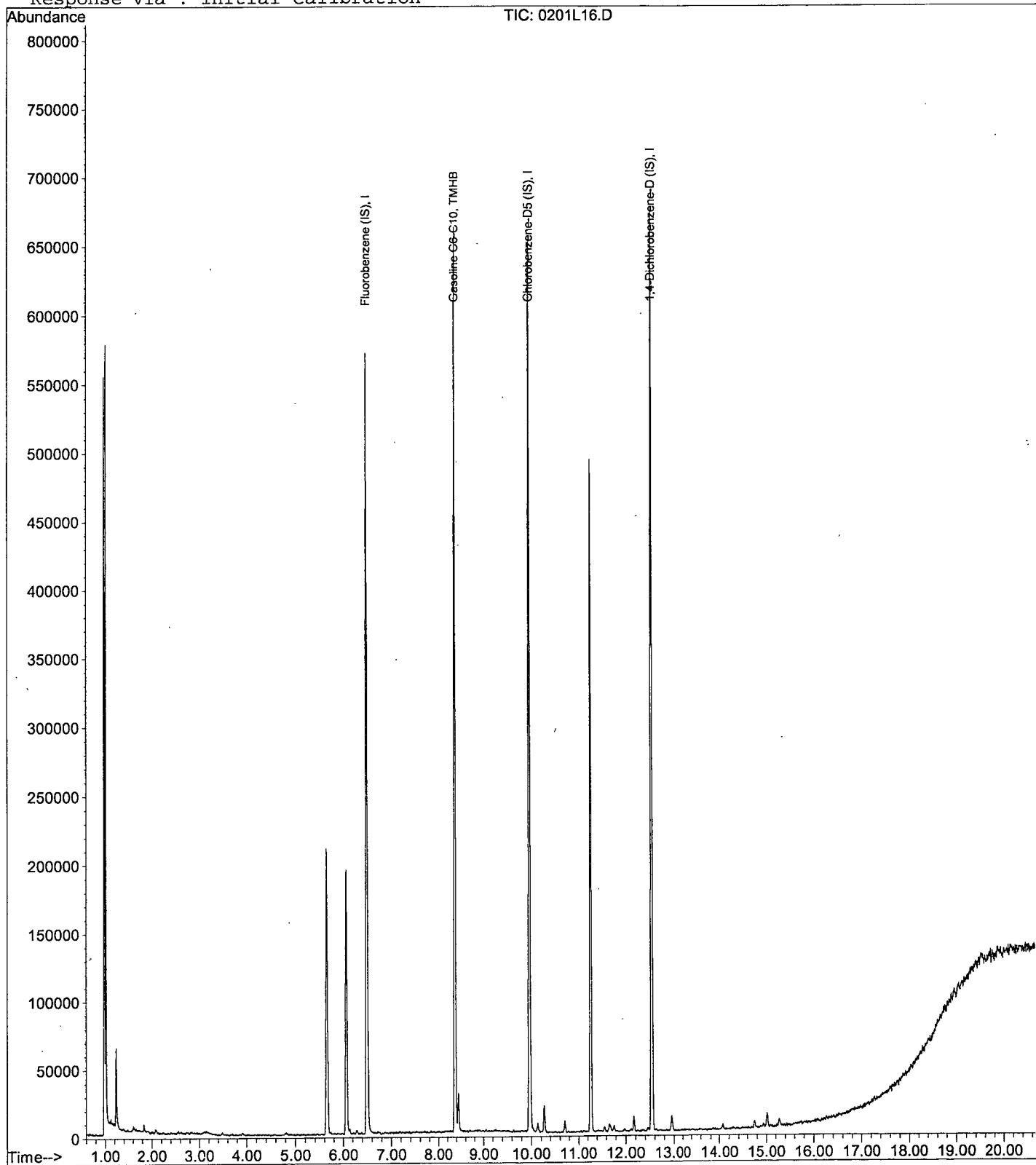
Data File : M:\LOKI\DATA\190201\0201L16.D  
Acq On : 1 Feb 19 17:57  
Sample : 20ug/L GAS STD 02/01/19  
Misc : IS&S 11/8/18

Vial: 15  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 2 10:56 2019

Quant Results File: LGAS0201.RES

Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Sat Feb 02 11:09:59 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190201\0201L17.D Vial: 16  
 Acq On : 1 Feb 19 18:26 Operator: PM,DG,SV,CMM,KV  
 Sample : 50ug/L GAS STD 02/01/19 Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Feb 2 10:56 2019 Quant Results File: LGAS0201.RES

Quant Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 10:55:51 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	561721	25.000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.97	TIC	651562	25.000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.54	TIC	675591	25.000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Gasoline C6-C10	8.37	TIC	6299184m	52.708	ppb	100

Quantitation Report

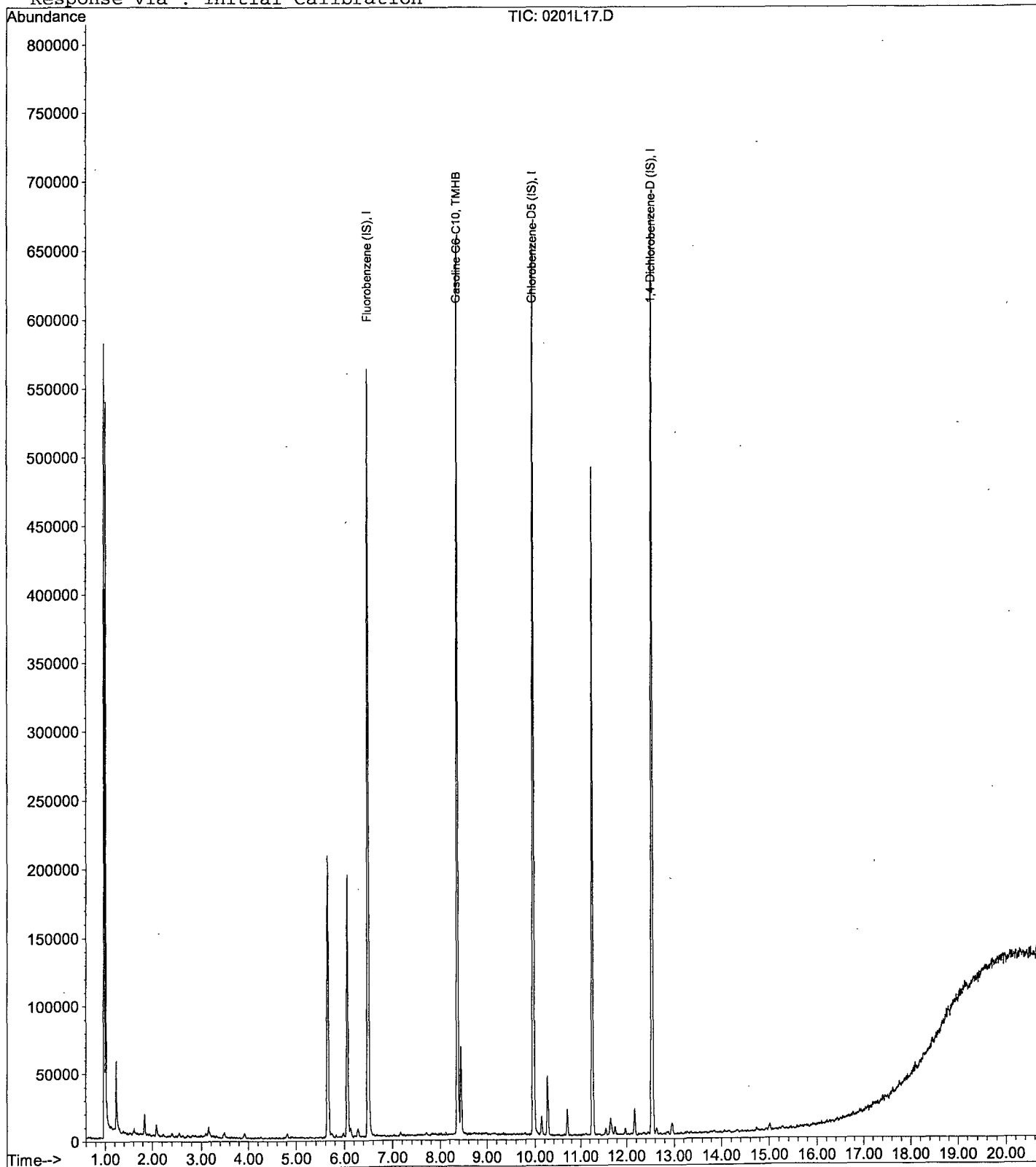
Data File : M:\LOKI\DATA\190201\0201L17.D  
Acq On : 1 Feb 19 18:26  
Sample : 50ug/L GAS STD 02/01/19  
Misc : IS&S 11/8/18

Vial: 16  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 2 10:56 2019

Quant Results File: LGAS0201.RES

Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Sat Feb 02 11:09:59 2019  
Response via : Initial Calibration





Data File : M:\LOKI\DATA\190201\0201L18.D Vial: 17  
 Acq On : 1 Feb 19 18:54 Operator: PM,DG,SV,CMM,KV  
 Sample : 100ug/L GAS STD 02/01/19 Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Feb 2 10:57 2019 Quant Results File: LGAS0201.RES

Quant Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 10:55:51 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	565983	25.000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.96	TIC	639504	25.000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.53	TIC	665181	25.000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Gasoline C6-C10	8.37	TIC	6939763m	108.015	ppb	100

Quantitation Report

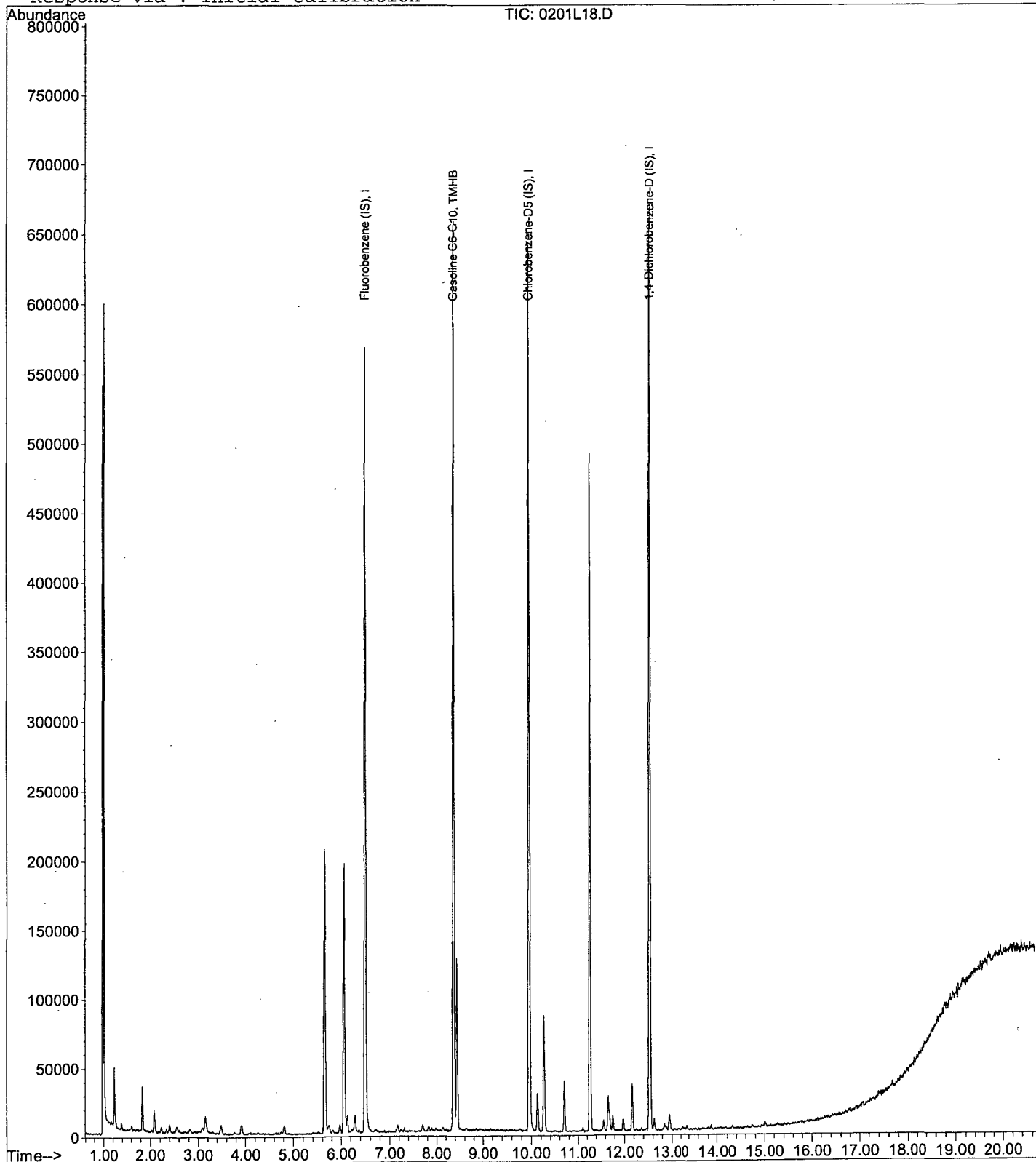
Data File : M:\LOKI\DATA\190201\0201L18.D  
Acq On : 1 Feb 19 18:54  
Sample : 100ug/L GAS STD 02/01/19  
Misc : IS&S 11/8/18

Vial: 17  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 2 10:57 2019

Quant Results File: LGAS0201.RES

Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Sat Feb 02 11:09:59 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190201\0201L19.D Vial: 18  
 Acq On : 1 Feb 19 19:23 Operator: PM,DG,SV,CMM,KV  
 Sample : 300ug/L GAS STD 02/01/19 Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Feb 2 10:57 2019 Quant Results File: LGAS0201.RES

Quant Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 10:55:51 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	567147	25.000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.97	TIC	665268	25.000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.53	TIC	695296	25.000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Gasoline C6-C10	8.37	TIC	9085826m	306.502	ppb	100

Quantitation Report

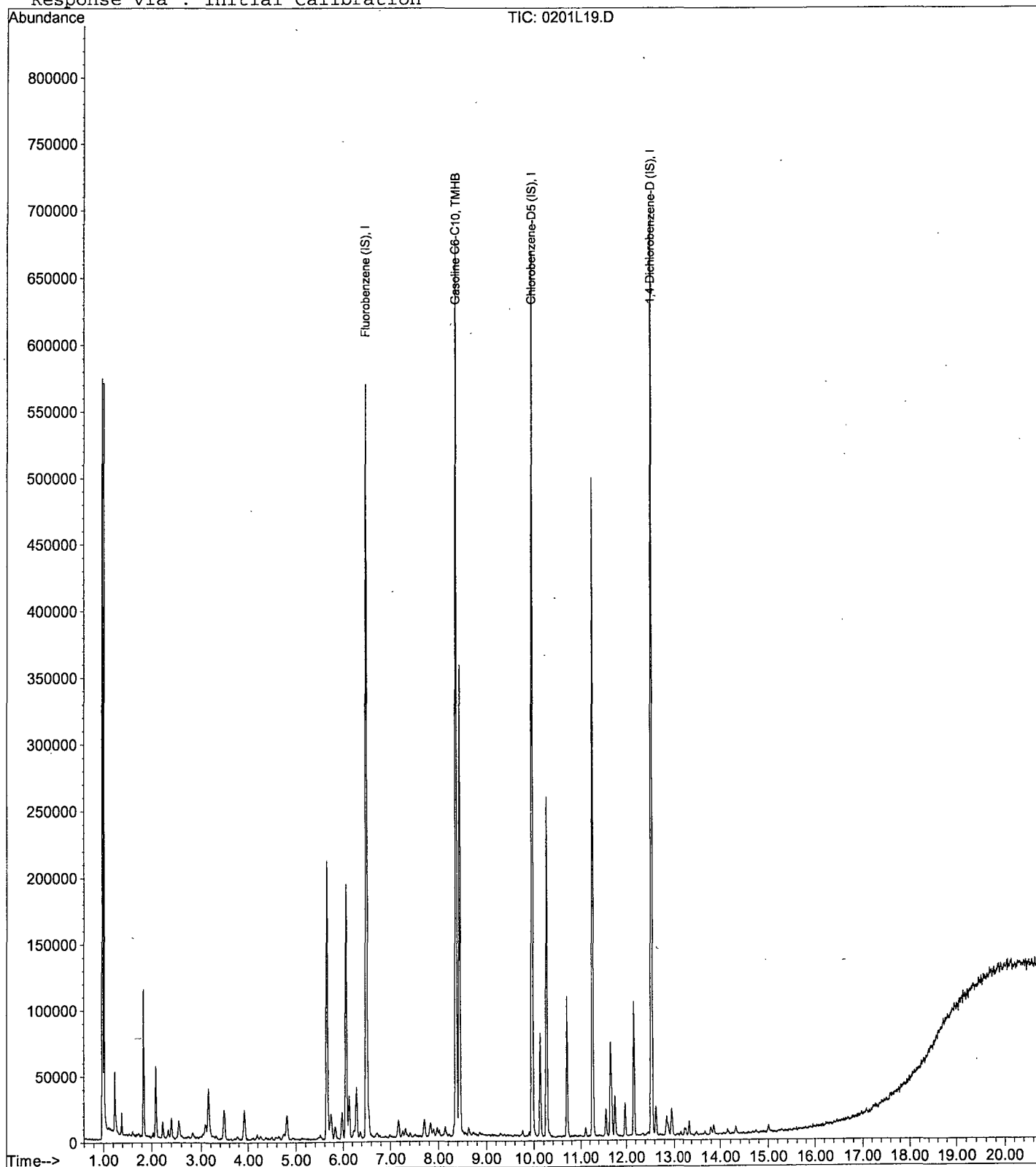
Data File : M:\LOKI\DATA\190201\0201L19.D  
Acq On : 1 Feb 19 19:23  
Sample : 300ug/L GAS STD 02/01/19  
Misc : IS&S 11/8/18

Vial: 18  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 2 10:57 2019

Quant Results File: LGAS0201.RES

Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Sat Feb 02 11:09:59 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190201\0201L20.D  
 Acq On : 1 Feb 19 19:52  
 Sample : 600ug/L GAS STD 02/01/19  
 Misc : IS&S 11/8/18

Vial: 19  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 2 10:57 2019

Quant Results File: LGAS0201.RES

Quant Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 10:55:51 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	556384	25.000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.97	TIC	668866	25.000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.54	TIC	706273	25.000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Gasoline C6-C10	8.44	TIC	12118221m	610.669	ppb	100

Quantitation Report

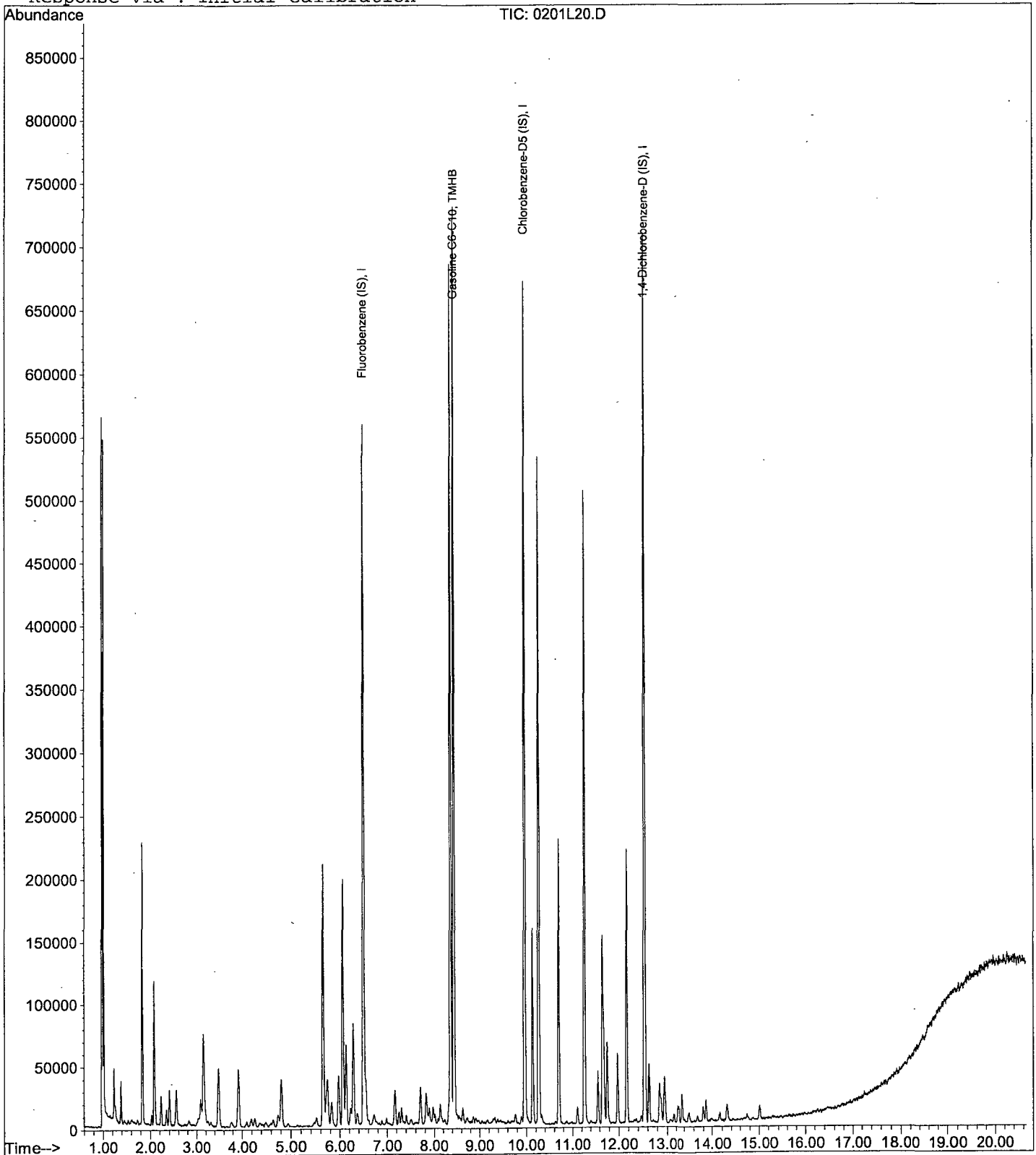
Data File : M:\LOKI\DATA\190201\0201L20.D  
Acq On : 1 Feb 19 19:52  
Sample : 600ug/L GAS STD 02/01/19  
Misc : IS&S 11/8/18

Vial: 19  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 2 10:57 2019

Quant Results File: LGAS0201.RES

Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Sat Feb 02 11:09:59 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190201\0201L21.D Vial: 20  
 Acq On : 1 Feb 19 20:20 Operator: PM,DG,SV,CMM,KV  
 Sample : 800ug/L GAS STD 02/01/19 Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Feb 2 11:07 2019 Quant Results File: LGAS0201.RES

Quant Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 10:55:51 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	565388	25.000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.97	TIC	658761	25.000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.53	TIC	700332	25.000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Gasoline C6-C10	8.44	TIC	14369636m	802.630	ppb	100

Quantitation Report

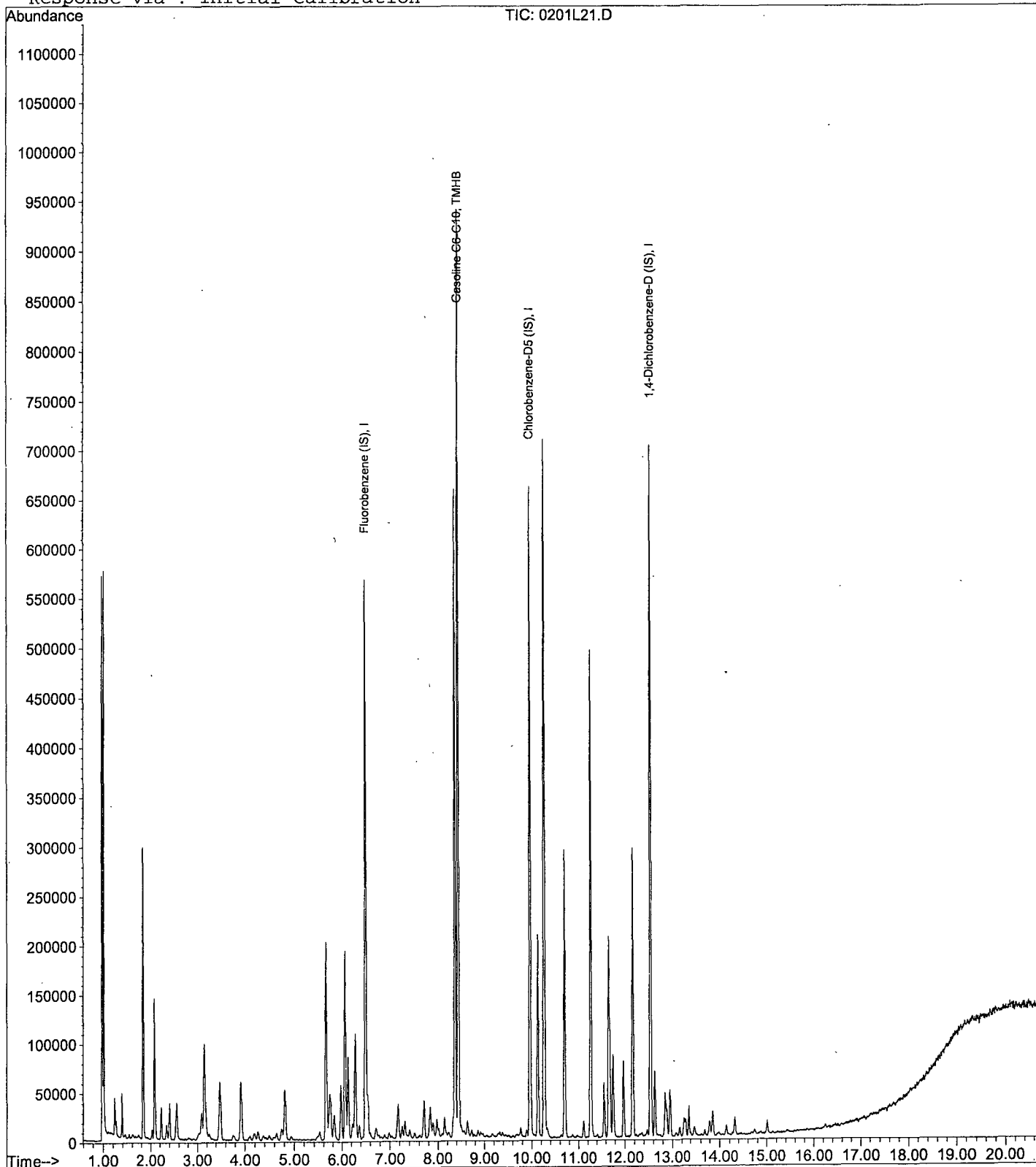
Data File : M:\LOKI\DATA\190201\0201L21.D  
Acq On : 1 Feb 19 20:20  
Sample : 800ug/L GAS STD 02/01/19  
Misc : IS&S 11/8/18

Vial: 20  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 2 11:07 2019

Quant Results File: LGAS0201.RES

Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Sat Feb 02 11:09:59 2019  
Response via : Initial Calibration





Data File : M:\LOKI\DATA\190201\0201L22.D Vial: 21  
 Acq On : 1 Feb 19 20:49 Operator: PM,DG,SV,CMM,KV  
 Sample : 1000ug/L GAS STD 02/01/19 Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Feb 2 11:08 2019 Quant Results File: LGAS0201.RES

Quant Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 10:55:51 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	557825	25.000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.97	TIC	645545	25.000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.53	TIC	696028	25.000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Gasoline C6-C10	8.44	TIC	16304248m	1003.965	ppb	100

Quantitation Report

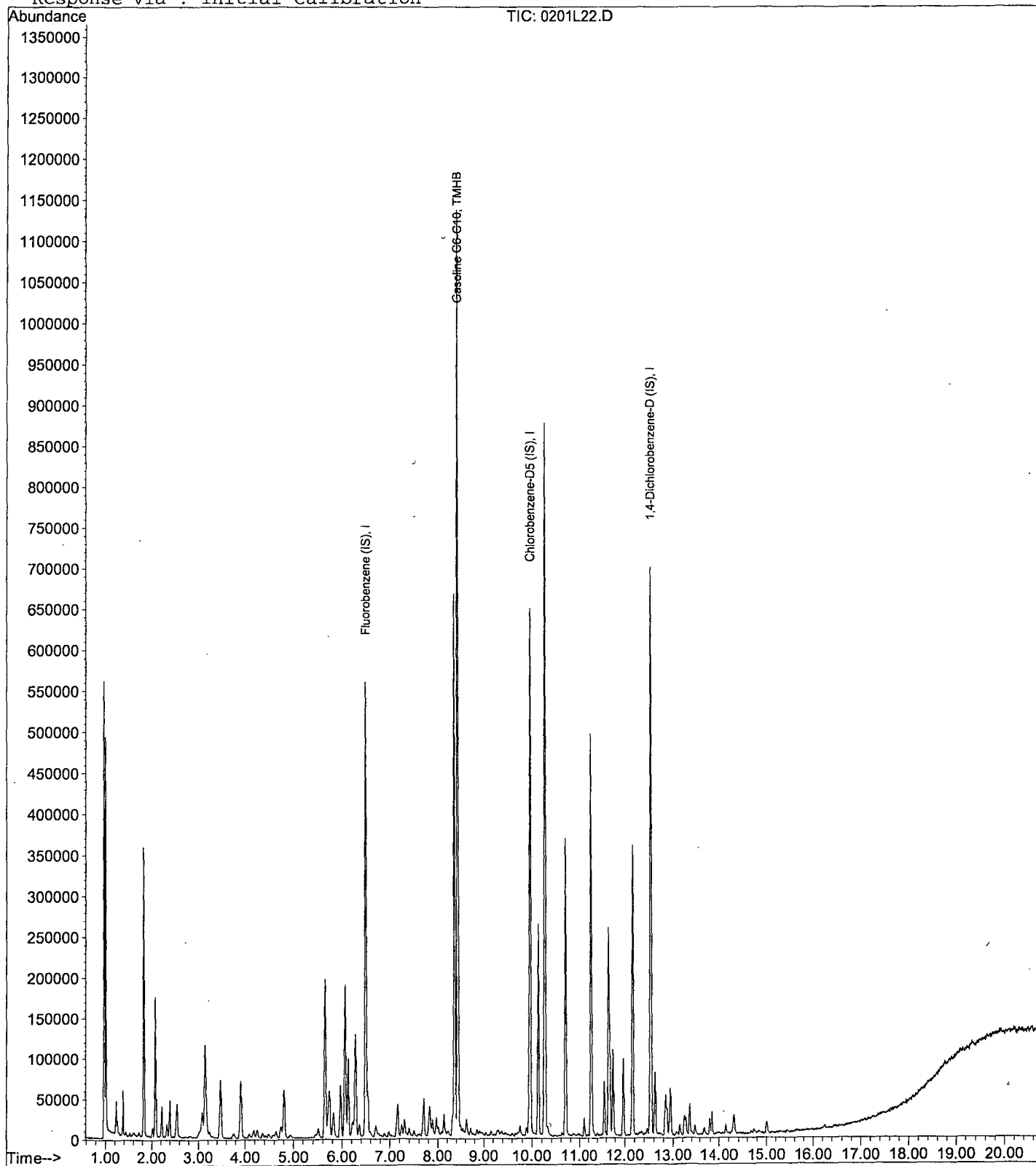
Data File : M:\LOKI\DATA\190201\0201L22.D  
Acq On : 1 Feb 19 20:49  
Sample : 1000ug/L GAS STD 02/01/19  
Misc : IS&S 11/8/18

Vial: 21  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 2 11:08 2019

Quant Results File: LGAS0201.RES

Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Sat Feb 02 11:09:59 2019  
Response via : Initial Calibration



VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 7

Second Source Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: water

SDG No: \_\_\_\_\_  
Date Analyzed: 1 Feb 19 21:46  
Instrument: Loki  
Initial Cal. Date: 02/01/19  
Data File: 0201L24.D

	Compound	MEAN	CCRF	%D	%Drift	
1	TMHB Gasoline C6-C10	3.678	1.345	63	TMHBL	2.4
2						
3						
4						
5						
6						
7						
8						
9						
10						
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12						
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32						
33						
34						
35						
36						
37						
38						
39						
40	Average			63.0		

Data File : M:\LOKI\DATA\190201\0201L24.D  
 Acq On : 1 Feb 19 21:46  
 Sample : (SS)300ug/L GAS STD 02/01/19  
 Misc : IS&S 11/8/18

Vial: 23  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 2 11:14 2019

Quant Results File: LGAS0201.RES

Quant Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 11:09:59 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	540691	25.000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.97	TIC	643055	25.000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.53	TIC	663804	25.000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Gasoline C6-C10	9.97	TIC	8723813m	307.259	ppb	100

Quantitation Report

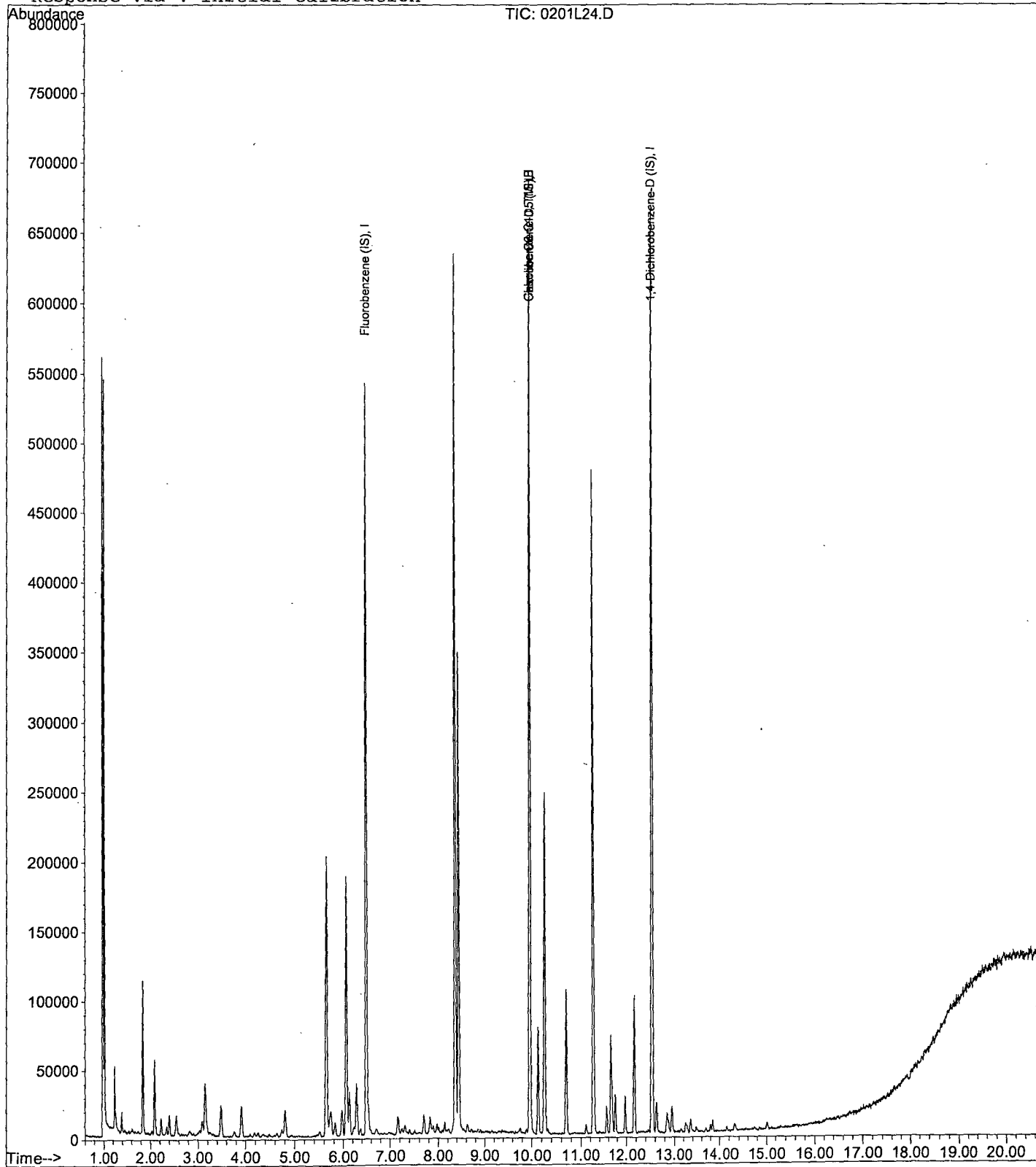
Data File : M:\LOKI\DATA\190201\0201L24.D  
Acq On : 1 Feb 19 21:46  
Sample : (SS)300ug/L GAS STD 02/01/19  
Misc : IS&S 11/8/18

Vial: 23  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 2 11:14 2019

Quant Results File: LGAS0201.RES

Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Sat Feb 02 11:09:59 2019  
Response via : Initial Calibration



VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 7

Continuing Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: \_\_\_\_\_

SDG No: \_\_\_\_\_  
Date Analyzed: 2 Feb 19 15:06  
Instrument: Loki  
Initial Cal. Date: 02/01/19  
Data File: 0202L17.D

	Compound	MEAN	CCRF	%D	%Drift
1	Fluorobenzene (IS)	ISTD			
2	TMHB Gasoline C6-C10	3.678	1.346	63	TMHBL 2.7
3	Chlorobenzene-D5 (IS)	ISTD			
4	1,4-Dichlorobenzene-D (IS)	ISTD			
5					
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33					
34					
35					
36					
37					
38					
39					
40	Average			63.0	

VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 7

Continuing Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: \_\_\_\_\_

SDG No: \_\_\_\_\_  
Date Analyzed: 2 Feb 19 15:06  
Instrument: Loki  
Initial Cal. Date: 02/01/19  
Data File: 0202L17.D

	Compound	MEAN	CCRF	%D	%Drift
1	I Fluorobenzene (IS)	ISTD			I
2	S Dibromofluoromethane(S)	0.4396	0.4673	6.3	S
3	S 1,2-DCA-D4(S)	0.5027	0.5982	19	S
4	I Chlorobenzene-D5 (IS)	ISTD			I
5	S Toluene-D8(S)	1.994	2.087	4.7	S
6	S 4-Bromofluorobenzene(S)	0.7736	0.7996	3.4	S
7	I 1,4-Dichlorobenzene-D (IS)	ISTD			I
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
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36					
37					
38					
39					
40	Average			8.4	

Data File : M:\LOKI\DATA\190201\0202L17.D Vial: 6  
 Acq On : 2 Feb 19 15:06 Operator: PM,DG,SV,CMM,KV  
 Sample : 190202A CCV 300ug/L Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Feb 5 11:03 2019 Quant Results File: LGAS0201.RES

Quant Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 11:09:59 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	421202	25.0000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.97	TIC	485811	25.0000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.53	TIC	508604	25.0000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Gasoline C6-C10	9.97	TIC	6802100m	308.0345	ppb	100



Data File : M:\LOKI\DATA\190201\0202L17.D Vial: 6  
 Acq On : 2 Feb 19 15:06 Operator: PM,DG,SV,CMM,KV  
 Sample : 190202A CCV 300ug/L Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Feb 5 11:01 2019 Quant Results File: LSUR201W.RES

Quant Method : M:\LOKI\DATA\190201\LSUR201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 10:34:35 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	199808	25.0000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	164672	25.0000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.53	152	85936	25.0000	ppb	0.00
System Monitoring Compounds						
2) Dibromofluoromethane(S)	5.65	111	93378	26.5789	ppb	0.00
Spiked Amount	25.000		Recovery	=	106.316%	
3) 1,2-DCA-D4(S)	6.07	65	119530	29.7505	ppb	0.00
Spiked Amount	25.000		Recovery	=	119.000%	
5) Toluene-D8(S)	8.37	98	343738	26.1737	ppb	0.00
Spiked Amount	25.000		Recovery	=	104.696%	
6) 4-Bromofluorobenzene(S)	11.26	95	131680	25.8428	ppb	0.00
Spiked Amount	25.000		Recovery	=	103.372%	

Target Compounds Qvalue

Quantitation Report

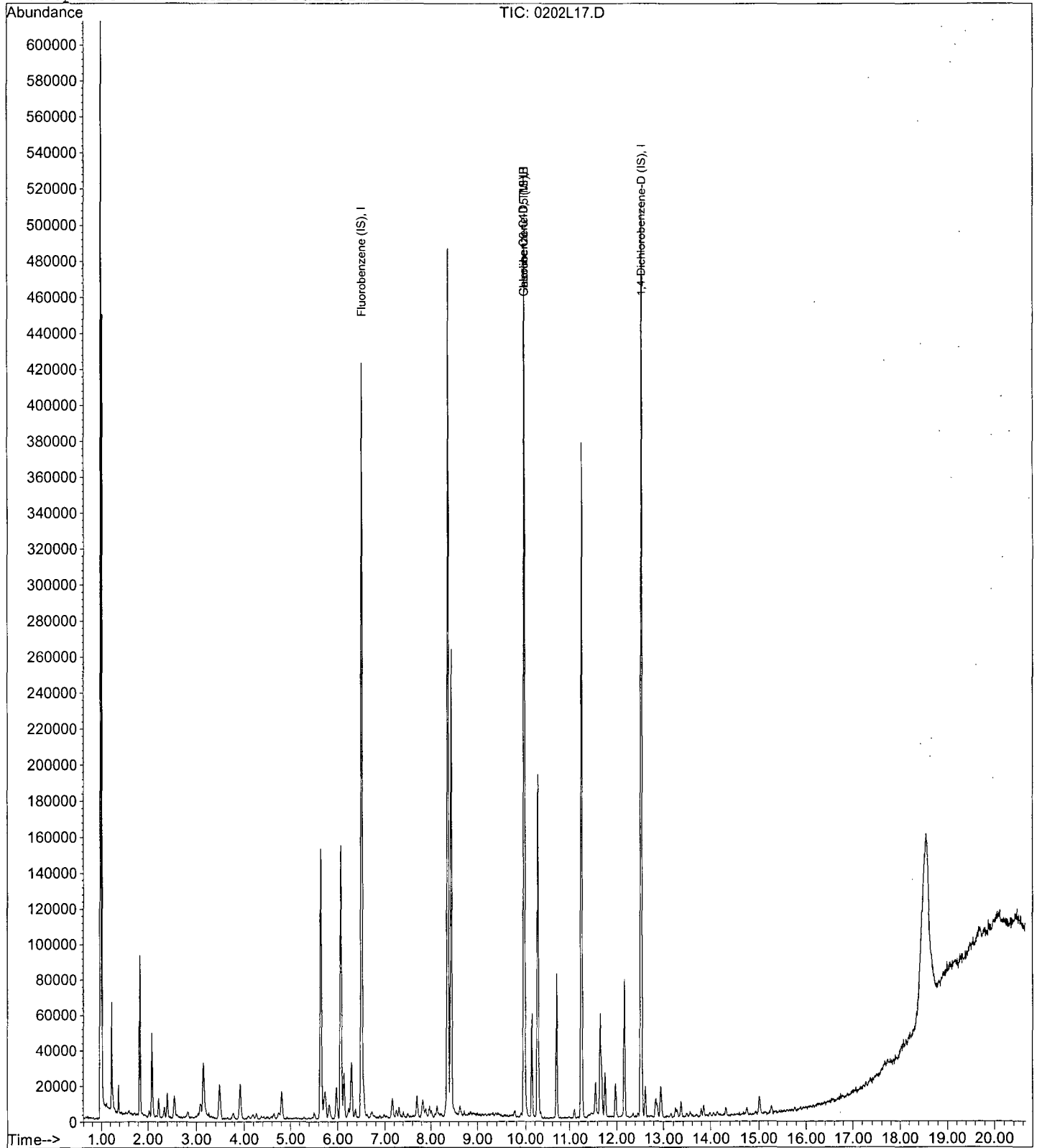
Data File : M:\LOKI\DATA\190201\0202L17.D  
Acq On : 2 Feb 19 15:06  
Sample : 190202A CCV 300ug/L  
Misc : IS&S 11/8/18

Vial: 6  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 5 11:03 2019

Quant Results File: LGAS0201.RES

Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Sat Feb 02 11:09:59 2019  
Response via : Initial Calibration



VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 7

Ending Continuing Calibration

Lab Name: APPL, Inc.

SDG No: \_\_\_\_\_

Case No: \_\_\_\_\_

Date Analyzed: 2 Feb 19 20:20

Matrix: \_\_\_\_\_

Instrument: Loki

Initial Cal. Date: 02/01/19

Data File: 0202L28.D

	Compound	MEAN	CCRF	%D	%Drift
1	Fluorobenzene (IS)	ISTD			
2	TMHB Gasoline C6-C10	3.678	1.036	72	TMHBL 63*
3	Chlorobenzene-D5 (IS)	ISTD			
4	1,4-Dichlorobenzene-D (IS)	ISTD			
5					
6					
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31					
32					
33					
34					
35					
36					
37					
38					
39					
40	Average			72.0	

VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 7

Ending Continuing Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: \_\_\_\_\_

SDG No: \_\_\_\_\_  
Date Analyzed: 2 Feb 19 20:20  
Instrument: Loki  
Initial Cal. Date: 02/01/19  
Data File: 0202L28.D

	Compound	MEAN	CCRF	%D	%Drift
1	I Fluorobenzene (IS)	ISTD			I
2	S Dibromofluoromethane(S)	0.4396	0.4820	9.7	S
3	S 1,2-DCA-D4(S)	0.5027	0.6125	22	S
4	I Chlorobenzene-D5 (IS)	ISTD			I
5	S Toluene-D8(S)	1.994	2.074	4.0	S
6	S 4-Bromofluorobenzene(S)	0.7736	0.7711	0.32	S
7	I 1,4-Dichlorobenzene-D (IS)	ISTD			I
8					
9					
10					
11					
12					
13					
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17					
18					
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36					
37					
38					
39					
40	Average			9.0	

Data File : M:\LOKI\DATA\190201\0202L28.D Vial: 17  
 Acq On : 2 Feb 19 20:20 Operator: PM,DG,SV,CMM,KV  
 Sample : Ending CCV 300ug/L 02/02/19 Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Feb 5 11:00 2019 Quant Results File: LGAS0201.RES

Quant Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 11:09:59 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	382837	25.0000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.97	TIC	451151	25.0000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.53	TIC	453910	25.0000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Gasoline C6-C10	8.37	TIC	4759378m	111.7747	ppb	100

Data File : M:\LOKI\DATA\190201\0202L28.D Vial: 17  
 Acq On : 2 Feb 19 20:20 Operator: PM,DG,SV,CMM,KV  
 Sample : Ending CCV 300ug/L 02/02/19 Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Feb 5 11:01 2019 Quant Results File: LSUR201W.RES

Quant Method : M:\LOKI\DATA\190201\LSUR201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 10:34:35 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	180032	25.0000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	150400	25.0000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.53	152	79536	25.0000	ppb	0.00
System Monitoring Compounds						
2) Dibromofluoromethane(S)	5.65	111	86784	27.4154	ppb	0.00
Spiked Amount	25.000		Recovery	=	109.660%	
3) 1,2-DCA-D4(S)	6.07	65	110274	30.4616	ppb	0.00
Spiked Amount	25.000		Recovery	=	121.848%	
5) Toluene-D8(S)	8.37	98	311959	26.0080	ppb	0.00
Spiked Amount	25.000		Recovery	=	104.032%	
6) 4-Bromofluorobenzene(S)	11.26	95	115972	24.9199	ppb	0.00
Spiked Amount	25.000		Recovery	=	99.680%	

Target Compounds Qvalue

Quantitation Report

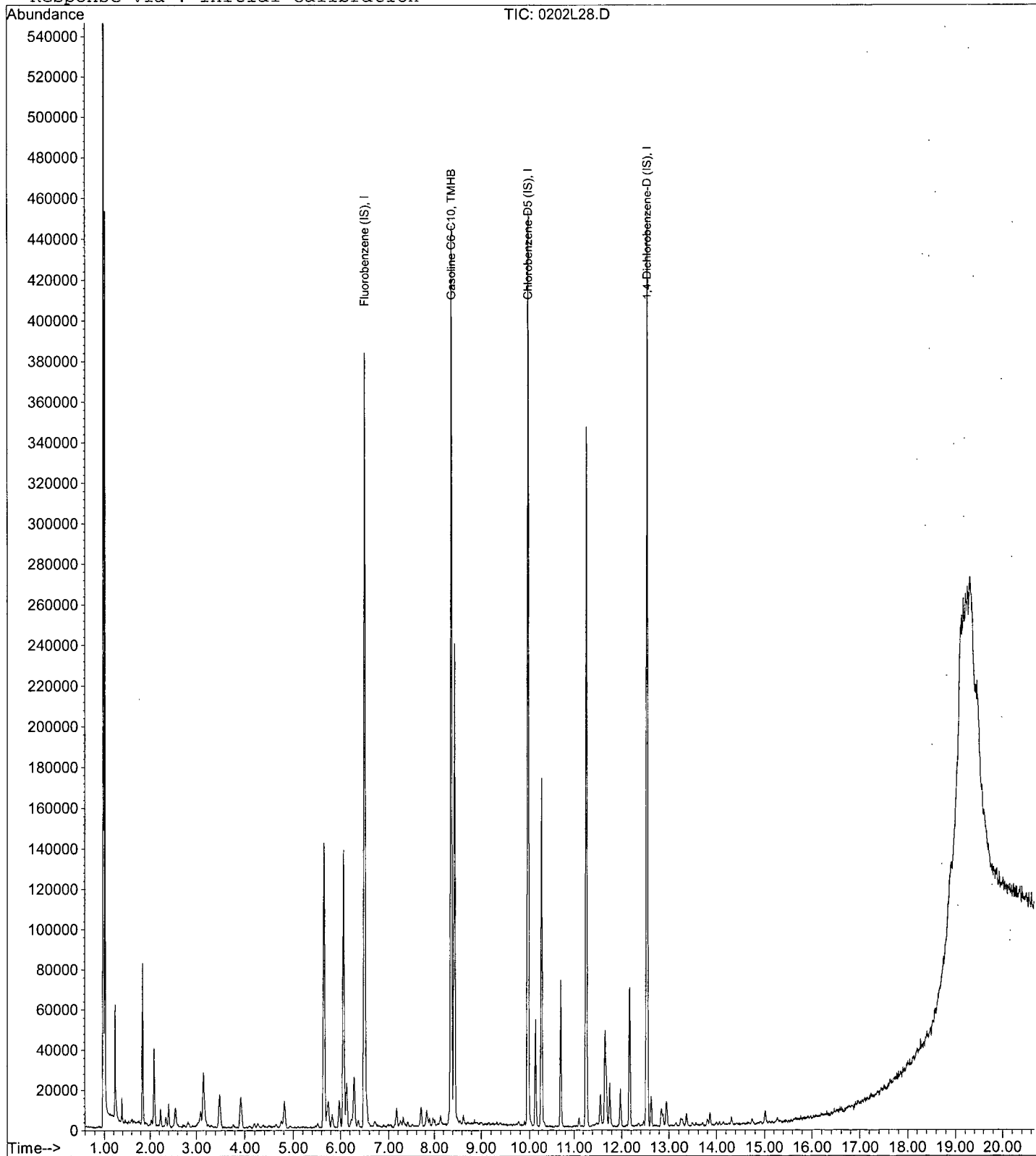
Data File : M:\LOKI\DATA\190201\0202L28.D  
Acq On : 2 Feb 19 20:20  
Sample : Ending CCV 300ug/L 02/02/19  
Misc : IS&S 11/8/18

Vial: 17  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 5 11:00 2019

Quant Results File: LGAS0201.RES

Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Sat Feb 02 11:09:59 2019  
Response via : Initial Calibration



**ORGANICS**  
**Raw Data**



Data File : M:\LOKI\DATA\190201\0202L23.D  
 Acq On : 2 Feb 19 17:58  
 Sample : AZ85762W02  
 Misc : IS&S 11/8/18

Vial: 12  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 5 11:05 2019

Quant Results File: LGAS0201.RES

Quant Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 11:09:59 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	392072	25.0000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.97	TIC	460973	25.0000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.53	TIC	458016	25.0000	ppb	0.00

System Monitoring Compounds

Target Compounds Qvalue

Data File : M:\LOKI\DATA\190201\0202L23.D  
 Acq On : 2 Feb 19 17:58  
 Sample : AZ85762W02  
 Misc : IS&S 11/8/18

Vial: 12  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 5 11:01 2019

Quant Results File: LSUR201W.RES

Quant Method : M:\LOKI\DATA\190201\LSUR201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 10:34:35 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	186048	25.0000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	157376	25.0000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.53	152	79384	25.0000	ppb	0.00
System Monitoring Compounds						
2) Dibromofluoromethane(S)	5.65	111	87646	26.7924	ppb	0.00
Spiked Amount	25.000		Recovery	=	107.168%	
3) 1,2-DCA-D4(S)	6.06	65	113993	30.4707	ppb	0.00
Spiked Amount	25.000		Recovery	=	121.884%	
5) Toluene-D8(S)	8.37	98	316405	25.2094	ppb	0.00
Spiked Amount	25.000		Recovery	=	100.836%	
6) 4-Bromofluorobenzene(S)	11.26	95	118471	24.3284	ppb	0.00
Spiked Amount	25.000		Recovery	=	97.312%	

Target Compounds

Qvalue

(#) = qualifier out of range (m) = manual integration

Quantitation Report

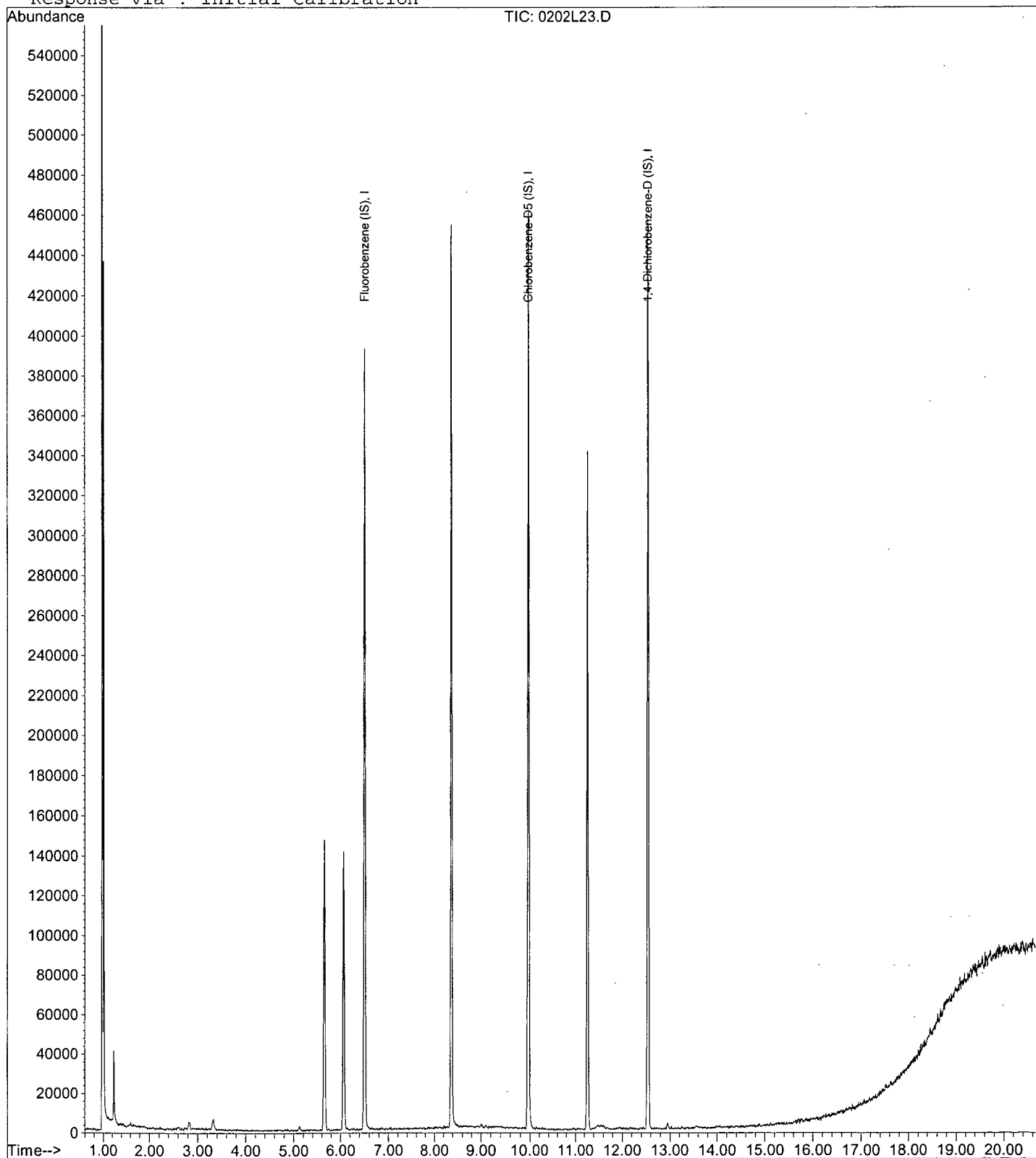
Data File : M:\LOKI\DATA\190201\0202L23.D  
Acq On : 2 Feb 19 17:58  
Sample : AZ85762W02  
Misc : IS&S 11/8/18

Vial: 12  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 5 11:05 2019

Quant Results File: LGAS0201.RES

Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Sat Feb 02 11:09:59 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190201\0202L24.D Vial: 13  
 Acq On : 2 Feb 19 18:26 Operator: PM,DG,SV,CMM,KV  
 Sample : AZ85763W02 Inst. : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Feb 5 11:05 2019 Quant Results File: LGAS0201.RES

Quant Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 11:09:59 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	400788	25.0000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.97	TIC	458759	25.0000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.53	TIC	451153	25.0000	ppb	0.00

System Monitoring Compounds

Target Compounds Qvalue

Data File : M:\LOKI\DATA\190201\0202L24.D  
 Acq On : 2 Feb 19 18:26  
 Sample : AZ85763W02  
 Misc : IS&S 11/8/18

Vial: 13  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 5 11:01 2019

Quant Results File: LSUR201W.RES

Quant Method : M:\LOKI\DATA\190201\LSUR201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 10:34:35 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	190080	25.0000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.96	117	155712	25.0000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.53	152	78000	25.0000	ppb	0.00
System Monitoring Compounds						
2) Dibromofluoromethane(S)	5.65	111	87486	26.1762	ppb	0.00
Spiked Amount	25.000					
					Recovery = 104.704%	
3) 1,2-DCA-D4(S)	6.07	65	116232	30.4102	ppb	0.00
Spiked Amount	25.000					
					Recovery = 121.640%	
5) Toluene-D8(S)	8.37	98	318104	25.6156	ppb	0.00
Spiked Amount	25.000					
					Recovery = 102.464%	
6) 4-Bromofluorobenzene(S)	11.26	95	119669	24.8370	ppb	0.00
Spiked Amount	25.000					
					Recovery = 99.348%	

Target Compounds

Qvalue

Quantitation Report

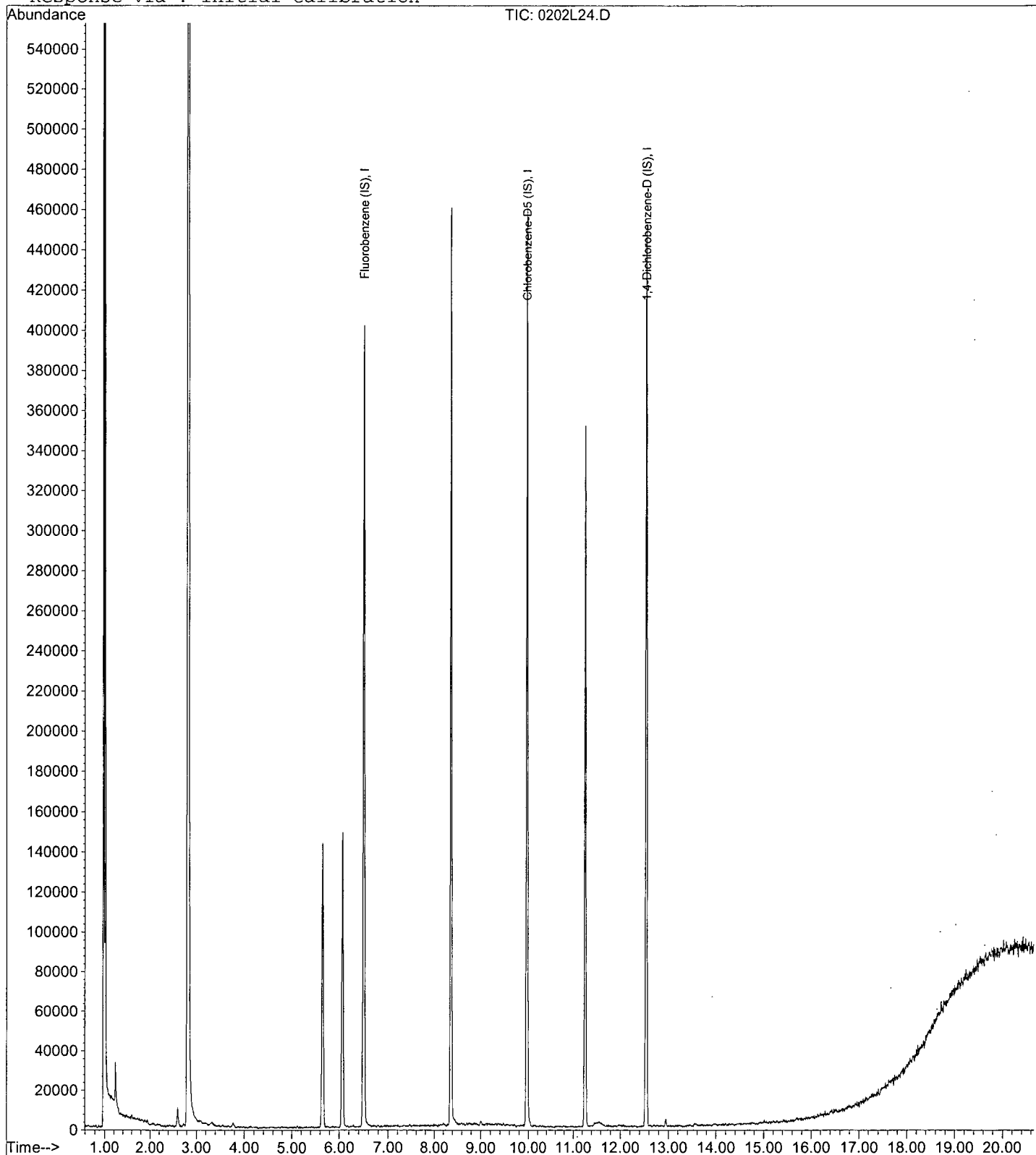
Data File : M:\LOKI\DATA\190201\0202L24.D  
Acq On : 2 Feb 19 18:26  
Sample : AZ85763W02  
Misc : IS&S 11/8/18

Vial: 13  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 5 11:05 2019

Quant Results File: LGAS0201.RES

Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Sat Feb 02 11:09:59 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190201\0202L25.D Vial: 14  
 Acq On : 2 Feb 19 18:55 Operator: PM,DG,SV,CMM,KV  
 Sample : AZ85764W02 Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Feb 5 11:05 2019 Quant Results File: LGAS0201.RES

Quant Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 11:09:59 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	377059	25.0000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.97	TIC	423544	25.0000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.53	TIC	440693	25.0000	ppb	0.00

System Monitoring Compounds

Target Compounds Qvalue

Data File : M:\LOKI\DATA\190201\0202L25.D  
 Acq On : 2 Feb 19 18:55  
 Sample : AZ85764W02  
 Misc : IS&S 11/8/18

Vial: 14  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 5 11:01 2019

Quant Results File: LSUR201W.RES

Quant Method : M:\LOKI\DATA\190201\LSUR201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 10:34:35 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	175872	25.0000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	141184	25.0000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.53	152	80168	25.0000	ppb	0.00
System Monitoring Compounds						
2) Dibromofluoromethane(S)	5.65	111	82390	26.6430	ppb	0.00
Spiked Amount	25.000					
					Recovery = 106.572%	
3) 1,2-DCA-D4(S)	6.07	65	107029	30.2646	ppb	0.00
Spiked Amount	25.000					
					Recovery = 121.060%	
5) Toluene-D8(S)	8.37	98	300184	26.6600	ppb	0.00
Spiked Amount	25.000					
					Recovery = 106.640%	
6) 4-Bromofluorobenzene(S)	11.26	95	111372	25.4936	ppb	0.00
Spiked Amount	25.000					
					Recovery = 101.976%	

Target Compounds Qvalue



Quantitation Report

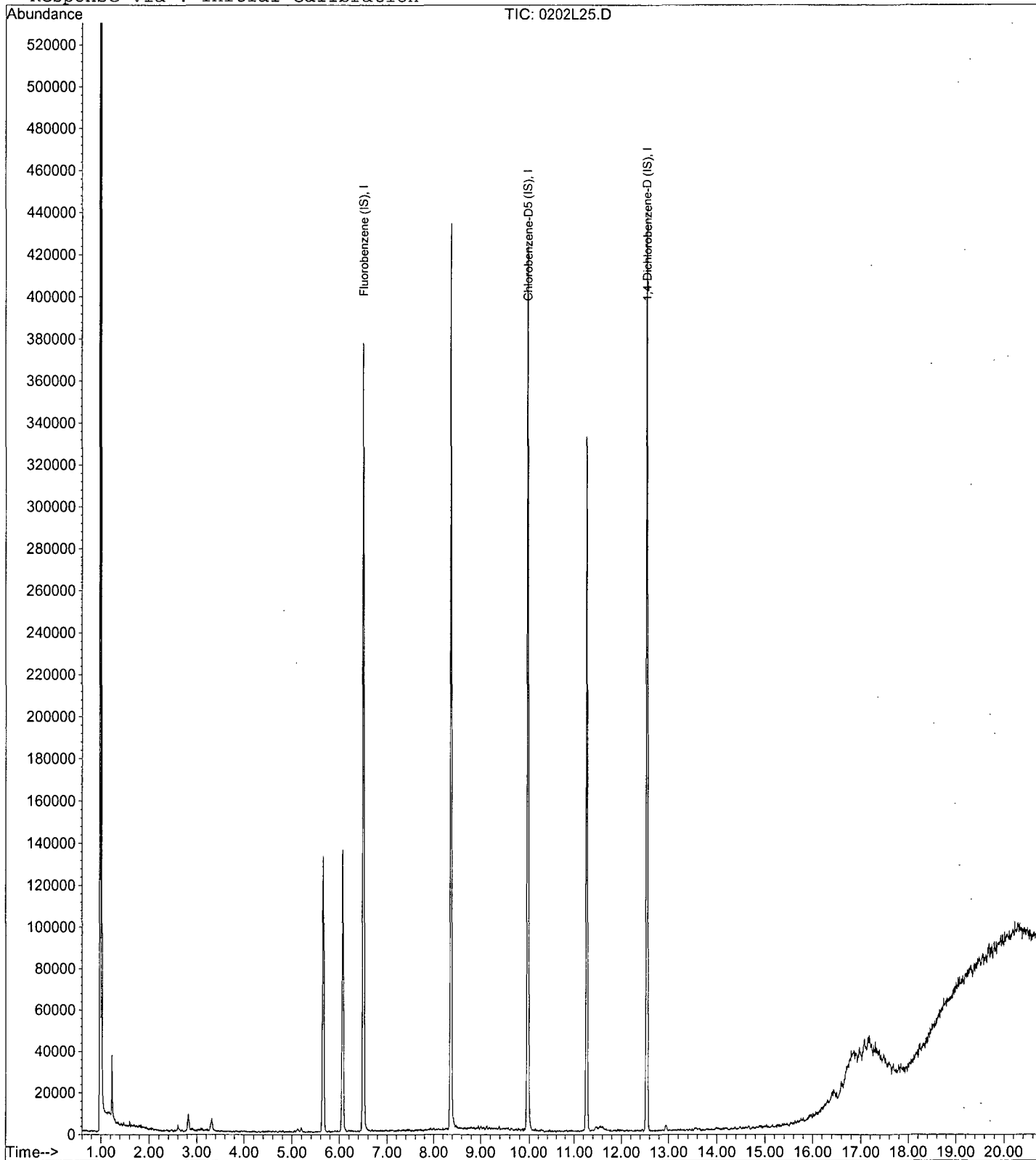
Data File : M:\LOKI\DATA\190201\0202L25.D  
Acq On : 2 Feb 19 18:55  
Sample : AZ85764W02  
Misc : IS&S 11/8/18

Vial: 14  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 5 11:05 2019

Quant Results File: LGAS0201.RES

Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Sat Feb 02 11:09:59 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190201\0202L22.D  
 Acq On : 2 Feb 19 17:29  
 Sample : AZ85765W02  
 Misc : IS&S 11/8/18

Vial: 11  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 5 11:05 2019

Quant Results File: LGAS0201.RES

Quant Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 11:09:59 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	415391	25.0000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.97	TIC	476139	25.0000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.53	TIC	483892	25.0000	ppb	0.00

System Monitoring Compounds

Target Compounds Qvalue

Data File : M:\LOKI\DATA\190201\0202L22.D  
 Acq On : 2 Feb 19 17:29  
 Sample : AZ85765W02  
 Misc : IS&S 11/8/18

Vial: 11  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 5 11:01 2019

Quant Results File: LSUR201W.RES

Quant Method : M:\LOKI\DATA\190201\LSUR201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 10:34:35 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	195520	25.0000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	161536	25.0000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.53	152	83872	25.0000	ppb	0.00
System Monitoring Compounds						
2) Dibromofluoromethane(S)	5.65	111	92189	26.8159	ppb	0.00
Spiked Amount	25.000					
					Recovery = 107.264%	
3) 1,2-DCA-D4(S)	6.07	65	119047	30.2801	ppb	0.00
Spiked Amount	25.000					
					Recovery = 121.120%	
5) Toluene-D8(S)	8.37	98	334704	25.9806	ppb	0.00
Spiked Amount	25.000					
					Recovery = 103.924%	
6) 4-Bromofluorobenzene(S)	11.26	95	125497	25.1075	ppb	0.00
Spiked Amount	25.000					
					Recovery = 100.432%	

Target Compounds Qvalue

Quantitation Report

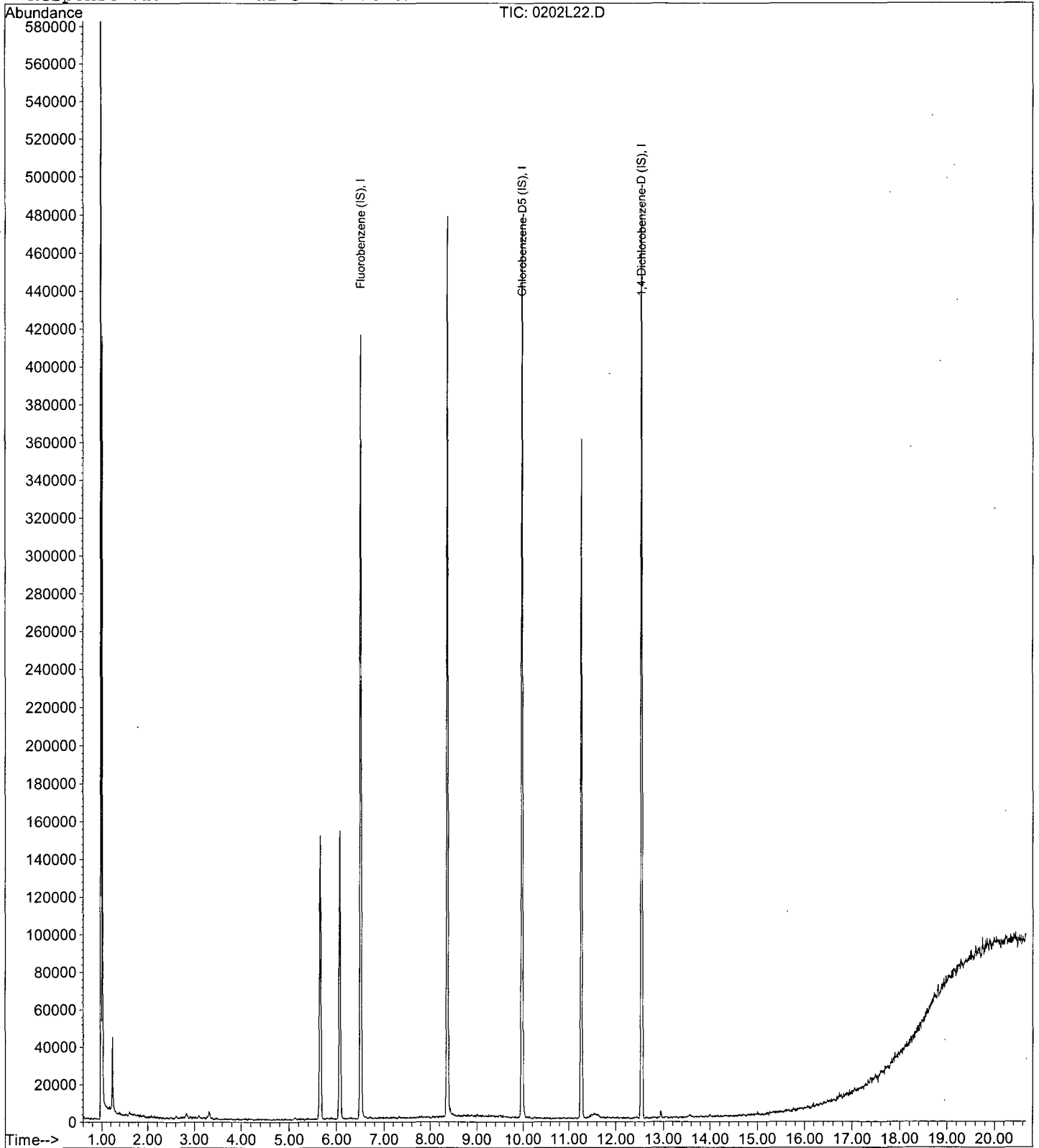
Data File : M:\LOKI\DATA\190201\0202L22.D  
Acq On : 2 Feb 19 17:29  
Sample : AZ85765W02  
Misc : IS&S 11/8/18

Vial: 11  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 5 11:05 2019

Quant Results File: LGAS0201.RES

Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Sat Feb 02 11:09:59 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190201\0202L26.D  
 Acq On : 2 Feb 19 19:23  
 Sample : AZ85766W02  
 Misc : IS&S 11/8/18

Vial: 15  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 5 11:05 2019

Quant Results File: LGAS0201.RES

Quant Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 11:09:59 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	405288	25.0000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.97	TIC	461725	25.0000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.53	TIC	473914	25.0000	ppb	0.00

System Monitoring Compounds

Target Compounds Qvalue

Data File : M:\LOKI\DATA\190201\0202L26.D  
 Acq On : 2 Feb 19 19:23  
 Sample : AZ85766W02  
 Misc : IS&S 11/8/18

Vial: 15  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 5 11:01 2019

Quant Results File: LSUR201W.RES

Quant Method : M:\LOKI\DATA\190201\LSUR201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 10:34:35 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	188288	25.0000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	158976	25.0000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.53	152	83368	25.0000	ppb	0.00
System Monitoring Compounds						
2) Dibromofluoromethane(S)	5.65	111	86704	26.1892	ppb	0.00
Spiked Amount	25.000		Recovery	=	104.756%	
3) 1,2-DCA-D4(S)	6.07	65	111549	29.4627	ppb	0.00
Spiked Amount	25.000		Recovery	=	117.852%	
5) Toluene-D8(S)	8.37	98	314370	24.7952	ppb	0.00
Spiked Amount	25.000		Recovery	=	99.180%	
6) 4-Bromofluorobenzene(S)	11.26	95	113661	23.1058	ppb	0.00
Spiked Amount	25.000		Recovery	=	92.424%	

Target Compounds

Qvalue

Quantitation Report

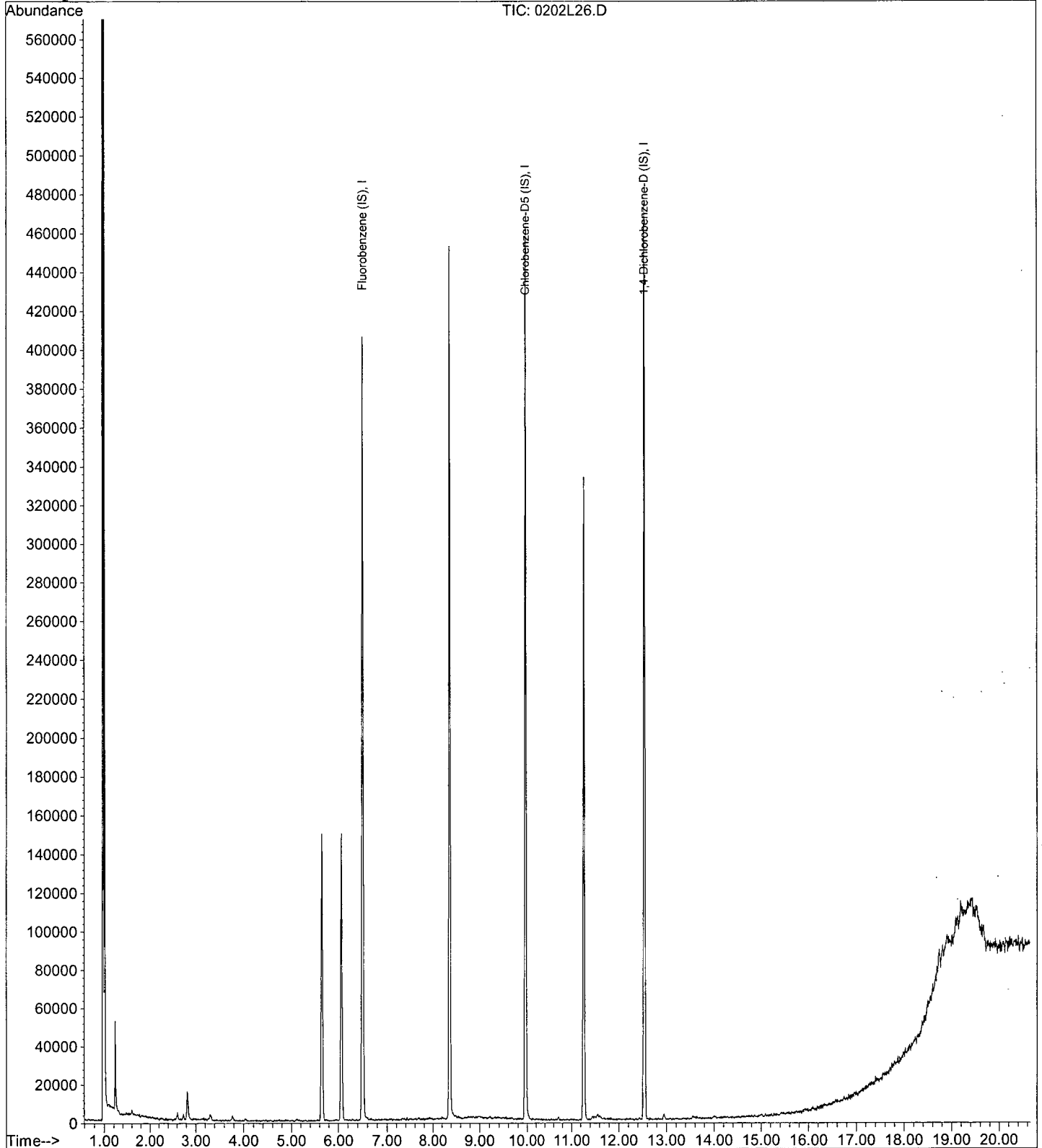
Data File : M:\LOKI\DATA\190201\0202L26.D  
Acq On : 2 Feb 19 19:23  
Sample : AZ85766W02  
Misc : IS&S 11/8/18

Vial: 15  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 5 11:05 2019

Quant Results File: LGAS0201.RES

Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Sat Feb 02 11:09:59 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190201\0202L21.D Vial: 10  
 Acq On : 2 Feb 19 17:01 Operator: PM,DG,SV,CMM,KV  
 Sample : 190202A blk Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Feb 5 11:02 2019 Quant Results File: LGAS0201.RES

Quant Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 11:09:59 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	390067	25.0000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.97	TIC	455300	25.0000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.53	TIC	461970	25.0000	ppb	0.00

System Monitoring Compounds

Target Compounds Qvalue



Data File : M:\LOKI\DATA\190201\0202L21.D  
 Acq On : 2 Feb 19 17:01  
 Sample : 190202A blk  
 Misc : IS&S 11/8/18

Vial: 10  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 5 11:01 2019

Quant Results File: LSUR201W.RES

Quant Method : M:\LOKI\DATA\190201\LSUR201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 10:34:35 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	183936	25.0000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	152384	25.0000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.53	152	79728	25.0000	ppb	0.00
System Monitoring Compounds						
2) Dibromofluoromethane(S)	5.65	111	85164	26.3326	ppb	0.00
Spiked Amount	25.000					
					Recovery = 105.332%	
3) 1,2-DCA-D4(S)	6.07	65	114718	31.0166	ppb	0.00
Spiked Amount	25.000					
					Recovery = 124.068%	
5) Toluene-D8(S)	8.37	98	317319	26.1105	ppb	0.00
Spiked Amount	25.000					
					Recovery = 104.440%	
6) 4-Bromofluorobenzene(S)	11.26	95	121566	25.7818	ppb	0.00
Spiked Amount	25.000					
					Recovery = 103.128%	

Target Compounds

Qvalue

Quantitation Report

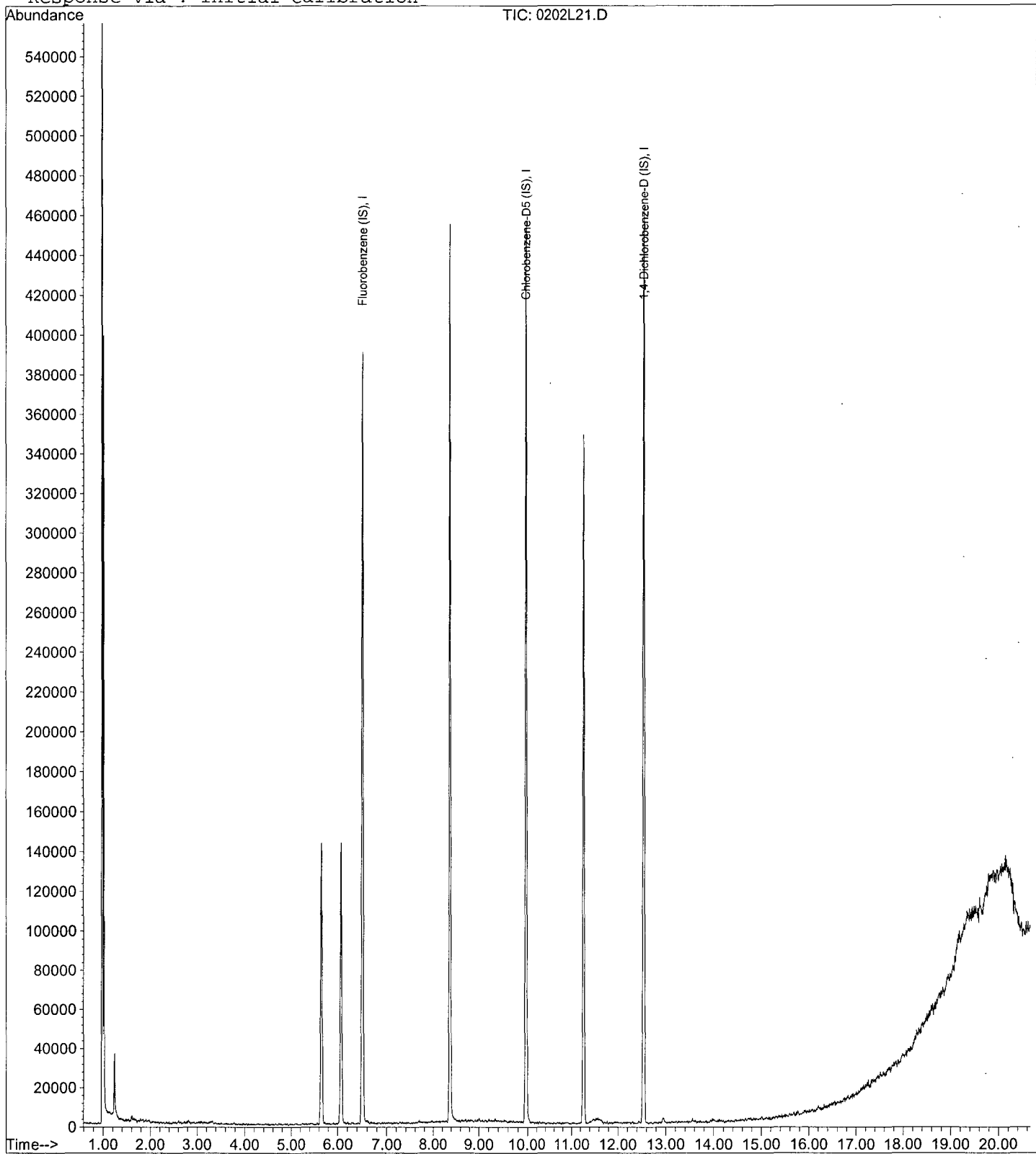
Data File : M:\LOKI\DATA\190201\0202L21.D  
Acq On : 2 Feb 19 17:01  
Sample : 190202A blk  
Misc : IS&S 11/8/18

Vial: 10  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 5 11:02 2019

Quant Results File: LGAS0201.RES

Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Sat Feb 02 11:09:59 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190201\0202L18.D  
 Acq On : 2 Feb 19 15:35  
 Sample : 190202A LCS 300ug/L  
 Misc : IS&S 11/8/18

Vial: 7  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 5 11:03 2019

Quant Results File: LGAS0201.RES

Quant Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 11:09:59 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	420890	25.0000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.97	TIC	483440	25.0000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.53	TIC	514514	25.0000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Gasoline C6-C10	9.97	TIC	6873628m	317.6387	ppb	100

Data File : M:\LOKI\DATA\190201\0202L18.D  
 Acq On : 2 Feb 19 15:35  
 Sample : 190202A LCS 300ug/L  
 Misc : IS&S 11/8/18

Vial: 7  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 5 11:01 2019

Quant Results File: LSUR201W.RES

Quant Method : M:\LOKI\DATA\190201\LSUR201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 10:34:35 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	196864	25.0000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	165504	25.0000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.53	152	90192	25.0000	ppb	0.00
System Monitoring Compounds						
2) Dibromofluoromethane(S)	5.65	111	92602	26.7522	ppb	0.00
Spiked Amount	25.000					
					Recovery = 107.008%	
3) 1,2-DCA-D4(S)	6.07	65	116450	29.4173	ppb	0.00
Spiked Amount	25.000					
					Recovery = 117.668%	
5) Toluene-D8(S)	8.37	98	335877	25.4466	ppb	0.00
Spiked Amount	25.000					
					Recovery = 101.788%	
6) 4-Bromofluorobenzene(S)	11.26	95	128949	25.1797	ppb	0.00
Spiked Amount	25.000					
					Recovery = 100.720%	

Target Compounds

Qvalue

Quantitation Report

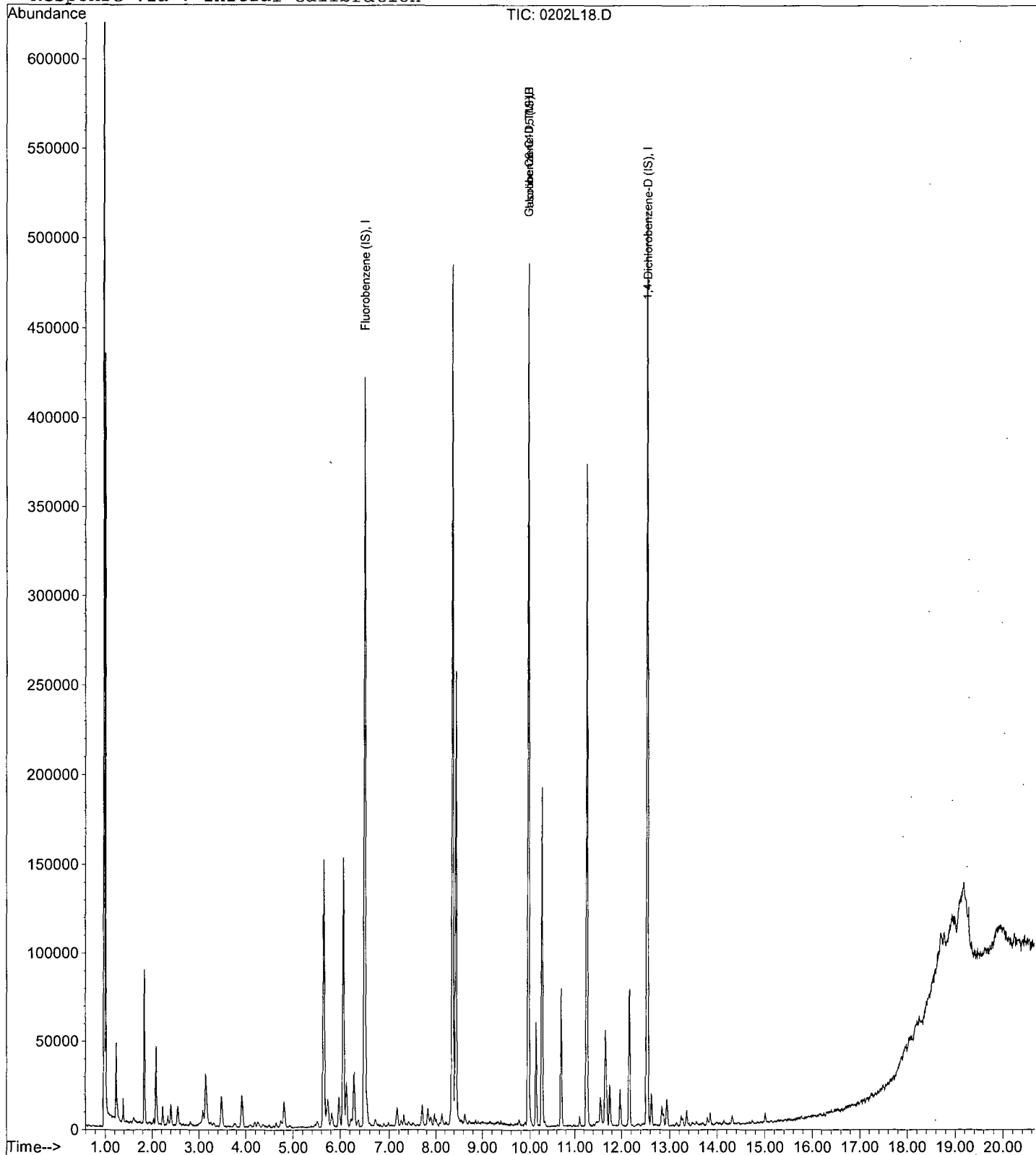
Data File : M:\LOKI\DATA\190201\0202L18.D  
Acq On : 2 Feb 19 15:35  
Sample : 190202A LCS 300ug/L  
Misc : IS&S 11/8/18

Vial: 7  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 5 11:03 2019

Quant Results File: LGAS0201.RES

Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Sat Feb 02 11:09:59 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190201\0202L19.D  
 Acq On : 2 Feb 19 16:03  
 Sample : 190202A LCSD 300ug/L  
 Misc : IS&S 11/8/18

Vial: 8  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 5 11:04 2019

Quant Results File: LGAS0201.RES

Quant Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 11:09:59 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	420285	25.0000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.97	TIC	484229	25.0000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.53	TIC	509252	25.0000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Gasoline C6-C10	9.97	TIC	6733865m	301.3233	ppb	100

(#) = qualifier out of range (m) = manual integration

Data File : M:\LOKI\DATA\190201\0202L19.D Vial: 8  
 Acq On : 2 Feb 19 16:03 Operator: PM, DG, SV, CMM, KV  
 Sample : 190202A LCSD 300ug/L Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Feb 5 11:01 2019 Quant Results File: LSUR201W.RES

Quant Method : M:\LOKI\DATA\190201\LSUR201W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 10:34:35 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	197440	25.0000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	162944	25.0000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.53	152	90976	25.0000	ppb	0.00
System Monitoring Compounds						
2) Dibromofluoromethane(S)	5.65	111	91451	26.3426	ppb	0.00
Spiked Amount	25.000		Recovery	=	105.372%	
3) 1,2-DCA-D4(S)	6.07	65	117310	29.5481	ppb	0.00
Spiked Amount	25.000		Recovery	=	118.192%	
5) Toluene-D8(S)	8.37	98	337705	25.9871	ppb	0.00
Spiked Amount	25.000		Recovery	=	103.948%	
6) 4-Bromofluorobenzene(S)	11.26	95	129474	25.6794	ppb	0.00
Spiked Amount	25.000		Recovery	=	102.716%	

Target Compounds Qvalue

Quantitation Report

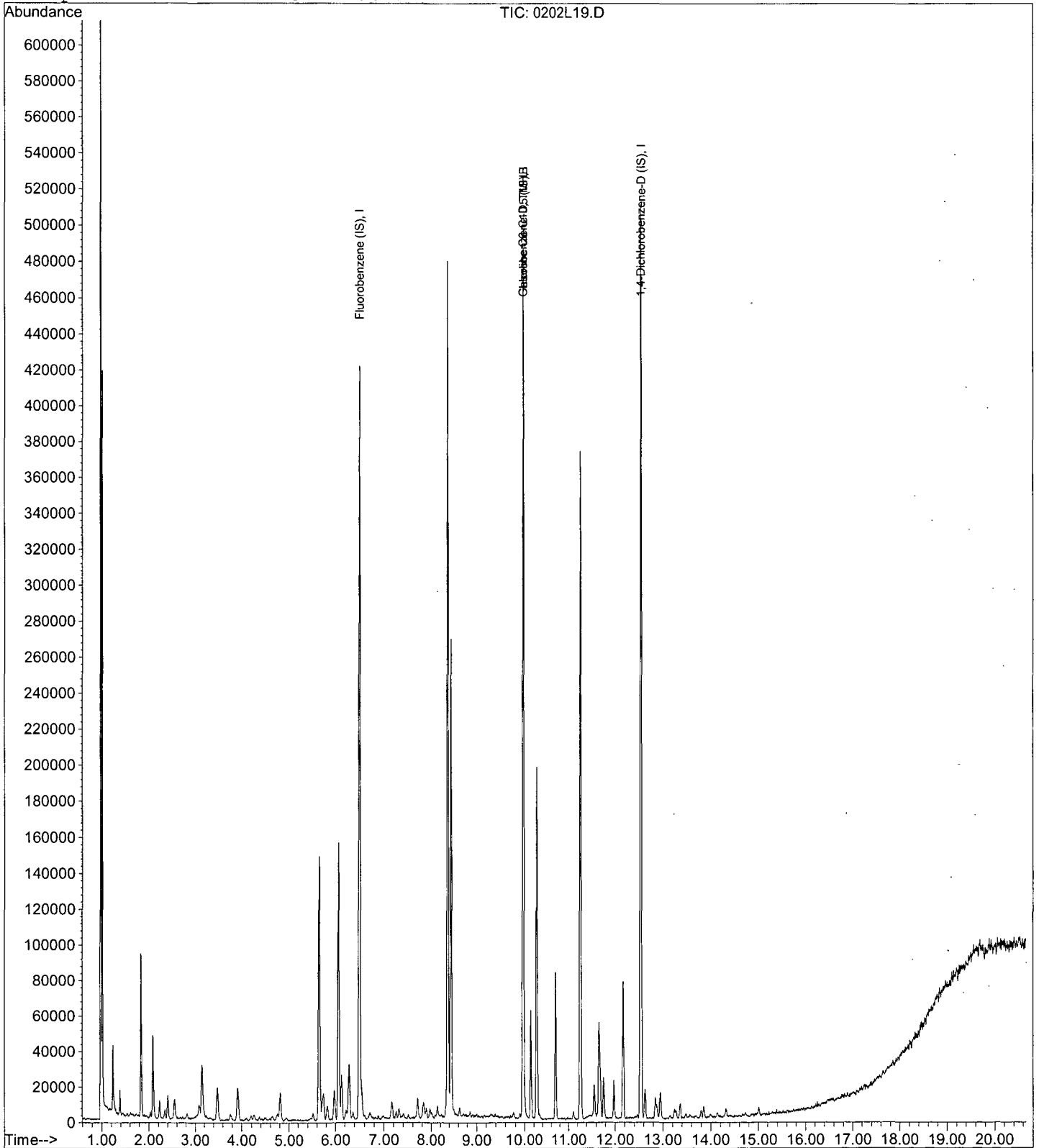
Data File : M:\LOKI\DATA\190201\0202L19.D  
Acq On : 2 Feb 19 16:03  
Sample : 190202A LCSD 300ug/L  
Misc : IS&S 11/8/18

Vial: 8  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 5 11:04 2019

Quant Results File: LGAS0201.RES

Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Sat Feb 02 11:09:59 2019  
Response via : Initial Calibration





## Loki 8260 Standard Prep

Loki 8260 Water Calibration Curve										
						Prepared By (Initials): <u>PC</u>				
<b>0.3ug/L</b>										
Prepared: 02/01/19										
Expires: 03/03/19										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 9	O2SI	0.3ug/L	5	Prepared 01/28/19	02/01/19	N/A	3uL	50mL	P&T Water	0.3
VOA STD. 10	O2SI		5	Prepared 01/28/19	03/29/19	N/A	3uL			0.3
VOA STD. 12	O2SI		5	Prepared 01/28/19	03/29/19	N/A	3uL			0.3
VOA STD. TBA	Various		250	Prepared 01/28/19	02/01/19	N/A	2uL			10
<b>0.5ug/L</b>										
Prepared: 02/01/19										
Expires: 03/03/19										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 9	O2SI	0.5ug/L	5	Prepared 01/28/19	02/01/19	N/A	5uL	50mL	P&T Water	0.5
VOA STD. 10	O2SI		5	Prepared 01/28/19	03/29/19	N/A	5uL			0.5
VOA STD. 12	O2SI		5	Prepared 01/28/19	03/29/19	N/A	5uL			0.5
VOA STD. TBA	Various		250	Prepared 01/28/19	02/01/19	N/A	5uL			25
<b>1.0ug/L</b>										
Prepared: 02/01/19										
Expires: 03/03/19										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 9	O2SI	1.0ug/L	5	Prepared 01/28/19	02/01/19	N/A	10uL	50mL	P&T Water	1
VOA STD. 10	O2SI		5	Prepared 01/28/19	03/29/19	N/A	10uL			1
VOA STD. 12	O2SI		5	Prepared 01/28/19	03/29/19	N/A	10uL			1
VOA STD. TBA	Various		250	Prepared 01/28/19	02/01/19	N/A	10uL			50
<b>2.0ug/L</b>										
Prepared: 02/01/19										
Expires: 03/03/19										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 9	O2SI	2.0ug/L	5	Prepared 01/28/19	02/01/19	N/A	20uL	50mL	P&T Water	2
VOA STD. 10	O2SI		5	Prepared 01/28/19	03/29/19	N/A	20uL			2
VOA STD. 12	O2SI		5	Prepared 01/28/19	03/29/19	N/A	20uL			2
VOA STD. TBA	Various		250	Prepared 01/28/19	02/01/19	N/A	15uL			75
<b>5ug/L</b>										
Prepared: 02/01/19										
Expires: 03/03/19										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 7	Various	5ug/L	50	Prepared 01/28/19	03/29/19	N/A	5uL	50mL	P&T Water	5
VOA STD. 8	Phenova		50	Prepared 01/28/19	02/01/19	N/A	5uL			5
VOA STD. 1	O2SI		50	Prepared 01/28/19	03/29/19	N/A	5uL			5
VOA STD. 2	O2SI		50	Prepared 01/28/19	03/29/19	N/A	5uL			5
VOA STD. TBA	Various		250	Prepared 01/28/19	02/01/19	N/A	20uL			100
<b>10ug/L</b>										
Prepared: 02/01/19										
Expires: 03/03/19										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 7	Various	10ug/L	50	Prepared 01/28/19	03/29/19	N/A	10uL	50mL	P&T Water	10
VOA STD. 8	Phenova		50	Prepared 01/28/19	02/01/19	N/A	10uL			10
VOA STD. 1	O2SI		50	Prepared 01/28/19	03/29/19	N/A	10uL			10
VOA STD. 2	O2SI		50	Prepared 01/28/19	03/29/19	N/A	10uL			10
VOA STD. TBA	Various		250	Prepared 01/28/19	02/01/19	N/A	25uL			125

20ug/L										
Prepared: 02/01/19										
Expires: 03/03/19										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 7	Various	20ug/L	50	Prepared 01/28/19	03/29/19	N/A	20uL	50mL	P&T Water	20
VOA STD. 8	Phenova		50	Prepared 01/28/19	02/01/19	N/A	20uL			20
VOA STD. 1	O2SI		50	Prepared 01/28/19	03/29/19	N/A	20uL			20
VOA STD. 2	O2SI		50	Prepared 01/28/19	03/29/19	N/A	20uL			20
VOA STD. TBA	Various		250	Prepared 01/28/19	02/01/19	N/A	30uL			150
40ug/L										
Prepared: 02/01/19										
Expires: 03/03/19										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 7	Various	40ug/L	50	Prepared 01/28/19	03/29/19	N/A	40uL	50mL	P&T Water	40
VOA STD. 8	Phenova		50	Prepared 01/28/19	02/01/19	N/A	40uL			40
VOA STD. 1	O2SI		50	Prepared 01/28/19	03/29/19	N/A	40uL			40
VOA STD. 2	O2SI		50	Prepared 01/28/19	03/29/19	N/A	40uL			40
VOA STD. TBA	Various		250	Prepared 01/28/19	02/01/19	N/A	35uL			175
100ug/L										
Prepared: 02/01/19										
Expires: 03/03/19										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 7	Various	100ug/L	50	Prepared 01/28/19	03/29/19	N/A	100uL	50mL	P&T Water	100
VOA STD. 8	Phenova		50	Prepared 01/28/19	02/01/19	N/A	100uL			100
VOA STD. 1	O2SI		50	Prepared 01/28/19	03/29/19	N/A	100uL			100
VOA STD. 2	O2SI		50	Prepared 01/28/19	03/29/19	N/A	100uL			100
VOA STD. TBA	Various		250	Prepared 01/28/19	02/01/19	N/A	40uL			200
Loki 8260 Water Second Source (SS)										
Prepared: 02/01/19										
Expires: 03/03/19										
						Prepared By (Initials): PC				
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 4	Phenova	8260 Water SS	50	Prepared 01/28/19	03/29/19	N/A	10uL	50mL	P&T Water	10
VOA STD. 5	O2SI	8260 Water SS	50	Prepared 01/28/19	03/29/19	N/A	10uL			10
VOA STD. 6	Various	8260 Water SS	50	Prepared 01/28/19	02/13/19	N/A	10uL			10
VOA STD. TBA	Various	8260 Water SS	250	Prepared 01/28/19	02/13/19	N/A	25uL			250
8260 Water Continuing Calibrations (CCV)/ Lab Control Spikes (LCS)										
Prepared: 02/01/19										
Expires: 02/02/19										
						Prepared By (Initials): PC				
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 7	Various	CCV/ LCS	50	Prepared 01/28/19	03/29/19	N/A	10uL	50mL	P&T Water	10
VOA STD. 8	Phenova	CCV/ LCS	50	Prepared 01/28/19	02/01/19	N/A	10uL			10
VOA STD. 1	O2SI	CCV/ LCS	50	Prepared 01/28/19	03/29/19	N/A	10uL			10
VOA STD. 2	O2SI	CCV/ LCS	50	Prepared 01/28/19	03/29/19	N/A	10uL			10
VOA STD. TBA	Various	CCV/ LCS	250	Prepared 01/28/19	02/01/19	N/A	25uL			125
LCS (X4 Ketones)										
Prepared: 02/01/19										
Expires: 02/02/19										
						Prepared By (Initials): PC				
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 7	Various	LCS X4 Ketones	50	Prepared 01/28/19	03/29/19	N/A	10uL	50mL	P&T Water	10
VOA STD. 8	Phenova	LCS X4 Ketones	50	Prepared 01/28/19	02/01/19	N/A	10uL			10
VOA STD. 1	O2SI	LCS X4 Ketones	50	Prepared 01/28/19	03/29/19	N/A	10uL			10
VOA STD. 2	O2SI	LCS X4 Ketones	50	Prepared 01/28/19	03/29/19	N/A	40uL			40
VOA STD. TBA	Various	LCS X4 Ketones	250	Prepared 01/28/19	02/01/19	N/A	25uL			125

Loki 8260 Water Surrogate										
Prepared: 12/13/18						Prepared By (Initials): DG				
Expires: 04/02/19										
Methanol Lot No: 202404-9077										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr.)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
8260 Surrogate Solution	O2SI	120002-01	2,000	275545-36335	07/28/19	04/02/19	375uL	15mL	Methanol	50
Loki 8260 Water Internal Standard										
Prepared: 11/08/18						Prepared By (Initials): DG				
Expires: 10/05/19										
Methanol Lot No: 202404-9077										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr.)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
Internal Standard Solution	O2SI	120004-02	2,000	326533-38441	10/05/19	04/27/21	375uL	15mL	Methanol	50

## Loki Gas Standard Prep

Gas Primary Working Standard										
Prepared: 02/01/19						Prepared By (Initials): <u>CMM</u>				
Expires: 11/01/19										
Methanol Lot No. 9077-02										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
50,000ug/mL Gas STD	Restek	30205	50,000	A0132443-39861	11/01/19	12/31/24	80uL	2mL	Methanol	2,000
Gas Second Source (SS) Working Standard										
Prepared: 01/14/19						Prepared By (Initials): <u>CMM</u>				
Expires: 01/14/20										
Methanol Lot No. 946										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
Gasoline (5,000ppm)	O2SI	020246-06	5,000	G34-326538-39193	01/14/20	10/31/20	800uL	2mL	Methanol	2,000
Loki Gas Calibration Curve										
Prepared: 02/01/19						Prepared By (Initials): <u>PC</u>				
Expires: 04/02/19										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA Gasses Standards	Phenova	20ug/L	2,000	Prepared 02/01/19	11/01/19	N/A	1uL	100mL	P&T Water	20
VOA Gasses Standards	Phenova	50ug/L	2,000	Prepared 02/01/19	11/01/19	N/A	2.5uL	100mL	P&T Water	50
VOA Gasses Standards	Phenova	100ug/L	2,000	Prepared 02/01/19	11/01/19	N/A	5uL	100mL	P&T Water	100
VOA Gasses Standards	Phenova	300ug/L	2,000	Prepared 02/01/19	11/01/19	N/A	15uL	100mL	P&T Water	300
VOA Gasses Standards	Phenova	600ug/L	2,000	Prepared 02/01/19	11/01/19	N/A	30uL	100mL	P&T Water	600
VOA Gasses Standards	Phenova	800ug/L	2,000	Prepared 02/01/19	11/01/19	N/A	40uL	100mL	P&T Water	800
VOA Gasses Standards	Phenova	1,000ug/L	2,000	Prepared 02/01/19	11/01/19	N/A	50uL	100mL	P&T Water	1,000
Loki Gas Second Source										
Prepared: 02/01/19						Prepared By (Initials): <u>PC</u>				
Expires: 04/02/19										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
50,000ug/mL Gas STD	Phenova	SS 300ug/L	2,000	Prepared 01/14/19	01/14/20	N/A	15uL	100mL	P&T Water	300
Loki Gas Continuing Calibrations/Lab Control Spikes										
Prepared: 02/01/19						Prepared By (Initials): <u>PC</u>				
Expires: 02/02/19										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
VOA Gasses Standards	Phenova	300ug/L	2,000	Prepared 02/01/19	11/01/19	N/A	15uL	100mL	P&T Water	300
Loki Gas Surrogate										
Prepared: 08/30/18						Prepared By (Initials): <u>PC</u>				
Expires: 04/02/19										
Methanol Lot No. 57159										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
8260B Surrogate Solution	O2SI	120002-01	2,000	275545-36329	06/09/19	04/02/19	375uL	15mL	Methanol	50
Loki Gas Internal Standard										
Prepared: 08/24/18						Prepared By (Initials): <u>PC</u>				
Expires: 04/13/19										
Methanol Lot No. 57159										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
IS Solution	O2SI	120004-02	2,000	326533-38443	04/13/19	04/27/21	375uL	15mL	Methanol	50

### Primary and Secondary Working Standards

Primary Standards										
VOA STD 7										
Prepared: 01/28/19 E										
Expires: 03/29/19										
Prepared By (Initials): PC										
Methanol Lot No. 907702-202404										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
VOA Gasses STD	Phenova	ALO-101206	2,000	CL12966-39990	10/31/23	10/31/23	100uL	4mL	Methanol	50
Hexachloroethane	Absolute	70199	1,000	091818-40038	01/17/20	09/18/23	200uL			50
Benzyl Chloride	O2SI	020228-02	1,000	082218-39617	01/17/20	12/04/19	200uL			50
VOA STD 8										
Prepared: 01/28/19 F										
Expires: 02/01/19										
Prepared By (Initials): PC										
Methanol Lot No. 907702-202404										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
VOA Additions STD	Phenova	ALO-130175	2,000	CL39322-39479	01/17/20	06/30/20	100uL	4mL	Methanol	50
502.2 Cal. Std.	Phenova	ALO-101200	2,000	CL12490-39491	01/17/20	05/31/23	100uL			50
Vinyl Acetate	Phenova	ALO-101228	2,000	CL13125-40120	02/01/19	02/01/19	100uL			50
VOA STD B										
Prepared: 01/28/19 G										
Expires: 02/01/19										
Prepared By (Initials): PC										
Methanol Lot No. 907702-202404										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
Custom VOC Mix	Phenova	ALO-130176	2,000	CL12542-39530	01/17/20	05/31/20	500uL	4mL	Methanol	250
Acrolein	Phenova	ALO-130549	10,000	CL13149-40121	02/01/19	02/01/19	100uL			250
VOA STD 1										
Prepared: 01/28/19 H										
Expires: 03/29/19										
Prepared By (Initials): PC										
Methanol Lot No. 907702-202404										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
2-CEVE	O2SI	020145-02	2,000	071018-39809	07/10/21	11/12/19	50	2mL	Methanol	50
VOA STD 2										
Prepared: 01/28/19 I										
Expires: 03/29/19										
Prepared By (Initials): PC										
Methanol Lot No. 907702-202404										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
Ketones Std.	Phenova	ALO-109211	2,000	CL10956-39506	01/17/20	08/30/23	100	4mL	Methanol	50
VOA STD 9										
Prepared: 01/28/19 J										
Expires: 02/01/19										
Prepared By (Initials): PC										
Methanol Lot No. 907702-202404										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
VOA STD. 7		VOA STD. 9	50	Prepared 01/28/19	12/04/19	N/A	200uL	2mL	Methanol	5
VOA STD. 8			50	Prepared 01/28/19	02/01/19	N/A	200uL			5
VOA STD. 10										
Prepared: 01/28/19 K										
Expires: 03/29/19										
Prepared By (Initials): PC										
Methanol Lot No. 907702-202404										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
VOA STD. 1		VOA STD. 10	50	Prepared 01/28/19	01/17/20	N/A	200uL	2mL	Methanol	5
VOA STD. 12										
Prepared: 01/28/19 L										
Expires: 03/29/19										
Prepared By (Initials): PC										
Methanol Lot No. 907702-202404										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
VOA STD. 2		VOA STD. 12	50	Prepared 01/28/19	01/17/20	N/A	200uL	2mL	Methanol	5

Second Source (SS) Standards											
VOA STD. 3											
Prepared: 01/28/19 M											
Expires: 03/29/19											
Methanol Lot No. 907702-202404											
Initial Standard Information						Final Standard Information					
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)	
Ketones Standard	Phenova	ALO-101211	2,000	CL12730-39671	01/17/20	08/31/28	50uL	2mL	Methanol	50	
VOA STD. 5											
Prepared: 01/28/19 N											
Expires: 03/29/19											
Methanol Lot No. 907702-202404											
Initial Standard Information						Final Standard Information					
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)	
8260 Gases (SS)	Phenova	ALO-101206	2,000	CL12965-39986	10/31/23	10/31/23	50uL	2mL	Methanol	50	
2-CEVE (SS)	Absolute	82408	2,000	112917-402102	11/29/20	07/10/21	50uL			50	
VOA STD. 6											
Prepared: 01/28/19 O											
Expires: 02/13/19											
Methanol Lot No. 907702-202404											
Initial Standard Information						Final Standard Information					
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)	
502.2 Calibration STD. (54-compounds)	Phenova	ALO-101200	2,000	CL12489-39970	01/17/20	05/31/23	50uL	2mL	Methanol	50	
Vinyl Acetate	Phenova	ALO-101228	2,000	CL13145-40120	01/17/20	02/13/19	50uL			50	
Hexachloroethane	Accustan	AS-E0011	1,000	218051281-39858	01/02/20	05/14/28	100uL			50	
Benzyl Chloride	Accustan	M-8010-01	200	214101335-04-39960	01/17/20	10/18/20	500uL			50	
VOA STD. TBA											
Prepared: 01/28/19 P											
Expires: 02/13/19											
Methanol Lot No. 907702-202404											
Initial Standard Information						Final Standard Information					
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)	
Custom VOA Mix (4-3)	Phenova	ALO-130176	2,000	CL12542-39679	01/17/20	05/31/20	250uL	2mL	Methanol	250	
Acrolein	Phenova	ALO-101224	10,000	CL13181-40203	02/13/19	02/13/19	50uL			250	
VOA STD. 0											
Prepared: 01/28/19 Q											
Expires: 03/29/19											
Methanol Lot No. 907702-202404											
Initial Standard Information						Final Standard Information					
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)	
VOA Addition STD.	Phenova	ALO-130175	2,000	CL12744-40002	01/17/20	08/30/20	50uL	2mL	Methanol	50	
BFB Tune											
Prepared: 01/18/19											
Expires: 12/12/19											
Methanol Lot No. 202404-00945											
Initial Standard Information						Final Standard Information					
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)	
4-Bromofluorobenzene	O2SI	020135-03	2,500	342387-39075	12/12/19	01/19/21	20uL	2mL	Methanol	25	

## Injection Log

Directory: M:\LOKI\DATA\190201\

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1	2	0201L03.D	1	0.3ug/L VOC STD 02/01/19	IS&S 11/8/18	1 Feb 19 11:44
2	3	0201L04.D	1	0.5ug/L VOC STD 02/01/19	IS&S 11/8/18	1 Feb 19 12:13
3	4	0201L05.D	1	1.0ug/L VOC STD 02/01/19	IS&S 11/8/18	1 Feb 19 12:42
4	5	0201L06.D	1	2.0ug/L VOC STD 02/01/19	IS&S 11/8/18	1 Feb 19 13:10
5	6	0201L07.D	1	5.0ug/L VOC STD 02/01/19	IS&S 11/8/18	1 Feb 19 13:39
6	7	0201L08.D	1	10ug/L VOC STD 02/01/19	IS&S 11/8/18	1 Feb 19 14:08
7	8	0201L09.D	1	20ug/L VOC STD 02/01/19	IS&S 11/8/18	1 Feb 19 14:36
8	9	0201L10.D	1	40ug/L VOC STD 02/01/19	IS&S 11/8/18	1 Feb 19 15:05
9	10	0201L11.D	1	50ug/L VOC STD 02/01/19	IS&S 11/8/18	1 Feb 19 15:34
10	11	0201L12.D	1	100ug/L VOC STD 02/01/19	IS&S 11/8/18	1 Feb 19 16:03
11	15	0201L16.D	1	20ug/L GAS STD 02/01/19	IS&S 11/8/18	1 Feb 19 17:57
12	16	0201L17.D	1	50ug/L GAS STD 02/01/19	IS&S 11/8/18	1 Feb 19 18:26
13	17	0201L18.D	1	100ug/L GAS STD 02/01/19	IS&S 11/8/18	1 Feb 19 18:54
14	18	0201L19.D	1	300ug/L GAS STD 02/01/19	IS&S 11/8/18	1 Feb 19 19:23
15	19	0201L20.D	1	600ug/L GAS STD 02/01/19	IS&S 11/8/18	1 Feb 19 19:52
16	20	0201L21.D	1	800ug/L GAS STD 02/01/19	IS&S 11/8/18	1 Feb 19 20:20
17	21	0201L22.D	1	1000ug/L GAS STD 02/01/19	IS&S 11/8/18	1 Feb 19 20:49
18	23	0201L24.D	1	(SS)300ug/L GAS STD 02/01/19	IS&S 11/8/18	1 Feb 19 21:46
19	6	0202L17.D	1	190202A CCV 300ug/L	IS&S 11/8/18	2 Feb 19 15:06
20	7	0202L18.D	1	190202A LCS 300ug/L	IS&S 11/8/18	2 Feb 19 15:35
21	8	0202L19.D	1	190202A LCSD 300ug/L	IS&S 11/8/18	2 Feb 19 16:03
22	10	0202L21.D	1	190202A blk	IS&S 11/8/18	2 Feb 19 17:01
23	11	0202L22.D	1	AZ85765W02	IS&S 11/8/18	2 Feb 19 17:29
24	12	0202L23.D	1	AZ85762W02	IS&S 11/8/18	2 Feb 19 17:58
25	13	0202L24.D	1	AZ85763W02	IS&S 11/8/18	2 Feb 19 18:26
26	14	0202L25.D	1	AZ85764W02	IS&S 11/8/18	2 Feb 19 18:55
27	15	0202L26.D	1	AZ85766W02	IS&S 11/8/18	2 Feb 19 19:23
28	17	0202L28.D	1	Ending CCV 300ug/L 02/02/19	IS&S 11/8/18	2 Feb 19 20:20

**ORGANICS**  
**Calibration Data**



Form 6

Initial Calibration

Lab Name: APPL, Inc.

SDG No: \_\_\_\_\_

Case No: \_\_\_\_\_

Initial Cal. Date: 01/20/19

Matrix: \_\_\_\_\_

Instrument: 7890

Initials: \_\_\_\_\_

19012000.D 19012001.D 19012002.D 19012003.D 19012005.D 19012007.D 19012008.D

	Compound	1	2	3	4	5	6	7				Avg	%RSD	Type	r <sup>2</sup>	Q
1	ATML Methane	31727	15184	9929	15034	12111	11418	8746				14878	52	ATM	0.994	
2	ATML Ethane	25078	13064	8590	12630	9815	9659	7285				12303	49	ATM	0.994	
3	ATML Ethene	22488	11903	7914	11685	9157	8919	6685				11250	47	ATM	0.993	
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35																

4.239405

Data File : G:\ROCKY\DATA\190120RS\19012000.D Vial: 1  
 Acq On : 20 Jan 19 11:58 Operator: cmm  
 Sample : RSK Std 1 01/20/19 Inst : 7890  
 Misc : 125uL from RSK Std 3 Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Jan 20 12:35 2019 Quant Results File: RSK0120.RES

Method : G:\ROCKY\DATA\190120RS\RSK0120.M (Chemstation Integrator)  
 Title : RSK 175  
 Last Update : Sun Jan 20 12:34:55 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 0.500 mL  
 Signal Phase : CARBOPACK  
 Signal Info :

Compound	R.T.	Response	Conc	Units
----------	------	----------	------	-------

Target Compounds

Target Compounds

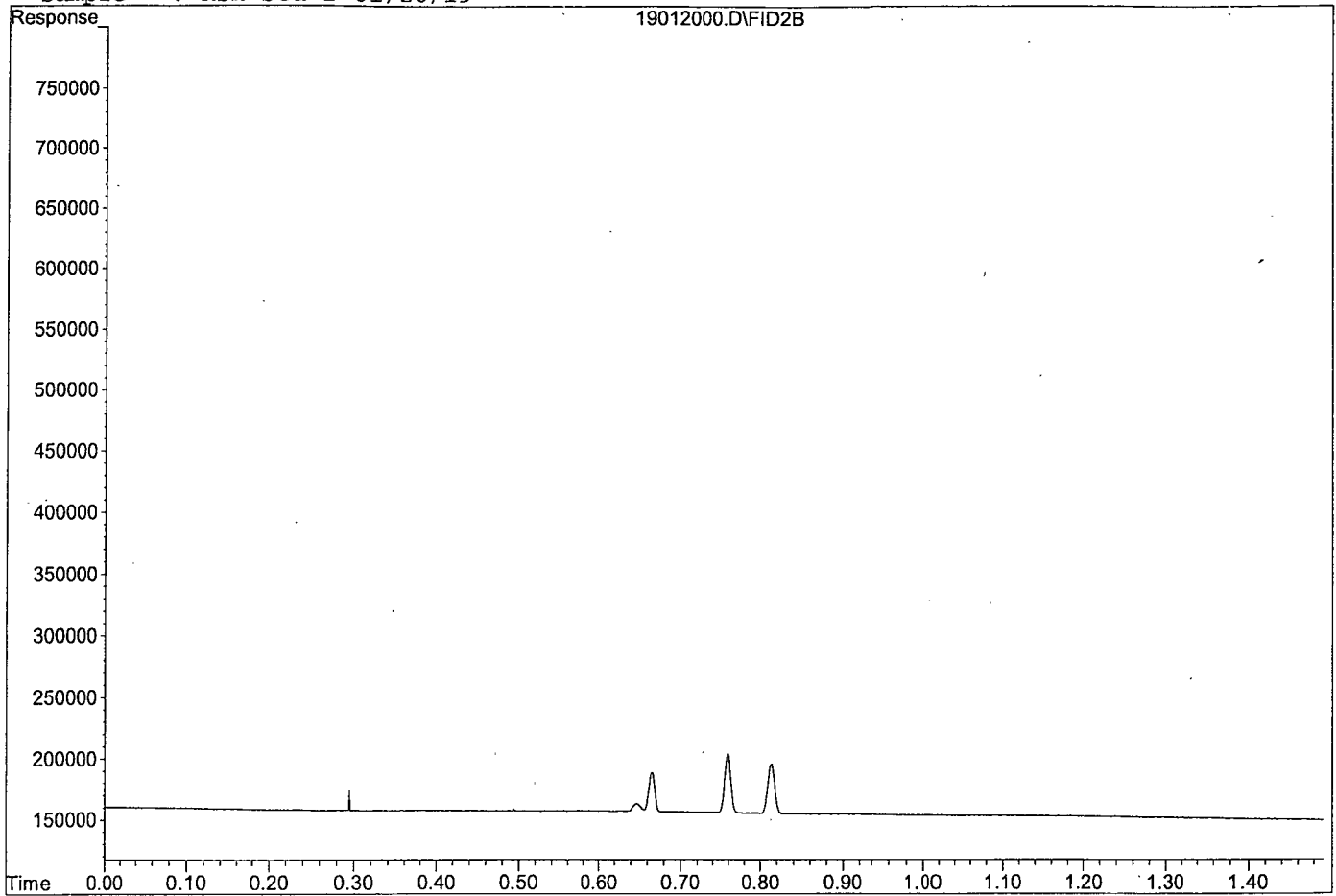
1) ATM Methane	0.67	32996	N.D.	ppb
2) ATM Ethane	0.76	49028	N.D.	ppb
3) ATM Ethene	0.81	41040	N.D.	ppb

Quantitation Report

Data File: G:\ROCKY\DATA\190120RS\19012000.D

Sample : RSK Std 1 01/20/19

19012000.D\FID2B



Data File : G:\ROCKY\DATA\190120RS\19012001.D Vial: 2  
 Acq On : 20 Jan 19 12:02 Operator: cmm  
 Sample : RSK Std 2 01/20/19 Inst : 7890  
 Misc : 250uL from RSK Std 3 Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Jan 20 12:35 2019 Quant Results File: RSK0120.RES

Method : G:\ROCKY\DATA\190120RS\RSK0120.M (Chemstation Integrator)  
 Title : RSK 175  
 Last Update : Sun Jan 20 12:35:30 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 0.500 mL  
 Signal Phase : CARBOPACK  
 Signal Info :

Compound	R.T.	Response	Conc	Units
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Target Compounds

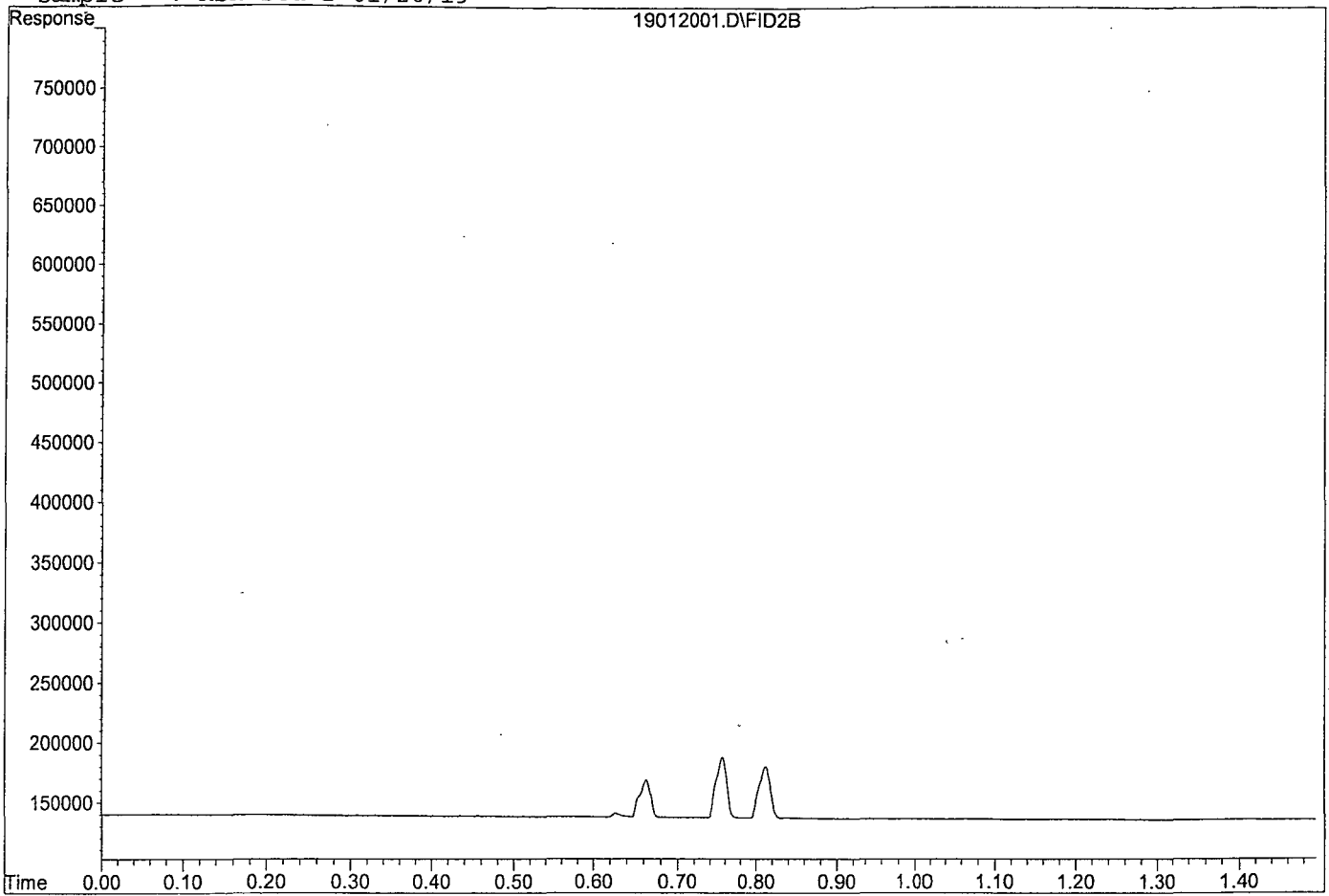
Target Compounds

1) ATM Methane	0.66	31584	N.D.	ppb
2) ATM Ethane	0.76	51016	N.D.	ppb
3) ATM Ethene	0.81	43446	N.D.	ppb

Quantitation Report

Data File: G:\ROCKY\DATA\190120RS\19012001.D

Sample : RSK Std 2 01/20/19



Data File : G:\ROCKY\DATA\190120RS\19012002.D Vial: 3  
 Acq On : 20 Jan 19 12:04 Operator: cmm  
 Sample : RSK Std 3 01/20/19 Inst : 7890  
 Misc : Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Jan 20 12:36 2019 Quant Results File: RSK0120.RES

Method : G:\ROCKY\DATA\190120RS\RSK0120.M (Chemstation Integrator)  
 Title : RSK 175  
 Last Update : Sun Jan 20 12:36:01 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 0.500 mL  
 Signal Phase : CARBOPACK  
 Signal Info :

Compound	R.T.	Response	Conc	Units
----------	------	----------	------	-------

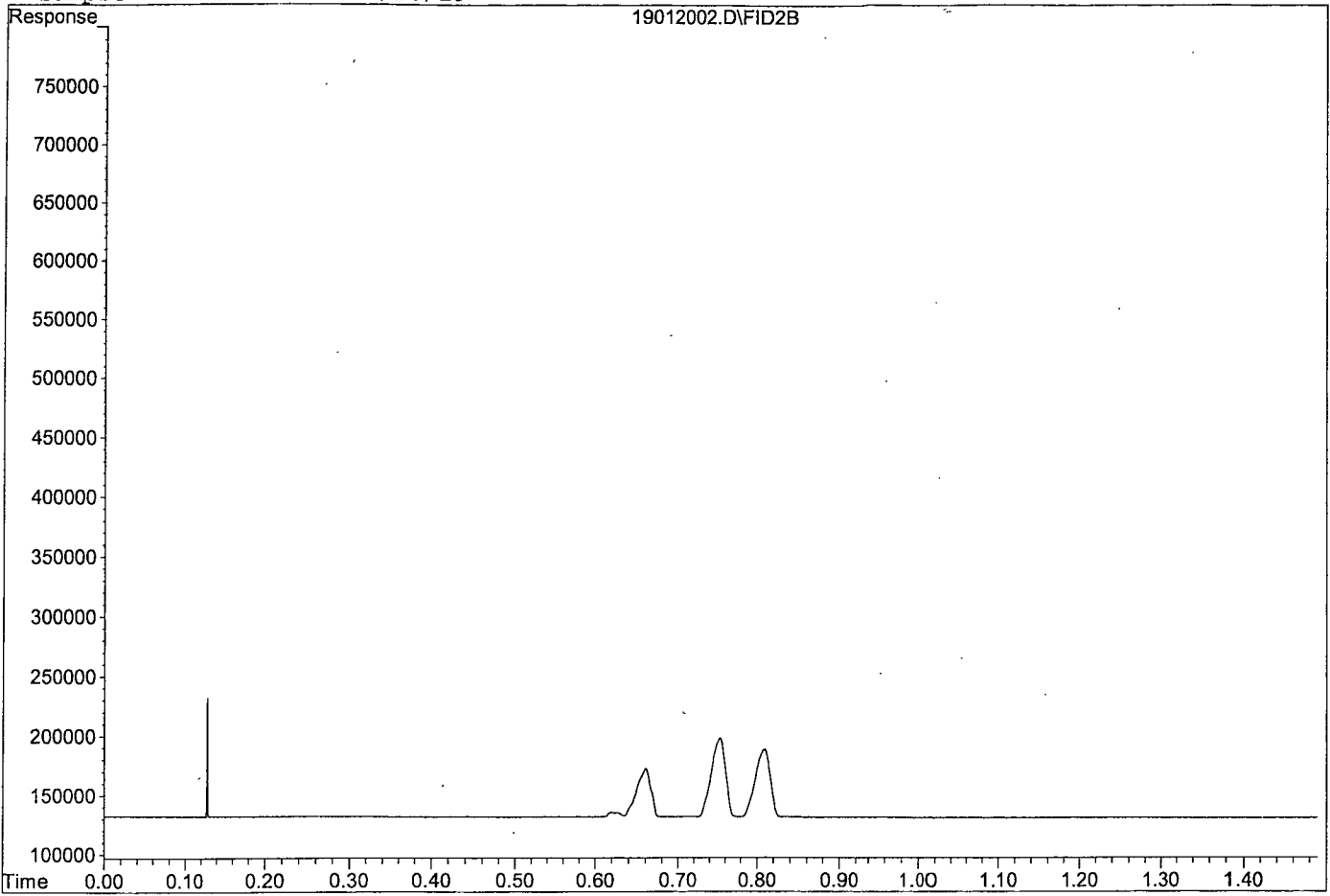
Target Compounds

Target Compounds	R.T.	Response	Conc	Units
1) ATM Methane	0.66	41402	N.D.	ppb
2) ATM Ethane	0.75	66998	N.D.	ppb
3) ATM Ethene	0.81	57770	N.D.	ppb

Quantitation Report

Data File: G:\ROCKY\DATA\190120RS\19012002.D

Sample : RSK Std 3 01/20/19



Data File : G:\ROCKY\DATA\190120RS\19012003.D Vial: 4  
 Acq On : 20 Jan 19 12:07 Operator: cmm  
 Sample : RSK Std 4 01/20/19 Inst : 7890  
 Misc : Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Jan 20 12:36 2019 Quant Results File: RSK0120.RES

Method : G:\ROCKY\DATA\190120RS\RSK0120.M (Chemstation Integrator)  
 Title : RSK 175  
 Last Update : Sun Jan 20 12:36:29 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 0.500 mL  
 Signal Phase : CARBOPACK  
 Signal Info :

Compound	R.T.	Response	Conc Units
-----			
Target Compounds			
1) ATM Methane	0.66	156731	17.650 ppb
2) ATM Ethane	0.75	246852	33.403 ppb
3) ATM Ethene	0.81	213014	30.693 ppb

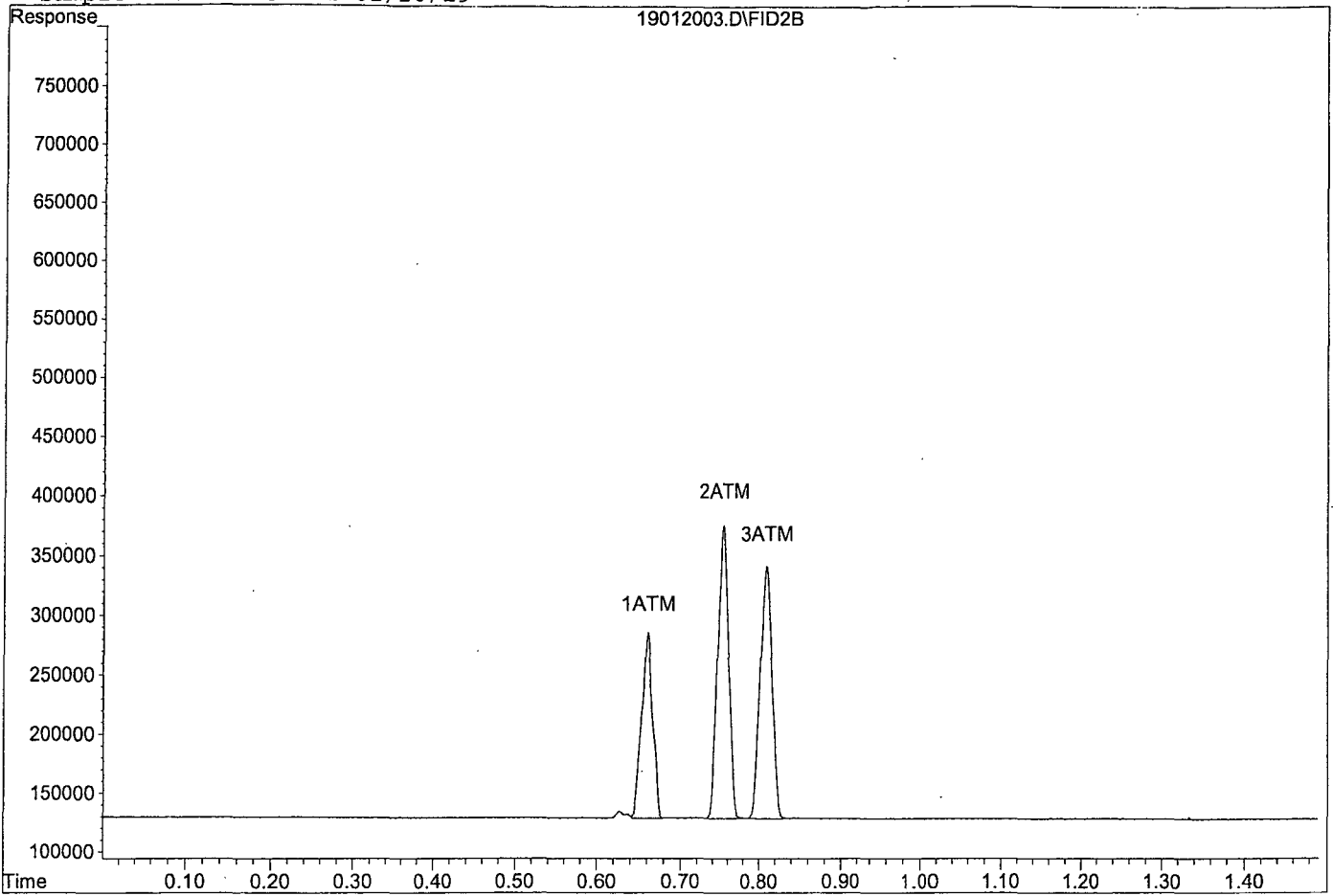
Target Compounds



Quantitation Report

Data File: G:\ROCKY\DATA\190120RS\19012003.D

Sample : RSK Std 4 01/20/19



Data File : G:\ROCKY\DATA\190120RS\19012005.D Vial: 6  
 Acq On : 20 Jan 19 12:12 Operator: cmm  
 Sample : RSK Std 5 01/20/19 Inst : 7890  
 Misc : Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Jan 20 12:37 2019 Quant Results File: RSK0120.RES

Method : G:\ROCKY\DATA\190120RS\RSK0120.M (Chemstation Integrator)  
 Title : RSK 175  
 Last Update : Sun Jan 20 12:36:58 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 0.500 mL  
 Signal Phase : CARBOPACK  
 Signal Info :

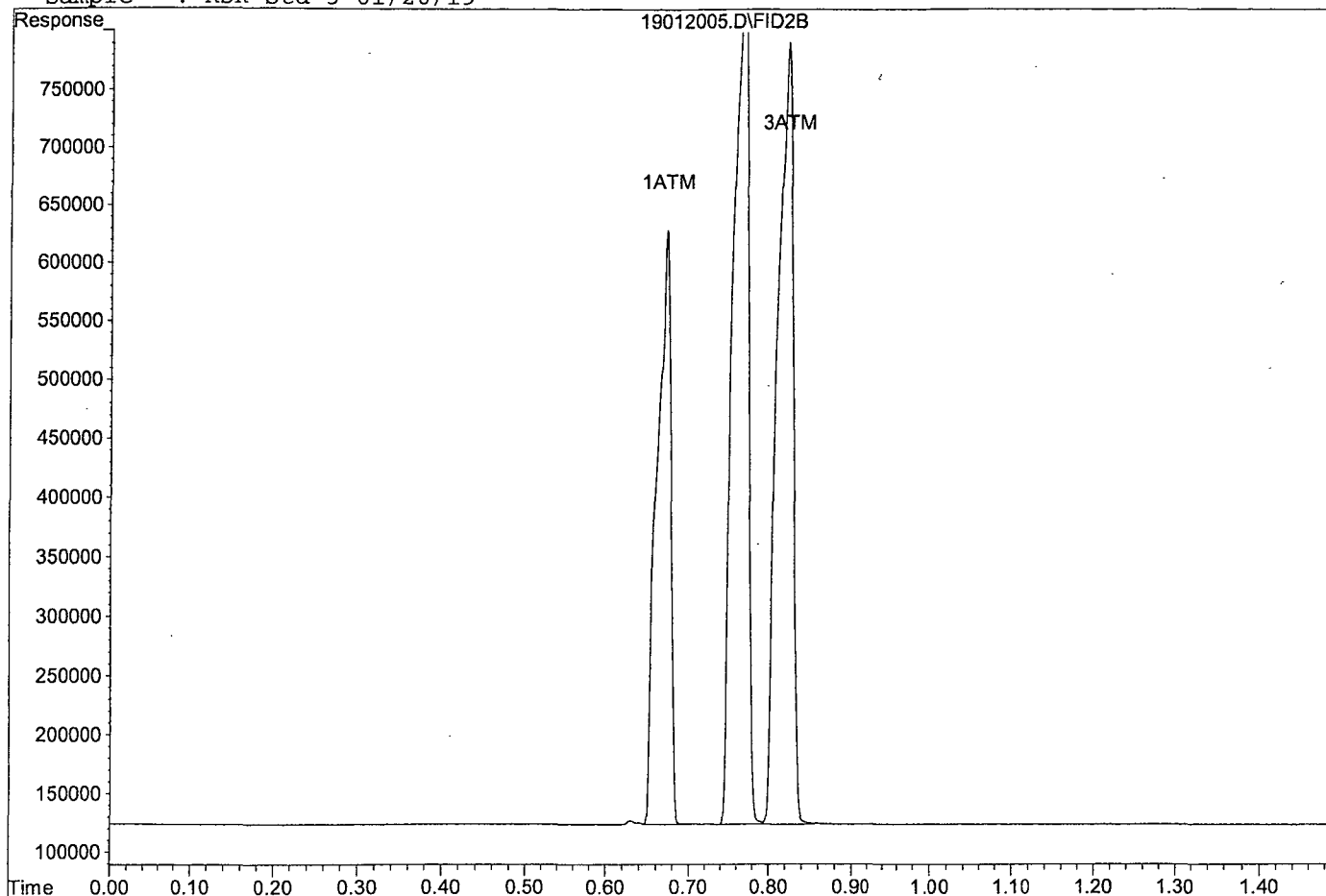
Compound	R.T.	Response	Conc Units
-----			
Target Compounds			
1) ATM Methane	0.67	505025	97.832 ppb
2) ATM Ethane	0.77	767300	177.156 ppb
3) ATM Ethene	0.82	667740	167.580 ppb

Target Compounds

Quantitation Report

Data File: G:\ROCKY\DATA\190120RS\19012005.D

Sample : RSK Std 5 01/20/19



Data File : G:\ROCKY\DATA\190120RS\19012007.D Vial: 8  
 Acq On : 20 Jan 19 12:17 Operator: cmm  
 Sample : RSK Std 6 01/20/19 Inst : 7890  
 Misc : Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Jan 20 12:37 2019 Quant Results File: RSK0120.RES

Method : G:\ROCKY\DATA\190120RS\RSK0120.M (Chemstation Integrator)  
 Title : RSK 175  
 Last Update : Sun Jan 20 12:37:36 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 0.500 mL  
 Signal Phase : CARBOPACK  
 Signal Info :

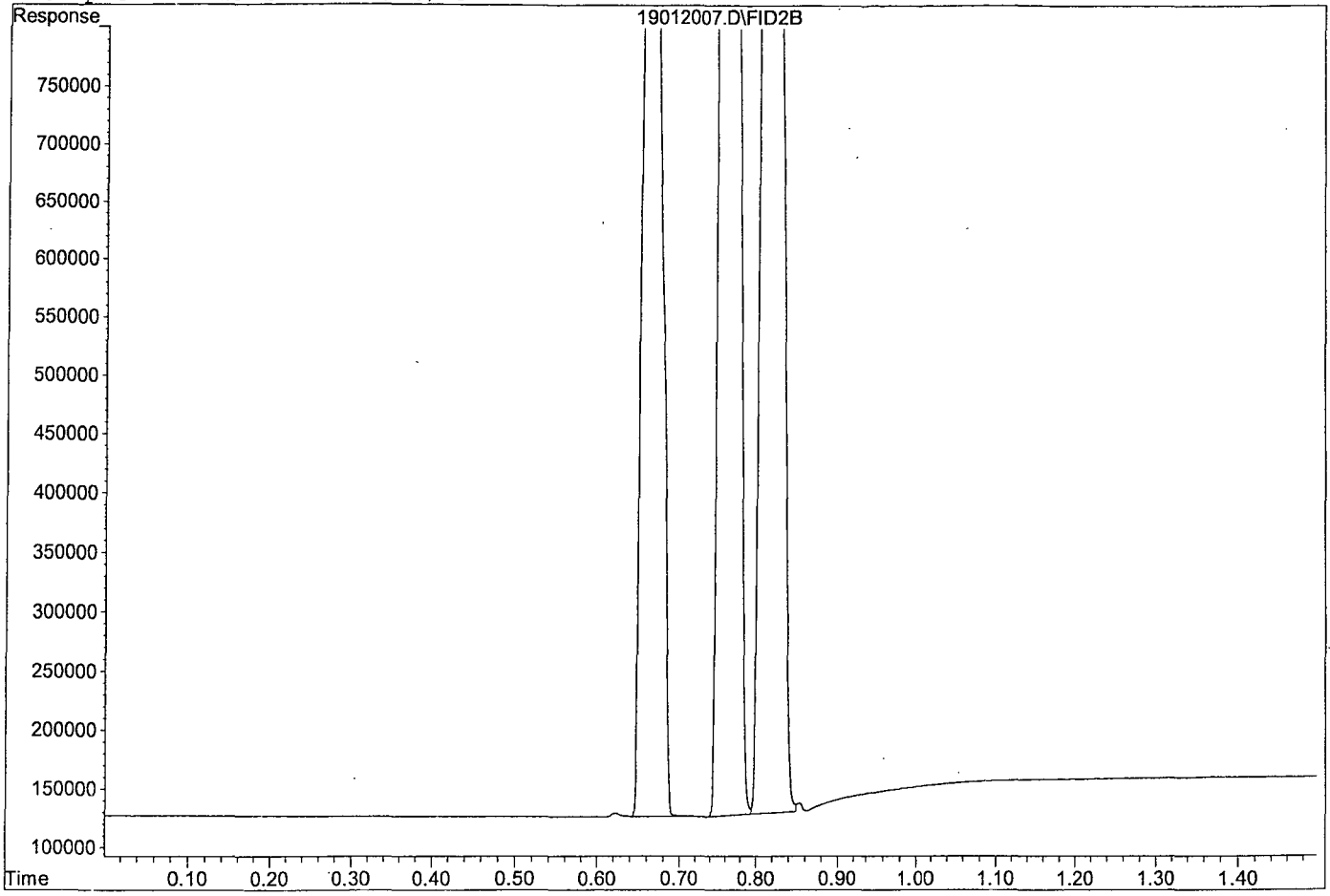
Compound	R.T.	Response	Conc Units
-----			
Target Compounds			
1) ATM Methane	0.67	1190356	255.605 ppb
2) ATM Ethane	0.77	1887834	486.657 ppb
3) ATM Ethene	0.82	1625935	456.029 ppb

Target Compounds

Quantitation Report

Data File: G:\ROCKY\DATA\190120RS\19012007.D

Sample : RSK Std 6 01/20/19



Data File : G:\ROCKY\DATA\190120RS\19012008.D Vial: 9  
 Acq On : 20 Jan 19 12:20 Operator: cmm  
 Sample : RSK Std 7 01/20/19 Inst : 7890  
 Misc : Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Jan 20 12:38 2019 Quant Results File: RSK0120.RES

Method : G:\ROCKY\DATA\190120RS\RSK0120.M (Chemstation Integrator)  
 Title : RSK 175  
 Last Update : Sun Jan 20 12:38:08 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 0.500 mL  
 Signal Phase : CARBOPACK  
 Signal Info :

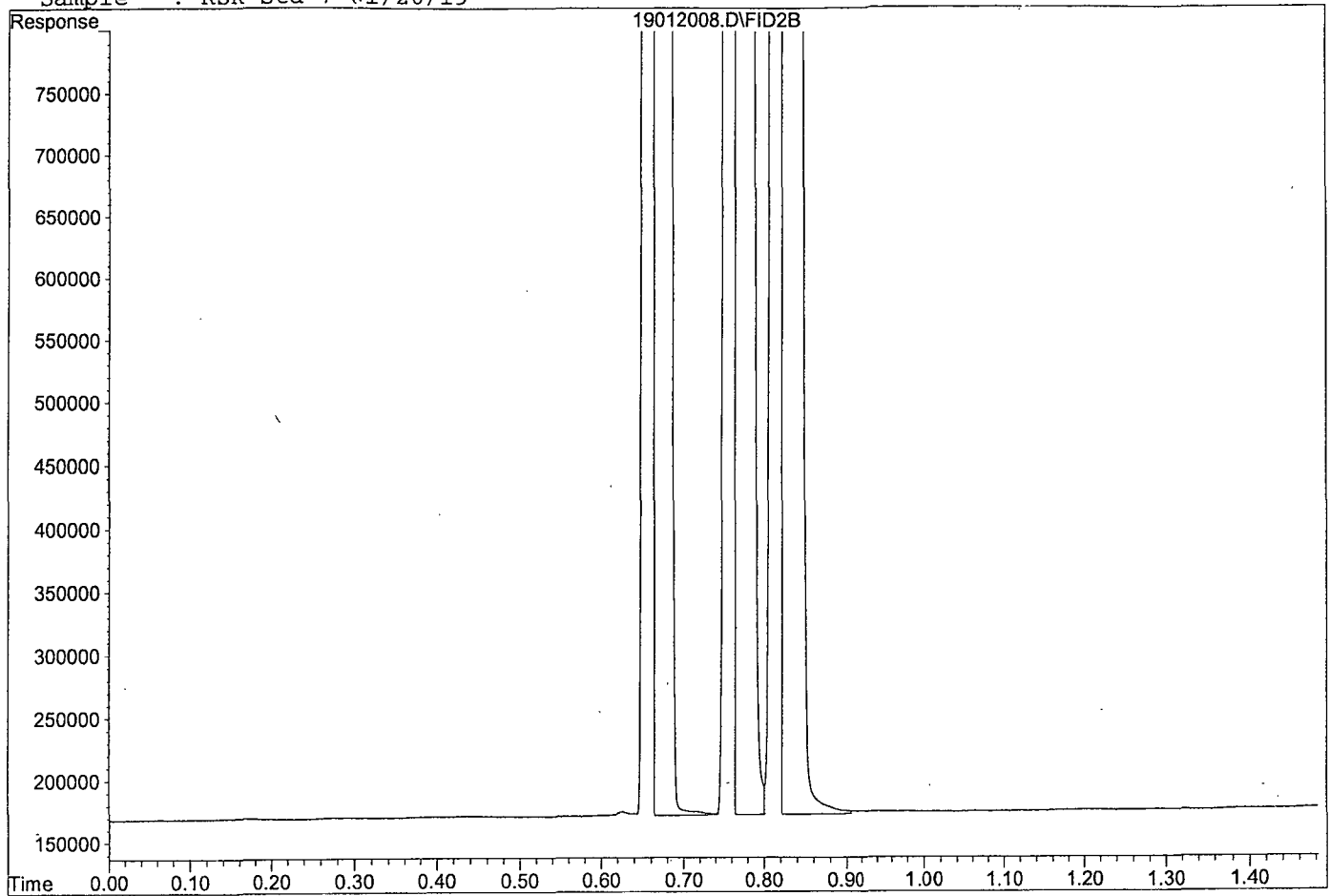
Compound	R.T.	Response	Conc Units
-----			
Target Compounds			
1) ATM Methane	0.67	3646926	821.142 ppb
2) ATM Ethane	0.77	5694692	1538.144 ppb
3) ATM Ethene	0.83	4874710	1434.020 ppb

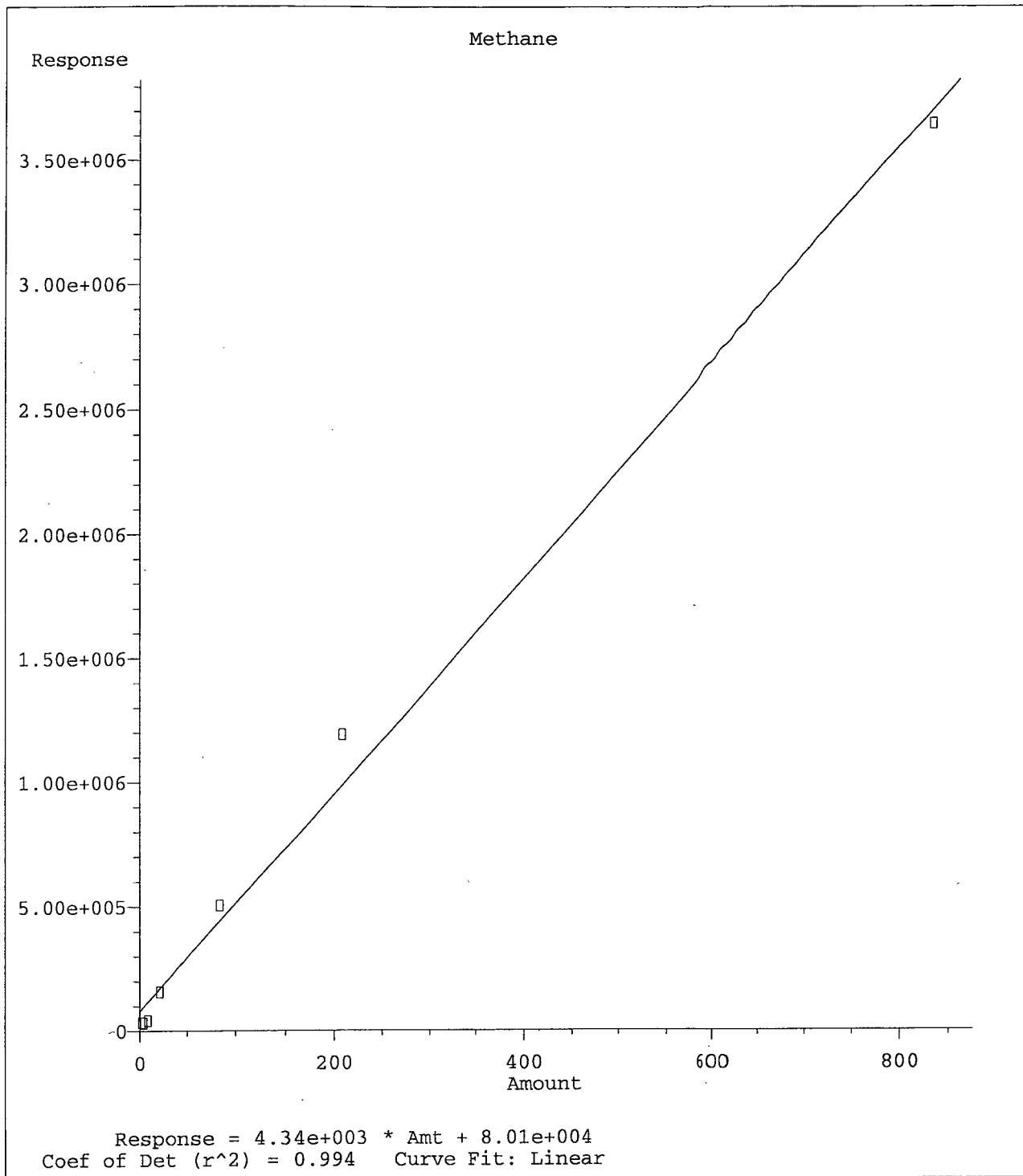
Target Compounds

Quantitation Report

Data File: G:\ROCKY\DATA\190120RS\19012008.D

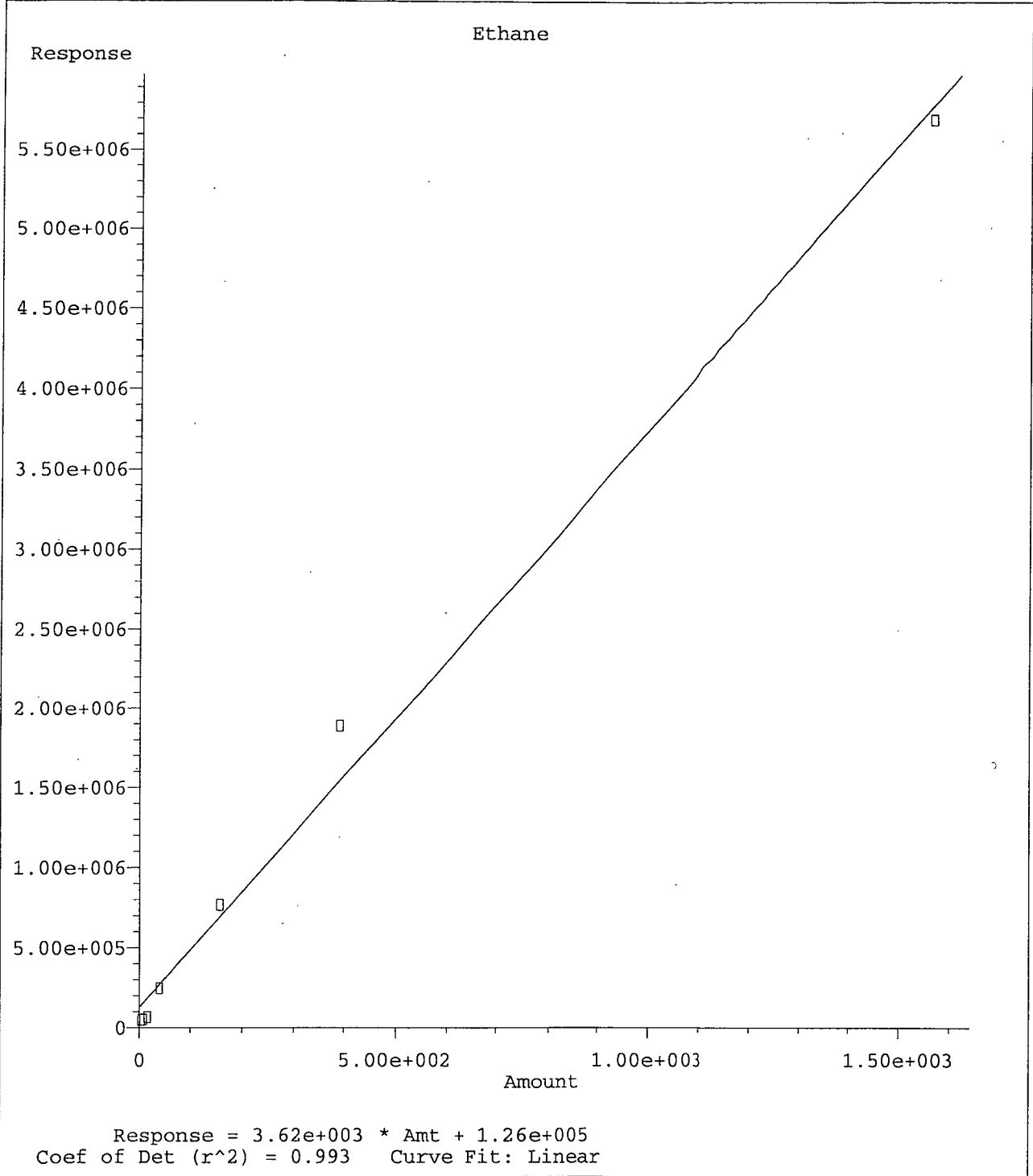
Sample : RSK Std 7 01/20/19



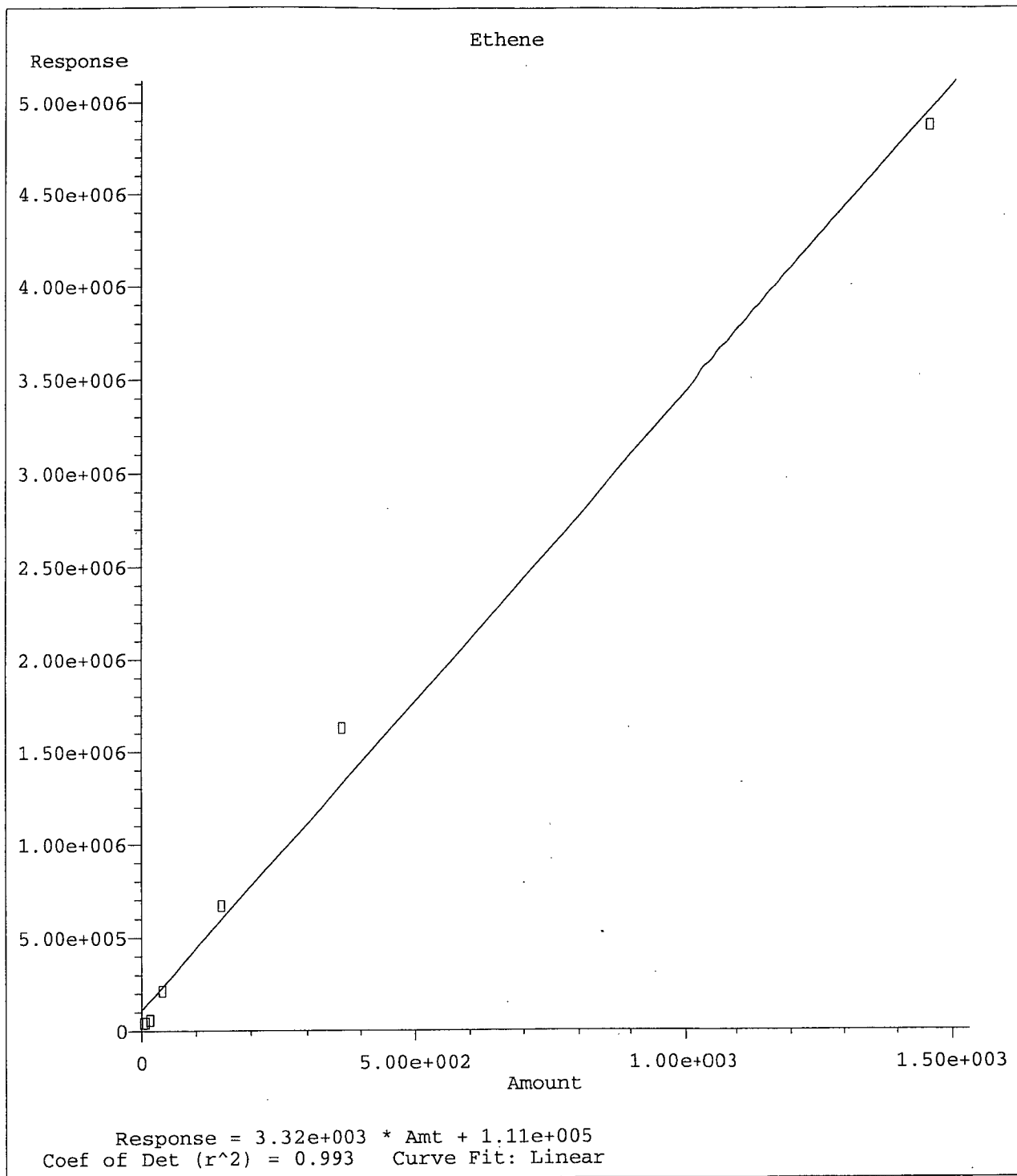


Method Name: G:\ROCKY\DATA\190120RS\RSK0120.M  
Calibration Table Last Updated: Sun Jan 20 12:32:56 2019





Method Name: G:\ROCKY\DATA\190120RS\RSK0120.M  
Calibration Table Last Updated: Sun Jan 20 12:32:56 2019



Method Name: G:\ROCKY\DATA\190120RS\RSK0120.M  
Calibration Table Last Updated: Sun Jan 20 12:33:08 2019

RSK 175  
RSK 175

Form 7

### Second Source Calibration

Lab Name: APPL, Inc.

SDG No: \_\_\_\_\_

Case No: \_\_\_\_\_

Date Analyzed: 01/20/19

Matrix: \_\_\_\_\_

Instrument: 7890

Initial Cal. Date: 01/20/19

Data File: 19012010.D

		Compound	MEAN	CCRF	%D		%Drift
1	ATML	Methane	14878	10667	28	ATML	0.69
2	ATML	Ethane	12303	9330	24	ATML	6.6
3	ATML	Ethene	11250	8592	24	ATML	6.4
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							

Average

25.3

Data File : G:\ROCKY\DATA\190120RS\19012010.D Vial: 11  
 Acq On : 20 Jan 19 12:39 Operator: cmm  
 Sample : SS RSK Std 5 01/20/19 Inst : 7890  
 Misc : Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Jan 20 12:42 2019 Quant Results File: RSK0120.RES

Method : G:\ROCKY\DATA\190120RS\RSK0120.M (Chemstation Integrator)  
 Title : RSK 175  
 Last Update : Sun Jan 20 12:42:01 2019  
 Response via : Multiple Level Calibration

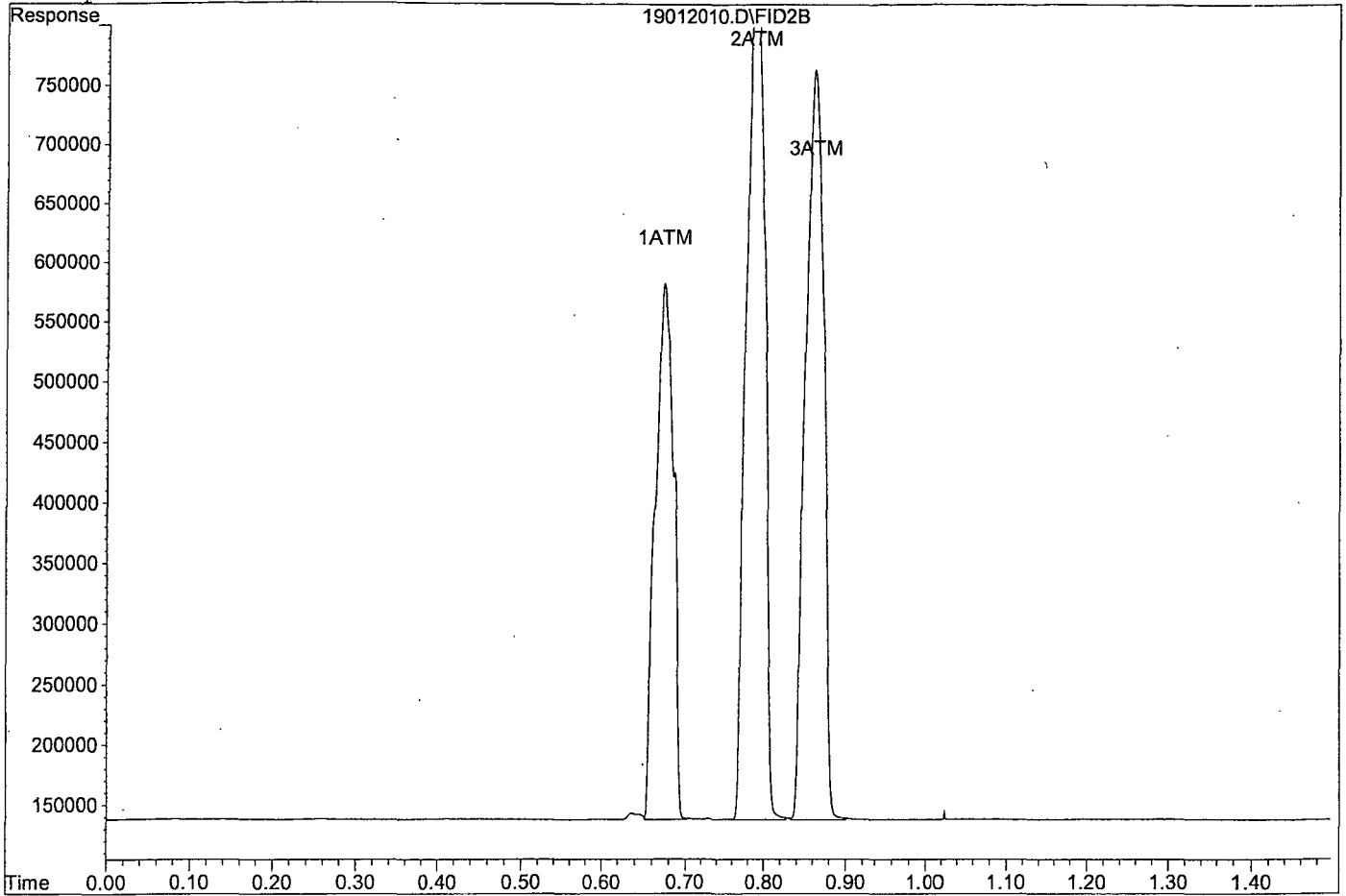
Volume Inj. : 0.500 mL  
 Signal Phase : CARBOPACK  
 Signal Info :

Compound	R.T.	Response	Conc Units
-----			
Target Compounds			
1) ATM Methane	0.67	444826	83.973 ppb
2) ATM Ethane	0.79	729370	166.679 ppb
3) ATM Ethene	0.86	626499	155.165 ppb

Target Compounds

Quantitation Report

Data File: G:\ROCKY\DATA\190120RS\19012010.D  
Sample : SS RSK Std 5 01/20/19



## Algorithm Check for Linear Regression

Data file: 19012010.D

Analyte: Methane

Area of target analyte:	444826
Area of internal standard:	1
concentration of internal standard:	1
multiplier:	1
amt:	80100
response ratio:	4340

$$\frac{((\text{Area pk/area IS}) - \text{constant term}) * (\text{conc IS} * \text{multiplier})}{\text{slope}} =$$

84.04

RSK 175  
RSK 175

Form 7

### Continuing Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: \_\_\_\_\_

SDG No: \_\_\_\_\_  
Date Analyzed: 4 Feb 19 9:14  
Instrument: 7890  
Initial Cal. Date: 01/20/19  
Data File: 19020400.D

		Compound	MEAN	CCRF	%D		%Drift
1	ATML	Methane	14878	10322	31	ATML	3.3
2	ATML	Ethane	12303	9161	26	ATML	4.3
3	ATML	Ethene	11250	8482	25	ATML	4.7
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
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24							
25							
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							

Average

27.3

Data File : G:\ROCKY\DATA\190120RS\19020400.D Vial: 1  
 Acq On : 4 Feb 19 9:14 Operator: cmm  
 Sample : 190204A LCS/CCV RSK Std 5 Inst : 7890  
 Misc : Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Feb 4 9:17 2019 Quant Results File: RSK0120.RES

Method : G:\ROCKY\DATA\190120RS\RSK0120.M (Chemstation Integrator)  
 Title : RSK 175  
 Last Update : Mon Feb 04 09:17:31 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 0.500 mL  
 Signal Phase : CARBOPACK  
 Signal Info :

Compound	R.T.	Response	Conc Units
----------	------	----------	------------

Target Compounds

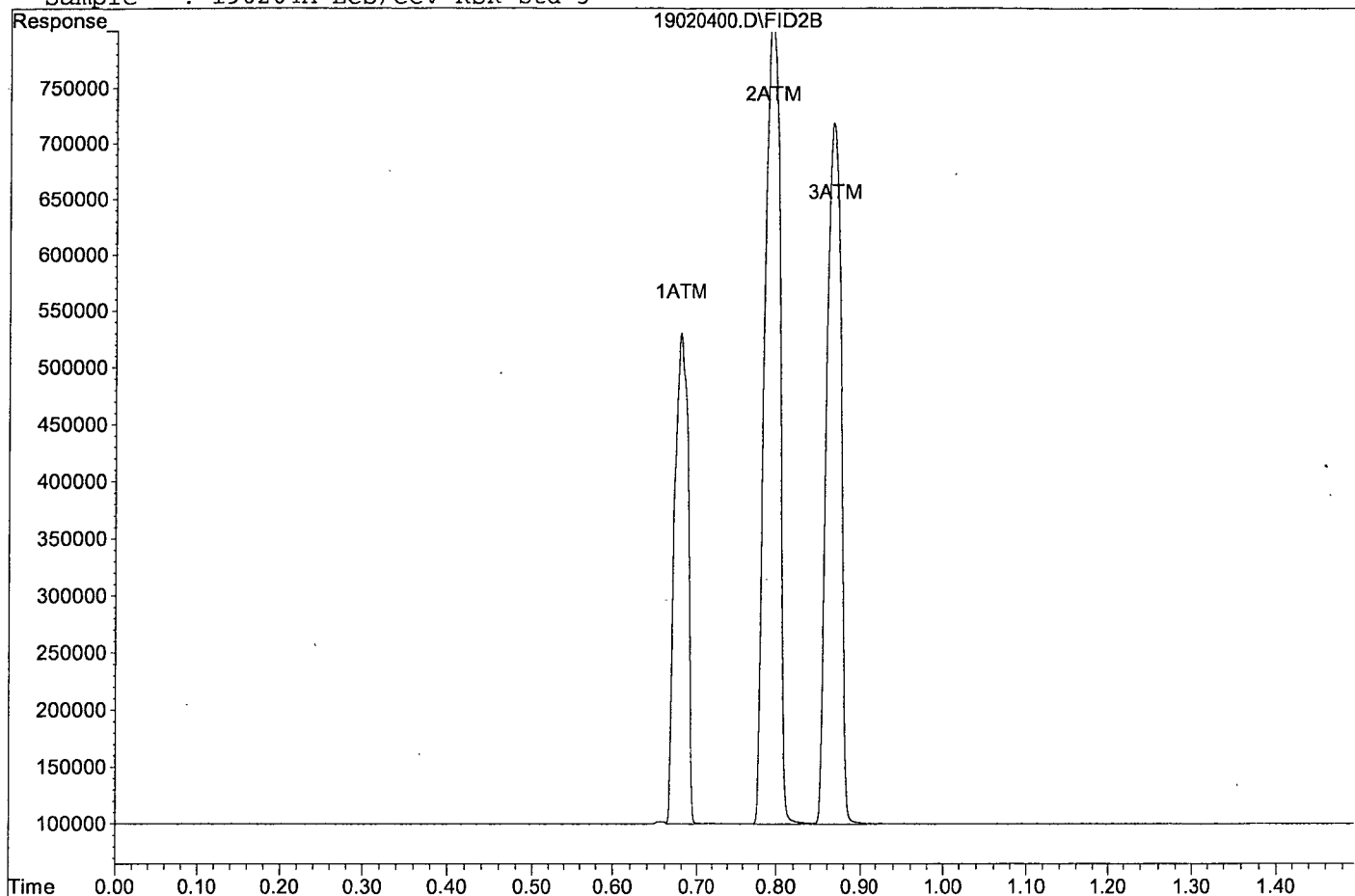
1) ATM Methane	0.68	430435	80.660 ppb
2) ATM Ethane	0.79	716167	163.032 ppb
3) ATM Ethene	0.87	618530	152.766 ppb

Target Compounds



Quantitation Report

Data File: G:\ROCKY\DATA\190120RS\19020400.D  
Sample : 190204A LCS/CCV RSK Std 5



RSK 175  
RSK 175

Form 7

### Ending Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: \_\_\_\_\_

SDG No: \_\_\_\_\_  
Date Analyzed: 4 Feb 19 9:59  
Instrument: 7890  
Initial Cal. Date: 01/20/19  
Data File: 19020416.D

	Compound	MEAN	CCRF	%D	%Drift	
1	ATML Methane	14878	12104	19	ATML	17
2	ATML Ethane	12303	10206	17	ATML	19
3	ATML Ethene	11250	9154	19	ATML	15
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						
33						
34						
35						
36						
37						
38						
39						
40						

Average

18.3

Data File : G:\ROCKY\DATA\190120RS\19020416.D Vial: 17  
 Acq On : 4 Feb 19 9:59 Operator: cmm  
 Sample : Ending CCV RSK Std 5 02/04/19 Inst : 7890  
 Misc : Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Feb 4 10:01 2019 Quant Results File: RSK0120.RES

Method : G:\ROCKY\DATA\190120RS\RSK0120.M (Chemstation Integrator)  
 Title : RSK 175  
 Last Update : Mon Feb 04 10:01:47 2019  
 Response via : Multiple Level Calibration

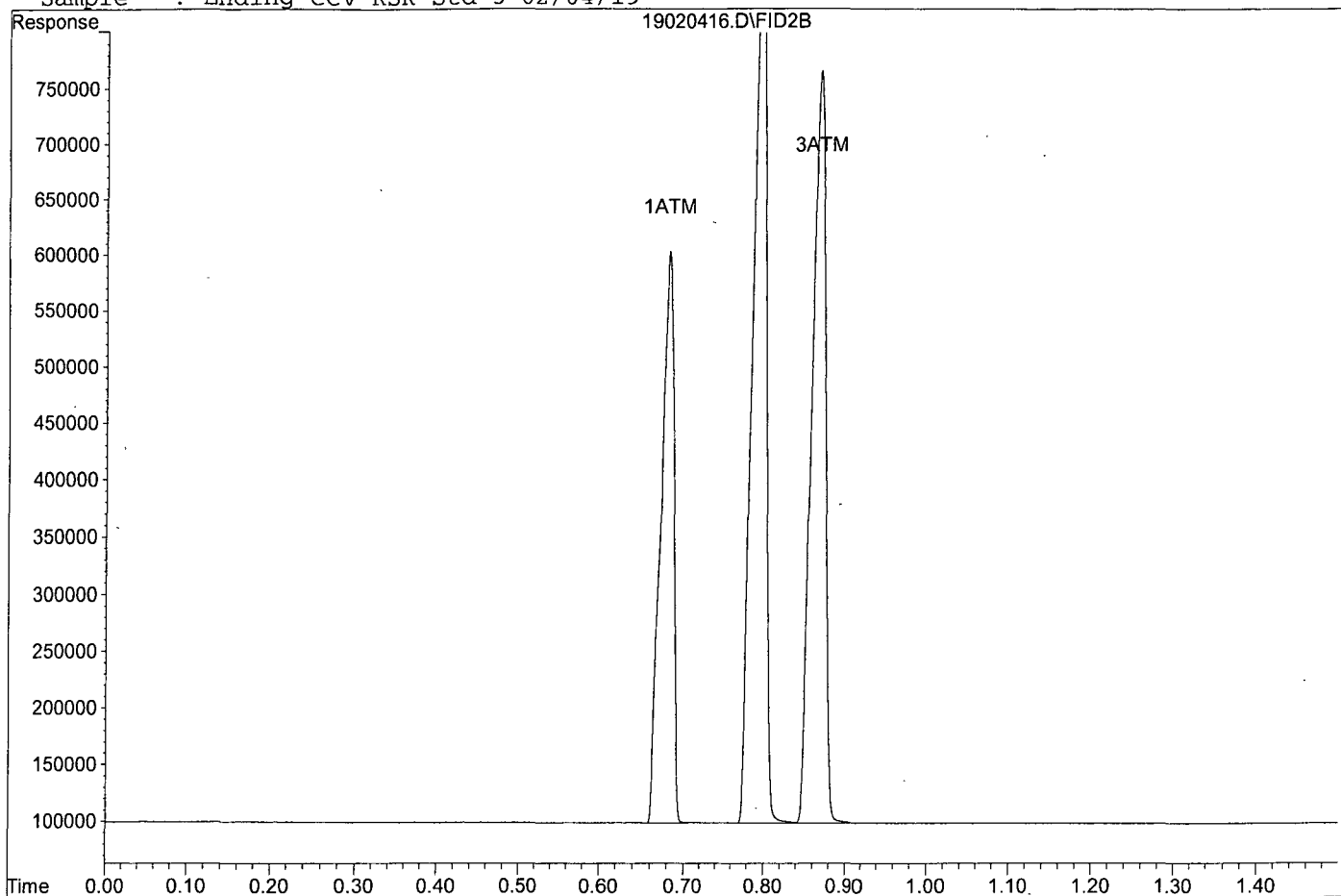
Volume Inj. : 0.500 mL  
 Signal Phase : CARBOPACK  
 Signal Info :

Compound	R.T.	Response	Conc Units
-----			
Target Compounds			
1) ATM Methane	0.68	504747	97.768 ppb
2) ATM Ethane	0.80	797814	185.584 ppb
3) ATM Ethene	0.87	667488	167.504 ppb

Target Compounds

Quantitation Report

Data File: G:\ROCKY\DATA\190120RS\19020416.D  
Sample : Ending CCV RSK Std 5 02/04/19



**ORGANICS**  
**Raw Data**

Data File : G:\ROCKY\DATA\190120RS\19020414.D Vial: 15  
 Acq On : 4 Feb 19 9:54 Operator: cmm  
 Sample : AZ85765W03 Inst : 7890  
 Misc : Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Feb 4 9:57 2019 Quant Results File: RSK0120.RES

Method : G:\ROCKY\DATA\190120RS\RSK0120.M (Chemstation Integrator)  
 Title : RSK 175  
 Last Update : Mon Feb 04 09:22:59 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 0.500 mL  
 Signal Phase : CARBOPACK  
 Signal Info :

Compound	R.T.	Response	Conc	Units
----------	------	----------	------	-------

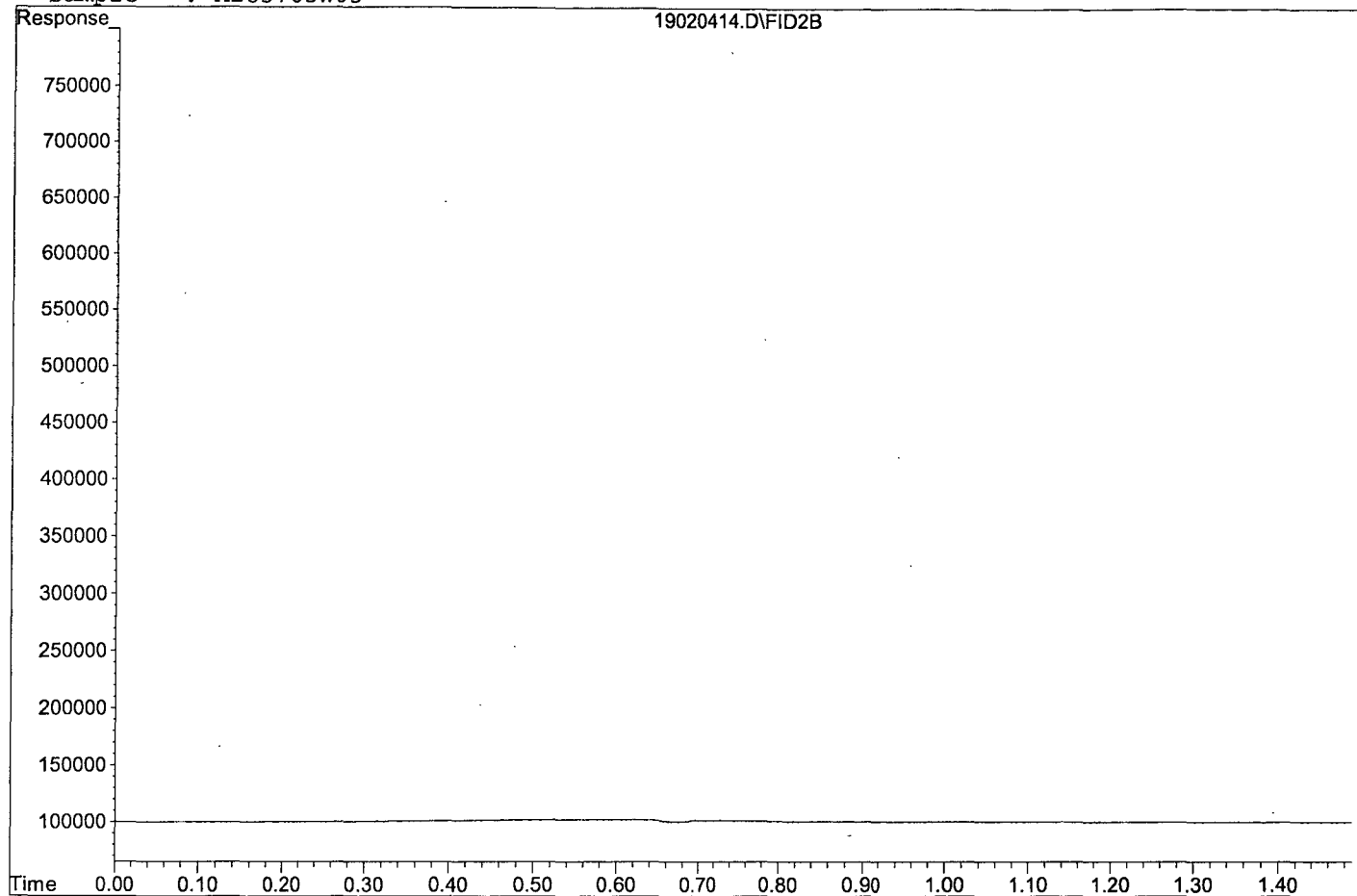
Target Compounds

Target Compounds	R.T.	Response	Conc	Units
1) ATM Methane	0.00	0	N.D.	ppb d
2) ATM Ethane	0.00	0	N.D.	ppb d
3) ATM Ethene	0.00	0	N.D.	ppb d

Quantitation Report

Data File: G:\ROCKY\DATA\190120RS\19020414.D

Sample : AZ85765W03



Data File : G:\ROCKY\DATA\190120RS\19020415.D Vial: 16  
 Acq On : 4 Feb 19 9:57 Operator: cmm  
 Sample : AZ85766W03 Inst : 7890  
 Misc : Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Feb 4 10:00 2019 Quant Results File: RSK0120.RES

Method : G:\ROCKY\DATA\190120RS\RSK0120.M (Chemstation Integrator)  
 Title : RSK 175  
 Last Update : Mon Feb 04 09:22:59 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 0.500 mL  
 Signal Phase : CARBOPACK  
 Signal Info :

Compound	R.T.	Response	Conc	Units
----------	------	----------	------	-------

Target Compounds

Target Compounds

1) ATM Methane	0.00	0	N.D.	ppb d
2) ATM Ethane	0.00	0	N.D.	ppb d
3) ATM Ethene	0.00	0	N.D.	ppb d

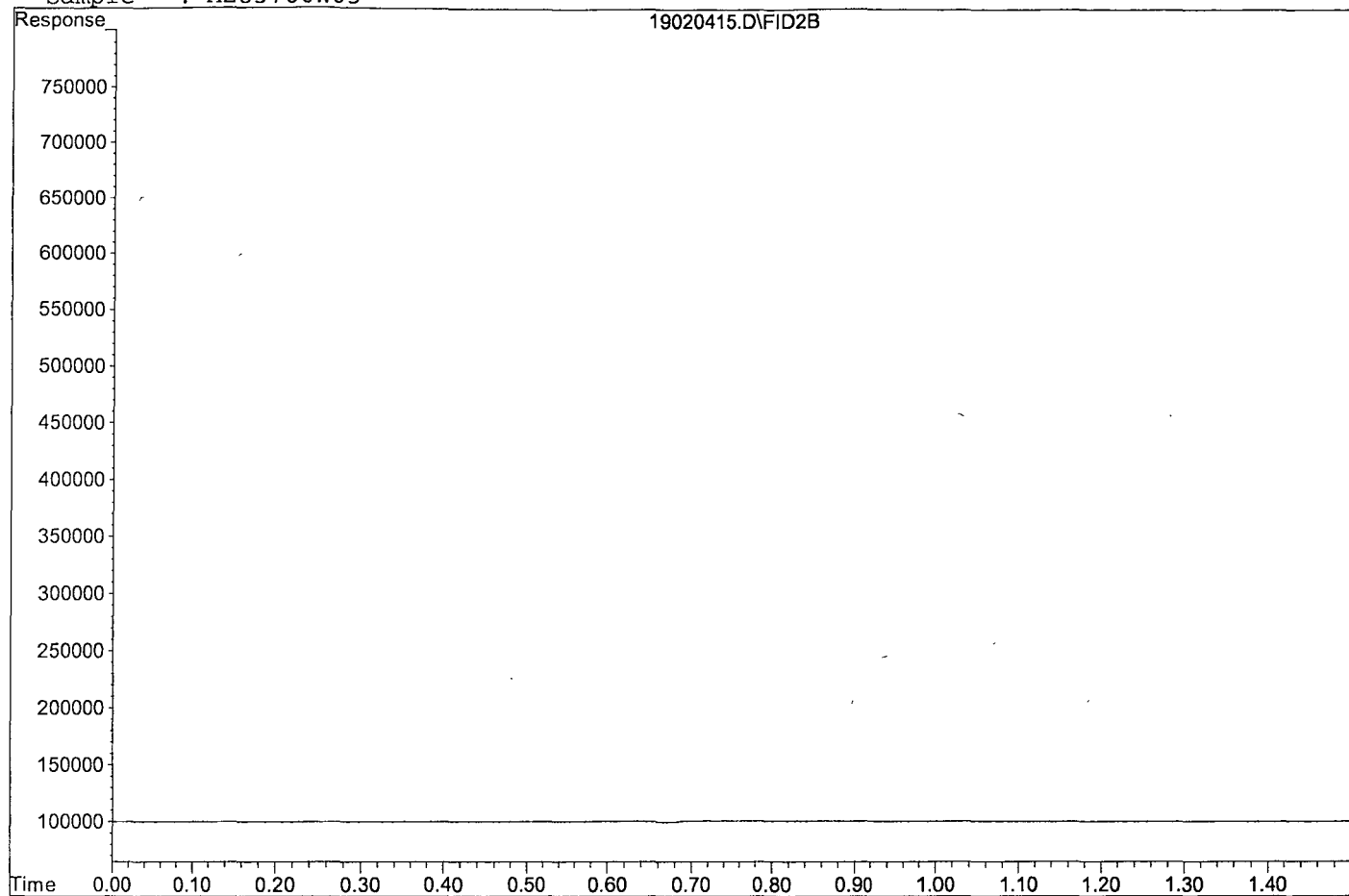


Quantitation Report

Data File: G:\ROCKY\DATA\190120RS\19020415.D

Sample : AZ85766W03

19020415.D\FID2B



Data File : G:\ROCKY\DATA\190120RS\19020403.D Vial: 4  
 Acq On : 4 Feb 19 9:24 Operator: cmm  
 Sample : 190204A Blk Inst : 7890  
 Misc : Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Feb 4 9:28 2019 Quant Results File: RSK0120.RES

Method : G:\ROCKY\DATA\190120RS\RSK0120.M (Chemstation Integrator)  
 Title : RSK 175  
 Last Update : Mon Feb 04 09:22:59 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 0.500 mL  
 Signal Phase : CARBOPACK  
 Signal Info :

Compound	R.T.	Response	Conc	Units
----------	------	----------	------	-------

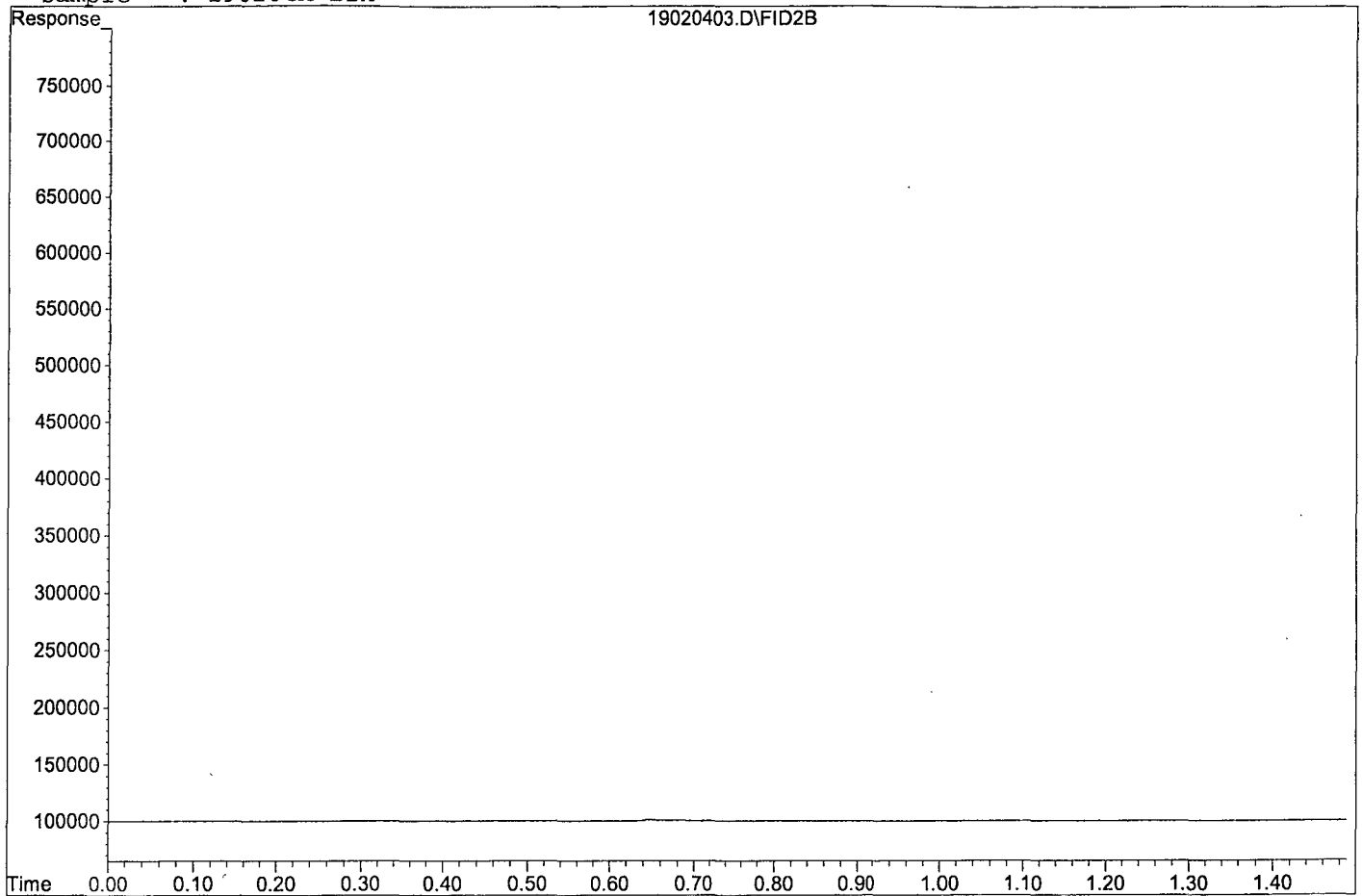
Target Compounds

Target Compounds	R.T.	Response	Conc	Units
1) ATM Methane	0.00	0	N.D.	ppb d
2) ATM Ethane	0.00	0	N.D.	ppb d
3) ATM Ethene	0.00	0	N.D.	ppb d

Quantitation Report

Data File: G:\ROCKY\DATA\190120RS\19020403.D

Sample : 190204A Blk



Data File : G:\ROCKY\DATA\190120RS\19020400.D Vial: 1  
 Acq On : 4 Feb 19 9:14 Operator: cmm  
 Sample : 190204A LCS/CCV RSK Std 5 Inst : 7890  
 Misc : Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Feb 4 9:17 2019 Quant Results File: RSK0120.RES

Method : G:\ROCKY\DATA\190120RS\RSK0120.M (Chemstation Integrator)  
 Title : RSK 175  
 Last Update : Mon Feb 04 09:17:31 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 0.500 mL  
 Signal Phase : CARBOPACK  
 Signal Info :

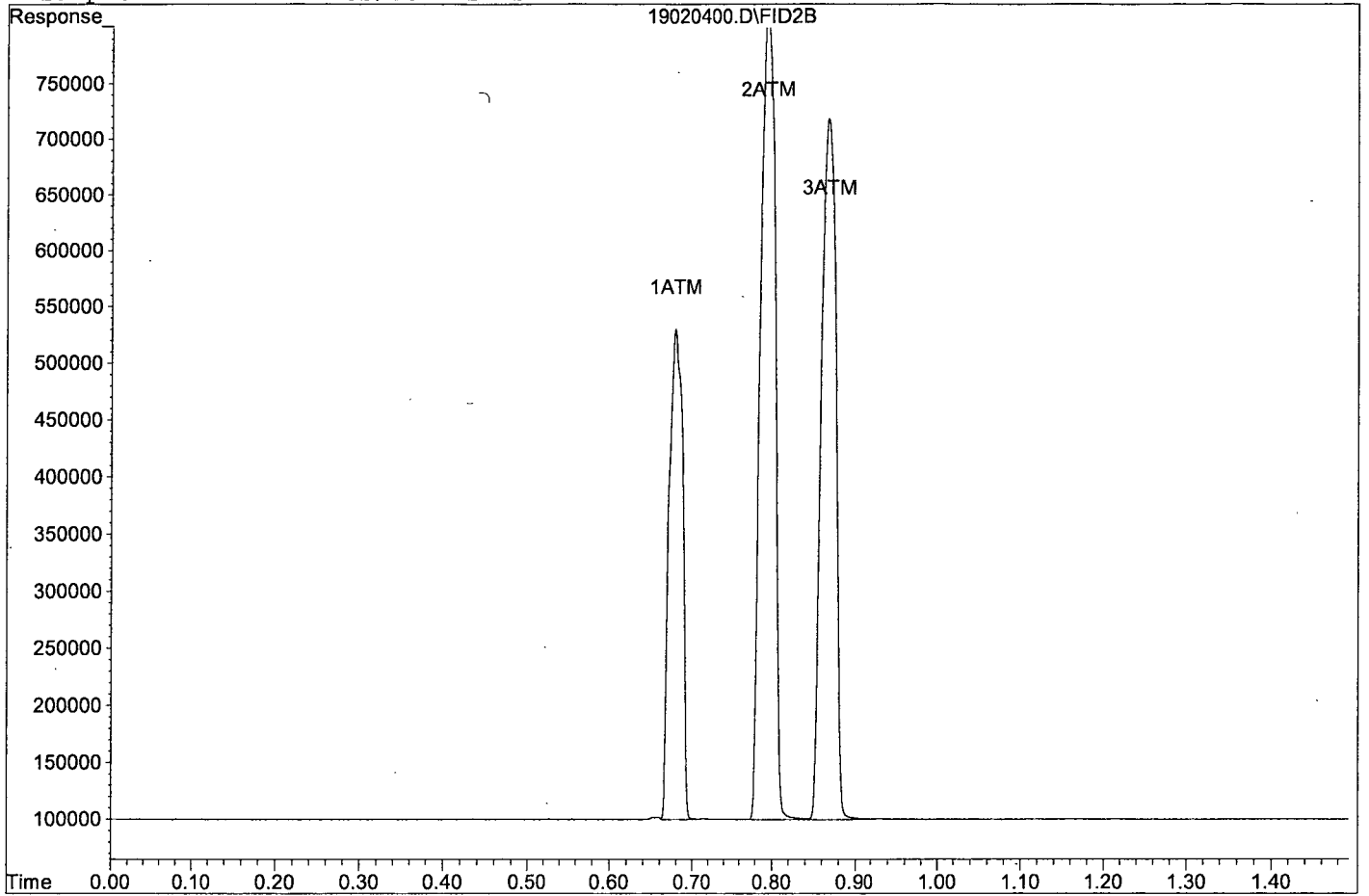
Compound	R.T.	Response	Conc Units
-----			
Target Compounds			
1) ATM Methane	0.68	430435	80.660 ppb
2) ATM Ethane	0.79	716167	163.032 ppb
3) ATM Ethene	0.87	618530	152.766 ppb

Target Compounds

Quantitation Report

Data File: G:\ROCKY\DATA\190120RS\19020400.D

Sample : 190204A LCS/CCV RSK Std 5



Data File : G:\ROCKY\DATA\190120RS\19020402.D Vial: 3  
 Acq On : 4 Feb 19 9:20 Operator: cmm  
 Sample : 190204A LCSD RSK Std 5 Inst : 7890  
 Misc : Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Feb 4 9:23 2019 Quant Results File: RSK0120.RES

Method : G:\ROCKY\DATA\190120RS\RSK0120.M (Chemstation Integrator)  
 Title : RSK 175  
 Last Update : Mon Feb 04 09:22:59 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 0.500 mL  
 Signal Phase : CARBOPACK  
 Signal Info :

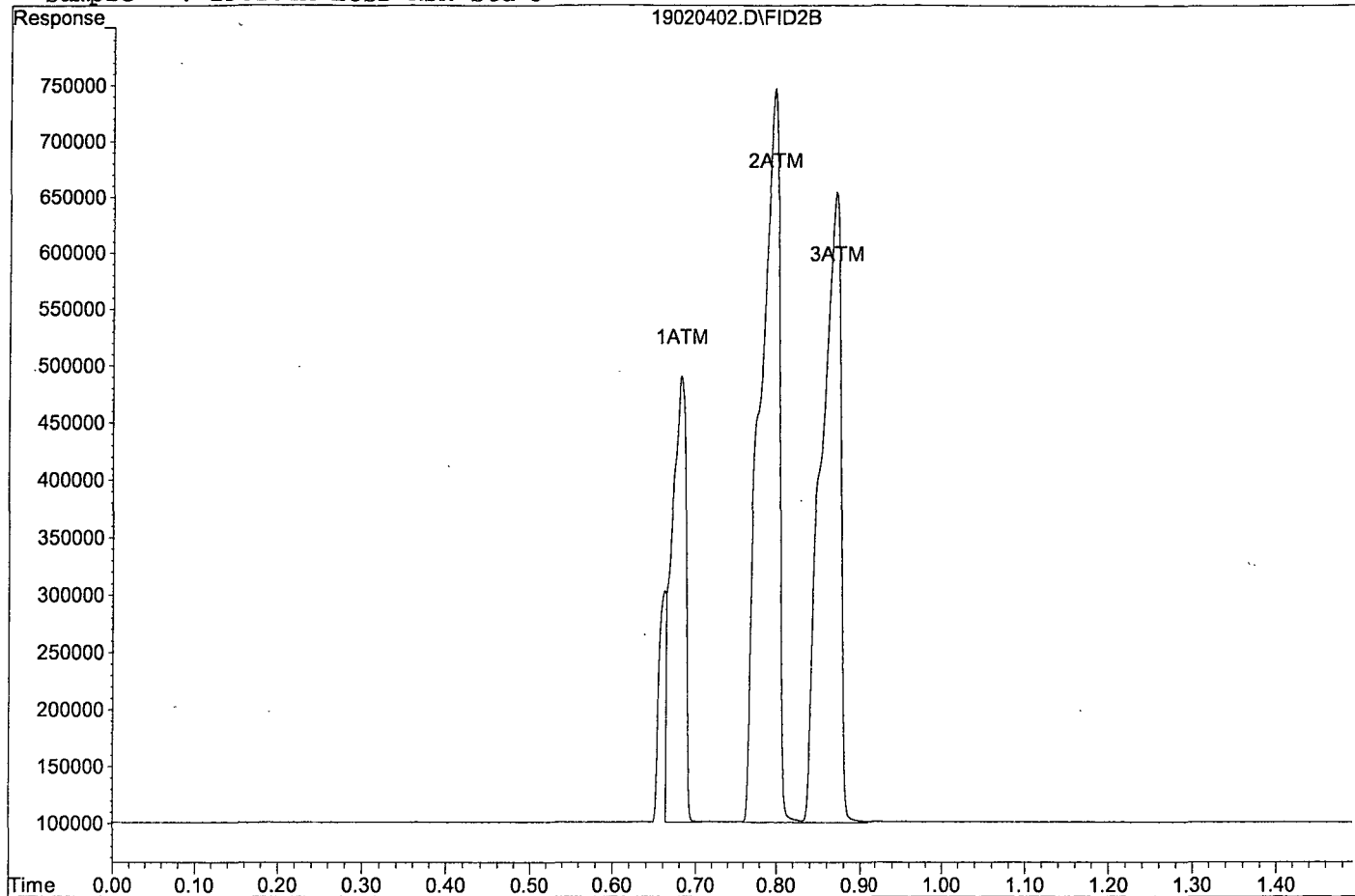
Compound	R.T.	Response	Conc Units
-----			
Target Compounds			
1) ATM Methane	0.68	390072	71.368 ppb
2) ATM Ethane	0.80	645861	143.613 ppb
3) ATM Ethene	0.87	553695	133.249 ppb

Target Compounds

Quantitation Report

Data File: G:\ROCKY\DATA\190120RS\19020402.D

Sample : 190204A LCSD RSK Std 5



**Primary Source Stock Standard 10,000ppmV**

Manufacturer Exp Date 09-21-2021

RSK Gas Mix (Scott Mini-Mix) Cat.# X04NI97CP140001, Lot # 16-401303031-1

1% Gas Concentration Moles = 10,000ppmV Methane, Ethane, Ethene

**RSK Calibration Curve (prepared in 1.0 L Tedlar Bags at room temp)****Expires 01/21/19****CMM 01/20/19**

Analyte	Conc Std 1 (1/2 = LOD) (ug/L)	Conc Std 2 (LOQ Chk) (ug/L)	Conc Std 3 (ug/L)	Conc Std 4 (ug/L)	Conc Std 5 (ug/L)	Conc Std 6 (ug/L)	Conc Std 7 (ug/L)
Methane (MW 16.04)	2.08	4.16	8.34	20.85	83.40	208.5	834.0
Ethane (MW 30.07)	3.91	7.81	15.6	39.09	156.35	390.9	1563.5
Ethene (MW 28.05)	3.65	7.30	14.6	36.46	145.84	364.6	1458.4
Stock Source	RSK Tank Lot #170PLU5SPC0 6L-35410	RSK Tank Lot #170PLU5SPC0 6L-35410	RSK Tank Lot #170PLU5SPC0 6L-35410	RSK Tank Lot #170PLU5SPC0 6L-35410	RSK Tank Lot #170PLU5SPC 06L-35410	RSK Tank Lot #170PLU5SPC0 6L-35410	RSK Tank Lot #170PLU5SPC0 6L-35410
Stock Conc (ppmv)	10,000 ppmV	10,000 ppmV	10,000 ppmV	10,000 ppmV	10,000 ppmV	10,000 ppmV	10,000 ppmV
Stock Aliquot (mL)	0.010	0.020	0.040	0.100	0.400	1.00	4.00
Final Volume P&T Water	32 mL	32 mL	32 mL	32 mL	32 mL	32 mL	32 mL

**Second Source Stock Standard 10,000ppmV**

Manufacturer Exp date 09/21/2021

RSK Gas Mix (Scott Mini-Mix) Cat.# 23452, Lot #160-401303032-1

1% Gas Concentration Moles = 10,000ppmV Methane, Ethane, Ethene

**Second Source****Expires 01/21/19****CMM 01/20/19**Spike 0.400mL of 10,000ppmV into 32mL DI water, with 8mL Nitrogen headspace  
final conc: 83.40ug/L Methane, 156.35ug/L Ethane, and 145.84ug/L Ethene**CCV/LCS/LCSD****CMM 02/04/19**Spike 0.400mL of 10,000ppmV into 32mL DI water, with 8mL Nitrogen headspace  
final conc: 83.40ug/L Methane, 156.35ug/L Ethane, and 145.84ug/L Ethene



## Injection Log

Directory: G:\ROCKYDATA\190120RS\

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1	1	19012000.D	1	RSK Std 1 01/20/19	125uL from RSK Std 3	20 Jan 19 11:58
2	2	19012001.D	1	RSK Std 2 01/20/19	250uL from RSK Std 3	20 Jan 19 12:02
3	3	19012002.D	1	RSK Std 3 01/20/19		20 Jan 19 12:04
4	4	19012003.D	1	RSK Std 4 01/20/19		20 Jan 19 12:07
5	6	19012005.D	1	RSK Std 5 01/20/19		20 Jan 19 12:12
6	8	19012007.D	1	RSK Std 6 01/20/19		20 Jan 19 12:17
7	9	19012008.D	1	RSK Std 7 01/20/19		20 Jan 19 12:20
8	11	19012010.D	1	SS RSK Std 5 01/20/19		20 Jan 19 12:39
9	1	19020400.D	1	190204A LCS/CCV RSK Std 5		4 Feb 19 9:14
10	3	19020402.D	1	190204A LCSD RSK Std 5		4 Feb 19 9:20
11	4	19020403.D	1	190204A Blk		4 Feb 19 9:24
12	15	19020414.D	1	AZ85765W03		4 Feb 19 9:54
13	16	19020415.D	1	AZ85766W03		4 Feb 19 9:57
14	17	19020416.D	1	Ending CCV RSK Std 5 02/04/19		4 Feb 19 9:59

**INORGANIC ANALYSIS  
Calibration Data**

**APPL, INC.**

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: A.P.P.L. INC. Contract: AECOM

ARF No: 87986 SDG: 87986

Initial Calibration Source: CPI

Continuing Calibration Source: Environmental Express

Analysis Date: 06/15/18

Analyte	Calibration Verification									M
	True ICV	Found 12:31	%R(1)	True CCV1	Found 8:10	%R(1)	True CCV1	Found 8:34	%R(1)	
Ferrous Iron	3	3.15693	105	4	3.91681	97.9	4	3.99680	99.9	

## INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: A.P.P.L. INC. Contract: AECOMARF No: 87986 SDG: 87986Initial Calibration Source: CPIContinuing Calibration Source: Environmental ExpressAnalysis Date: 01/30/19

Analyte	Calibration Verification									M
	True CCV1	Found 10:16	%R(1)	True CCV1	Found 10:18	%R(1)	True	Found	%R(1)	
Ferrous Iron	4	3.93681	98.4	4	3.98680	99.7				

A.P.P.L. INC.

3

BLANKS

Lab Name: A.P.P.L. INC.

Contract: AECOM

ARF No.: 87986

SDG: 87986

Preparation Blank Matrix (soil/water): water

Preparation Blank Concentration Units (ug/L or mg/kg): mg/L

Analyte	Calibration Blanks										M
	ICB	C	CCB	C	CCB	C	CCB	C	CCB	C	
	06/15/18 12:32		01/30/19 08:11		01/30/19 08:35		01/30/19 10:17		01/30/19 10:19		
Ferrous Iron	1.000	U	1.000	U	1.000	U	1.000	U	1.0000	U	

A.P.P.L. INC.

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: A.P.P.L. INC. Contract: \_\_\_\_\_

ARF No: \_\_\_\_\_ SDG: \_\_\_\_\_

Initial Calibration Source: CPI

Continuing Calibration Source: Environmental Express

Analysis Date: 01/24/19

Analyte	Calibration Verification									M
	True ICV	Found 13:12	%R(1)	True ICV	Found 13:20	%R(1)	True	Found	%R(1)	
bromide	12.5	12.8349	103	12.5	12.8652	103				
chloride	25	24.9773	99.9	25	25.0366	100				
fluoride	5	5.0197	100	5	4.9943	99.9				
Nitrate(NO3)	22.1	21.9822	99.5	22.1	22.0247	99.7				
Nitrate(NO3)-N	5	4.9637	99.3	5	4.9733	99.5				
Nitrite(NO2)	9.98	10.2443	103	9.98	10.2551	103				
Nitrite(NO2)-N	3.04	3.1189	103	3.04	3.1222	103				
phosphate	30.7	28.2065	91.9	30.7	28.7373	93.6				
phosphate-p	10	9.2043	92.0	10	9.3775	93.8				
sulfate	25	24.8282	99.3	25	24.8792	99.5				

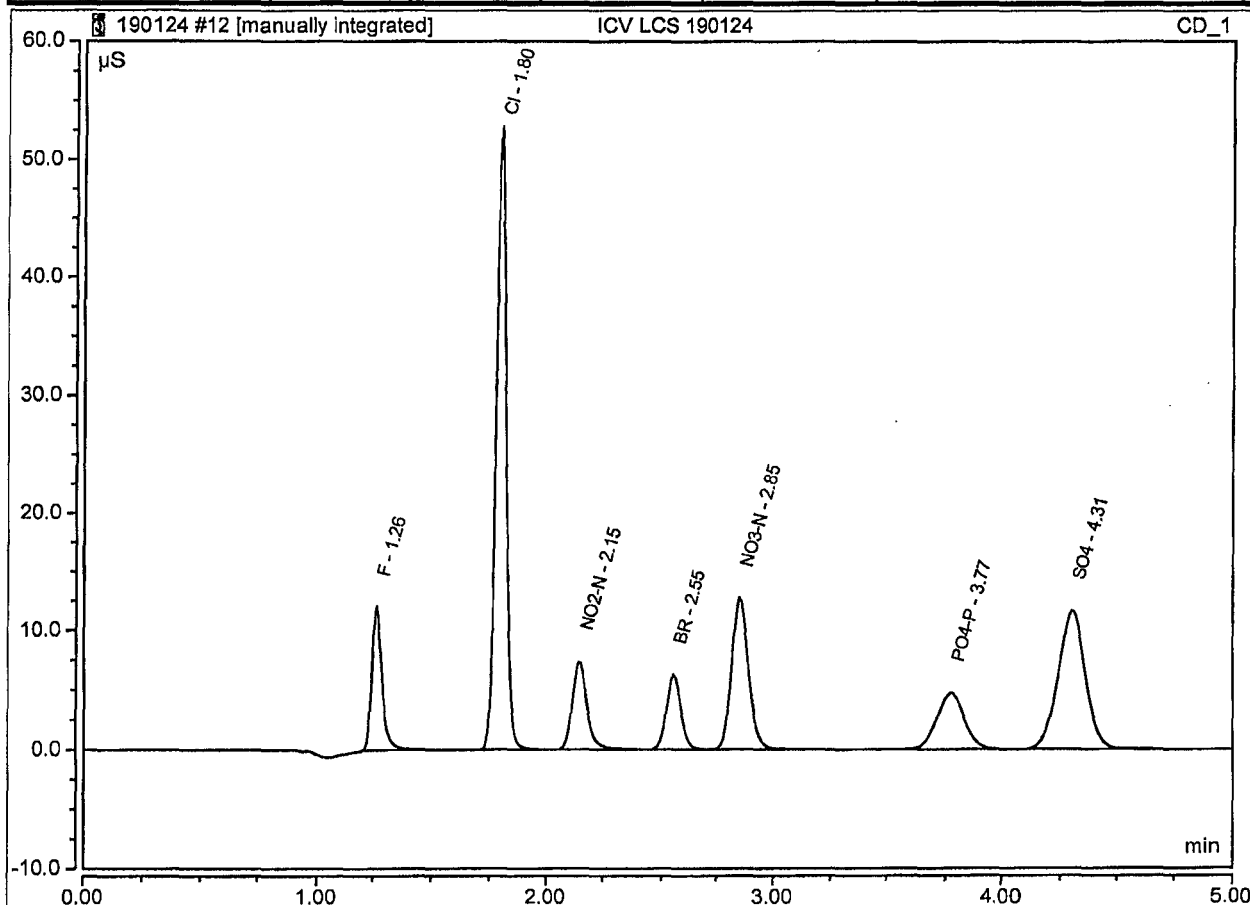
(1) Control Limits: 90-110

ILM02.0

### Peak Integration Report

Sample Name:	ICV LCS 190124	Inj. Vol.:	25.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 13:12	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.26	F	BMB*	0.626	12.036	5.0197
2	1.80	Cl	BMB	2.660	52.786	24.9773
3	2.15	NO2-N	BMB	0.552	7.368	3.1189
4	2.55	BR	BMB	0.467	6.249	12.8349
5	2.85	NO3-N	BMB	1.088	12.728	4.9637
6	3.77	PO4-P	BMB	0.642	4.687	9.2043
7	4.31	SO4	BMB	1.650	11.613	24.8282



F mi1 HH 190128 MM

Algorithm Check:

y = Peak Area

x = mg/L S04

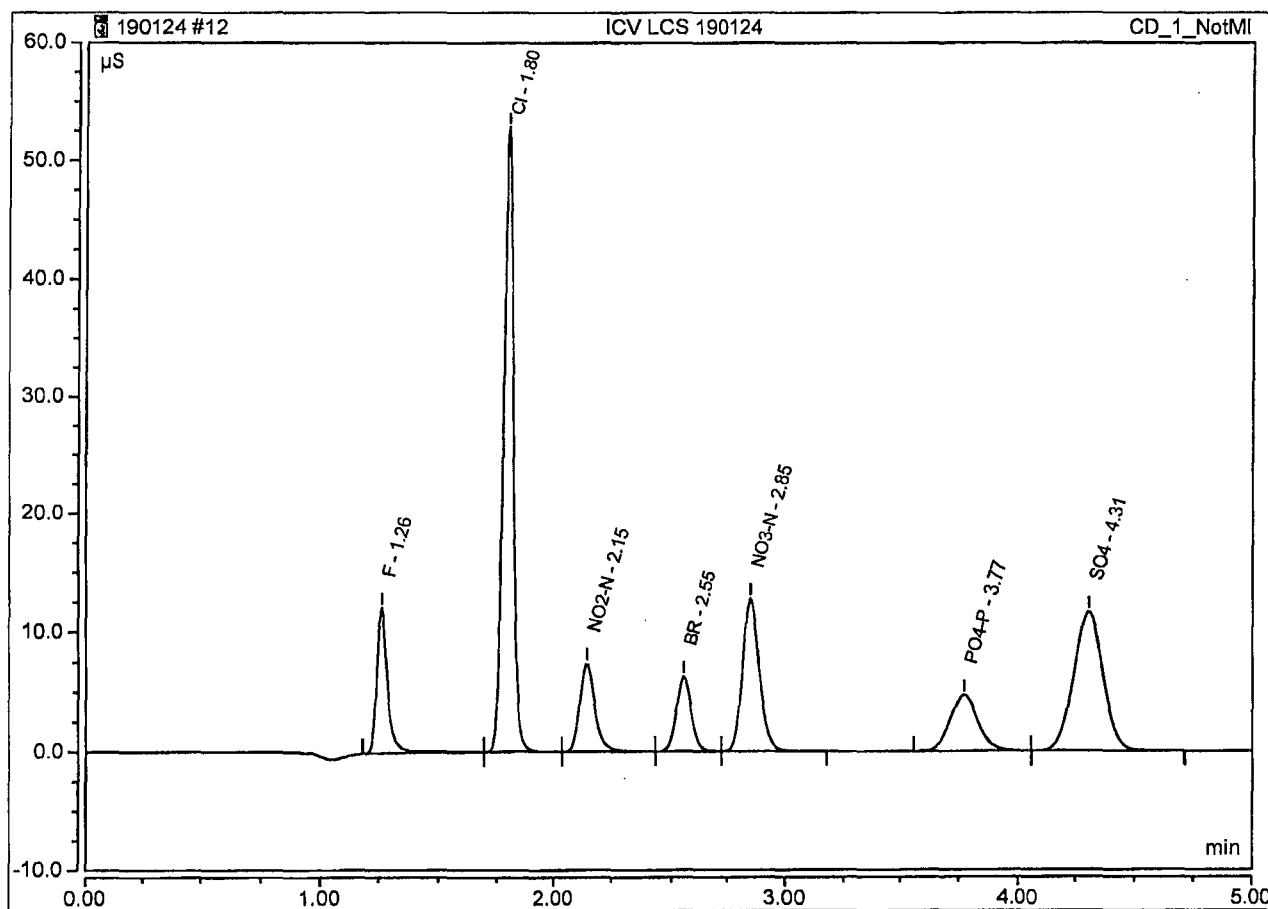
$$y = 0.0664 \quad x + \quad 0.0000$$

$$y = 1.6497 \quad \text{therefor } x = 24.85 \text{ HH 190129}$$

### Not Manipulated Peak Integration Report

Sample Name:	ICV LCS 190124	Inj. Vol.:	25.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 13:12	Run Time:	5.00

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height $\mu\text{S}$	Area $\mu\text{S}\cdot\text{min}$
1	1.26	F	BMB*	0.653	12.130	4.9830
2	1.80	Cl	BMB	2.660	52.786	24.9773
3	2.15	NO <sub>2</sub> -N	BMB	0.552	7.368	3.1189
4	2.55	BR	BMB	0.467	6.249	12.8349
5	2.85	NO <sub>3</sub> -N	BMB	1.088	12.728	4.9637
6	3.77	PO <sub>4</sub> -P	BMB	0.642	4.687	9.2043
7	4.31	SO <sub>4</sub>	BMB	1.650	11.613	24.8282

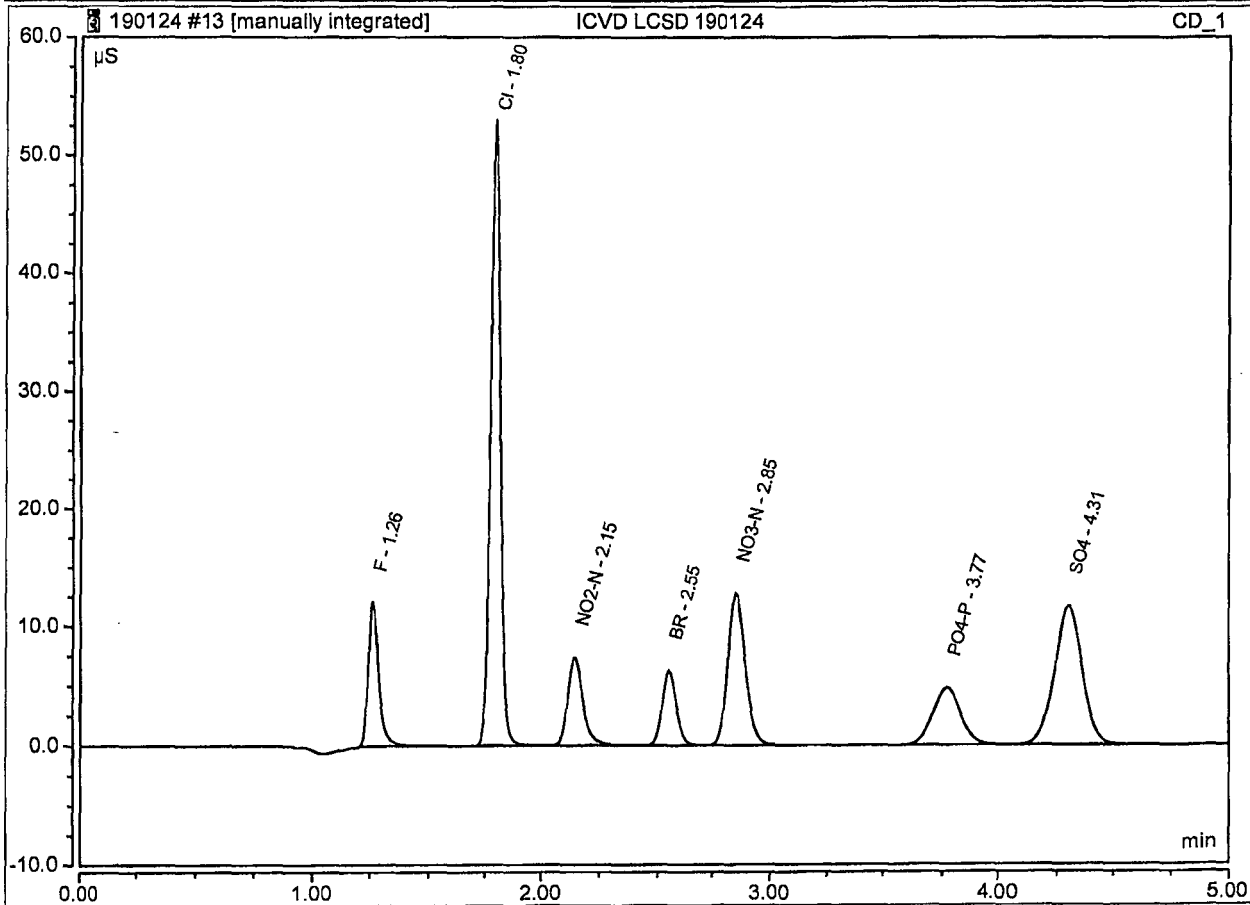




**Peak Integration Report**

Sample Name:	ICVD LCSD 190124	Inj. Vol.:	25.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 13:20	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.26	F	BMB*	0.623	12.051	4.9943
2	1.80	Cl	BMB	2.666	52.924	25.0366
3	2.15	NO2-N	BMB	0.552	7.375	3.1222
4	2.55	BR	BMB	0.468	6.262	12.8652
5	2.85	NO3-N	BMB	1.090	12.755	4.9733
6	3.77	PO4-P	BMB	0.654	4.778	9.3775
7	4.31	SO4	BMB	1.653	11.628	24.8792

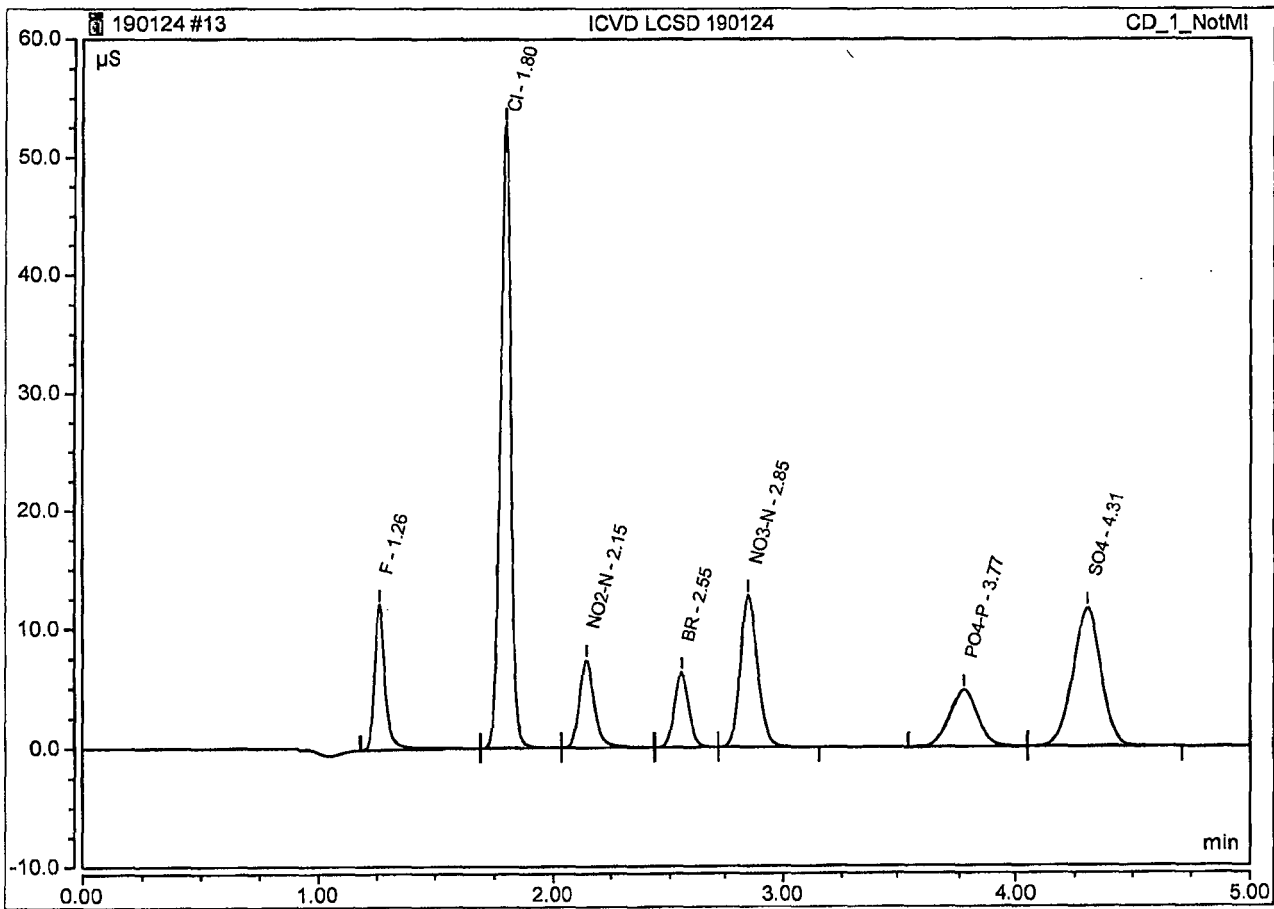


F mi1 HH 190128 MM

### Not Manipulated Peak Integration Report

Sample Name:	ICVD LCSD 190124	Inj. Vol.:	25.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 13:20	Run Time:	5.00

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height $\mu\text{S}$	Area $\mu\text{S}\cdot\text{min}$
1	1.26	F	BMB*	0.653	12.160	4.9894
2	1.80	Cl	BMB	2.666	52.924	25.0366
3	2.15	NO2-N	BMB	0.552	7.375	3.1222
4	2.55	BR	BMB	0.468	6.262	12.8652
5	2.85	NO3-N	BMB	1.090	12.755	4.9733
6	3.77	PO4-P	BMB	0.654	4.778	9.3775
7	4.31	SO4	BMB	1.653	11.628	24.8792



A.P.P.L. INC.

3

BLANKS

Lab Name: A.P.P.L. INC.

Contract: \_\_\_\_\_

ARF No.: \_\_\_\_\_

SDG: \_\_\_\_\_

Preparation Blank Matrix (soil/water): water

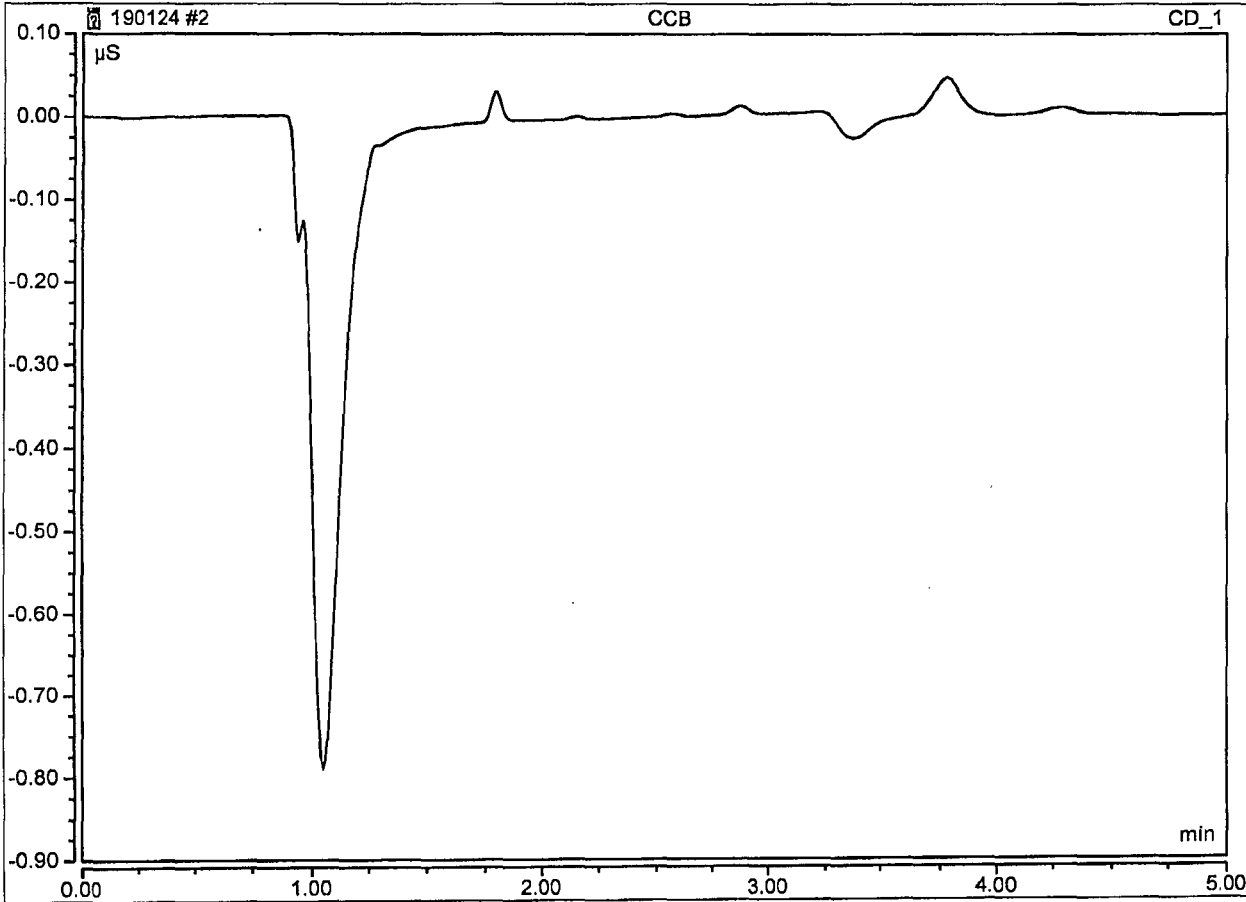
Preparation Blank Concentration Units (ug/L or mg/kg): mg/L

Analyte	Calibration Blanks										M
	CCB 01/24/19 11:58	C	CCB 01/24/19 13:05	C		C		C		C	
bromide	.500	U	.500	U							
chloride	1.000	U	1.000	U							
fluoride	.100	U	.100	U							
Nitrate(NO3)	.500	U	.500	U							
Nitrate(NO3)-N	.200	U	.200	U							
Nitrite(NO2)	.300	U	.300	U							
Nitrite(NO2)-N	.100	U	.100	U							
phosphate	.600	U	.316	J							
phosphate-p	.200	U	.103	J							
sulfate	1.000	U	1.000	U							

### Peak Integration Report

Sample Name:	CCB	Inj. Vol.:	25.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Anlon APM 190109	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 11:58	Run Time:	5.00

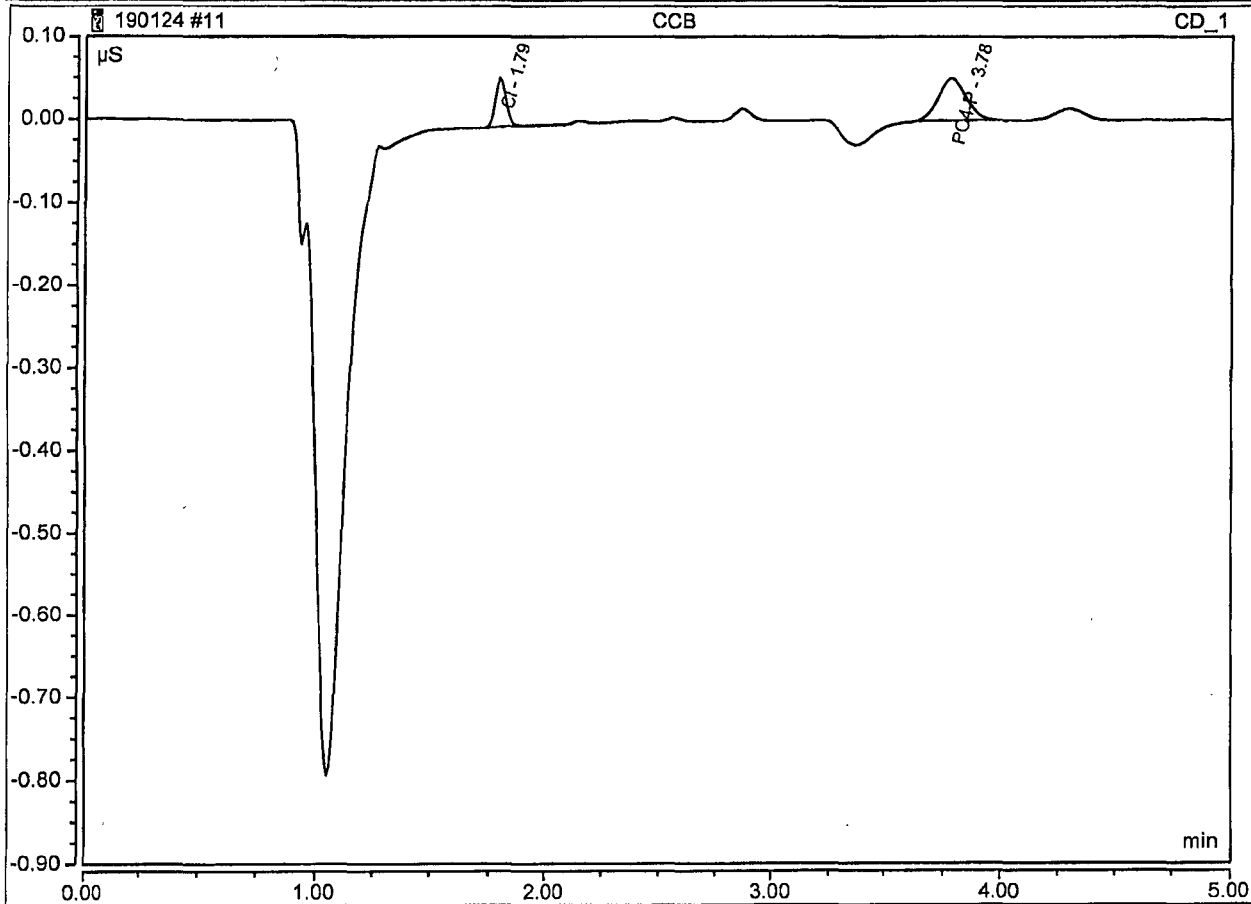
No.	Time (min)	Peak Name	Peak Type	Area ( $\mu\text{S}\cdot\text{min}$ )	Height ( $\mu\text{S}$ )	Amount (mg/L)
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### Peak Integration Report

Sample Name:	CCB	Inj. Vol.:	25.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 13:05	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.79	Cl	BMB	0.003	0.059	0.0294
2	3.78	PO4-P	BMB	0.007	0.051	0.1030



INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: A.P.P.L. INC. Contract: AECOM

ARF No: 87986 SDG: 87986

Initial Calibration Source: CPI

Continuing Calibration Source: Environmental Express

Analysis Date: 01/30/19

Analyte	Calibration Verification									M
	True CCV1	Found 9:03	%R(1)	True CCV1	Found 11:42	%R(1)	True CCV1	Found 13:37	%R(1)	
chloride	25	23.58	94.3	25	23.691	94.8	25	23.7576	95.0	
Nitrate(NO3)	22.1	20.9689	94.9	22.1	21.2298	96.1	22.1	21.2701	96.2	
sulfate	25	23.6184	94.5	25	24.0506	96.2	25	23.9083	95.6	

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: A.P.P.L. INC. Contract: AECOM

ARF No: 87986 SDG: 87986

Initial Calibration Source: CPI

Continuing Calibration Source: Environmental Express

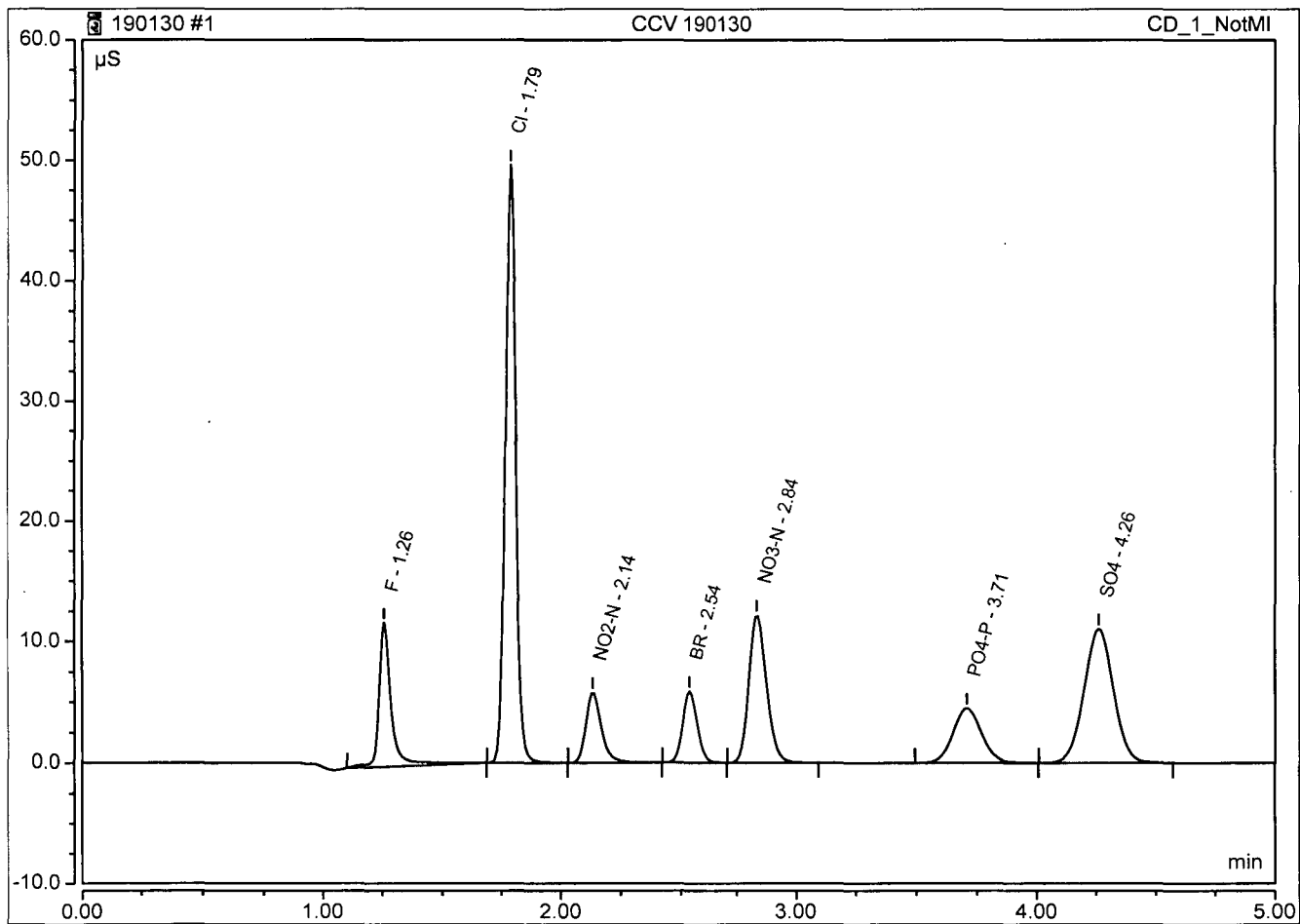
Analysis Date: 01/30/19

Analyte	Calibration Verification									M
	True CCV1	Found 14:59	%R(1)	True	Found	%R(1)	True	Found	%R(1)	
chloride	25	23.7775	95.1							
Nitrate(NO3)	22.1	21.2701	96.2							
sulfate	25	23.9267	95.7							

### Not Manipulated Peak Integration Report

Sample Name:	CCV 190130	Inj. Vol.:	25.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	30-Jan-2019 / 09:03	Run Time:	5.00

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height $\mu\text{S}$	Area $\mu\text{S} \cdot \text{min}$
1	1.26	F	BMB*	0.711	11.855	5.4405
2	1.79	Cl	BMB	2.511	49.593	23.5800
3	2.14	NO <sub>2</sub> -N	BMB	0.434	5.791	2.4553
4	2.54	BR	BMB	0.440	5.893	12.1041
5	2.84	NO <sub>3</sub> -N	BMB	1.038	12.161	4.7349
6	3.71	PO <sub>4</sub> -P	BMB	0.611	4.470	8.7666
7	4.26	SO <sub>4</sub>	BMB	1.569	11.016	23.6184

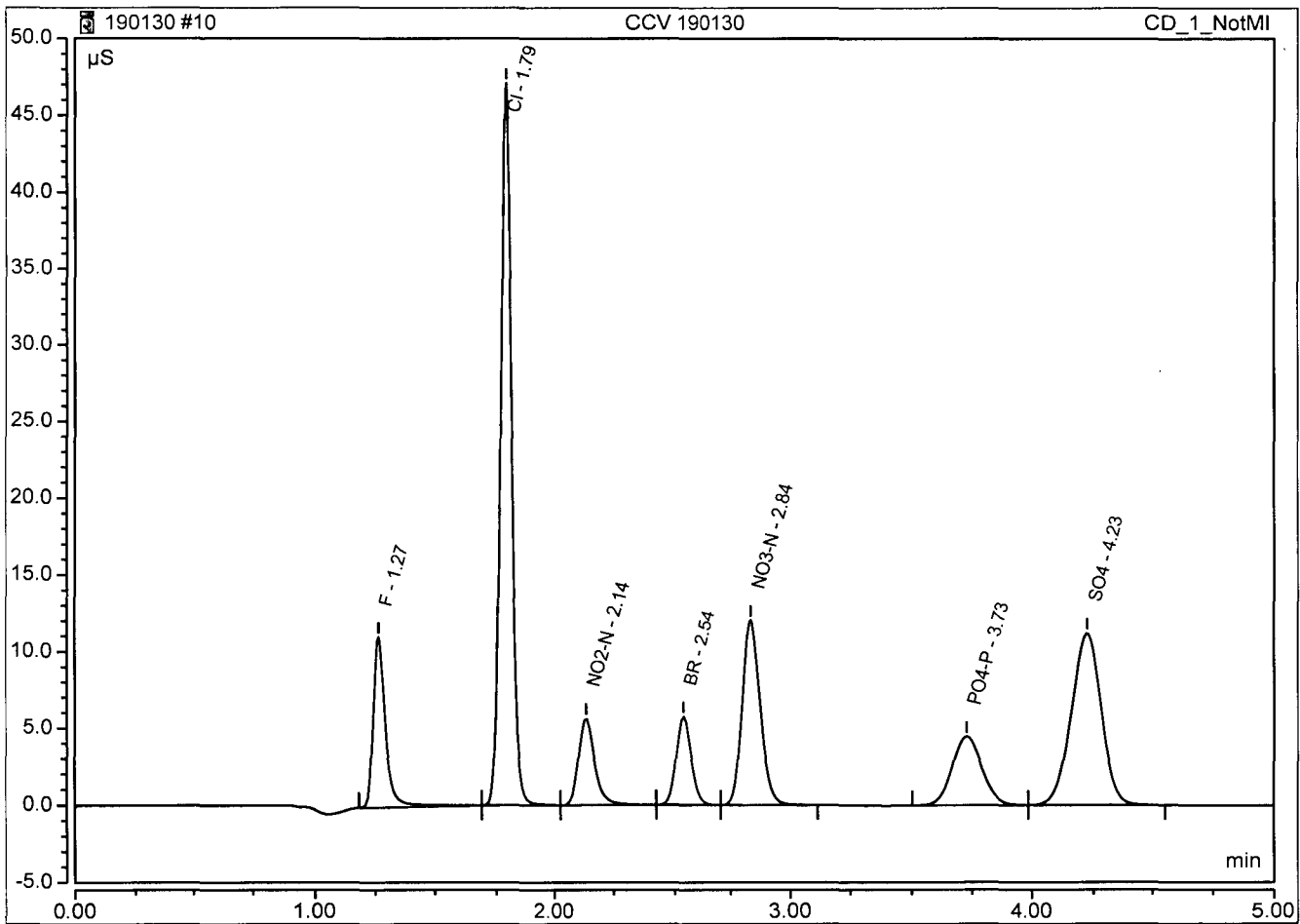




### Not Manipulated Peak Integration Report

Sample Name:	CCV 190130	Inj. Vol.:	25.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	30-Jan-2019 / 11:42	Run Time:	5.00

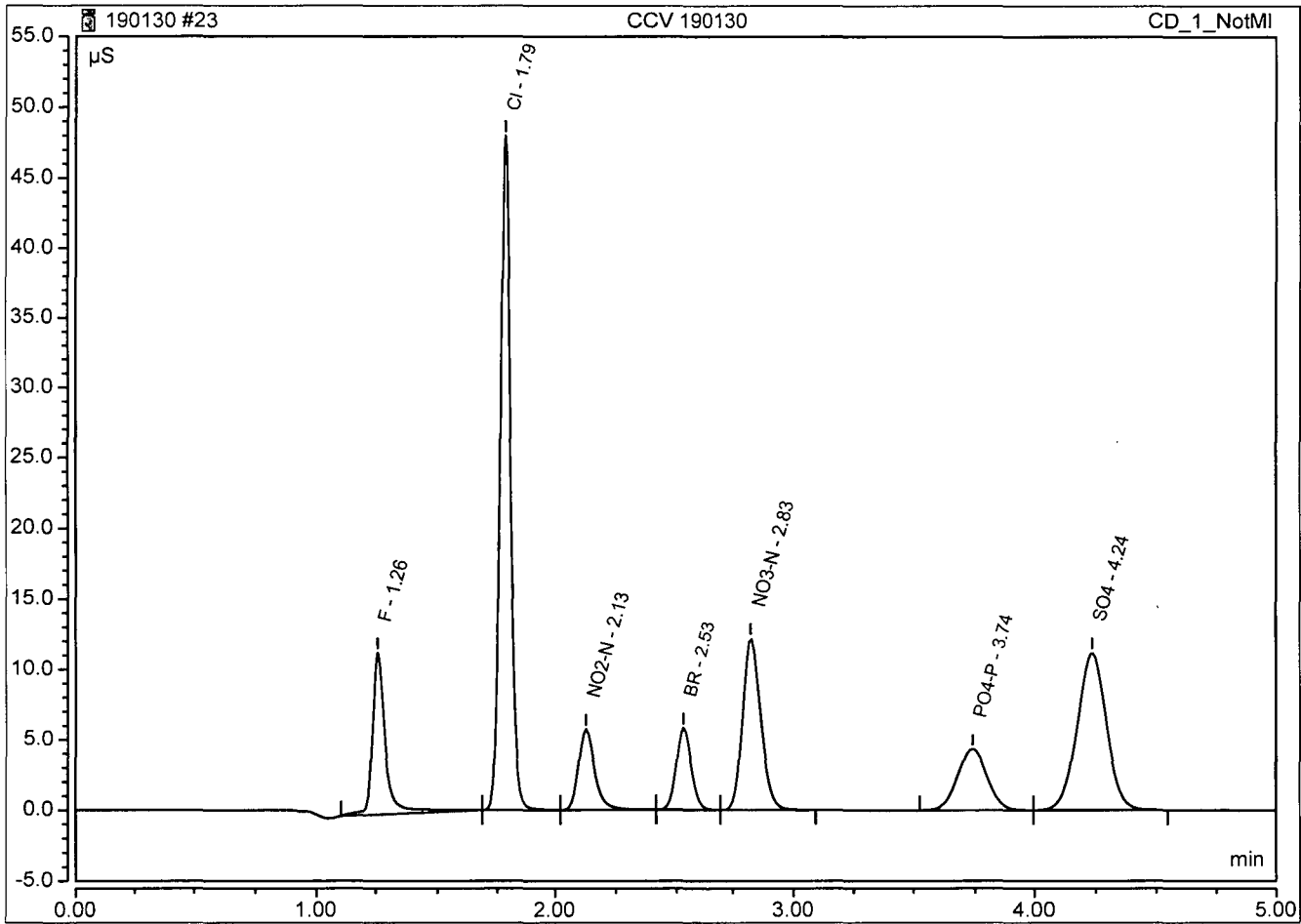
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height $\mu\text{S}$	Area $\mu\text{S}\cdot\text{min}$
1	1.27	F	BMB*	0.658	11.084	5.0222
2	1.79	Cl	BMB	2.523	47.075	23.6910
3	2.14	NO <sub>2</sub> -N	BMB	0.442	5.645	2.4984
4	2.54	BR	BMB	0.445	5.757	12.2290
5	2.84	NO <sub>3</sub> -N	BMB	1.051	12.015	4.7938
6	3.73	PO <sub>4</sub> -P	BMB	0.620	4.461	8.8940
7	4.23	SO <sub>4</sub>	BMB	1.598	11.210	24.0506



### Not Manipulated Peak Integration Report

Sample Name:	CCV 190130	Inj. Vol.:	25.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	30-Jan-2019 / 13:37	Run Time:	5.00

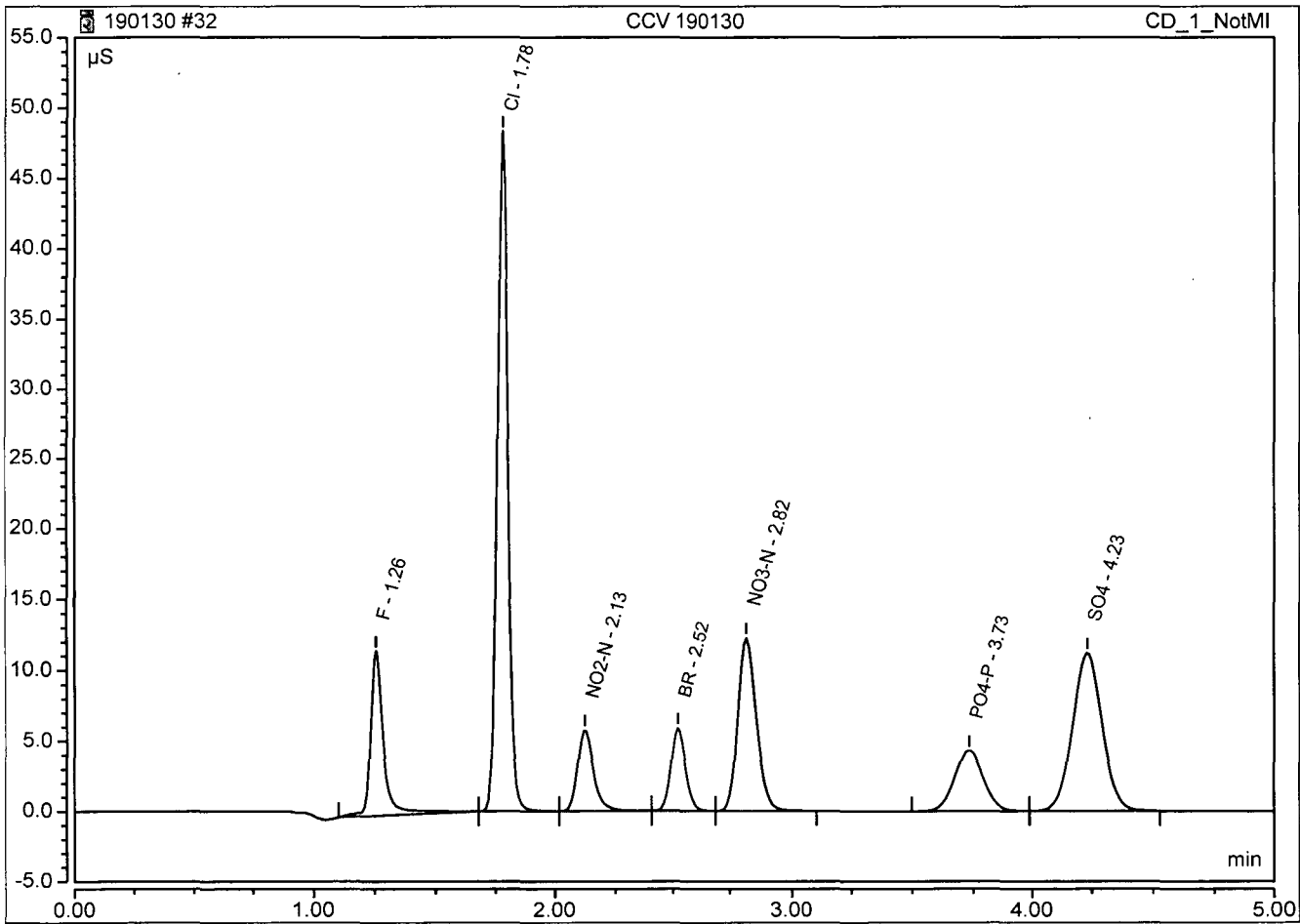
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height $\mu\text{S}$	Area $\mu\text{S} \cdot \text{min}$
1	1.26	F	BMB*	0.722	11.516	5.5324
2	1.79	Cl	BMB	2.530	47.974	23.7576
3	2.13	NO <sub>2</sub> -N	BMB	0.442	5.739	2.4989
4	2.53	BR	BMB	0.445	5.841	12.2426
5	2.83	NO <sub>3</sub> -N	BMB	1.053	12.187	4.8029
6	3.74	PO <sub>4</sub> -P	BMB	0.601	4.342	8.6198
7	4.24	SO <sub>4</sub>	BMB	1.589	11.184	23.9083



### Not Manipulated Peak Integration Report

Sample Name:	CCV 190130	Inj. Vol.:	25.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	30-Jan-2019 / 14:59	Run Time:	5.00

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height $\mu\text{S}$	Area $\mu\text{S}\cdot\text{min}$
1	1.26	F	BMB*	0.724	11.687	5.5484
2	1.78	Cl	BMB	2.532	48.319	23.7775
3	2.13	NO <sub>2</sub> -N	BMB	0.443	5.778	2.5028
4	2.52	BR	BMB	0.446	5.881	12.2522
5	2.82	NO <sub>3</sub> -N	BMB	1.053	12.270	4.8029
6	3.73	PO <sub>4</sub> -P	BMB	0.595	4.308	8.5352
7	4.23	SO <sub>4</sub>	BMB	1.590	11.213	23.9267



A.P.P.L. INC.

3

BLANKS

Lab Name: A.P.P.L. INC.

Contract: AECOM

ARF No.: 87986

SDG: 87986

Preparation Blank Matrix (soil/water): water

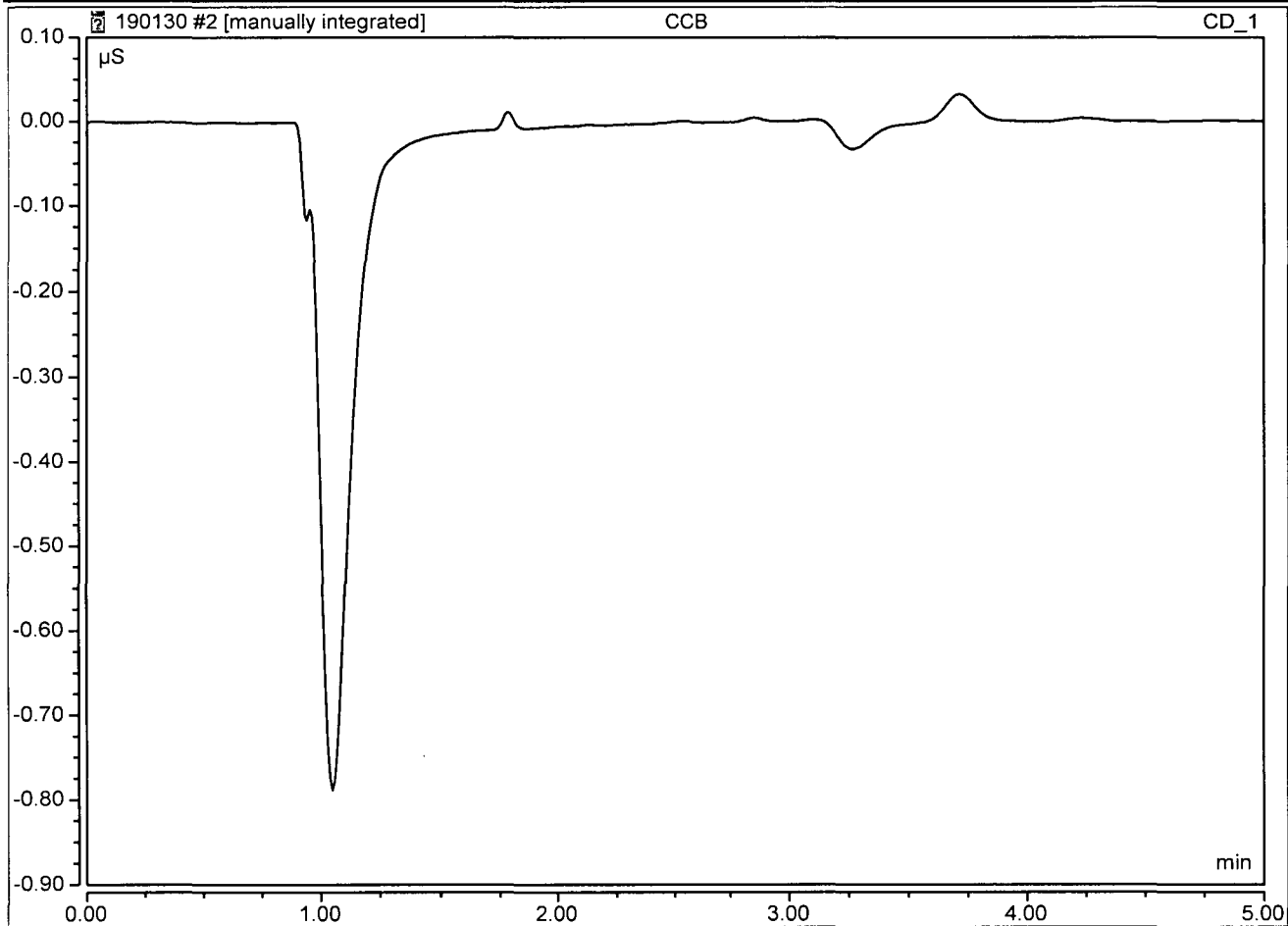
Preparation Blank Concentration Units (ug/L or mg/kg): mg/L

Analyte	Calibration Blanks										M
	CCB 01/30/19 09:10	C	CCB 01/30/19 11:50	C	CCB 01/30/19 13:44	C	CCB 01/30/19 15:06	C		C	
chloride	1.000	U	1.000	U	1.000	U	1.000	U			
Nitrate(NO3)	.500	U	.500	U	.500	U	.500	U			
sulfate	1.000	U	1.000	U	1.000	U	1.000	U			

### Peak Integration Report

Sample Name:	CCB	Inj. Vol.:	25.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	30-Jan-2019 / 09:10	Run Time:	5.00

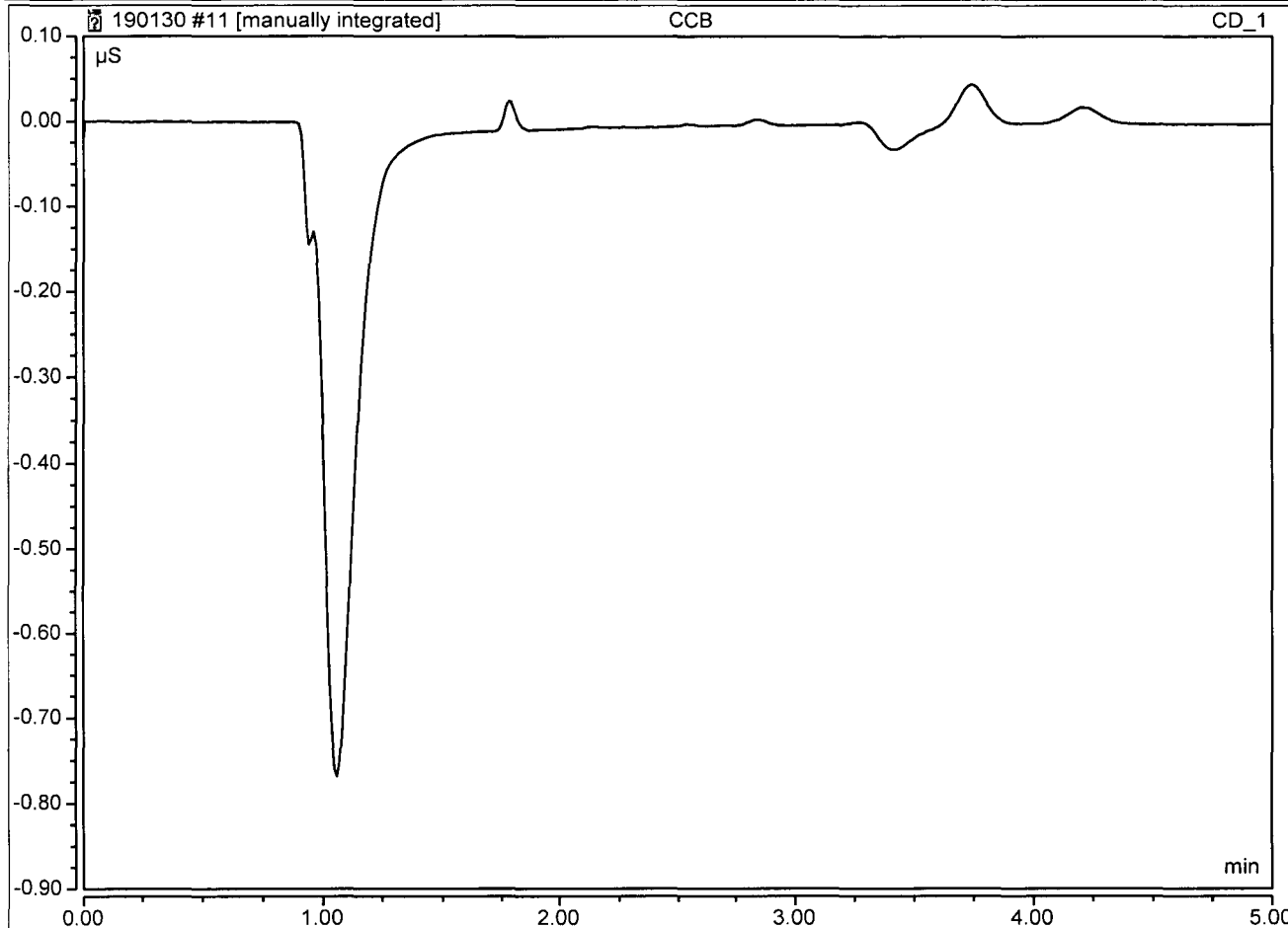
No.	Time (min)	Peak Name	Peak Type	Area ( $\mu\text{S}\cdot\text{min}$ )	Height ( $\mu\text{S}$ )	Amount (mg/L)
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### Peak Integration Report

Sample Name:	CCB	Inj. Vol.:	25.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	30-Jan-2019 / 11:50	Run Time:	5.00

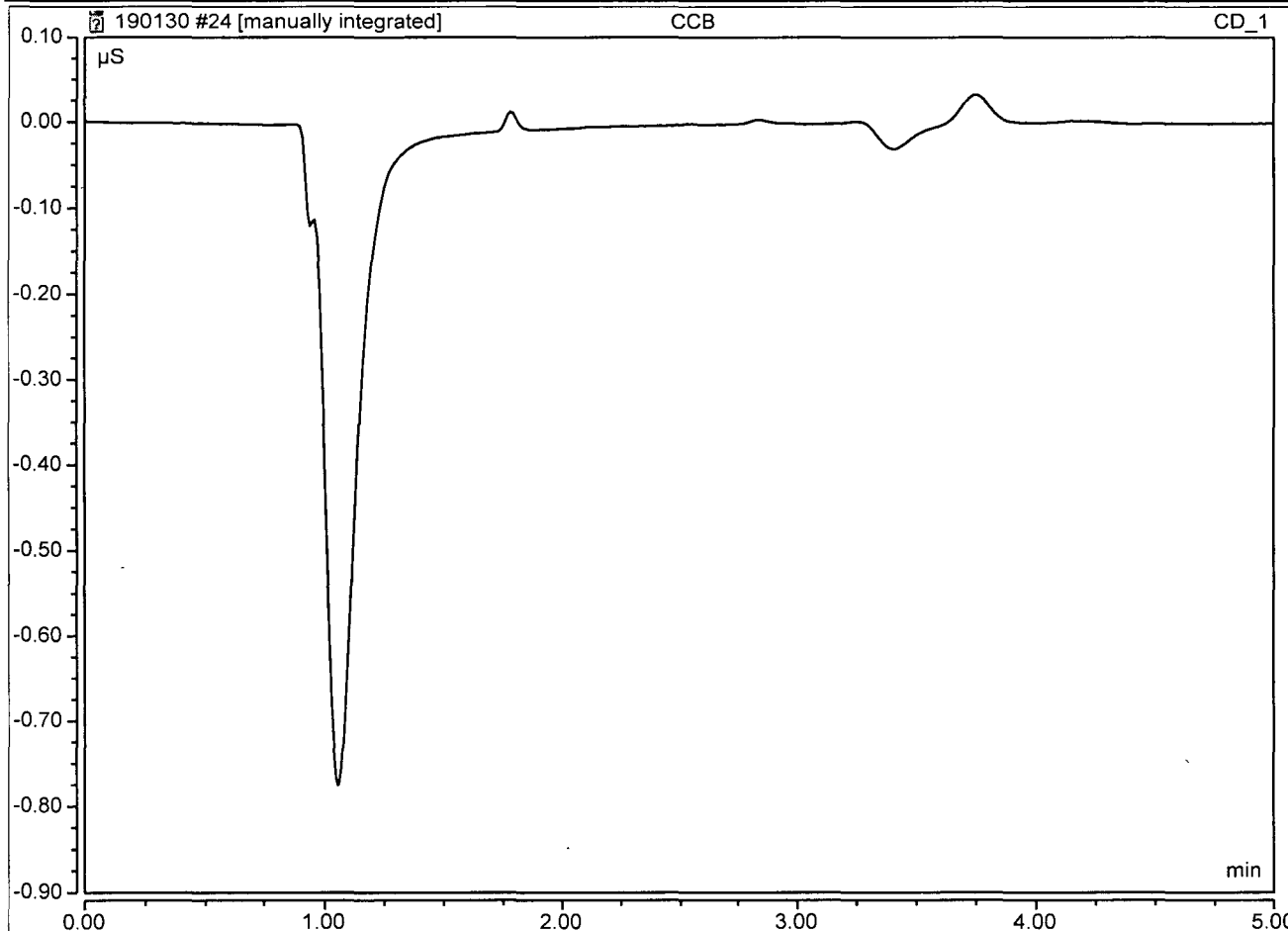
No.	Time (min)	Peak Name	Peak Type	Area ( $\mu\text{S}\cdot\text{min}$ )	Height ( $\mu\text{S}$ )	Amount (mg/L)
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### Peak Integration Report

Sample Name:	CCB	Inj. Vol.:	25.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	30-Jan-2019 / 13:44	Run Time:	5.00

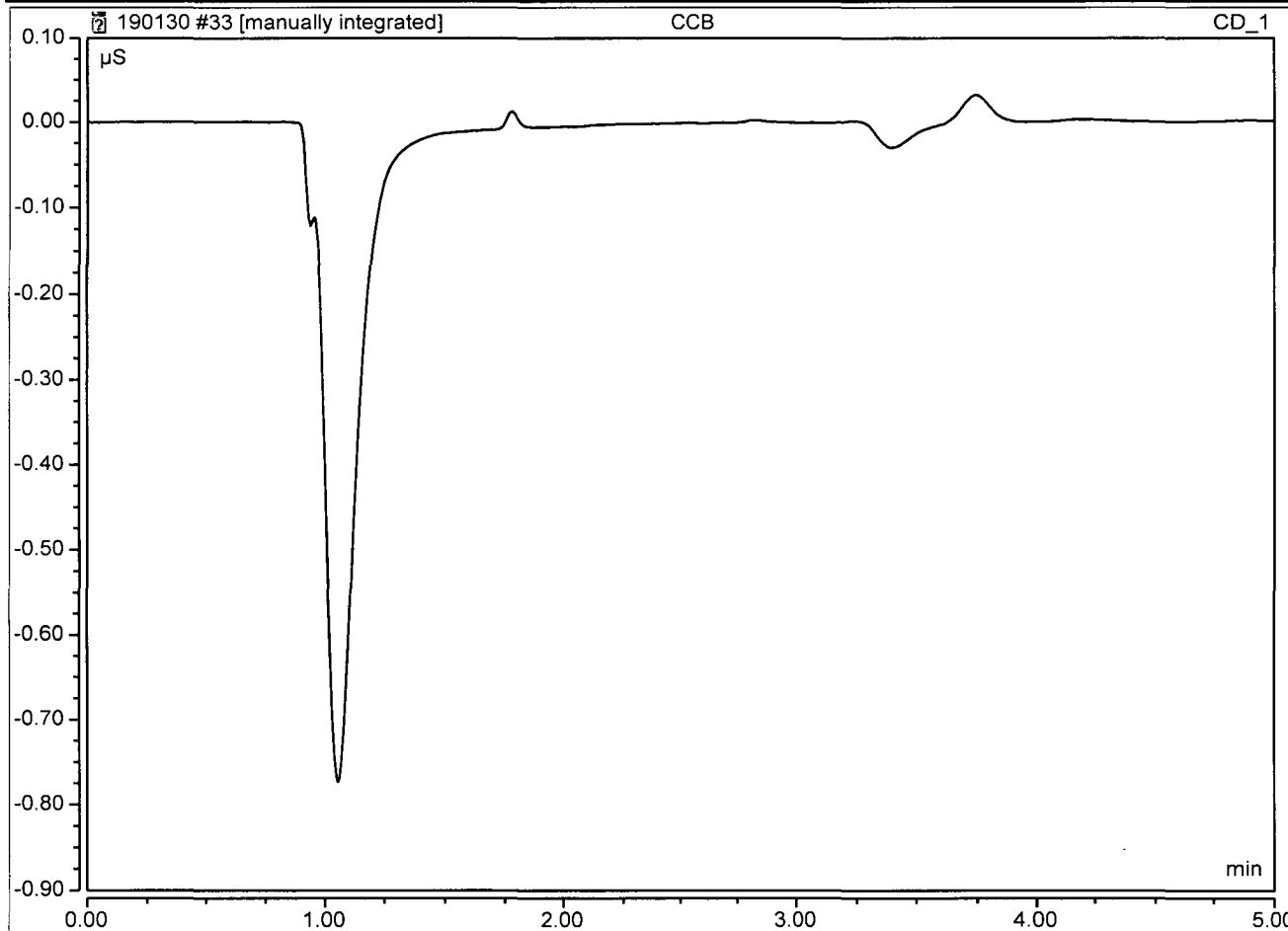
No.	Time (min)	Peak Name	Peak Type	Area ( $\mu\text{S}\cdot\text{min}$ )	Height ( $\mu\text{S}$ )	Amount (mg/L)
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### Peak Integration Report

Sample Name:	CCB	Inj. Vol.:	25.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	30-Jan-2019 / 15:06	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area ( $\mu\text{S}\cdot\text{min}$ )	Height ( $\mu\text{S}$ )	Amount (mg/L)
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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: A.P.P.L. INC. Contract: AECOM

ARF No: 87986 SDG: 87986

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: O2Si

Analysis Date: 02/04/19

Analyte	Calibration Verification									M
	True ICV	Found 14:31	%R(1)	True CCV1	Found 14:43	%R(1)	True	Found	%R(1)	
TOXN	3	2.8821	96.1	3	2.9157	97.2				

A.P.P.L. INC.

3

BLANKS

Lab Name: A.P.P.L. INC.

Contract: AECOM

ARF No.: 87986

SDG: 87986

Preparation Blank Matrix (soil/water): water

Preparation Blank Concentration Units (ug/L or mg/kg): mg/L

Analyte	Calibration Blanks										M
	ICB 02/04/19 14:33	C	CCB 02/04/19 14:44	C		C		C		C	
TOXN	.100	U	.100	U							

**APPL Inc**  
**2A**  
**Initial and Continuing Calibration Verification**

**Lab Name:** APPL Inc  
**ARF No:**  
**ICAL Source:**  
**CCV Source:**  
**Analysis Date:** 02/11/19

**Contract:**  
**SDG:**

Analyte	Calibration Verification									M
	True ICV	Found 20:02	%R (1)	True CCV	Found	%R (2)	True CCV	Found	%R (3)	
TOC	2.50	2.696	107.8							

APPL Inc  
3  
Blanks

Lab Name: APPL Inc  
 ARF No:  
 Prep Blank Matrix: water  
 Prep BlankUnits: mg/L

Contract:  
 SDG:

	Calibration Blanks												M	
	Analyte	ICB 2/11/19 19:31	C											
TOC	0.16	J												

APPL Inc  
2A  
Initial and Continuing Calibration Verification

Lab Name: APPL Inc  
 ARF No: 87986  
 ICAL Source:  
 CCV Source:  
 Analysis Date: 02/13/19

Contract: AECOM  
 SDG: 87986

Analyte	Calibration Verification									M
	True CCV	Found 08:48	%R (1)	True CCV	Found 21:23	%R (2)	True CCV	Found 03:55	%R (3)	
TOC	2.50	2.658	106.3	2.50	2.704	108.2	2.50	2.555	102.2	

APPL Inc  
3  
Blanks

Lab Name: APPL Inc  
 ARF No: 87986  
 Prep Blank Matrix: water  
 Prep BlankUnits: mg/L

Contract: AECOM  
 SDG: 87986

	Calibration Blanks											M
	CCB 2/13/19 09:23		CCB 2/13/19 21:58		CCB 2/14/19 04:31							
Analyte	C	C	C									
TOC	0.31	J	0.28	J	0.93	U						

### Calibration Batch Report

Sequence:	190124	Injection Volume:	25.00
Instrument Method:	Anions IM	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 12:57	Run Time:	5

Calibration Summary							
Peak Name	Eval.Type	Cal.Type	Points	Offset (C0)	Slope (C1)	Curve (C2)	Coeff.Det. %
F	Area	Lin, WithOffset, 1/A	8.000	-0.006	0.126	0.000	99.6784
Cl	Area	Lin	8.000	0.000	0.106	0.000	99.5874
NO2-N	Area	Lin	8.000	0.000	0.177	0.000	99.9482
BR	Area	Lin	8.000	0.000	0.036	0.000	99.8938
NO3-N	Area	Lin	8.000	0.000	0.219	0.000	99.7197
PO4-P	Area	Lin	8.000	0.000	0.070	0.000	99.1895
SO4	Area	Lin	8.000	0.000	0.066	0.000	99.7785

Injection Name	Ret.Time min	Area $\mu\text{S} \cdot \text{min}$	Height $\mu\text{S}$	Amount mg/L
	CD 1	CD 1	CD 1	CD 1
	F	F	F	F
i cal 1	1.258	0.0078	0.177	0.110
i cal 2	1.263	0.0331	0.551	0.311
i cal 3	1.263	0.0600	1.273	0.525
i cal 4	1.260	0.1319	2.702	1.096
i cal 5	1.258	0.2788	5.622	2.263
i cal 6	1.267	0.7668	14.736	6.141
i cal 7	1.270	1.1062	20.788	8.837
i cal 8	1.272	1.6227	29.189	12.941

Injection Name	Ret.Time min	Area $\mu\text{S}^*\text{min}$	Height $\mu\text{S}$	Amount mg/L
	CD 1	CD 1	CD 1	CD 1
	Cl	Cl	Cl	Cl
i cal 1	1.790	0.0388	0.720	0.364
i cal 2	1.790	0.1261	2.353	1.184
i cal 3	1.795	0.1988	3.728	1.867
i cal 4	1.792	0.4159	7.930	3.906
i cal 5	1.792	0.8761	17.063	8.228
i cal 6	1.798	2.4846	49.285	23.333
i cal 7	1.803	3.6782	72.562	34.542
i cal 8	1.807	5.4995	106.635	51.646

Injection Name	Ret.Time min	Area $\mu\text{S}^*\text{min}$	Height $\mu\text{S}$	Amount mg/L
	CD 1	CD 1	CD 1	CD 1
	NO2-N	NO2-N	NO2-N	NO2-N
i cal 1	2.143	0.0068	0.093	0.038
i cal 2	2.143	0.0168	0.228	0.095
i cal 3	2.148	0.0409	0.554	0.231
i cal 4	2.143	0.0830	1.119	0.469
i cal 5	2.143	0.1677	2.261	0.948
i cal 6	2.147	0.4302	5.768	2.433
i cal 7	2.150	0.6156	8.211	3.481
i cal 8	2.152	0.8951	11.797	5.061

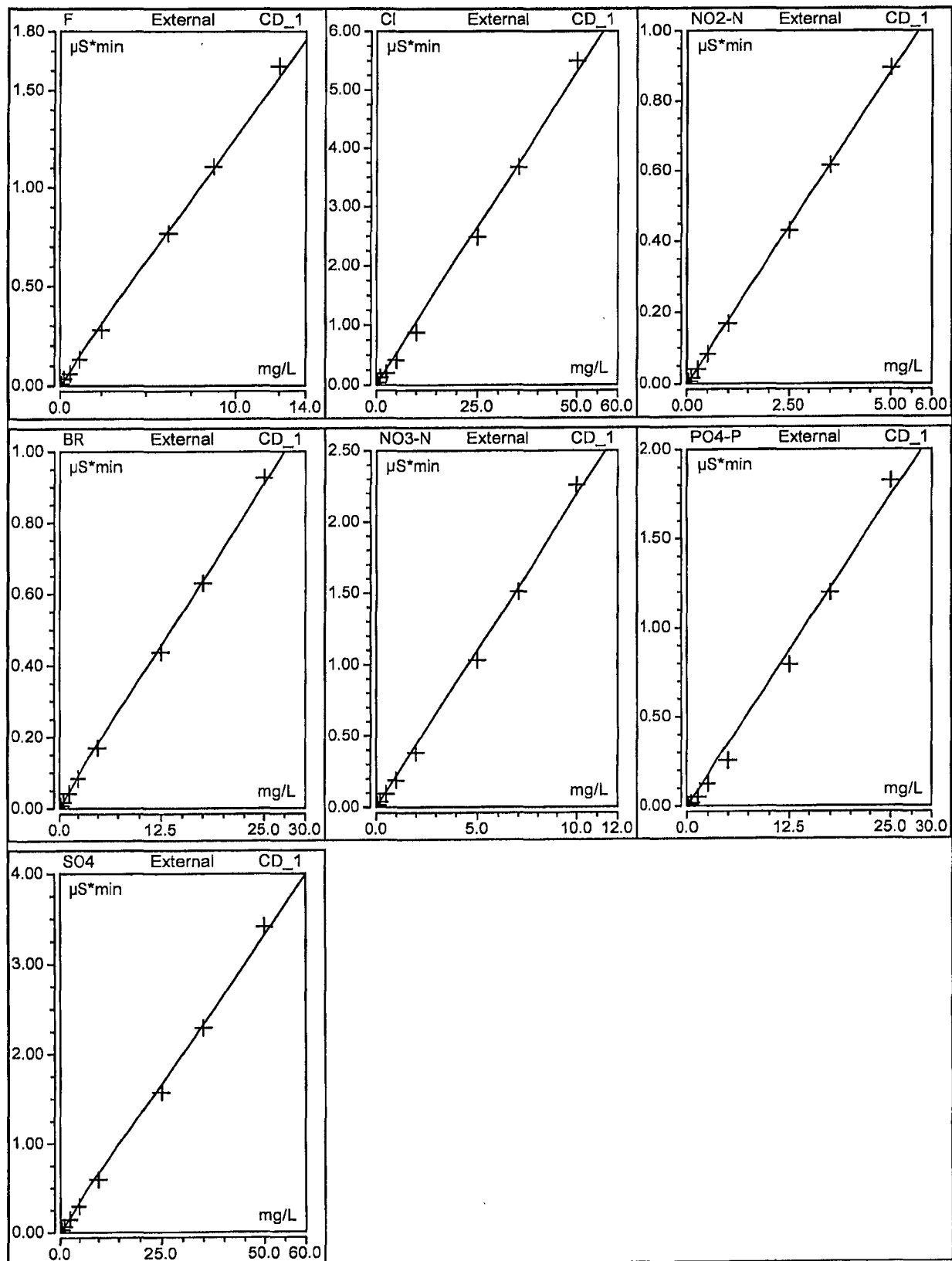
Injection Name	Ret.Time min	Area $\mu\text{S}^*\text{min}$	Height $\mu\text{S}$	Amount mg/L
	CD 1	CD 1	CD 1	CD 1
	BR	BR	BR	BR
i cal 1	2.558	0.0071	0.093	0.195
i cal 2	2.558	0.0171	0.224	0.470
i cal 3	2.562	0.0416	0.544	1.144
i cal 4	2.557	0.0838	1.099	2.304
i cal 5	2.555	0.1691	2.232	4.648
i cal 6	2.557	0.4375	5.850	12.024
i cal 7	2.557	0.6299	8.490	17.311
i cal 8	2.553	0.9266	12.598	25.466

Injection Name	Ret.Time min	Area $\mu\text{S}^*\text{min}$	Height $\mu\text{S}$	Amount mg/L
	CD 1	CD 1	CD 1	CD 1
	NO3-N	NO3-N	NO3-N	NO3-N
i cal 1	2.867	0.0162	0.183	0.074
i cal 2	2.867	0.0392	0.446	0.179
i cal 3	2.868	0.0936	1.062	0.427
i cal 4	2.863	0.1896	2.162	0.865
i cal 5	2.858	0.3821	4.442	1.743
i cal 6	2.857	1.0311	12.086	4.704
i cal 7	2.855	1.5088	17.791	6.883
i cal 8	2.850	2.2578	26.658	10.299



Injection Name	Ret.Time min CD 1	Area $\mu\text{S}^*\text{min}$ CD 1	Height $\mu\text{S}$ CD 1	Amount mg/L CD 1
	PO4-P	PO4-P	PO4-P	PO4-P
i cal 1	3.775	0.0077	0.055	0.111
i cal 2	3.773	0.0176	0.121	0.252
i cal 3	3.778	0.0508	0.355	0.729
i cal 4	3.773	0.1246	0.850	1.788
i cal 5	3.772	0.2545	1.894	3.651
i cal 6	3.772	0.7954	5.814	11.410
i cal 7	3.772	1.1958	8.858	17.153
i cal 8	3.770	1.8237	13.683	26.161

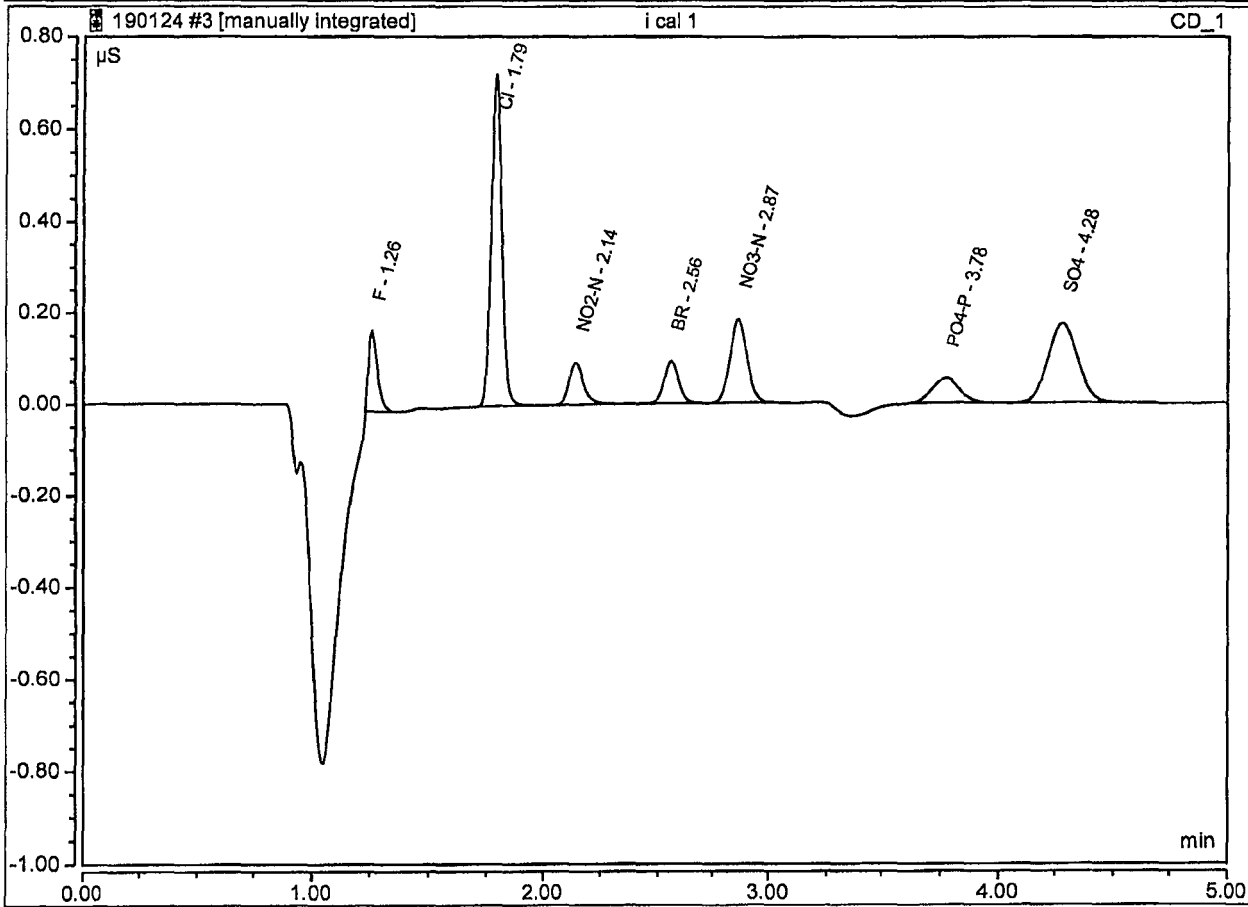
Injection Name	Ret.Time min CD 1	Area $\mu\text{S}^*\text{min}$ CD 1	Height $\mu\text{S}$ CD 1	Amount mg/L CD 1
	SO4	SO4	SO4	SO4
i cal 1	4.282	0.0258	0.174	0.388
i cal 2	4.283	0.0616	0.417	0.927
i cal 3	4.288	0.1444	0.976	2.174
i cal 4	4.288	0.2937	1.996	4.421
i cal 5	4.290	0.5930	4.065	8.925
i cal 6	4.300	1.5710	10.997	23.643
i cal 7	4.308	2.2902	16.201	34.468
i cal 8	4.315	3.4113	24.358	51.341



Peak Integration Report

Sample Name:	i cal 1	Inj. Vol.:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 12:06	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.26	F	BMB*	0.008	0.177	0.1105
2	1.79	Cl	BMB	0.039	0.720	0.3640
3	2.14	NO2-N	BMB	0.007	0.093	0.0383
4	2.56	BR	BMB	0.007	0.093	0.1945
5	2.87	NO3-N	BMB	0.016	0.183	0.0739
6	3.78	PO4-P	BMB	0.008	0.055	0.1109
7	4.28	SO4	BMB	0.026	0.174	0.3876

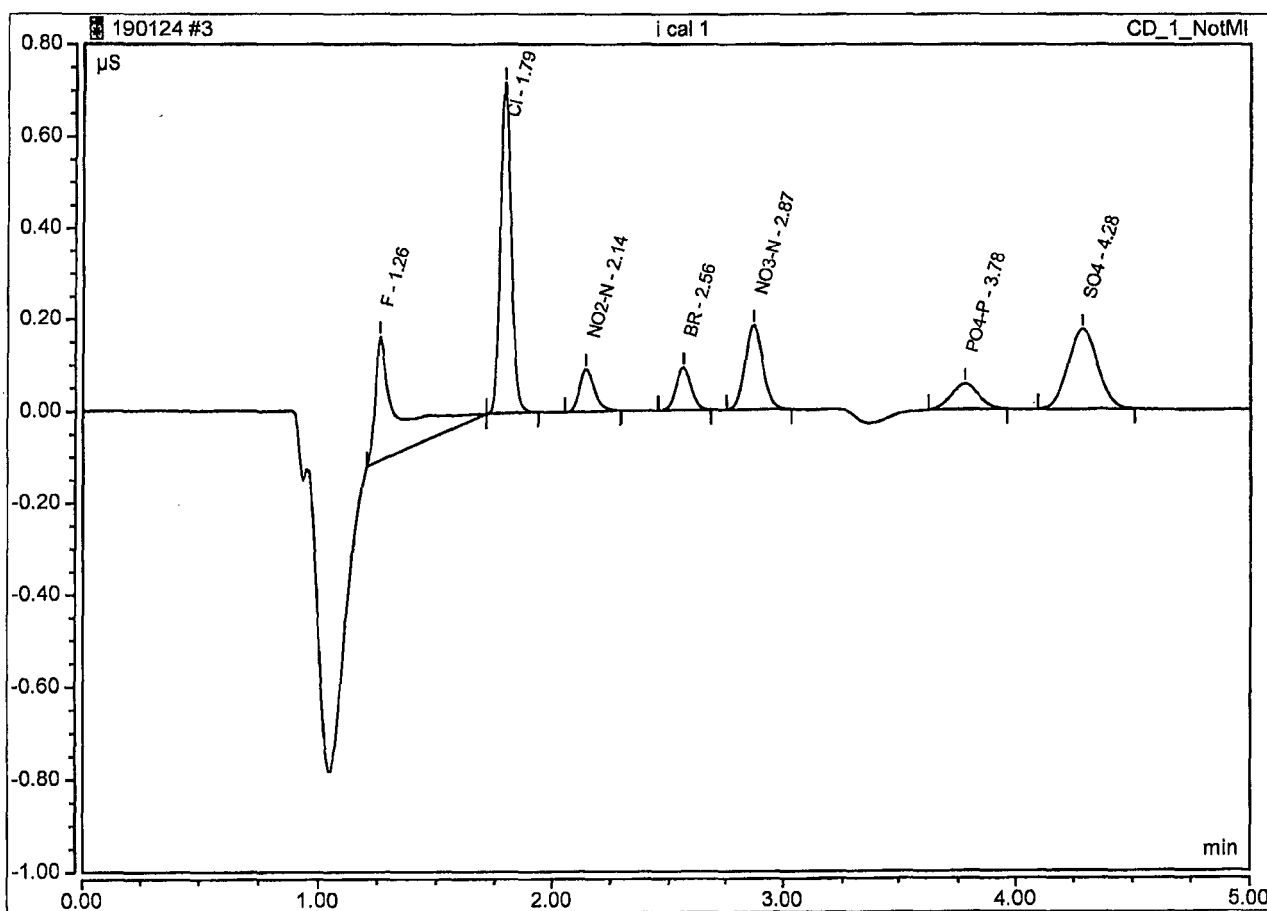


F mi1 HH 190128 MM

### Not Manipulated Peak Integration Report

Sample Name:	I cal 1	Inj. Vol.:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 12:06	Run Time:	5.00

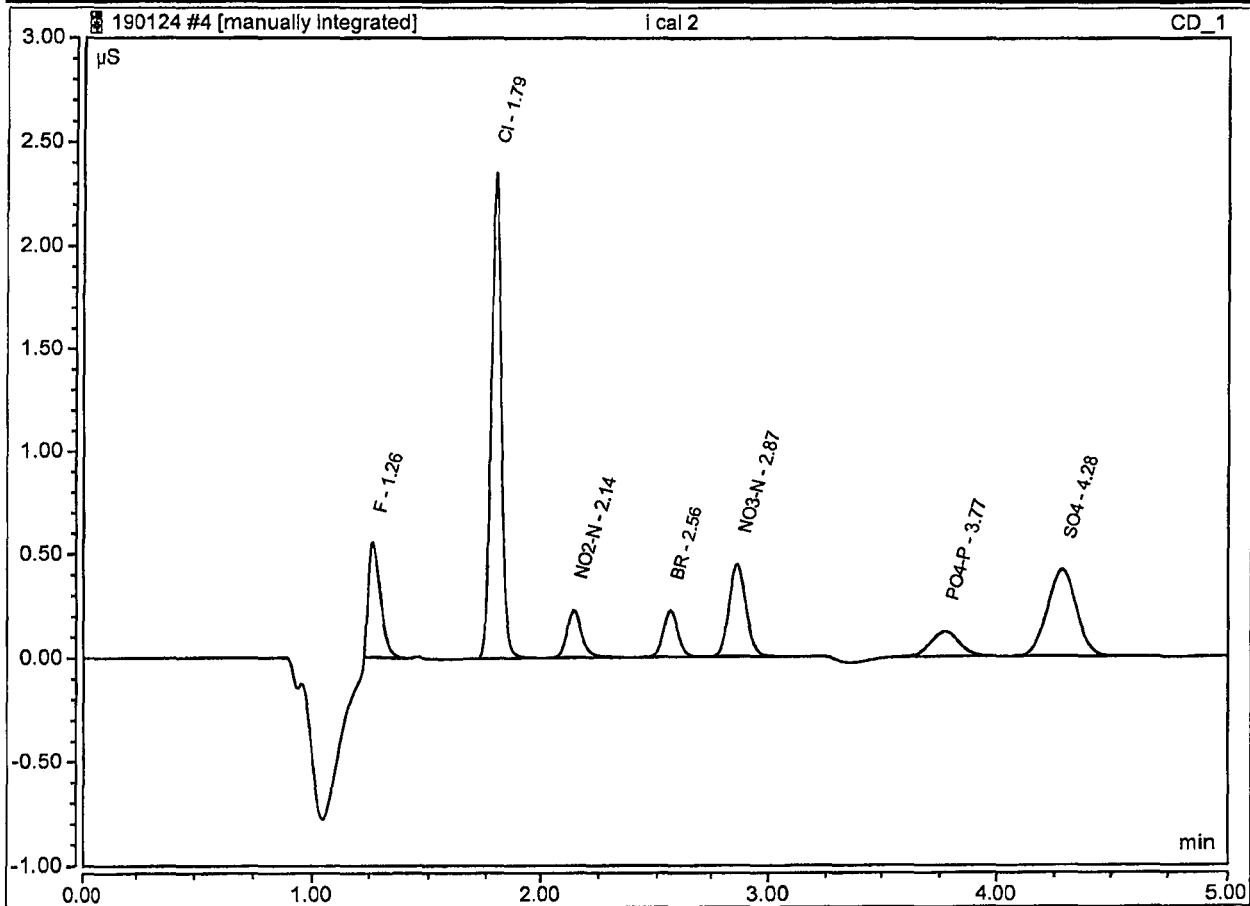
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height $\mu\text{S}$	Area $\mu\text{S} \cdot \text{min}$
1	1.26	F	BMB*	0.032	0.269	0.0900
2	1.79	Cl	BMB	0.039	0.720	0.3640
3	2.14	NO <sub>2</sub> -N	BMB	0.007	0.093	0.0383
4	2.56	BR	BMB	0.007	0.093	0.1945
5	2.87	NO <sub>3</sub> -N	BMB	0.016	0.183	0.0739
6	3.78	PO <sub>4</sub> -P	BMB	0.008	0.055	0.1109
7	4.28	SO <sub>4</sub>	BMB	0.026	0.174	0.3876



**Peak Integration Report**

Sample Name:	i cal 2	Inj. Vol.:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 12:13	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.26	F	BMB*	0.033	0.551	0.3114
2	1.79	Cl	BMB	0.126	2.353	1.1844
3	2.14	NO2-N	BMB	0.017	0.228	0.0951
4	2.56	BR	BMB	0.017	0.224	0.4697
5	2.87	NO3-N	BMB	0.039	0.446	0.1790
6	3.77	PO4-P	BMB	0.018	0.121	0.2519
7	4.28	SO4	BMB	0.062	0.417	0.9266

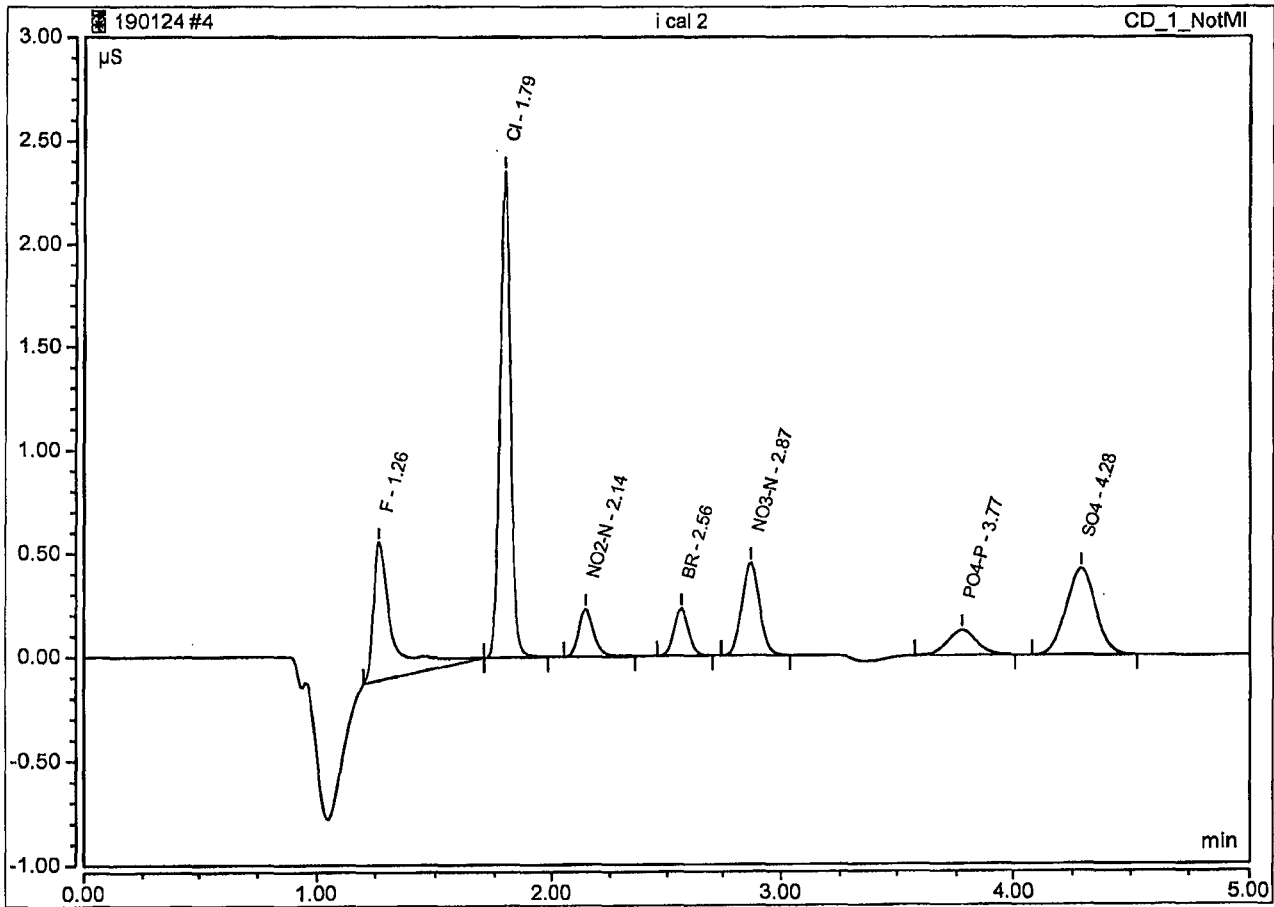


F mi1 HH 190128 MM

### Not Manipulated Peak Integration Report

Sample Name:	I cal 2	Inj. Vol.:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 12:13	Run Time:	5.00

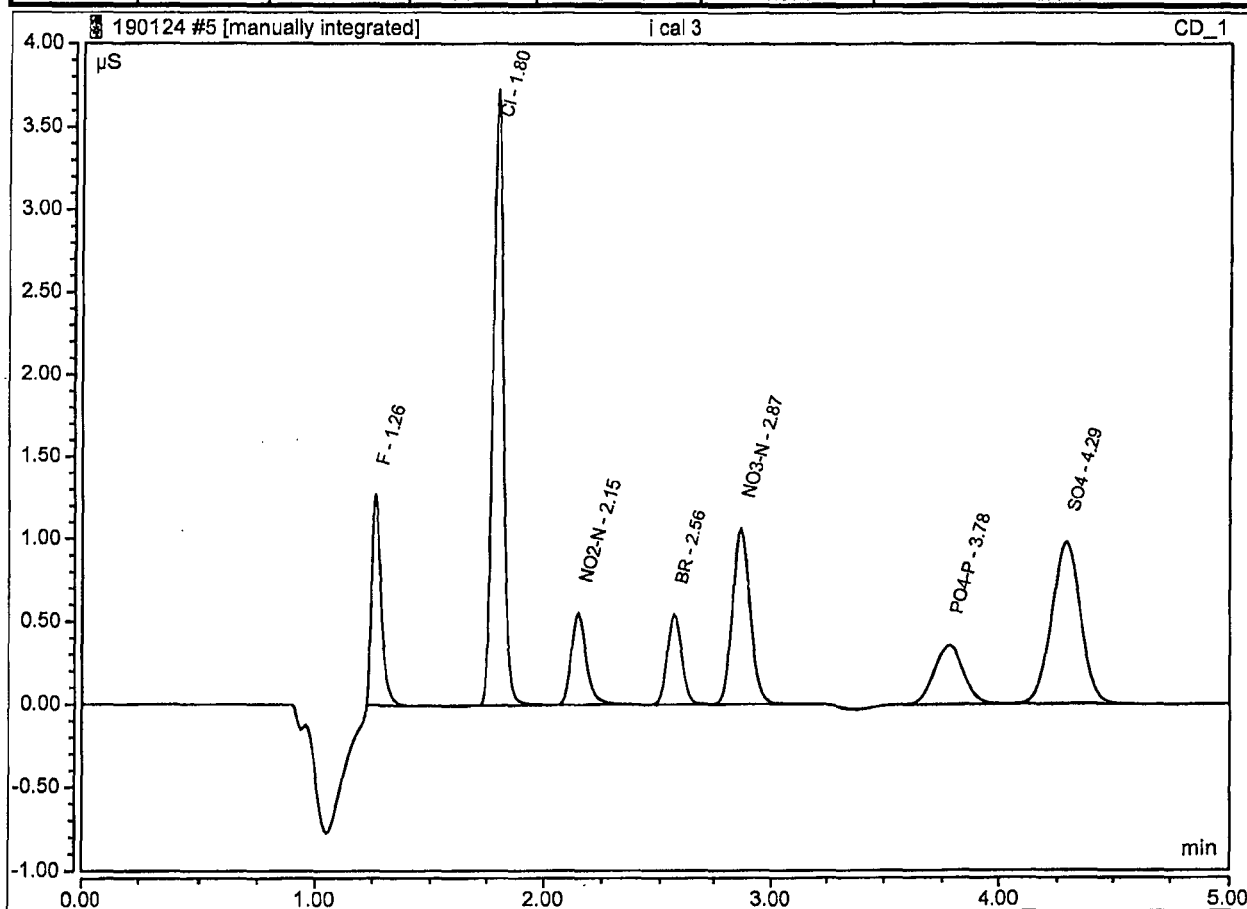
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height $\mu\text{S}$	Area $\mu\text{S} \cdot \text{min}$
1	1.26	F	BMB*	0.064	0.668	0.3399
2	1.79	Cl	BMB	0.126	2.353	1.1844
3	2.14	NO <sub>2</sub> -N	BMB	0.017	0.228	0.0951
4	2.56	BR	BMB	0.017	0.224	0.4697
5	2.87	NO <sub>3</sub> -N	BMB	0.039	0.446	0.1790
6	3.77	PO <sub>4</sub> -P	BMB	0.018	0.121	0.2519
7	4.28	SO <sub>4</sub>	BMB	0.062	0.417	0.9266



### Peak Integration Report

Sample Name:	i cal 3	Inj. Vol.:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 12:20	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area (μS*min)	Height (μS)	Amount (mg/L)
1	1.26	F	BMB*	0.060	1.273	0.5246
2	1.80	Cl	BMB	0.199	3.728	1.8672
3	2.15	NO2-N	BMB	0.041	0.554	0.2311
4	2.56	BR	BMB	0.042	0.544	1.1439
5	2.87	NO3-N	BMB	0.094	1.062	0.4271
6	3.78	PO4-P	BMB	0.051	0.355	0.7288
7	4.29	SO4	BMB	0.144	0.976	2.1737

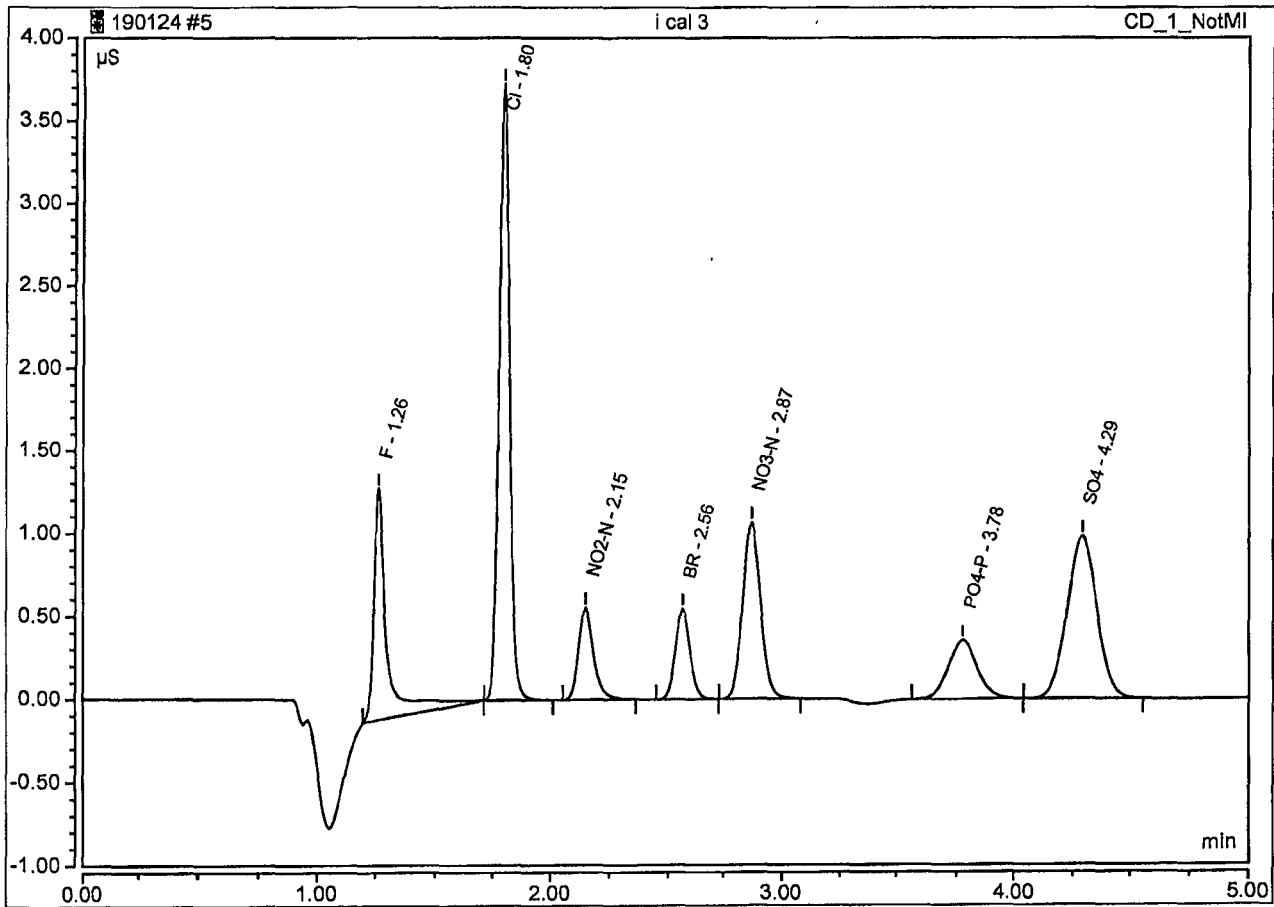


F mi1 HH 190128 MM

### Not Manipulated Peak Integration Report

Sample Name:	I cal 3	Inj. Vol.:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 12:20	Run Time:	5.00

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height $\mu\text{S}$	Area $\mu\text{S}\cdot\text{min}$
1	1.26	F	BMB*	0.091	1.392	0.5597
2	1.80	Cl	BMB	0.199	3.728	1.8672
3	2.15	NO2-N	BMB	0.041	0.554	0.2311
4	2.56	BR	BMB	0.042	0.544	1.1439
5	2.87	NO3-N	BMB	0.094	1.062	0.4271
6	3.78	PO4-P	BMB	0.051	0.355	0.7288
7	4.29	SO4	BMB	0.144	0.976	2.1737

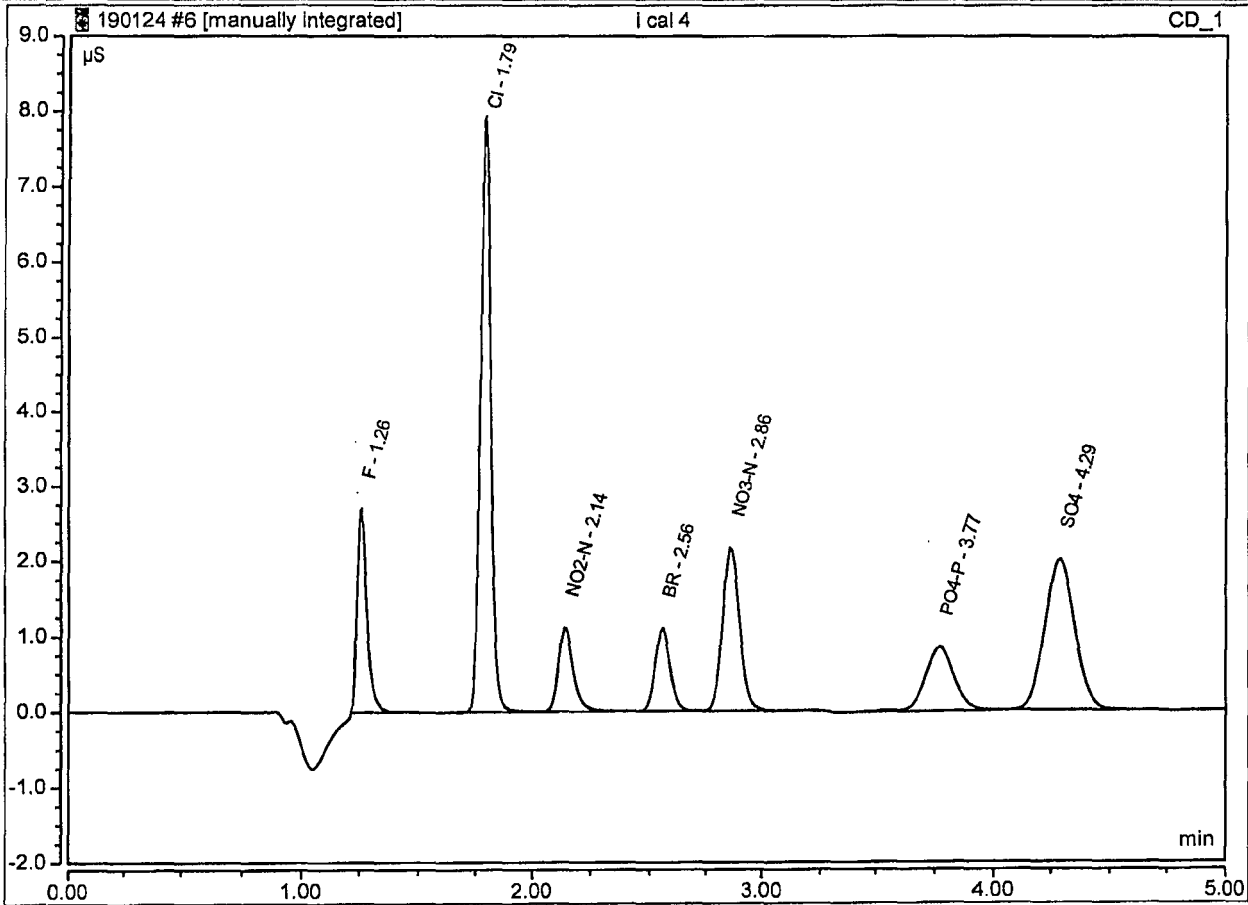




**Peak Integration Report**

Sample Name:	i cal 4	Inj. Vol.:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 12:28	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.26	F	BMB*	0.132	2.702	1.0962
2	1.79	Cl	BMB	0.416	7.930	3.9059
3	2.14	NO2-N	BMB	0.083	1.119	0.4691
4	2.56	BR	BMB	0.084	1.099	2.3038
5	2.86	NO3-N	BMB	0.190	2.162	0.8648
6	3.77	PO4-P	BMB	0.125	0.850	1.7878
7	4.29	SO4	BMB	0.294	1.996	4.4209

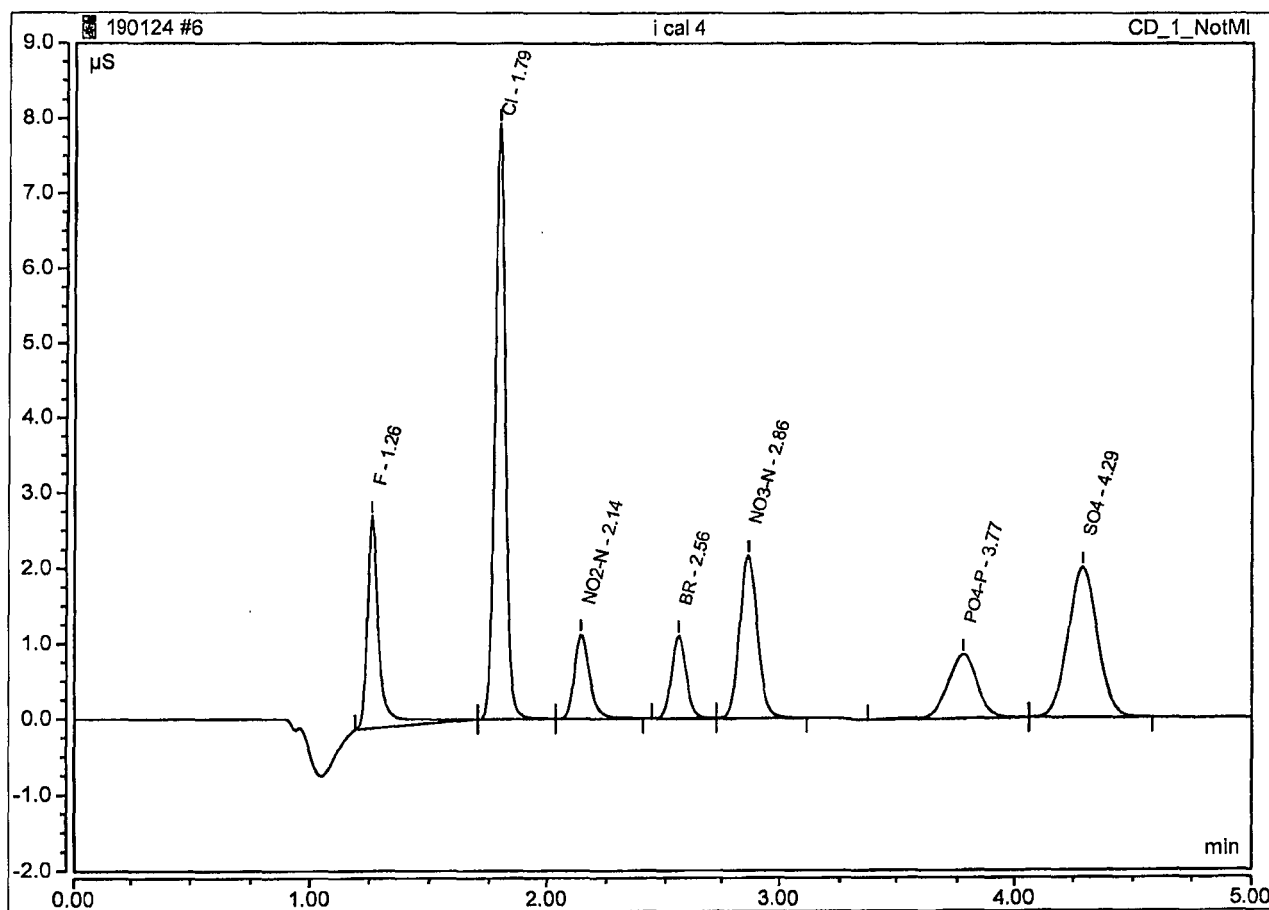


F mi1 HH 190128 MM

### Not Manipulated Peak Integration Report

Sample Name:	i cal 4	Inj. Vol.:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 12:28	Run Time:	5.00

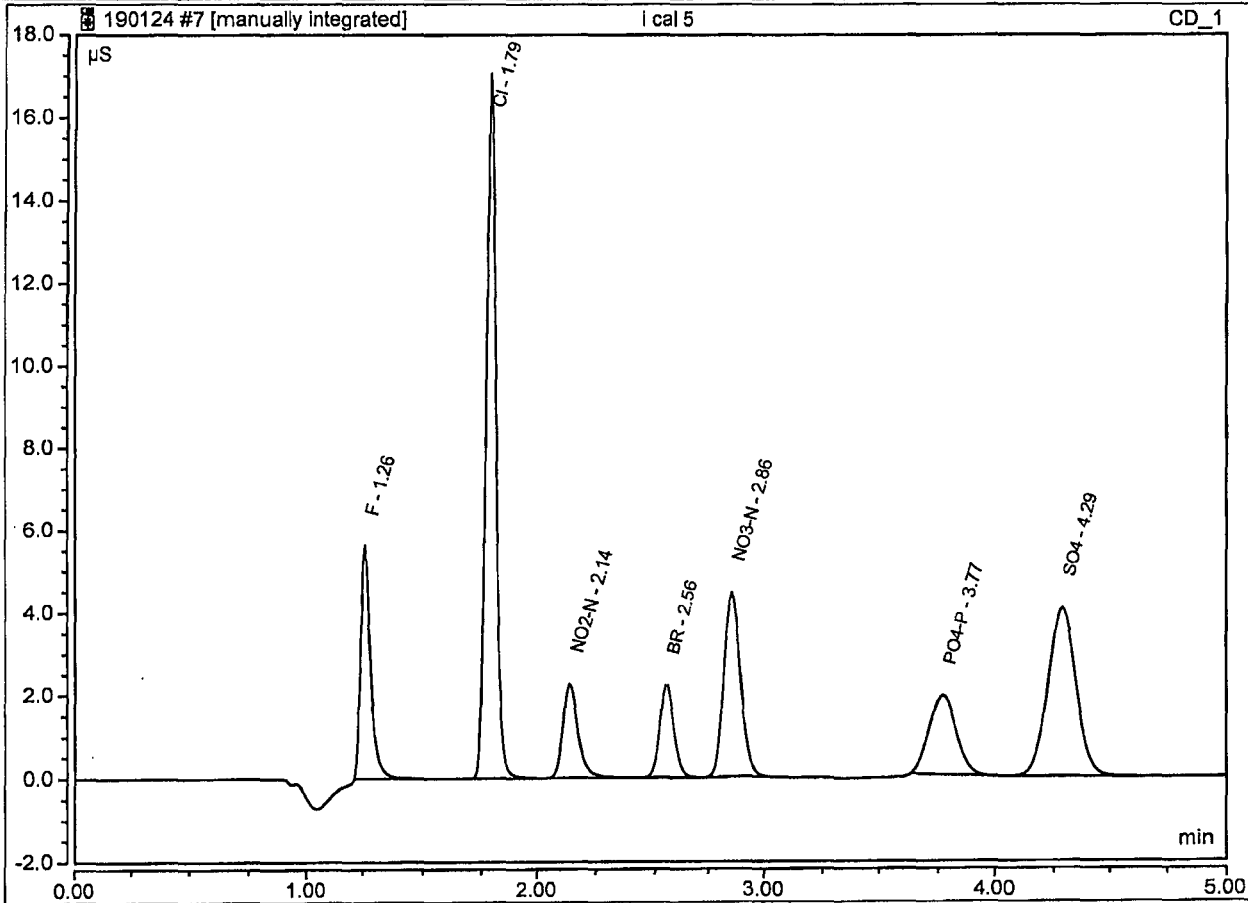
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height $\mu\text{S}$	Area $\mu\text{S} \cdot \text{min}$
1	1.26	F	BMB*	0.164	2.815	1.1319
2	1.79	Cl	BMB	0.416	7.930	3.9059
3	2.14	NO <sub>2</sub> -N	BMB	0.083	1.119	0.4691
4	2.56	BR	BMB	0.084	1.099	2.3038
5	2.86	NO <sub>3</sub> -N	BMB	0.190	2.162	0.8648
6	3.77	PO <sub>4</sub> -P	BMB	0.125	0.850	1.7878
7	4.29	SO <sub>4</sub>	BMB	0.294	1.996	4.4209



Peak Integration Report

Sample Name:	i cal 5	Inj. Vol.:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Anlon APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 12:35	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.26	F	BMB*	0.279	5.622	2.2633
2	1.79	Cl	BMB	0.876	17.063	8.2279
3	2.14	NO2-N	BMB	0.168	2.261	0.9484
4	2.56	BR	BMB	0.169	2.232	4.6484
5	2.86	NO3-N	BMB	0.382	4.442	1.7432
6	3.77	PO4-P	BMB	0.255	1.894	3.6510
7	4.29	SO4	BMB	0.593	4.065	8.9251

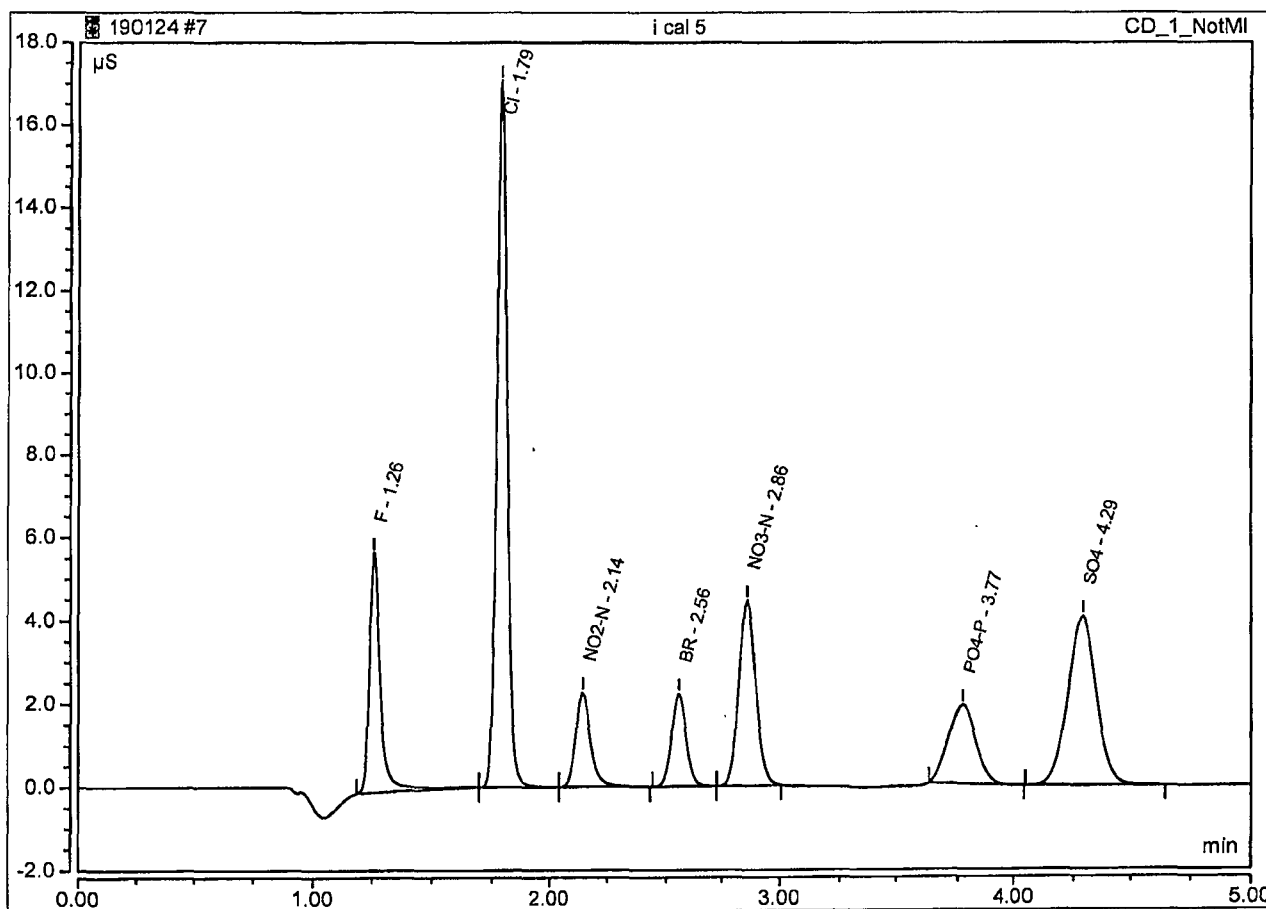


F mi1 HH 190128 MM

### Not Manipulated Peak Integration Report

Sample Name:	I cal 5	Inj. Vol.:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 12:35	Run Time:	5.00

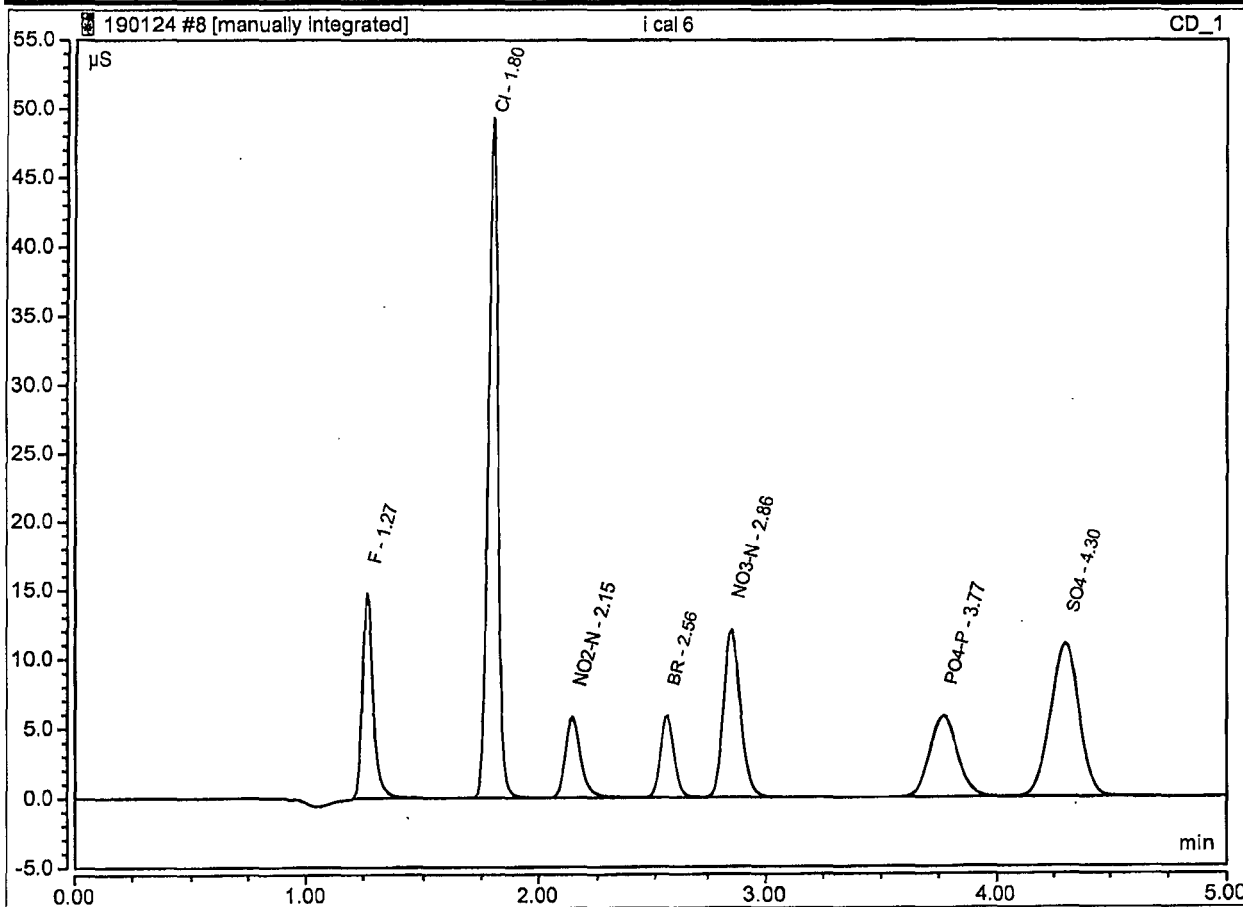
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height $\mu\text{S}$	Area $\mu\text{S}\cdot\text{min}$
1	1.26	F	BMB*	0.313	5.748	2.3094
2	1.79	Cl	BMB	0.876	17.063	8.2279
3	2.14	NO <sub>2</sub> -N	BMB	0.168	2.261	0.9484
4	2.56	BR	BMB	0.169	2.232	4.6484
5	2.86	NO <sub>3</sub> -N	BMB	0.382	4.442	1.7432
6	3.77	PO <sub>4</sub> -P	BMB	0.255	1.894	3.6510
7	4.29	SO <sub>4</sub>	BMB	0.593	4.065	8.9251



### Peak Integration Report

Sample Name:	i cal 6	Inj. Vol.:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 12:43	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.27	F	BMB*	0.767	14.736	6.1409
2	1.80	Cl	BMB	2.485	49.285	23.3335
3	2.15	NO2-N	BMB	0.430	5.768	2.4325
4	2.56	BR	BMB	0.437	5.850	12.0236
5	2.86	NO3-N	BMB	1.031	12.086	4.7035
6	3.77	PO4-P	BMB	0.795	5.814	11.4097
7	4.30	SO4	BMB	1.571	10.997	23.6433

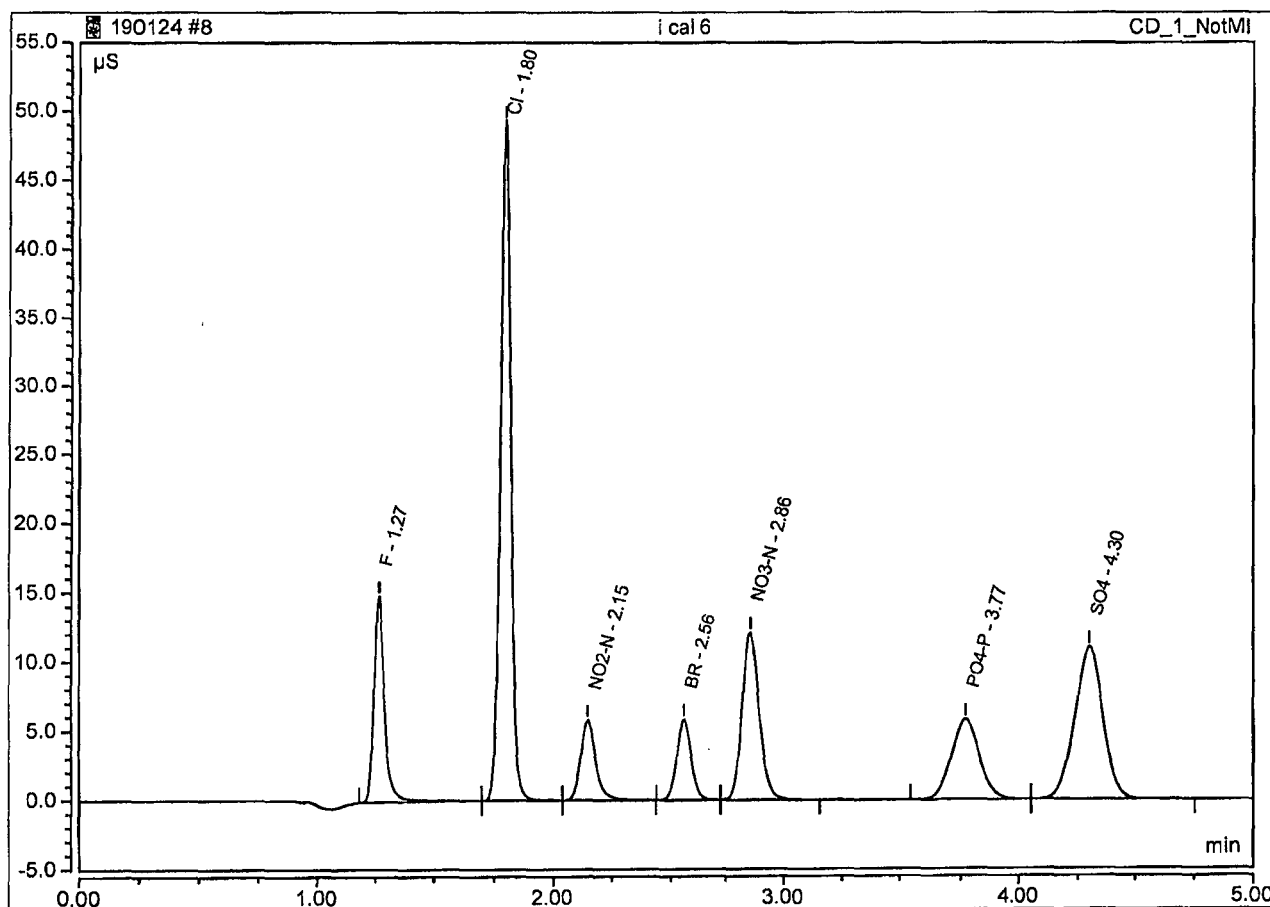


F mi1 HH 190128 MM

### Not Manipulated Peak Integration Report

Sample Name:	i cal 6	Inj. Vol.:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 12:43	Run Time:	5.00

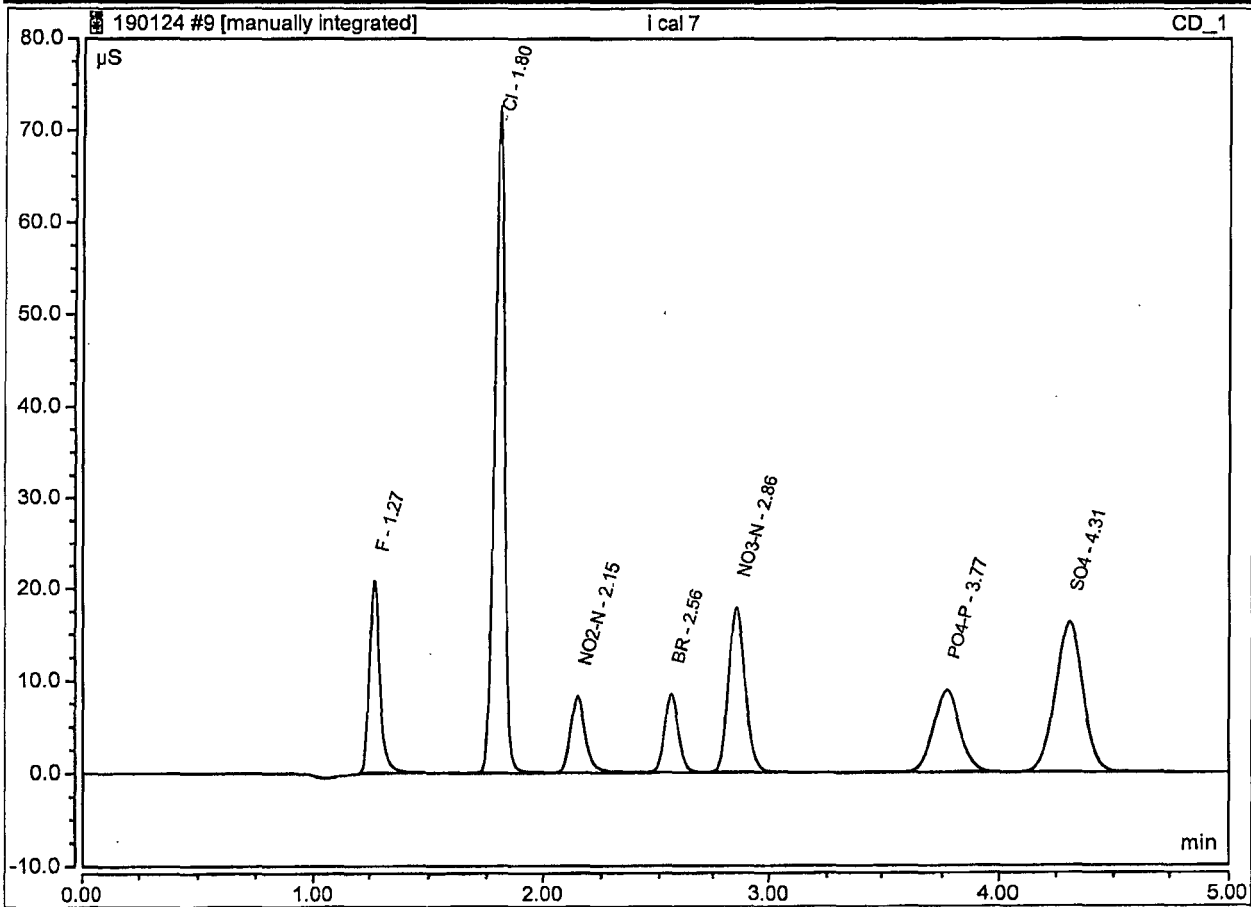
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height $\mu\text{S}$	Area $\mu\text{S}\cdot\text{min}$
1	1.27	F	BMB*	0.797	14.841	6.1203
2	1.80	Cl	BMB	2.485	49.285	23.3335
3	2.15	NO <sub>2</sub> -N	BMB	0.430	5.768	2.4325
4	2.56	BR	BMB	0.437	5.850	12.0236
5	2.86	NO <sub>3</sub> -N	BMB	1.031	12.086	4.7035
6	3.77	PO <sub>4</sub> -P	BMB	0.795	5.814	11.4097
7	4.30	SO <sub>4</sub>	BMB	1.571	10.997	23.6433



**Peak Integration Report**

Sample Name:	I cal 7	Inj. Vol.:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 12:50	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.27	F	BMB*	1.106	20.788	8.8373
2	1.80	Cl	BMB	3.678	72.562	34.5418
3	2.15	NO2-N	BMB	0.616	8.211	3.4811
4	2.56	BR	BMB	0.630	8.490	17.3110
5	2.86	NO3-N	BMB	1.509	17.791	6.8826
6	3.77	PO4-P	BMB	1.196	8.858	17.1532
7	4.31	SO4	BMB	2.290	16.201	34.4680

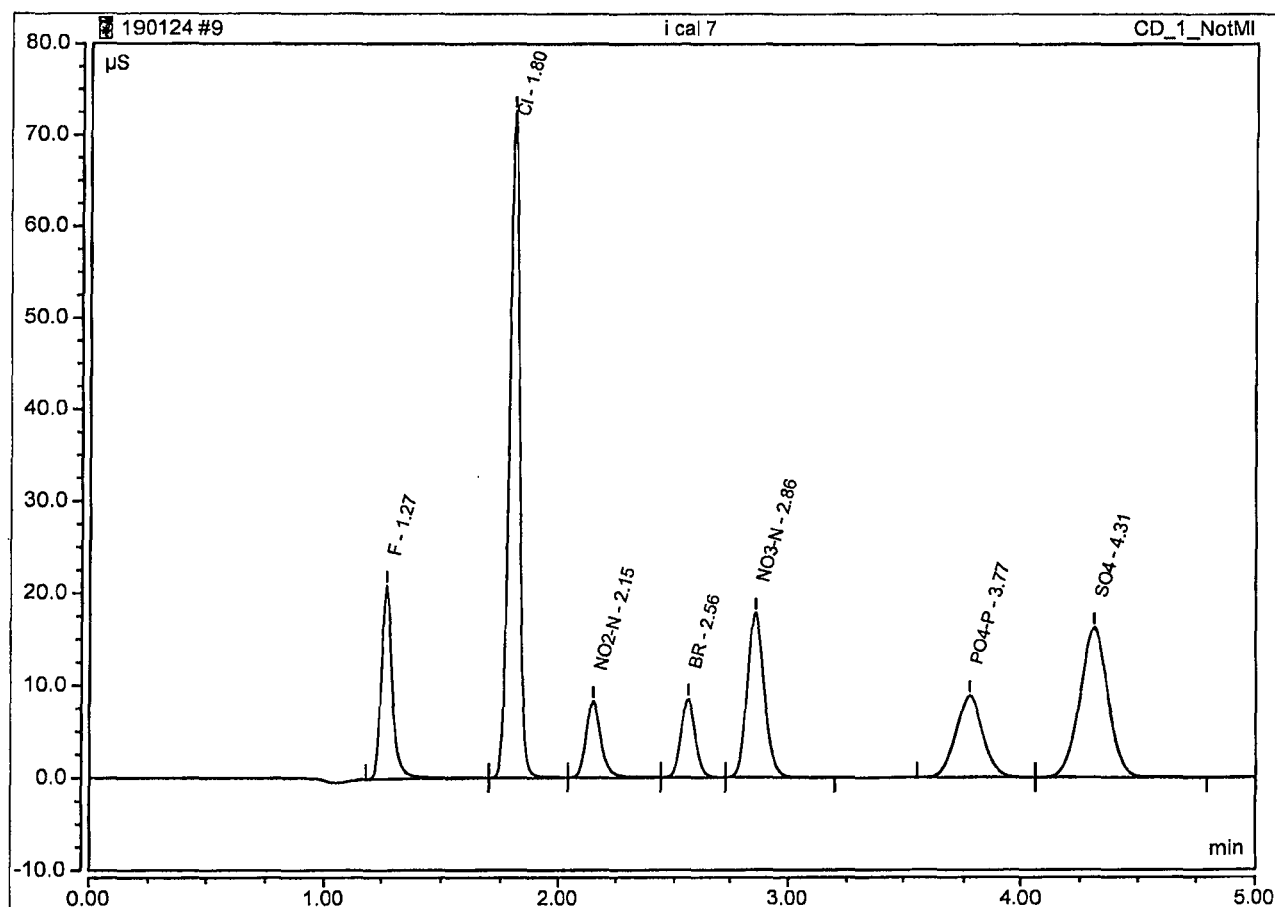


F mi1 HH 190128 MM

### Not Manipulated Peak Integration Report

Sample Name:	i cal 7	Inj. Vol.:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 12:50	Run Time:	5.00

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height $\mu\text{S}$	Area $\mu\text{S}\cdot\text{min}$
1	1.27	F	BMB*	1.139	20.900	8.8150
2	1.80	Cl	BMB	3.678	72.562	34.5418
3	2.15	NO <sub>2</sub> -N	BMB	0.616	8.211	3.4811
4	2.56	BR	BMB	0.630	8.490	17.3110
5	2.86	NO <sub>3</sub> -N	BMB	1.509	17.791	6.8826
6	3.77	PO <sub>4</sub> -P	BMB	1.196	8.858	17.1532
7	4.31	SO <sub>4</sub>	BMB	2.290	16.201	34.4680

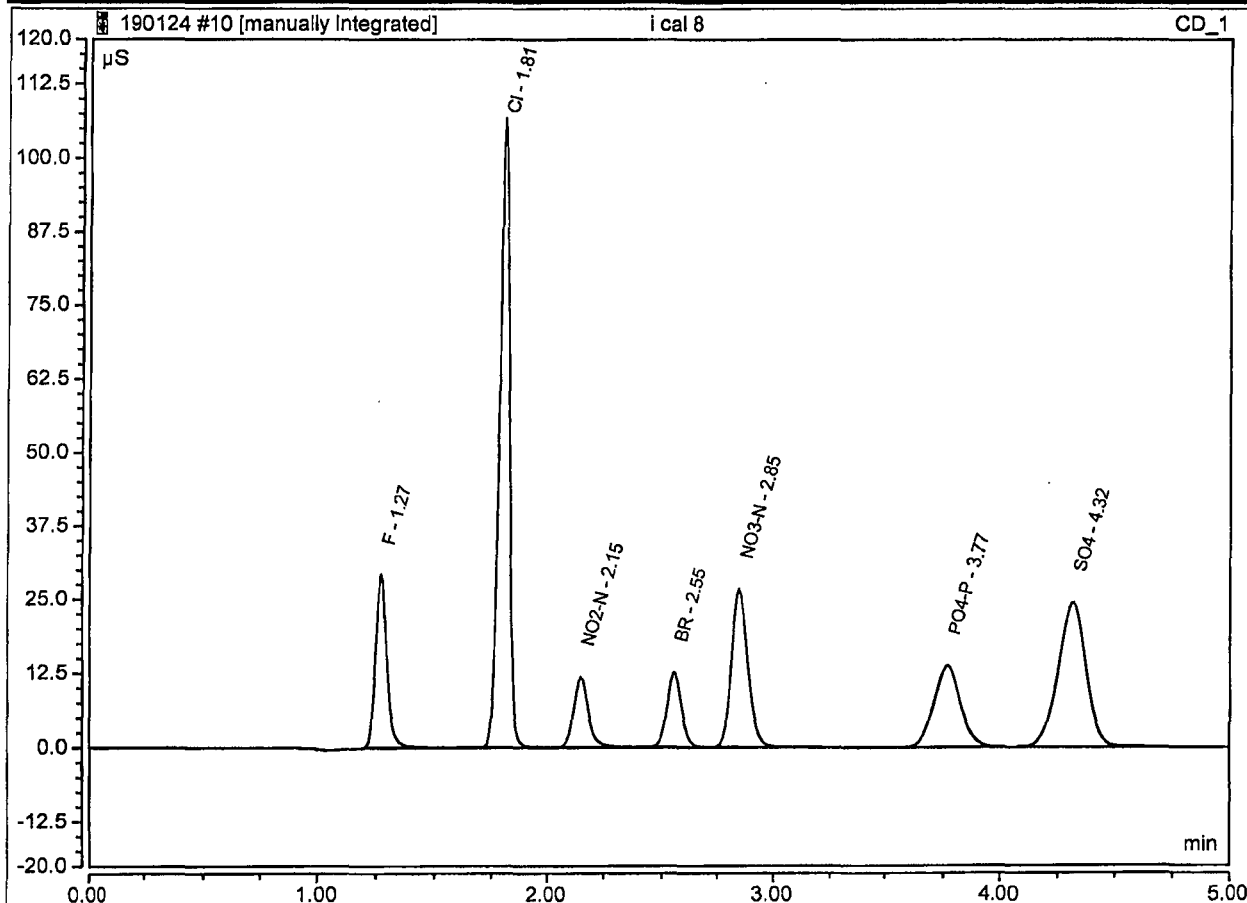




### Peak Integration Report

Sample Name:	i cal 8	Inj. Vol.:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 12:57	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.27	F	BMB*	1.623	29.189	12.9407
2	1.81	Cl	BMB	5.499	106.635	51.6461
3	2.15	NO2-N	BMB	0.895	11.797	5.0614
4	2.55	BR	BMB	0.927	12.598	25.4664
5	2.85	NO3-N	BMB	2.258	26.658	10.2994
6	3.77	PO4-P	BMB	1.824	13.683	26.1607
7	4.32	SO4	BMB	3.411	24.358	51.3415

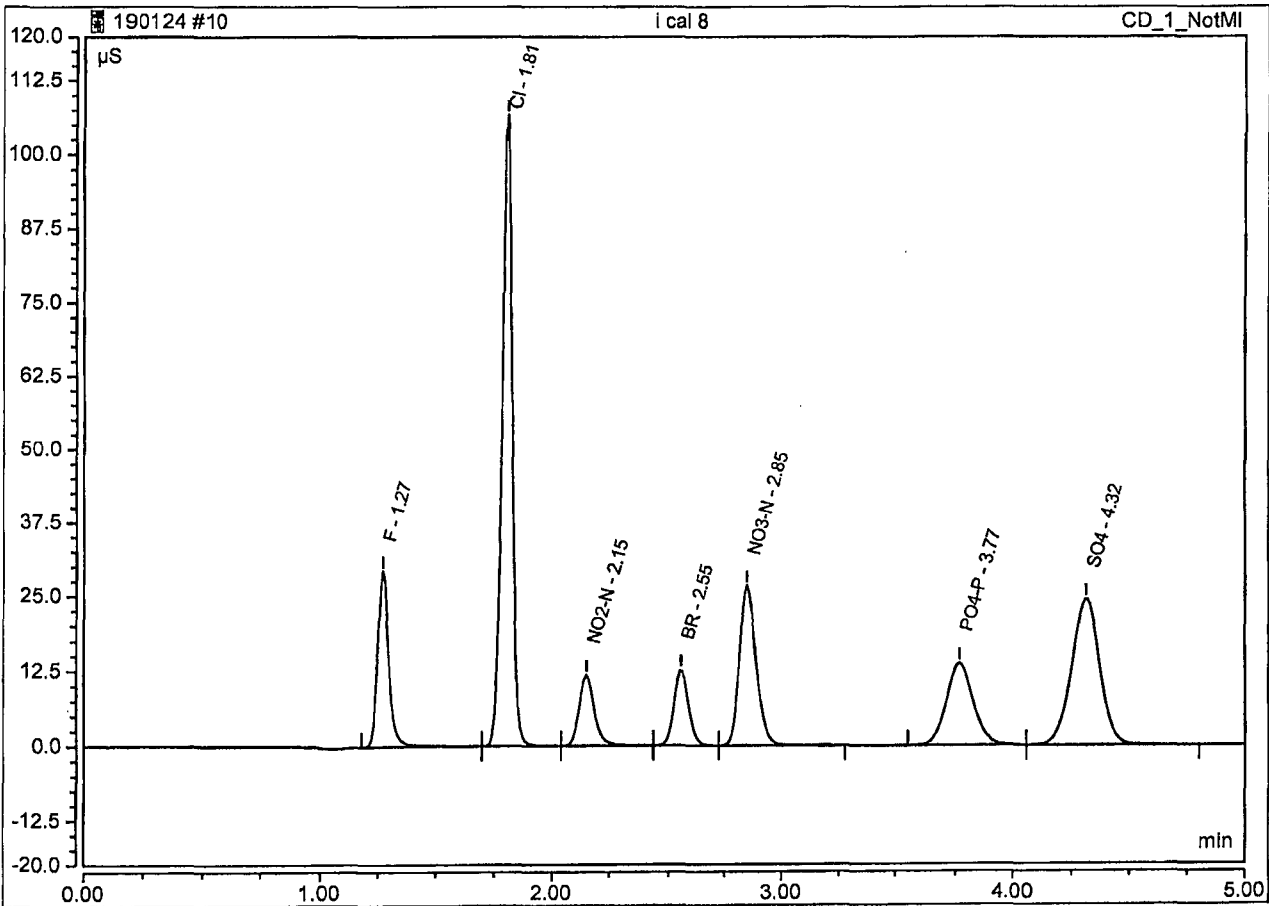


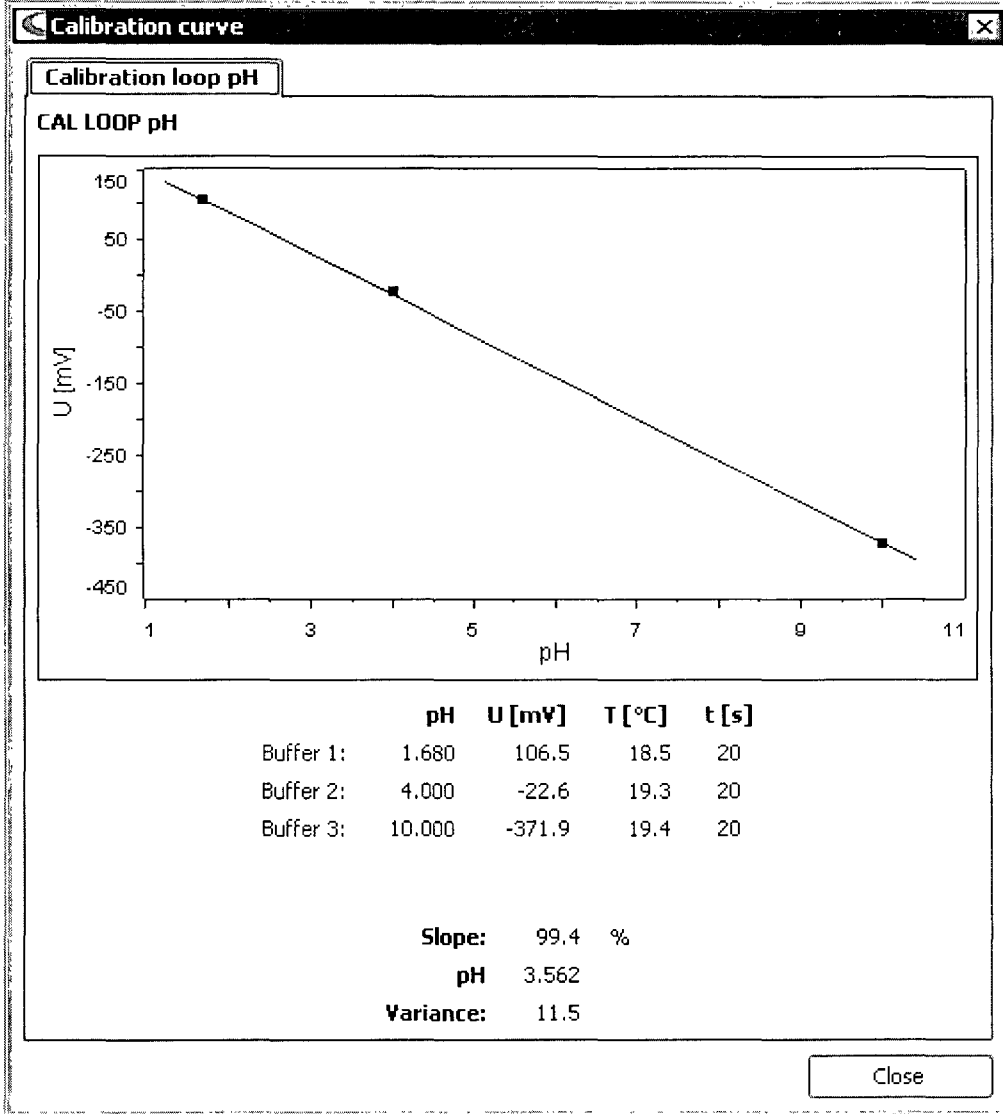
F mi1 HH 190128 MM

### Not Manipulated Peak Integration Report

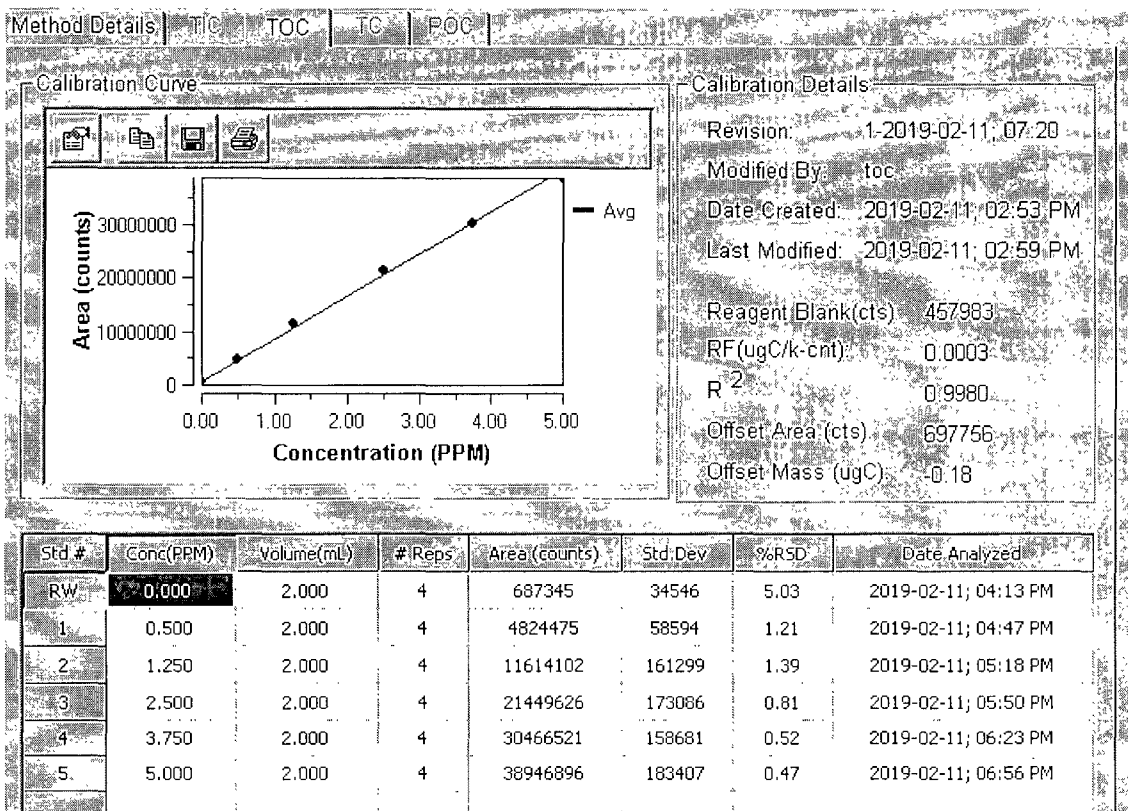
Sample Name:	I cal 8	Inj. Vol.:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 12:57	Run Time:	5.00

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height $\mu\text{S}$	Area $\mu\text{S}\cdot\text{min}$
1	1.27	F	BMB*	1.652	29.287	12.8588
2	1.81	Cl	BMB	5.499	106.635	51.6461
3	2.15	NO <sub>2</sub> -N	BMB	0.895	11.797	5.0614
4	2.55	BR	BMB	0.927	12.598	25.4664
5	2.85	NO <sub>3</sub> -N	BMB	2.258	26.658	10.2994
6	3.77	PO <sub>4</sub> -P	BMB	1.824	13.683	26.1607
7	4.32	SO <sub>4</sub>	BMB	3.411	24.358	51.3415





TicToc Calibration Curve 190211A





Appl.Inc  
 908 N Temperance Ave  
 Clovis, Ca  
 93611  
 USA

Date Prepared: 02/18/2019 By:

TOC

Date Approved: By:

Sample Results Summary

Spl #	Vial #	Sample ID	Num Rep	Act Rep	Method	Type	Dil	Customer ID	Mode	Avg. Area (cts)	Avg. Mass (ug)	Avg. Conc (PPM)	Std. Dev	% RSD	Notes
2	1	TOC-RW	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	Standard	1 : 1	00000000	TOC	687,345	0.000	0.000	34,546	5.03	
3	2	TOC-Std#1-0.500 PPM	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	Standard	1 : 1	00000000	TOC	4,824,475	1.000	0.500	58,594	1.21	
4	3	TOC-Std#2-1.250 PPM	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	Standard	1 : 1	00000000	TOC	11,614,102	2.500	1.250	161,299	1.39	
5	4	TOC-Std#3-2.500 PPM	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	Standard	1 : 1	00000000	TOC	21,449,626	5.000	2.500	173,086	0.81	
6	5	TOC-Std#4-3.750 PPM	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	Standard	1 : 1	00000000	TOC	30,466,521	7.500	3.750	158,681	0.52	
7	6	TOC-Std#5-5.000 PPM	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	Standard	1 : 1	00000000	TOC	38,946,896	10.000	5.000	183,407	0.47	
8	7	ICB	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	Sample	1 : 1	00000000	TOC	1,717,970	0.316	0.158	31,138	1.81	Pass
9	8	ICV Sugar	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	Check_Stan	1 : 1	00000000	TOC	22,163,151	5.392	2.696	109,699	0.49	



Appl.Inc  
 908 N Temperance Ave  
 Clovis, Ca  
 93611  
 USA

Date Prepared: 02/18/2019

By:

TOC

Date Approved:

By:

Sample Results

Spl #: 2 Sample ID: TOC-RW Type: Standard Date: 02/11/2019 Status: Passed  
 Vial #: 1 Method: NPOC - Feb 11, 2019; 02-54-31 Dilution: 1 : 1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	4:13 pm	-	-	-	668,867	0.000	0.000
2	4:21 pm	-	-	-	739,036	0.000	0.000
3	4:28 pm	-	-	-	667,973	0.000	0.000
4	4:36 pm	-	-	-	673,502	0.000	0.000
Avg.		-	-	-	687,345	0.000	0.000
Std.Dev.							
% RSD.					5.03		

Spl #: 3 Sample ID: TOC-Std#1-0.500 PPM Type: Standard Date: 02/11/2019 Status: Passed  
 Vial #: 2 Method: NPOC - Feb 11, 2019; 02-54-31 Dilution: 1 : 1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	4:47 pm	-	-	-	4,799,949	1.000	0.500
2	4:54 pm	-	-	-	4,769,063	1.000	0.500
3	5:02 pm	-	-	-	4,823,015	1.000	0.500
4	5:10 pm	-	-	-	4,905,872	1.000	0.500
Avg.		-	-	-	4,824,475	1.000	0.500
Std.Dev.							
% RSD.					1.21		



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Date Prepared: 02/18/2019 By: TOC  
 Date Approved: By:

Spl #: 4 Sample ID: TOC-Std#2-1.250 PPM Type: Standard Date: 02/11/2019 Status: Passed  
 Vial #: 3 Method: NPOC - Feb 11, 2019; 02-54-31 Dilution: 1 : 1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	5:18 pm	-	-	-	11,514,099	2.500	1.250
2	5:26 pm	-	-	-	11,788,000	2.500	1.250
3	5:34 pm	-	-	-	11,444,716	2.500	1.250
4	5:42 pm	-	-	-	11,709,594	2.500	1.250
Avg.		-	-	-	11,614,102	2.500	1.250
Std.Dev.							
% RSD.					1.39		

Spl #: 5 Sample ID: TOC-Std#3-2.500 PPM Type: Standard Date: 02/11/2019 Status: Passed  
 Vial #: 4 Method: NPOC - Feb 11, 2019; 02-54-31 Dilution: 1 : 1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	5:50 pm	-	-	-	21,654,245	5.000	2.500
2	5:58 pm	-	-	-	21,360,038	5.000	2.500
3	6:06 pm	-	-	-	21,521,272	5.000	2.500
4	6:15 pm	-	-	-	21,262,949	5.000	2.500
Avg.		-	-	-	21,449,626	5.000	2.500
Std.Dev.							
% RSD.					0.81		



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Date Prepared: 02/18/2019 By: TOC  
 Date Approved: By:

Spl #: 6 Sample ID: TOC-Std#4-3.750 PPM Type: Standard Date: 02/11/2019 Status: Passed  
 Vial #: 5 Method: NPOC - Feb 11, 2019; 02-54-31 Dilution: 1 : 1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	6:23 pm	-	-	-	30,612,289	7.500	3.750
2	6:31 pm	-	-	-	30,309,053	7.500	3.750
3	6:39 pm	-	-	-	30,351,074	7.500	3.750
4	6:47 pm	-	-	-	30,593,670	7.500	3.750
Avg.		-	-	-	30,466,521	7.500	3.750
Std.Dev.							
% RSD.					0.52		

Spl #: 7 Sample ID: TOC-Std#5-5.000 PPM Type: Standard Date: 02/11/2019 Status: Passed  
 Vial #: 6 Method: NPOC - Feb 11, 2019; 02-54-31 Dilution: 1 : 1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	6:56 pm	-	-	-	38,971,032	10.000	5.000
2	7:04 pm	-	-	-	38,706,906	10.000	5.000
3	7:12 pm	-	-	-	38,956,234	10.000	5.000
4	7:20 pm	-	-	-	39,153,413	10.000	5.000
Avg.		-	-	-	38,946,896	10.000	5.000
Std.Dev.							
% RSD.					0.47		





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Date Prepared: 02/18/2019 By: *TOC*

Date Approved: By:

Spl #: 8 Sample ID: ICB Type: Sample Date: 02/11/2019 Status: Passed  
 Vial #: 7 Method: NPOC - Feb 11, 2019; 02-54-31 Dilution: 1 : 1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	7:31 pm	-	-	-	1,702,854	0.313	0.156
2	7:39 pm	-	-	-	1,725,871	0.318	0.159
3	7:46 pm	-	-	-	1,685,579	0.308	0.154
4	7:54 pm	-	-	-	1,757,576	0.326	0.163
Avg.		-	-	-	1,717,970	0.316	0.158
Std.Dev.							
% RSD.					1.81		

Spl #: 9 Sample ID: ICV Sugar Type: Check\_Stan Date: 02/11/2019 Status: Passed  
 Vial #: 8 Method: NPOC - Feb 11, 2019; 02-54-31 Dilution: 1 : 1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	8:02 pm	-	-	-	22,271,756	5.419	2.710
2	8:10 pm	-	-	-	22,113,536	5.379	2.690
3	8:18 pm	-	-	-	22,033,394	5.359	2.680
4	8:26 pm	-	-	-	22,233,919	5.409	2.705
Avg.		-	-	-	22,163,151	5.392	2.696
Std.Dev.							
% RSD.					0.49		



**INORGANIC ANALYSIS**  
**Raw Data**

**APPL, INC.**

Method SM3500Fe	Units mg/L	Ferrous Iron		Instrument: Genisis Spectrometer
Analyte Fe2+	QCG: 190130A			Wavelength: 510 nm
Analyst HH	Final Volume: 50mL			

Date	Time	Appl ID	[Fe2+]	Absorbance	% Recovery
06/15/18	12:27	ICB	0.00	0.000	
06/15/18	12:27	Ical 1	1.00	0.099	98.7%
06/15/18	12:28	Ical 2	2.00	0.201	100.4%
06/15/18	12:28	Ical 3	4.00	0.396	98.9%
06/15/18	12:29	Ical 4	5.00	0.501	100.1%
06/15/18	12:30	Ical 5	10.00	1.000	100.0%
06/15/18	12:31	ICV	3.00	0.316	105.2%
06/15/18	12:32	ICB	0.00	0.000	

Slope	0.100015306	Algorithm Check:	Appl ID	Absorbance	Result
Intercept	0.000258661		190130 LCS	0.296	2.96
Coefficient of Determination	0.999973247		Result = (Absorbance-Raw Blk-Intercept)/ Slope		
		Test:	HH	190130	2.96

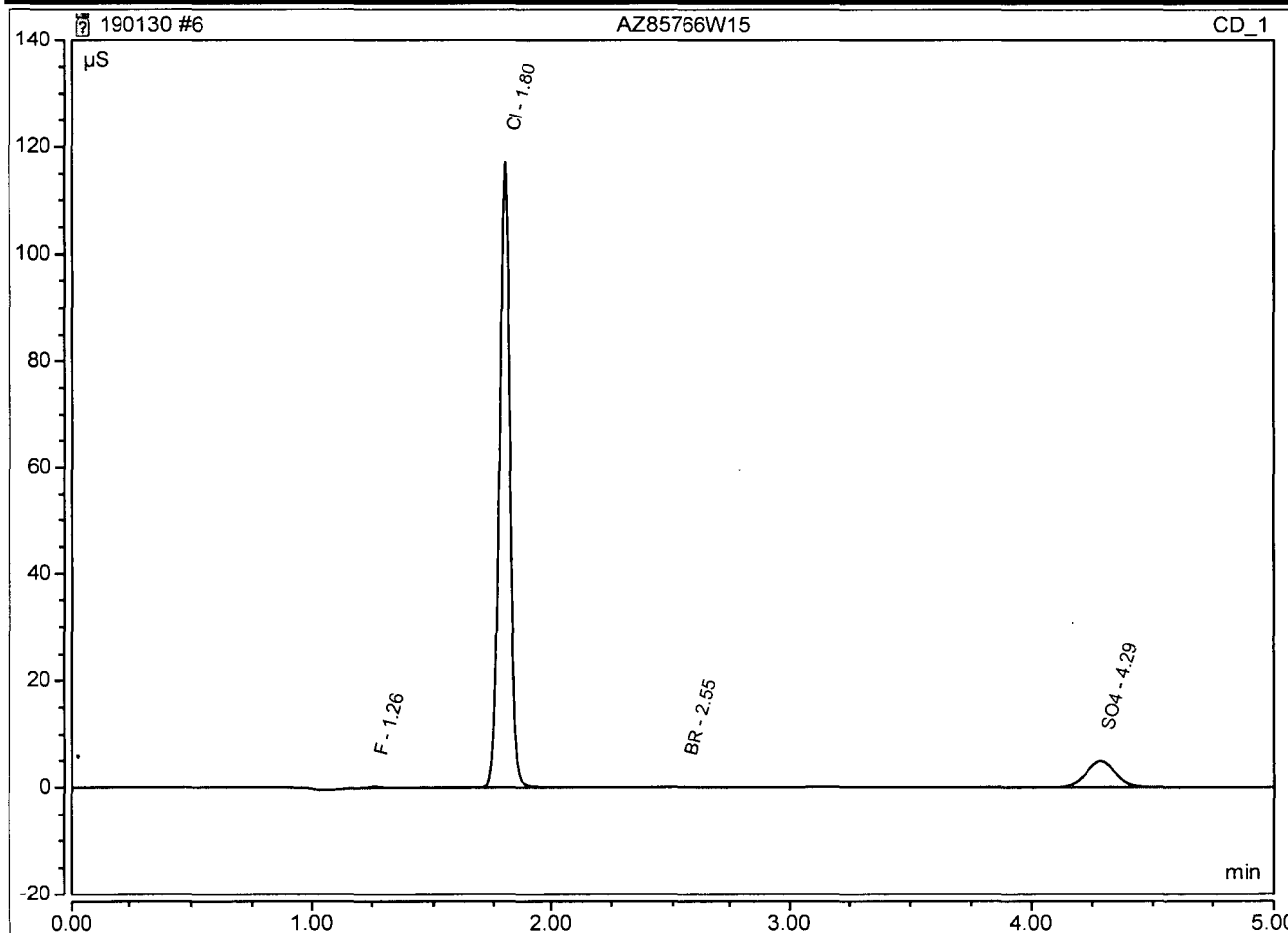
  

Date	Time	Appl ID	DF	Raw Result	SubSample Amount	Raw BLK	Calc Conc	Result	QC True	% Recovery
01/30/19	8:10	CCV 4.0 190130	1	0.392	25mL		3.92	3.92	4.00	97.9%
01/30/19	8:11	CCB 190130	1	-0.004	25mL		-0.04	-0.04		
01/30/19	8:12	190130 LCS	1	0.296	25mL		2.96	2.96	3.00	98.6%
01/30/19	8:12	190130 LCSD	1	0.300	25mL		3.00	3.00	3.00	99.9%
01/30/19	8:13	AZ85754W18 DF2	2	0.662	12.5mL		6.62	13.23		
01/30/19	8:14	AZ85761W26	1	0.033	25mL		0.33	0.33		
01/30/19	8:14	AZ85761W26 MS	1	0.343	25mL		3.43	3.43		
01/30/19	8:15	AZ85761W26 MSD	1	0.337	25mL		3.37	3.37		
01/30/19	8:30	AZ85755W06	1	0.015	25mL		0.15	0.15		
01/30/19	8:30	AZ85757W13	1	0.044	25mL		0.44	0.44		
01/30/19	8:31	AZ85758W13	1	0.049	25mL		0.49	0.49		
01/30/19	8:33	AZ85759W13	1	0.095	25mL		0.95	0.95		
01/30/19	8:34	AZ85760W13	1	0.044	25mL		0.44	0.44		
01/30/19	8:34	CCV 4.0 190130	1	0.400	25mL		4.00	4.00	4.00	99.9%
01/30/19	8:35	CCB 190130	1	0.005	25mL		0.05	0.05		
01/30/19	10:16	CCV 4.0 190130	1	0.394	25mL		3.94	3.94	4.00	98.4%
01/30/19	10:17	CCB 190130	1	0.005	25mL		0.05	0.05		
01/30/19	10:18	AZ85766W17	1	0.020	25mL		0.20	0.20		
01/30/19	10:18	CCV 4.0 190130	1	0.399	25mL		3.99	3.99	4.00	99.7%
01/30/19	10:19	CCB 190130	1	0.005	25mL		0.05	0.05		

### Peak Integration Report

Sample Name:	AZ85766W15	Inj. Vol.:	25.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	30-Jan-2019 / 10:16	Run Time:	5.00

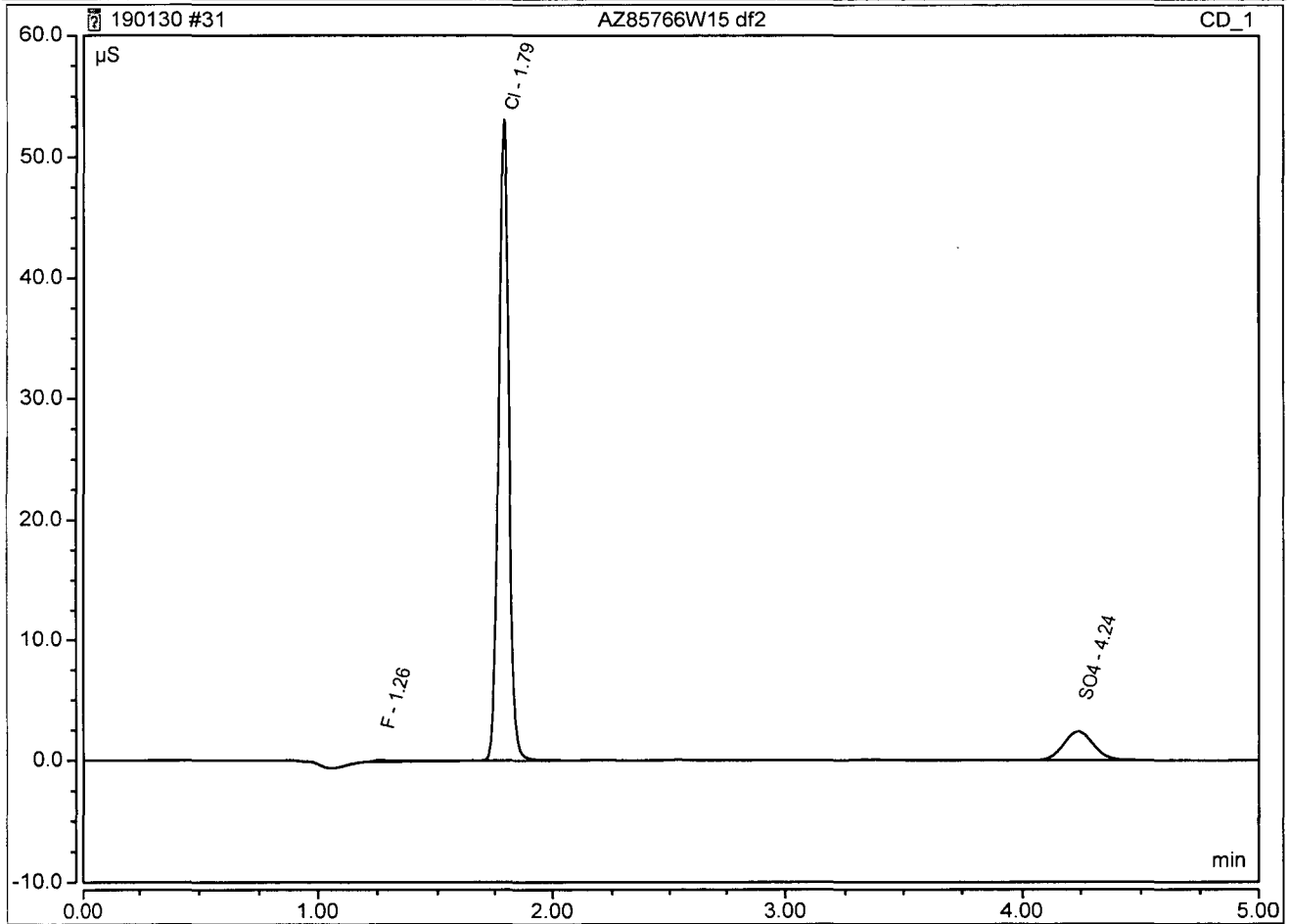
No.	Time (min)	Peak Name	Peak Type	Area ( $\mu\text{S}\cdot\text{min}$ )	Height ( $\mu\text{S}$ )	Amount (mg/L)
2	1.26	F	BMB	0.013	0.247	0.1492
3	1.80	Cl	BMB	6.102	117.032	57.3075
4	2.55	BR	BMB	0.003	0.049	0.0747
5	4.29	SO4	BMB	0.698	4.868	10.5053



### Peak Integration Report

Sample Name:	AZ85766W15 df2	Inj. Vol.:	25.00
Injection Type:	Unknown	Dilution Factor:	2.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	30-Jan-2019 / 14:51	Run Time:	5.00

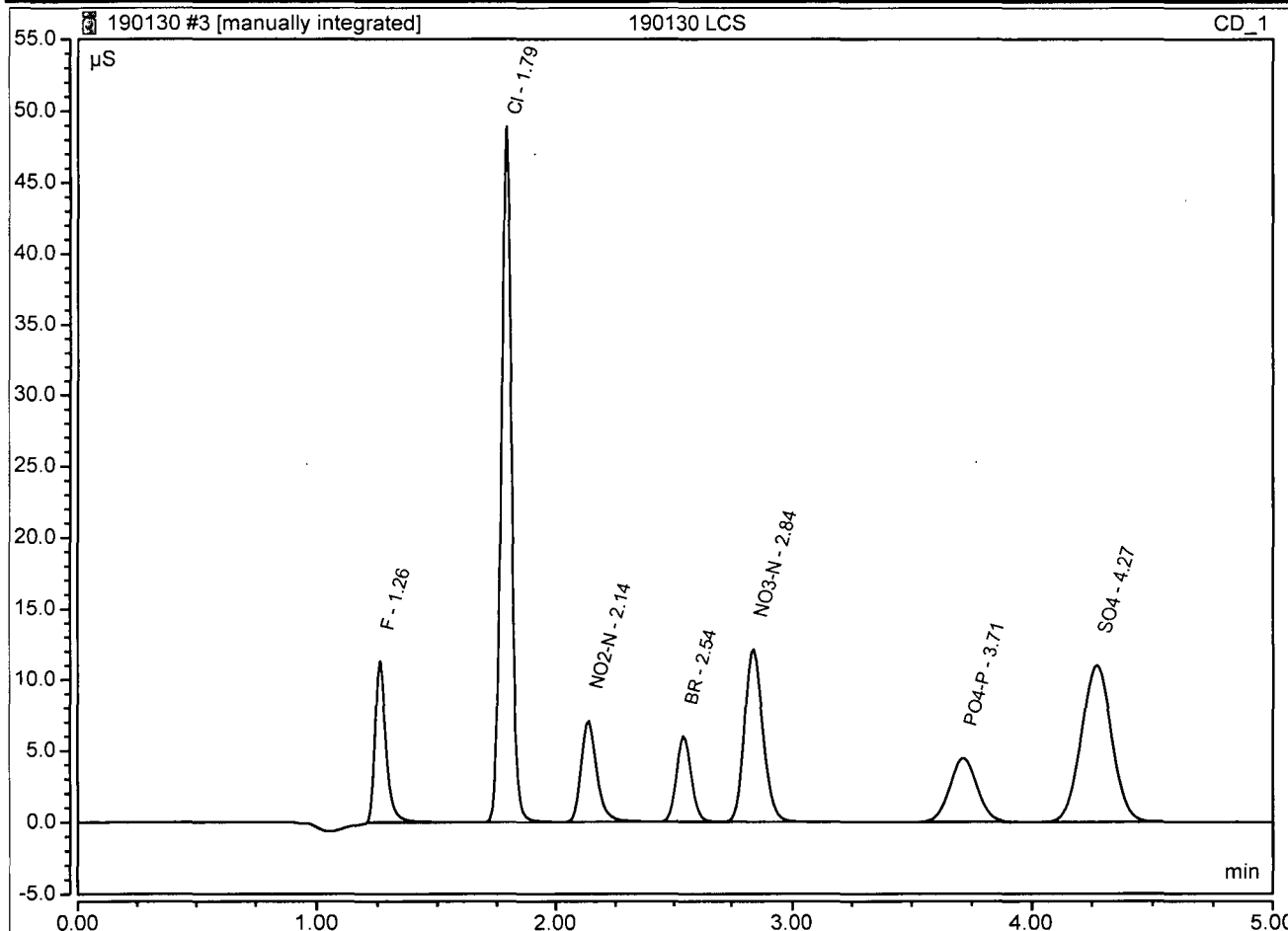
No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.26	F	BMB	0.022	0.152	0.4512
2	1.79	Cl	BMB	2.786	53.045	52.3206
3	4.24	SO4	BMB	0.340	2.375	10.2482



### Peak Integration Report

Sample Name:	190130 LCS	Inj. Vol.:	25.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	30-Jan-2019 / 09:18	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.26	F	BMB*	0.592	11.302	4.7532
2	1.79	Cl	BMB	2.472	48.865	23.2127
3	2.14	NO2-N	BMB	0.533	7.074	3.0126
4	2.54	BR	BMB	0.449	5.997	12.3427
5	2.84	NO3-N	BMB	1.043	12.139	4.7575
6	3.71	PO4-P	BMB	0.609	4.468	8.7292
7	4.27	SO4	BMB	1.564	11.020	23.5420



F mi1 HH 190130 MM

Algorithm Check:

y = Peak Area

x = mg/L S04

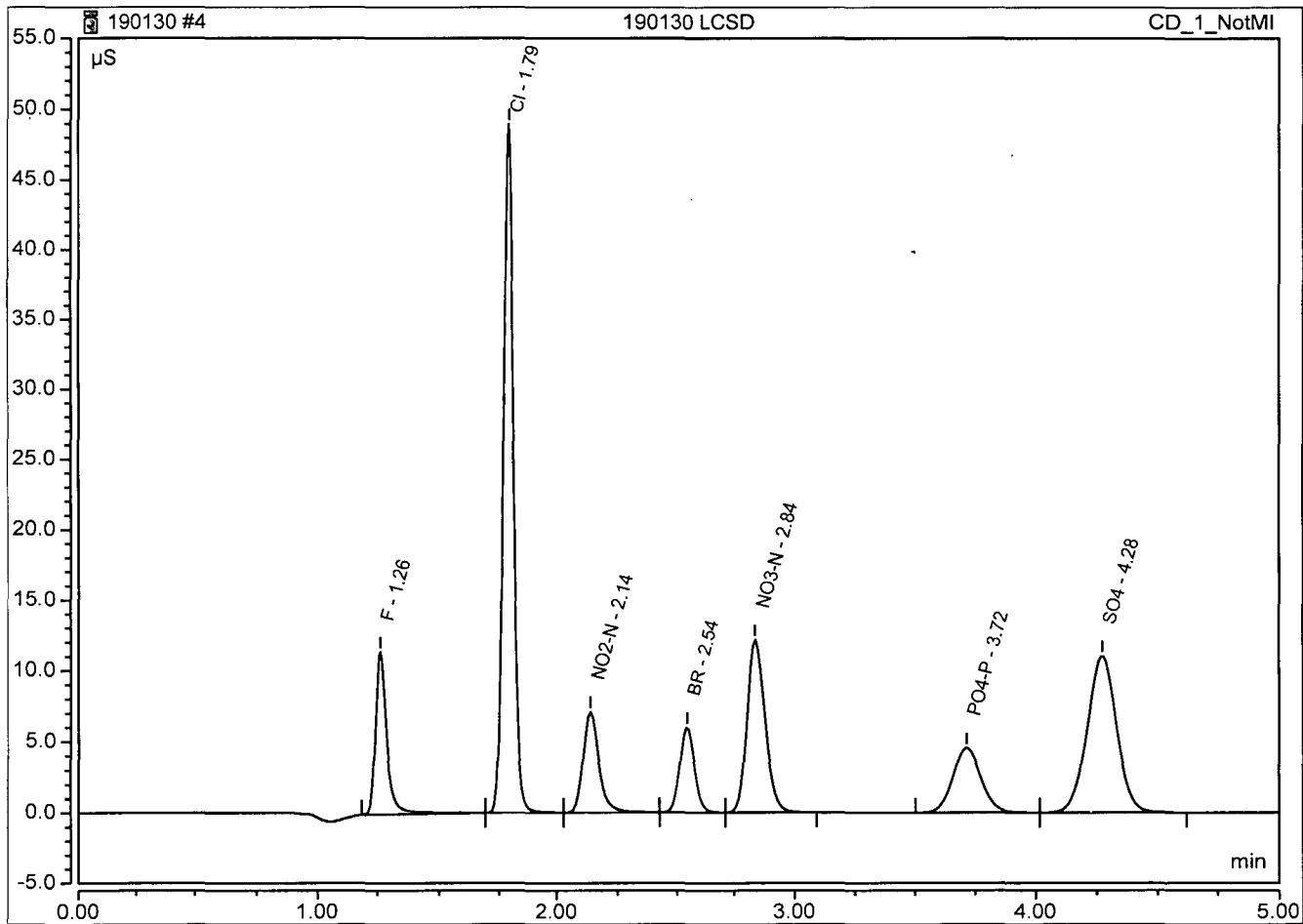
$$y = 0.0664 \quad x + \quad 0.0000$$

$$y = 1.5642 \quad \text{therefor } x = 23.55 \text{ HH 190130}$$

### Not Manipulated Peak Integration Report

Sample Name:	190130 LCSD	Inj. Vol.:	25.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	30-Jan-2019 / 09:25	Run Time:	5.00

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height $\mu\text{S}$	Area $\mu\text{S} \cdot \text{min}$
1	1.26	F	BMB*	0.627	11.445	4.7780
2	1.79	Cl	BMB	2.475	48.932	23.2464
3	2.14	NO <sub>2</sub> -N	BMB	0.534	7.092	3.0169
4	2.54	BR	BMB	0.450	6.008	12.3586
5	2.84	NO <sub>3</sub> -N	BMB	1.042	12.159	4.7535
6	3.72	PO <sub>4</sub> -P	BMB	0.620	4.563	8.9001
7	4.28	SO <sub>4</sub>	BMB	1.567	11.033	23.5868



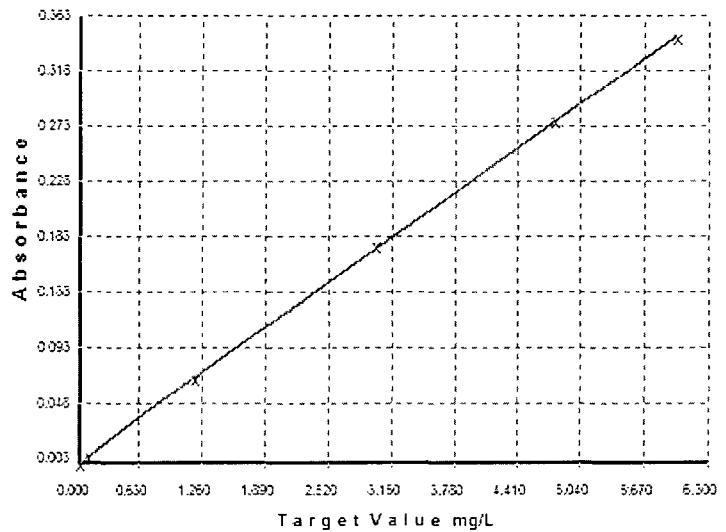
**TOXN**

**Calibration Chart**

Type	Absorbance	Calc mg/L	Target mg/L	% Error
S1	0.0035	-0.0013	0.0000	
S90	0.0088	0.0924	0.1000	-7.63
S91	0.0717	1.1902	1.2000	-0.82
S92	0.1771	3.0297	3.0000	0.99
S93	0.2790	4.8087	4.8000	0.18
S94	0.3461	5.9802	6.0000	-0.33
S0	0.0034	-0.0022	0.0000	

Polynomial Order: 1  
 Correlation Coefficient: 1.0000  
 Carryover(%): -0.0  
 Calibration equation:  $y = bx + a$   
 y =: Concentration mg/L  
 x =: Measured absorbance  
 a =: -6.182168E-002  
 b =: 1.745792E+001  
 Date & Time: 2019-02-04 14:25:04

**Calibration Graph**



**Reagents**

Name	Batch	Prepared By	Expiry Date
NO3 W Buffer	Algorithm	Joel	
Sulfa-NEDD	check	Joel	
$y = 17.45742 \times 0.168628 - 0.06182168$ $y = 2.88$			
		EV	2/12/19

Cup Type	ID	Result	Units	QC Pro	Raw Data	Auto Dil.	Man Dil.	User	Time/Date
S1	Standard 1	0.0035			0.003468			Ev	2019-02-04 14:11:56
S90	Standard 90	0.0088			0.008832			Ev	2019-02-04 14:14:07
S91	Standard 91	0.0717			0.071718			Ev	2019-02-04 14:16:18
S92	Standard 92	0.1771			0.177086			Ev	2019-02-04 14:18:30
S93	Standard 93	0.2790			0.278989			Ev	2019-02-04 14:20:41
S94	Standard 94	0.3461			0.346092			Ev	2019-02-04 14:22:52
S0	Standard 0	0.0034			0.003417			Ev	2019-02-04 14:25:04
CCV	CCV	2.5986	mg/L		0.152388			Ev	2019-02-04 14:27:16
CCB	CCB	-0.0299	mg/L		0.001826			Ev	2019-02-04 14:29:28
4 U2	✓ICV NO3 TOXN	2.8821	mg/L		0.168628			Ev	2019-02-04 14:31:40
5 U3	ICB NO2 NO3 TOXN	-0.0166	mg/L		0.002589			Ev	2019-02-04 14:33:51
6 U4	190204A BLK NO2 NO3 TOXN	-0.0137	mg/L		0.002754			Ev	2019-02-04 14:36:04
9 U7	190204A LCS NO3 TOXN	2.8905	mg/L		0.169113			Ev	2019-02-04 14:36:42
10 U8	190204A LCSD NO3 TOXN	2.7171	mg/L		0.159180			Ev	2019-02-04 14:37:47
12 U10	1ppm NO3 TOXN	0.9252	mg/L		0.056539			Ev	2019-02-04 14:38:43
13 U11	AZ85766W16	-0.0297	mg/L		0.001838			Ev	2019-02-04 14:39:39
14 U12	AZ85766W16 MS	-0.0204	mg/L		0.002372			Ev	2019-02-04 14:40:35
15 U13	AZ85766W16 MSD	-0.0124	mg/L		0.002831			Ev	2019-02-04 14:41:31
16 U14	AZ85434W01	6.5289	mg/L		0.377520			Ev	2019-02-04 14:42:27
CCV	CCV	2.9157	mg/L		0.170553			Ev	2019-02-04 14:43:23
CCB	CCB	-0.0266	mg/L		0.002016			Ev	2019-02-04 14:44:20

**Nitrite-N**

Cup Type	ID	Result	Units	QC Pro	Raw Data	Auto Dil.	Man Dil.	User	Time/Date
CCV	CCV .75	0.7600	mg/L		0.666320				2019-02-04 14:58:22
CCB	CCB	-0.0001	mg/L		0.002843				2019-02-04 15:00:41
17 U15	AZ85435W01	1.8328	mg/L		0.402903	x 4.000		Ev	2019-02-04 15:02:54
CCV	CCV .75	0.7144	mg/L		0.626536				2019-02-04 15:05:07
CCB	CCB	0.0006	mg/L		0.003442				2019-02-04 15:06:15

**TOXN**

Cup Type	ID	Result	Units	QC Pro	Raw Data	Auto Dil.	Man Dil.	User	Time/Date
CCV	CCV	2.7888	mg/L		0.163288				2019-02-04 15:09:30



## Metrohm 814/809 Titrando Data

Sample ID	Analysis Date/Time	Method	Titration Volume		OH	CO3	HCO3	Total Alk	Unit	Sample Vol	N	Batch	Initials
			(to 8.3)	(total)									
AZ85766W15	2019-02-05 15:29:25 UTC-8	Alkalinity	0.000	2.740	0.00	0.00	113.98	113.98	mg/L	25 mL	0.0208	190205A	AR
190205A LCSD	2019-02-05 11:48:13 UTC-8	Alkalinity	0.000	5.872	0.00	0.00	238.40	238.40	mg/L	25 mL	0.0203	190205A	AR
190205A LCS	2019-02-05 11:38:28 UTC-8	Alkalinity	0.000	5.872	0.00	0.00	238.40	238.40	mg/L	25 mL	0.0203	190205A	AR
190205A BLK	2019-02-05 11:35:18 UTC-8	Alkalinity	0.000	0.054	0.00	0.00	2.19	2.19	mg/L	25 mL	0.0203	190205A	AR



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Date Prepared: 02/18/2019

By:

TOC

Date Approved:

By:

Sample Results Summary

Spl Vial #	#	Sample ID	Num Rep	Act Rep	Method	Type	Dil	Customer ID	Mode	Avg. Area (cts)	Avg. Mass (ug)	Avg. Conc (PPM)	Std. Dev	% RSD	Notes
34	34	CCV	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	QC #1	1 : 1	00000000	TOC	21,173,836	5.316	2.658	461,598	2.18	
35	35	CCB	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	QC #1	1 : 1	00000000	TOC	2,431,812	0.611	0.306	63,952	2.63	
3	5	190213A LCS	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	QC #1	1 : 1	00000000	TOC	17,425,240	4.375	2.187	98,650	0.57	
4	6	190213A LCSD	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	QC #1	1 : 1	00000000	TOC	17,206,265	4.320	2.160	111,046	0.65	
11	10	CCV 190212	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	QC #1	1 : 1	00000000	TOC	21,546,495	5.409	2.704	129,277	0.60	
12	11	CCB	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	QC #1	1 : 1	00000000	TOC	2,243,558	0.563	0.282	64,732	2.89	
15	14	AZ85766W13 TOC	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	Sample	1 : 1	00000000	TOC	8,574,829	2.038	1.019	60,399	0.70	Pass
23	10	CCV 190212	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	QC #1	1 : 1	00000000	TOC	20,349,294	5.109	2.555	1,690,420	8.31	
24	11	CCB	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	QC #1	1 : 1	00000000	TOC	13,896	0.003	0.002	17,018	122.47	





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Date Prepared: 02/18/2019 By: *TOC*  
 Date Approved: By:

**Sample Results**

Spl #: 34 Sample ID: CCV Type: QC #1 Date: 02/13/2019 Status: Passed  
 Vial #: 34 Method: NPOC - Feb 11, 2019; 02-54-31 Dilution: 1 : 1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	8:48 am	-	-	-	21,613,624	5.426	2.713
2	8:56 am	-	-	-	21,531,430	5.406	2.703
3	9:04 am	-	-	-	20,771,851	5.215	2.608
4	9:12 am	-	-	-	20,778,437	5.217	2.608
<b>Avg.</b>		-	-	-	21,173,836	5.316	2.658
<b>Std.Dev.</b>							
<b>% RSD.</b>					2.18		

Spl #: 35 Sample ID: CCB Type: QC #1 Date: 02/13/2019 Status: Passed  
 Vial #: 35 Method: NPOC - Feb 11, 2019; 02-54-31 Dilution: 1 : 1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	9:23 am	-	-	-	2,426,350	0.609	0.305
2	9:31 am	-	-	-	2,523,661	0.634	0.317
3	9:39 am	-	-	-	2,394,622	0.601	0.301
4	9:46 am	-	-	-	2,382,614	0.598	0.299
<b>Avg.</b>		-	-	-	2,431,812	0.611	0.306
<b>Std.Dev.</b>							
<b>% RSD.</b>					2.63		



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 Clovis, Ca  
 93611  
 USA

Date Prepared: 02/18/2019 By:

TOC

Date Approved: By:

Spl #: 11 Sample ID: CCV 190212 Type: QC #1 Date: 02/13/2019 Status: Passed  
 Vial #: 10 Method: NPOC - Feb 11, 2019; 02-54-31 Dilution: 1:1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	9:23 pm	-	-	-	21,570,741	5.415	2.708
2	9:31 pm	-	-	-	21,668,118	5.440	2.719
3	9:39 pm	-	-	-	21,583,376	5.419	2.709
4	9:47 pm	-	-	-	21,363,745	5.364	2.682
Avg.		-	-	-	21,546,495	5.409	2.704
Std.Dev.							
% RSD.					0.60		

Spl #: 12 Sample ID: CCB Type: QC #1 Date: 02/13/2019 Status: Passed  
 Vial #: 11 Method: NPOC - Feb 11, 2019; 02-54-31 Dilution: 1:1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	9:58 pm	-	-	-	2,334,995	0.586	0.293
2	10:05 pm	-	-	-	2,221,045	0.558	0.279
3	10:13 pm	-	-	-	2,234,864	0.561	0.281
4	10:21 pm	-	-	-	2,183,327	0.548	0.274
Avg.		-	-	-	2,243,558	0.563	0.282
Std.Dev.							
% RSD.					2.89		



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Date Prepared: 02/18/2019 By: TOC  
 Date Approved: By:

Spl #: 15 Sample ID: AZ85766W13 TOC Type: Sample Date: 02/13/2019 Status: Passed  
 Vial #: 14 Method: NPOC - Feb 11, 2019; 02-54-31 Dilution: 1 : 1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	11:34 pm	-	-	-	8,548,526	2.031	1.016
2	11:43 pm	-	-	-	8,547,298	2.031	1.015
3	11:51 pm	-	-	-	8,538,320	2.029	1.014
4	11:59 pm	-	-	-	8,665,170	2.060	1.030
Avg.		-	-	-	8,574,829	2.038	1.019
Std.Dev.							
% RSD.					0.70		

Spl #: 23 Sample ID: CCV 190212 Type: QC #1 Date: 02/14/2019 Status: Passed  
 Vial #: 10 Method: NPOC - Feb 11, 2019; 02-54-31 Dilution: 1 : 1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	3:55 am	-	-	-	21,306,554	5.349	2.675
2	4:03 am	-	-	-	21,028,032	5.279	2.640
3	4:11 am	-	-	-	21,242,621	5.333	2.667
4	4:20 am	-	-	-	17,819,967	4.474	2.237
Avg.		-	-	-	20,349,294	5.109	2.555
Std.Dev.							
% RSD.					8.31		





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Date Prepared: 02/18/2019 By: *TOC*  
 Date Approved: By:

Spl #: 24 Sample ID : CCB Type : QC #1 Date: 02/14/2019 Status: Passed  
 Vial #: 11 Method : NPOC - Feb 11, 2019; 02-54-31 Dilution : 1 : 1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	4:31 am	-	-	-	19,402	0.005	0.002
2	4:39 am	-	-	-	622	0.000	0.000
3	4:46 am	-	-	-	0	0.000	0.000
4	4:54 am	-	-	-	35,558	0.009	0.005
Avg.		-	-	-	13,896	0.003	0.002
Std.Dev.							
% RSD.					122.47		

Spl #: 3 Sample ID : 190213A LCS Type : QC #1 Date: 02/13/2019 Status: Passed  
 Vial #: 5 Method : NPOC - Feb 11, 2019; 02-54-31 Dilution : 1 : 1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	11:48 am	-	-	-	17,358,532	4.358	2.178
2	11:55 am	-	-	-	17,410,530	4.371	2.186
3	12:04 pm	-	-	-	17,362,958	4.359	2.180
4	12:12 pm	-	-	-	17,568,942	4.411	2.205
Avg.		-	-	-	17,425,240	4.375	2.187
Std.Dev.							
% RSD.					0.57		



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Date Prepared: 02/18/2019 By: TOC  
 Date Approved: By:

Spl #: 4 Sample ID: 190213A LCSD Type: QC #1 Date: 02/13/2019 Status: Passed  
 Vial #: 6 Method: NPOC - Feb 11, 2019; 02-54-31 Dilution: 1 : 1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	12:23 pm	-	-	-	17,120,286	4.298	2.149
2	12:31 pm	-	-	-	17,200,482	4.318	2.159
3	12:39 pm	-	-	-	17,139,545	4.303	2.152
4	12:47 pm	-	-	-	17,364,746	4.360	2.180
Avg.		-	-	-	17,206,265	4.320	2.160
Std.Dev.							
% RSD.					0.65		

Standard Prep							
Prep Date	Ferrous Iron Standards		Prep'd By (Initials)		HH		
Exp Date	06/15/18						
	06/15/19						
Stock Label	Supplier	Batch Number	Exp Date	Aliquot from Stock	Final Volume	Solvent	Ferrous Iron Concentration
Ferrous Ammonium Sulfate	J.T Baker	0000184592	08/21/20	0.351	250mL	5ml H2SO4 (0000167828) Diluted with water	200ug/L
Ferrous Sulfate	Mallinckrodt	Lot 5056 KDRX	NA	0.249	250mL	5ml H2SO4 (0000167828) Diluted with water	200ug/L
Ferrous Iron CCV/LCS/MS/ICV			Prep'd By (Initials)		HH		
Prep Date	See Injection Log						
Exp Date	24 Hours						
Initial Standard Information	Supplier	Batch Number	Exp Date	Final Standard Information			
Ferrous Iron CCV	J.T.Baker	0000184592	06/14/19	500uL	25mL	Deionized water	4mg/L
Ferrous Iron ICV/LCS	Mallinckrodt	Lot 5056 KDRX	06/14/19	375uL	25mL	Deionized water	3mg/L
Ferrous Iron Calibration Curve			Prep'd By (Initials)		HH		
Prep Date	06/15/18						
Exp Date	06/16/18						
Final Standard Information							
Point Label	Supplier	Batch Number	Exp Date	Aliquot from Stock (mL)	Final Volume	Solvent	Ferrous Iron Concentration
CCB	J.T Baker	0000184592	06/14/19	0	25mL	Deionized water	0mg/L
Ical 1	J.T.Baker	0000184592	06/14/19	0.125	25mL	Deionized water	1mg/L
Ical 2	J.T.Baker	0000184592	06/14/19	0.25	25mL	Deionized water	2mg/L
Ical 3	J.T.Baker	0000184592	06/14/19	0.5	25mL	Deionized water	4mg/L
Ical 4	J.T.Baker	0000184592	06/14/19	0.625	25mL	Deionized water	5mg/L
Ical 5	J.T.Baker	0000184592	06/14/19	1.25	25mL	Deionized water	10mg/L
ICV	Mallinckrodt	Lot 5056 KDRX	06/14/19	0.375	25mL	Deionized water	3mg/L
Reagent Prep							
Reagent	Chemical Lot #	Chemical	Chemical Expiration Date	Amount	Date Prep		
Colorizer	0747C107	1,10-phenanthroline	na	0.2076	01/29/19		
		HCL conc	na	8drops			
Buffer	Z28B018	Ammonia Acetate	na	249.3g	01/15/19		
	2018071399	Glacial Acetic Acid	06/27/20	700mL			



Anion Chromatography Working Standard									
Prep Date: 01/24/19									
Exp Date: 01/25/19									
Initial Standard Information					Prep'd By (Initials): HH				
Name of Initial Standard (QAU Label)	Supplier	Supplier Part No.	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date	Aliquot from Stock	Final Volume	Solvent	Final Standard Conc (ug/mL)
Ion Chromatography Standard Fluoride 1000ug/mL in H <sub>2</sub> O	o2si	O2SI-062002-01-01	1000	142626-24-38407	04/20/19	312.5 µL	25 mL	Millipore Water	12.5
Ion Chromatography Standard Nitrite as N 1000 ug/mL in H <sub>2</sub> O	o2si	O2SI-062004-01-01	1000	142626-24-38408	04/20/19	125 µL	25 mL	Millipore Water	5
Ion Chromatography Standard Chloride, 500mL 5,000 mg/L in H <sub>2</sub> O	o2si	062001-08-03	5000	10084781-1-39578	02/21/20	250 µL	25 mL	Millipore Water	50
Ortho-Phosphate as P Standard	Ultra Scientific	ICC-005A	1000	G34-CP-3323-39057	08/31/23	625 µL	25 mL	Millipore Water	25
Ion Chromatography Standard Nitrate as N, 500mL 1,000 mg/L in H <sub>2</sub> O	o2si	062003-01-03	1000	880117-4-39577	02/21/20	250 µL	25 mL	Millipore Water	10
Bromide Standard	Ultra Scientific	ICC-001	1000	CR-5372-39521	12/31/21	625 µL	25 mL	Millipore Water	25
Sulfate Standard	Agilent	ICC-006	1000	CS-0688-40047	03/31/22	1250 µL	25 mL	Millipore Water	50

Anion Chromatography Calibration Curve									
Prep Date: 01/24/19									
Exp Date: 01/25/19									
Initial Standard Information					Prep'd By (Initials): HH				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. Range (ug/mL)	Reference To APPL Prep Date	Exp. Date	Aliquot from Stock	Final Volume	Solvent	Final Conc. Range (ug/mL)
ICal2	Varries	ICal1	5.0-50.0	Prepared 01/24/19	01/25/19	400 µL	1000 µL	Millipore Water	0.08-0.40
Anion Chromatography Working Standard	Varries	ICal2	5.0-50.0	Prepared 01/24/19	01/25/19	20 µL	1000 µL	Millipore Water	0.1-1.0
Anion Chromatography Working Standard	Varries	ICal3	5.0-50.0	Prepared 01/24/19	01/25/19	50 µL	1000 µL	Millipore Water	0.25-2.5
Anion Chromatography Working Standard	Varries	ICal4	5.0-50.0	Prepared 01/24/19	01/25/19	100 µL	1000 µL	Millipore Water	0.5-5.0
Anion Chromatography Working Standard	Varries	ICal5	5.0-50.0	Prepared 01/24/19	01/25/19	200 µL	1000 µL	Millipore Water	1.0-10.0
Anion Chromatography Working Standard	Varries	ICal6	5.0-50.0	Prepared 01/24/19	01/25/19	500 µL	1000 µL	Millipore Water	2.5-25.0
Anion Chromatography Working Standard	Varries	ICal7	5.0-50.0	Prepared 01/24/19	01/25/19	700 µL	1000 µL	Millipore Water	3.5-35.0
Anion Chromatography Working Standard	Varries	ICal8	5.0-50.0	Prepared 01/24/19	01/25/19	1000 µL	1000 µL	Millipore Water	5.0-50.0

Anion Chromatography LCS/ICV									
Prep Date: See Injection Log									
Exp Date: 24 hours after prep									
Initial Standard Information					Prep'd By (Initials): HH				
Name of Initial Standard (QAU Label)	Supplier	Supplier Part No.	Conc. Range (ug/mL)	Lot Number - QA Number	Exp. Date	Aliquot from Stock	Final Volume	Solvent	Final Standard Conc (ug/mL)
Fluoride	Inorganic Ventures	ICF1	993-999	K-F652018-39801	10/23/19	62.5 µL	25 mL	Millipore Water	5
Nitrite	Inorganic Ventures	ICNO21	993-1001	M2-NOX660562-39802	10/23/19	250 µL	25 mL	Millipore Water	3.04
Chloride	Inorganic Ventures	ICCL1	995-1001	NaCL664868-39904	11/26/19	500 µL	25 mL	Millipore Water	20
O-Phosphate as P	Inorganic Ventures	IPPO41	1001-1009	M2-POX655826-39803	10/23/19	125 µL	25 mL	Millipore Water	10
Nitrate as N	Inorganic Ventures	ICNNO31	994-1002	N2-NOX667147-39510	10/23/19	125 µL	25 mL	Millipore Water	5
Ion Chromatography Bromide Standard	CPI International	4400-ICBM	1000	161681-8-39539	02/06/20	312.5 µL	25 mL	Millipore Water	12.5
Sulfate	Inorganic Ventures	ICSO41	998-1006	K2-SOX01111-38875	08/13/19	500 µL	25 mL	Millipore Water	20

Anion Chromatography CCV									
Prep Date: See Injection Log									
Exp Date: 24 hours after prep									
Initial Standard Information					Prep'd By (Initials): HH				
Name of Initial Standard (QAU Label)	Supplier	Supplier Part No.	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date	Aliquot from Stock	Final Volume	Solvent	Final Standard Conc (ug/mL)
Ion Chromatography Standard Fluoride 1000ug/mL in H <sub>2</sub> O	o2si	O2SI-062002-01-01	1000	142626-24-38407	04/20/19	125 µL	25 mL	Millipore Water	5
Ion Chromatography Standard Nitrite as N 1000 ug/mL in H <sub>2</sub> O	o2si	O2SI-062004-01-01	1000	142626-24-38408	04/20/19	62.5 µL	25 mL	Millipore Water	2.5
Ion Chromatography Standard Chloride, 500mL 5,000 mg/L in H <sub>2</sub> O	o2si	062001-08-03	5000	10084781-1-39578	02/21/20	125 µL	25 mL	Millipore Water	25
Ortho-Phosphate as P Standard	Ultra Scientific	ICC-005A	1000	G34-CP-3323-39057	08/31/23	250 µL	25 mL	Millipore Water	10
Ion Chromatography Standard Nitrate as N, 500mL 1,000 mg/L in H <sub>2</sub> O	o2si	062003-01-03	1000	880117-4-39577	02/21/20	125 µL	25 mL	Millipore Water	5
Bromide Standard	Ultra Scientific	ICC-001	1000	CR-5372-39521	12/31/21	312.5 µL	25 mL	Millipore Water	12.5
Sulfate Standard	Agilent	ICC-006	1000	CS-0688-40047	03/31/22	625 µL	25 mL	Millipore Water	25

## Nitrite

### High Point @ 1.5 mg/L

0.075 mL NO<sub>2</sub> O<sub>2</sub>Si lot 142626-24 - 38408 exp: 4/20/19  
50 mL DI Water

### CCV @ 0.75 mg/L

0.0375 mL NO<sub>2</sub> O<sub>2</sub>Si lot 142626-24-38408 exp: 4/20/19  
50 mL DI Water

### ICV/LCS @ 0.73 mg/L

0.12mL NO<sub>2</sub> Inorganic Ventures lot M2-NOX660562-39802 exp: 10/23/19  
50 mL DI Water

### 1 mg/L NO<sub>2</sub>

400 uL of High point and 200 uL of DI made directly into a sample cup

Prep 01/28/19  
Exp 2/4/19  
EV

## Nitrate/TOXN

### High Point @ 6 mg/L

0.30 mL NO<sub>3</sub> O<sub>2</sub>Si lot 880117-39577 exp: 2/21/20  
50 mL DI Water

### CCV @ 3.0 mg/L

0.15 mL NO<sub>3</sub> O<sub>2</sub>Si lot 880117-39577 exp: 2/21/20  
50 mL DI Water

### ICV/LCS @ 3.0 mg/L

0.150 mL NO<sub>3</sub> Inorganic Ventures lot N2-NOX667147-39510 exp: 10/23/19  
50 mL DI Water

### 1 mg/L NO<sub>3</sub>

100 uL of High point and 500 uL of DI made directly into a sample cup

### MS @ 2.5 mg/L NO<sub>3</sub> and 0.73 mg/L NO<sub>2</sub>

0.125 mL NO<sub>3</sub> Inorganic Ventures lot N2-NOX667147-39510 exp: 10/23/19  
and 0.12mL Inorganic Ventures lot M2-NOX660562-39802 exp: 10/23/19  
Final volume 50 mL of sample

Prep 01/28/19  
Exp 2/4/19  
EV

**Tiamo Alkalinity Standard Prep**

Prep Date: \_\_\_\_\_

Exp Date: \_\_\_\_\_

Prep'd By (Initials): AR

Initial Standard Information

Final Standard Information

Name of Initial Standard (QAU Label)	Supplier	Unit	Conc	Lot Number - QA Number	Prep/Opened	Exp. Date	Aliquot from Stock	Final Volume	Solvent	Final Standard Conc
Sulfuric Acid (H <sub>2</sub> SO <sub>4</sub> )	J.T.Baker	NA	NA	167828	NA	NA	PURCHASED	NA	NA	NA
0.10N Sulfuric Acid (H <sub>2</sub> SO <sub>4</sub> )	J.T.Baker	Normality	0.1N	167828	12/19/18	12/19/19	3ml	1L	DI	0.10N
0.02N Sulfuric Acid (H <sub>2</sub> SO <sub>4</sub> )	J.T.Baker	Normality	0.02N	167828	12/19/18	12/19/19	200mL	1L	DI	0.02N
Inorganic Spike(NaHCO <sub>3</sub> )	BDH	NA	NA	1575C510	10/18/18	08/14/20	PURCHASED	NA	NA	NA
Inorganic Spike Solution	BDH	Milligrams/Liters	250mg/L	1575C510	01/29/19	01/29/20	3.5g	500mL	DI	250mg/L
Standarizing Solution(NaCO <sub>3</sub> )	J.T.Baker	Normality	1N	178494	07/25/17	07/25/19	PURCHASED	NA	NA	NA

Name of Final Standard TOC Calibration Curve  
 Prep Date 02/11/19  
 Exp Date 03/11/19

Prep'd By (Initials) HH

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
Total Organic Carbon (TOC) Standard	Agilent	IQC-1 06-5	1000 mg/L	CS-5157-40233	11/30/20	20 uL	40 mL	DI Water	0.5 ppm
Total Organic Carbon (TOC) Standard	Agilent	IQC-1 06-5	1000 mg/L	CS-5157-40233	11/30/20	50 uL	40 mL	DI Water	1.25 ppm
Total Organic Carbon (TOC) Standard	Agilent	IQC-1 06-5	1000 mg/L	CS-5157-40233	11/30/20	100 uL	40 mL	DI Water	2.5 ppm
Total Organic Carbon (TOC) Standard	Agilent	IQC-1 06-5	1000 mg/L	CS-5157-40233	11/30/20	150 uL	40 mL	DI Water	3.75 ppm
Total Organic Carbon (TOC) Standard	Agilent	IQC-1 06-5	1000 mg/L	CS-5157-40233	11/30/20	200 uL	40 mL	DI Water	5 ppm

Name of Final Standard 1000 PPM ICV TOC Intermediate  
 Prep Date 02/11/19  
 Exp Date 02/11/20

Prep'd By (Initials) HH

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
Sugar	Millenia	814-293	42% Carbon	V298J-NA	NA	2.3831 g	1 L	DI Water	1003.45 ppm

Name of Final Standard ICV (TOC)  
 Prep Date 02/11/19  
 Exp Date 03/11/19

Prep'd By (Initials) HH

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
1000 PPM ICV TOC Intermediate	APPL Inc.	Prep: 2/11/19	1000 mg/L	Prep: 2/11/19	03/11/19	100 uL	40mL	DI Water	2.5 ppm

Name of Final Standard CCV (TOC)  
 Prep Date 02/12/19  
 Exp Date 03/12/19

Prep'd By (Initials) MM

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
Total Organic Carbon (TOC) Standard	Agilent	IQC-1 06-5	1000 mg/L	CS-5157-40233	11/30/20	100 uL	40 mL	DI Water	2.5 ppm

Name of Final Standard TOC LCS/LCSD  
 Prep Date 02/13/19  
 Exp Date 03/13/19

Prep'd By (Initials) MM

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
Total Organic Carbon (TOC) Standard	ULTRA Scientific	IQC-106-5	1000 mg/L	CR-0328-37639	02/28/19	80 uL	40 mL	DI Water	2.0 ppm

Name of Final Standard TOC MS/MSD  
 Prep Date 02/13/19  
 Exp Date 03/13/19

Prep'd By (Initials) MM

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
Total Organic Carbon (TOC) Standard	ULTRA Scientific	IQC-106-5	1000 mg/L	CR-0328-37639	02/28/19	100 uL	40 mL	sample	2.5 ppm

# SM3500FeB Injection Log

Directory: I:\Spec Sheets\Ferrous Iron (Fe2)\2019\

RunID	Injected		Sample Name	Misc Info	FileName	Multiplier
13	30 Jan 2019	08:10	CCV 4.0 190130		190130A	1.
14	30 Jan 2019	08:11	CCB 190130		190130A	1.
15	30 Jan 2019	08:12	190130 LCS		190130A	1.
16	30 Jan 2019	08:12	190130 LCSD		190130A	1.
26	30 Jan 2019	08:34	CCV 4.0 190130		190130A	1.
27	30 Jan 2019	08:35	CCB 190130		190130A	1.
28	30 Jan 2019	10:16	CCV 4.0 190130		190130A	1.
29	30 Jan 2019	10:17	CCB 190130		190130A	1.
31	30 Jan 2019	10:18	AZ85766W17		190130A	1.
30	30 Jan 2019	10:18	CCV 4.0 190130		190130A	1.
32	30 Jan 2019	10:19	CCB 190130		190130A	1.
33	15 Jun 2018	12:27	ICB		190130A	1.
34	15 Jun 2018	12:27	Ical 1		190130A	1.
35	15 Jun 2018	12:28	Ical 2		190130A	1.
36	15 Jun 2018	12:28	Ical 3		190130A	1.
37	15 Jun 2018	12:29	Ical 4		190130A	1.
38	15 Jun 2018	12:30	Ical 5		190130A	1.
39	15 Jun 2018	12:31	ICV		190130A	1.
40	15 Jun 2018	12:32	ICB		190130A	1.

# EPA 300.0 Injection Log

Directory: I:\Dionex\Charlie\

RunID	Injected		Sample Name	Misc Info	FileName	Multiplier
2	24 Jan 2019	11:58	CCB		Anions	1.
3	24 Jan 2019	12:06	i cal 1		Anions	1.
4	24 Jan 2019	12:13	i cal 2		Anions	1.
5	24 Jan 2019	12:20	i cal 3		Anions	1.
6	24 Jan 2019	12:28	i cal 4		Anions	1.
7	24 Jan 2019	12:35	i cal 5		Anions	1.
8	24 Jan 2019	12:43	i cal 6		Anions	1.
9	24 Jan 2019	12:50	i cal 7		Anions	1.
10	24 Jan 2019	12:57	i cal 8		Anions	1.
11	24 Jan 2019	13:05	CCB		Anions	1.
12	24 Jan 2019	13:12	ICV LCS 190124		Anions	1.
13	24 Jan 2019	13:20	ICVD LCSD 190124		Anions	1.

# EPA 300.0 Injection Log

Directory: I:\Dionex\Charlie\

RunID	Injected		Sample Name	Misc Info	FileName	Multiplier
1	30 Jan 2019	09:03	CCV 190130		Anions	1.
2	30 Jan 2019	09:10	CCB		Anions	1.
3	30 Jan 2019	09:18	190130 LCS		Anions	1.
4	30 Jan 2019	09:25	190130 LCSD		Anions	1.
6	30 Jan 2019	10:16	AZ85766W15		Anions	1.
10	30 Jan 2019	11:42	CCV 190130		Anions	1.
11	30 Jan 2019	11:50	CCB		Anions	1.
23	30 Jan 2019	13:37	CCV 190130		Anions	1.
24	30 Jan 2019	13:44	CCB		Anions	1.
31	30 Jan 2019	14:51	AZ85766W15 df2		Anions	2.
32	30 Jan 2019	14:59	CCV 190130		Anions	1.
33	30 Jan 2019	15:06	CCB		Anions	1.



# EPA 353.2 Injection Log

Directory: I:\EVE\Export\2019\

RunID	Injected		Sample Name	Misc Info	FileName	Multiplier
1	04 Feb 2019	14:11	Standard 1 TOXN/NO3		190204A NO	1.
2	04 Feb 2019	14:14	Standard 90 TOXN/NO3		190204A NO	1.
3	04 Feb 2019	14:16	Standard 91 TOXN/NO3		190204A NO	1.
4	04 Feb 2019	14:18	Standard 92 TOXN/NO3		190204A NO	1.
5	04 Feb 2019	14:20	Standard 93 TOXN/NO3		190204A NO	1.
6	04 Feb 2019	14:22	Standard 94 TOXN/NO3		190204A NO	1.
7	04 Feb 2019	14:25	Standard 0 TOXN/NO3		190204A NO	1.
10	04 Feb 2019	14:31	ICV NO3 TOXN		190204A NO	1.
11	04 Feb 2019	14:33	ICB NO2 NO3 TOXN		190204A NO	1.
13	04 Feb 2019	14:36	190204A LCS NO3 TOXN		190204A NO	1.
12	04 Feb 2019	14:36	190204A BLK NO2 NO3 TOXN		190204A NO	1.
14	04 Feb 2019	14:37	190204A LCSD NO3 TOXN		190204A NO	1.
16	04 Feb 2019	14:39	AZ85766W16 TOXN/NO3		190204A NO	1.
17	04 Feb 2019	14:43	CCV TOXN/NO3		190204A NO	1.
18	04 Feb 2019	14:44	CCB TOXN/NO3		190204A NO	1.

# SM 2320B Injection Log

Directory: I:\Tiamo\EXPORT\

RunID	Injected		Sample Name	Misc Info	FileName	Multiplier
1	05 Feb 2019	11:35	190205A BLK		190205A_AL	1.
2	05 Feb 2019	11:38	190205A LCS		190205A_AL	1.
3	05 Feb 2019	11:48	190205A LCSD		190205A_AL	1.
18	05 Feb 2019	15:29	AZ85766W15		190205A_AL	1.

## 9060A Injection Log

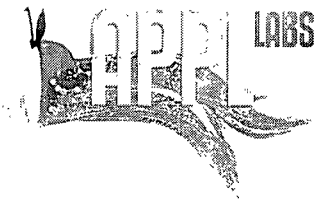
Directory: OI Analytical - TOC Reporter - G949730077 - Wet Chemistry

RunID	Injected		Sample Name	Misc Info	FileName	Multiplier
1	11 Feb 2019	16:13	TOC-RW		190211A	1.
2	11 Feb 2019	16:47	TOC-Std#1-0.500 PPM		190211A	1.
3	11 Feb 2019	17:18	TOC-Std#2-1.250 PPM		190211A	1.
4	11 Feb 2019	17:50	TOC-Std#3-2.500 PPM		190211A	1.
5	11 Feb 2019	18:23	TOC-Std#4-3.750 PPM		190211A	1.
6	11 Feb 2019	18:56	TOC-Std#5-5.000 PPM		190211A	1.
7	11 Feb 2019	19:31	ICB		190211A	1.
8	11 Feb 2019	20:02	ICV Sugar		190211A	1.

## 9060A Injection Log

Directory: OI Analytical - TOC Reporter - G949730077 - Wet Chemistry

RunID	Injected		Sample Name	Misc Info	FileName	Multiplier
34	13 Feb 2019	8:48	CCV		190212A	1.
35	13 Feb 2019	9:23	CCB		190212A	1.
38	13 Feb 2019	11:48	190213A LCS		190213A	1.
39	13 Feb 2019	12:23	190213A LCSD		190213A	1.
52	13 Feb 2019	21:23	CCV		190213A	1.
53	13 Feb 2019	21:58	CCB		190213A	1.
56	13 Feb 2019	23:34	AZ85766W13 TOC		190213A	1.
64	14 Feb 2019	3:55	CCV		190213A	1.
65	14 Feb 2019	4:31	CCB		190213A	1.



908 North Temperance Ave. ▽ Clovis, CA 93611 ▽ Phone 559-275-2175 ▽ Fax 559-275-4422

Certification Number: CA1312  
NELAP Certification number: CA00046  
DoD-ELAP Certificate number: 4064.01

## Data Validatable Report

March 6, 2019

AECOM  
1001 Bishop Street, Suite 1600  
Honolulu, Hawaii 96813

Attn: Margie Pascua

Title: Report of Data: Case 88062

Project: 60571032 CV18F0126 Red Hill Fuel Storage. HI

Contract #: Prime contract # for DoD: NAVY CLEAN N62742-17-F-1800, CV18F0126  
Subcontract: 18S-22209-HI27

Dear Ms. Pascua:

Two water samples were received February 8, 2019. Written results for the requested analyses are being provided on this March 6, 2019.

Results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

If you have any questions or require further information, please contact your APPL Project Manager, Libby Cheeseborough, libby@applinc.com, at your convenience. Thank you for choosing APPL, Inc.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. These test results meet all requirements of NELAC and DoD QSM. Release of the hard copy has been authorized by the Laboratory Manager or her designee, as verified by the following signature.

Paula McCartney, Laboratory Director  
APPL, Inc.

PM/lac  
Enclosure  
cc: File

Number of pages in this report: \_\_\_\_\_

Data Validation Package  
for  
60481245 CIV 0053 Red Hill Fuel Storage  
APPL SDG 88062  
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# **CASE NARRATIVE**

# Case Narrative

ARF: 88062

Project: 60571032 CV18F0126 Red Hill Fuel Storage. HI

## Sample Receipt Information:

Two water samples were received February 8, 2019, at 3.0°C. The sample group was assigned Analytical Request Form (ARF) number 88062.

## Sample Preparation and Analysis Information:

For the EPA 8015B analysis, the samples were extracted according to EPA method 3520C. The sample extracts were silica gel cleaned according to APPL's SOP CLN004 and placed on hold.

For the EPA 8270D SIM analysis, the samples were extracted according to EPA method 3520C.

For the EPA 8270D Phenol analysis, the samples were extracted according to EPA method 3520C. The samples were screened for Tentatively Identified Compounds (TICs).

For the APPL SOP ANA2MEE analysis, the samples were extracted according to EPA method 3535.

For the EPA 8260B VOC and Gasoline analyses, the samples were purged according to EPA method 5030B.

For the RSK-175 analysis, the samples were allowed to equilibrate for 10 minutes at 40°C and a portion of the headspace was analyzed.

For the EPA 300.0, 353.2, 9060A, SM 2320B, and SM 3500FeB analyses, the sample was prepared according to the methods.

Only the portion of the injection log relative to these samples is included. A full sequence log is available upon request. Measurement uncertainty can be reported upon request.

## Analytical Exceptions, Deviations and Abnormalities.

**EPA 8081B:** Heptachlor recovered below the 54% control limit in the LSC and the LCSD. Corrective Action: The client was notified.

Manual integrations were performed in accordance with APPL's SOP. D-BHC and heptachlor were manually integrated in the calibration standard and the second source standard. Chromatograms of before and after manual integration are enclosed.

**GRO:** The LCS recovered above the control limit. The LCSD surrogate recovered about the control limit. There was not GRO detected in the samples.

**EPA 8270D SIM:** Manual integrations were performed in accordance with APPL's SOP. Benzo(k) fluoranthene was manually integrated in a calibration standard. Chromatograms of before and after manual integration are enclosed.



**EPA 8270D:** The surrogate 2-Fluorophenol recovered above the 119% upper control limit in one sample. Corrective action: None, No target compound was detected in the sample.

The surrogate Phenol recovered above the 115% upper control limit in one sample.  
Corrective action: None, no target compound was detected in the sample.

**APPL SOP ANA2MEE:** MEE was manually integrated in the ICAL. The manual integrations are performed according to the SOP. Before and after chromatograms are provided in the package.

**Inorganics:** The sample was analyzed as soon as possible for ferrous iron.

In the method blank, alkalinity and bicarbonate were detected above one-half the LOQ.  
Corrective action: None, the concentration of alkalinity and bicarbonate in the sample exceeds the blank concentration by ten-fold or more.

**AMENDED PAGE**

tbICOC\_APPLCaseNarrative

SDG	Received	Client ID	APPL ID	Collected DateTime	Matrix	Method	Method Description
88062	02/08/19	ERH758	AZ86199	02/07/19 7:40:00 AM	WATER	EPA 8260B	EPA 8260B BTEX WATER
88062	02/08/19	ERH758	AZ86199	02/07/19 7:40:00 AM	WATER	EPA 8260B	EPA 8260B GRO WATER
88062	02/08/19	ERH758	AZ86199	02/07/19 7:40:00 AM	WATER	RSK 175	METHANE BY RSK 175
88062	02/08/19	ERH759	AZ86200	02/07/19 10:45:00 AM	WATER	SM 2320B	Wetlab 2320B - Water
88062	02/08/19	ERH759	AZ86200	02/07/19 10:45:00 AM	WATER	EPA 300.0	Wetlab 300.0 - Water
88062	02/08/19	ERH759	AZ86200	02/07/19 10:45:00 AM	WATER	EPA 300.0	Wetlab 300.0 - Water
88062	02/08/19	ERH759	AZ86200	02/07/19 10:45:00 AM	WATER	SM3500FeB	Ferrous Iron
88062	02/08/19	ERH759	AZ86200	02/07/19 10:45:00 AM	WATER	EPA 353.2	EPA 353.2 - WATER
88062	02/08/19	ERH759	AZ86200	02/07/19 10:45:00 AM	WATER	EPA 8260B	EPA 8260B BTEX WATER
88062	02/08/19	ERH759	AZ86200	02/07/19 10:45:00 AM	WATER	EPA 8270D	EPA 8270D WATER
88062	02/08/19	ERH759	AZ86200	02/07/19 10:45:00 AM	WATER	EPA 8270D	EPA 8270D MODIFIED WATER
88062	02/08/19	ERH759	AZ86200	02/07/19 10:45:00 AM	WATER	EPA 8015B-eLL	EPA 8015B TPH LIQ-LIQ
88062	02/08/19	ERH759	AZ86200	02/07/19 10:45:00 AM	WATER	EPA 8260B	EPA 8260B GRO WATER
88062	02/08/19	ERH759	AZ86200	02/07/19 10:45:00 AM	WATER	RSK 175	METHANE BY RSK 175
88062	02/08/19	ERH759	AZ86200	02/07/19 10:45:00 AM	WATER	8270D-SIM	EPA 8270D SIM LIQ-LIQ
88062	02/08/19	ERH759	AZ86200	02/07/19 10:45:00 AM	WATER	SW846 9060A	9060A TOC & DOC

**APPL Inc.**  
**Abbreviations and Flags**


<b>FLAG</b>	<b>DESCRIPTION</b>
#	Recovery or RPD outside control limits
*	Recovery or RPD outside control limits
B	Analyte detected in associated method blank
C1	Reason for correction: wrote incorrect response
C2	Reason for correction: calculated incorrectly
C3	Reason for correction: needs to be rechecked
C4	Reason for correction: data not usable
DO	Diluted out
E	Exceeds linear range
F	Estimated value
G1	Includes a wide range of hydrocarbons which does not match our gasoline standard
G10	Includes a match to hydrocarbon profiles within the range of mineral spirits
G11	Includes a match to hydrocarbon profiles within the range of JP-4
G12	Pattern does not match the gasoline standard; the carbon range for this sample is consistent with JP8
G13	Closely resembles the hydrocarbon profile of aviation gasoline
G14	Analyte concentration may be biased due to carry over
G2	Closely resembles the boiling point hydrocarbon profile consistent with weathered gasoline
G3	Includes higher boiling hydrocarbons
G4	Includes dominant peak(s) not indicative of petroleum hydrocarbons
G5	Is mainly dominant peak(s) not indicative of petroleum hydrocarbons
G6	Contains recognizable contaminant peak(s) which has been removed from quantitation
G7	Is mainly a match to hydrocarbons within the range of gasoline
G8	Closely resembles the boiling point hydrocarbon profile consistent with weathered gasoline
G9	Includes hydrocarbons within the range of kerosene
J	Estimated value
M	Matrix effect
MI1	Manual integration: integration does not follow baseline
MI2	Manual integration: non-target peak interference
MI3	Manual integration: to split a peak that was integrated as one peak by the computer.
MI4	Manual integration: to integrate a split peak
MI5	Manual integration: the whole peak or part of the peak was not integrated
MI6	Manual integration: computer integrated wrong peak
MI7	Manual integration: other – (See case narrative)
MDL	Method detection limit
ND	Not detected
NT	Non-target
Q	Acceptance criteria not met
T1 I	Includes wide range of hydrocarbons not indicative of diesel
T1 M	Is mainly wide range of hydrocarbons not necessarily indicative of diesel
T2 I	Includes lower boiling hydrocarbons, e.g. mineral spirits, kerosene, stoddard solvent, white gas
T2 M	Is mainly lower boiling hydrocarbons, e.g. mineral spirits, kerosene, stoddard solvent, white gas
T3 I	Includes higher boiling hydrocarbons, e.g. asphaltene, waste oil, motor oil, or weathered diesel fuel
T3 M	Is mainly higher boiling hydrocarbons, e.g. asphaltene, waste oil, motor oil, or weathered diesel fuel
T4 I	Includes dominant peak(s) not indicative of hydrocarbons
T4 M	Is mainly dominant peak(s) not indicative of hydrocarbons
T5	Contains recognizable contaminant peak(s) which has been removed from quantitation
T6	Is mainly a match to hydrocarbons within range of diesel fuel
T7	Closely resembles the boiling point hydrocarbon profile consistent with diesel fuel
T8	Includes a match to hydrocarbon profiles within range of diesel and kerosene fuel
T9 I	Includes non-diesel hydrocarbons within boiling point range of diesel fuel
T9 M	Is mainly non-diesel hydrocarbons within boiling point range of diesel fuel
U	Not detected
Y	Percent difference between primary and confirmation column > 40%

**SAMPLE RECORDS MANAGEMENT  
CHAIN OF CUSTODY,  
ARF, CRF, AND  
CLIENT COMMUNICATION**

**APPL - Analysis Request Form**

**88062**

Client: AECOM  
 Address: 1001 Bishop Street, Suite 1600  
Honolulu, HI 96813  
 Attn: Margie Pascua  
 Phone: 808-356-5373 Fax: 808-523-8950  
 Job: 60571032 CV18F0126 Red Hill Fuel Storage  
 PO #: 18S-22209-HI27 PO# 102604  
 Chain of Custody (Y/N): Y # 013  
 RAD Screen (Y/N): Y pH (Y/N): Y  
 Turn Around Type: 1 WEEK

Received by: AAR   
 Date Received: 02/08/19 Time: 10:15  
 Delivered by: FEDEX  
 Shuttle Custody Seals (Y/N): Y Time Zone: -10  
 Chest Temp(s): 3.0°C  
 Color: VOA/F-Pink  
 Samples Chilled until Placed in Refrig/Freezer: Y  
 Project Manager: Libby Cheesebor  
 QC Report Type: DVP4DOD/EQUIS/HI  
 Due Date: 02/15/19

**Comments:**

*PM: login and F1s to Margie.Pascua@aecom.com*  
*AN: 7 day TAT for Form 1s; 21 day TAT for PKG STYLE 1; DOD v5.1; DOD Forms (LOQ/LOD database/DL)*  
*8260: BTEX & TPH-G only; 8270 SIM: 1-methylnaphthalene, 2-methylnaphthalene & naphthalene only.*  
*TPH D & O both with and w/o SGC; reverse surrogate for the SGC; analyze SGC if detections*  
*RSK: Methane only; 8011: EDB only; \$87DC53W5: report phenol + TICs; \$87DMEEW5: 2-MEE (LCS Spk 80ppb).*  
*FR: HC to LDC, 2 labeled CDs to Margie Pascua.*  
*EDD: AECOM EQUiS EDD 2.5.3 Red Hill 87DMEE->3535A to Margie.Pascua@aecom.com & jecklund@lab-data.com*



**Sample Distribution:**

**GC:** 1-\$87DC53W5, 1-\$87DMEEW5, 1-\$DOC53W5LIQ, 1-\$SIM53LIQ51  
**Extractions:** 1- LIQ003, 1- LIQ005, 1- MWE2MEE  
**VOA:** 2-\$86BTOTXDOD5W, 2-\$GASBL, 2-\$GRO86BW, 2-\$RSKMETH  
**Wetlab:** 1-\$232W(HCO3,CO3,ALK), 1-\$300W(NO3,CL,SO4), 1-\$35FE, 1-\$35OF, 1-\$TOCDOCW

**Charges:**

**Invoice To:**

**ACCOUNTS PAYABLE**  
 1001 Bishop Street, Ste 1600  
 USAPImaging@aecom.com  
 mary.basano@aecom.com

Client ID	APPL ID	Sampled	Analyses Requested
1. ERH758	AZ86199W LCSD 	02/07/19 07:40	\$86BTOTXDOD5W, \$GASBL, \$GRO86BW, \$RSKMETH
2. ERH759	AZ86200W LCSD 	02/07/19 10:45	\$232W(HCO3,CO3,ALK), \$300W(NO3,CL,SO4), \$35FE, \$35OF, \$86BTOTXDOD5W, \$87DC53W5, \$87DMEEW5, \$DOC53W5LIQ, \$GASBL, \$GRO86BW, \$RSKMETH, \$SIM53LIQ51, \$TOCDOCW

# APPL Sample Receipt Form

ARF# 88062

Sample	Container Type	Count	p
AZ86199	<sup>13</sup> VOAs - HCL	4	NA
AZ86200	<sup>3</sup> PL 250mL	1	NA
	<sup>10</sup> PL 250mL - H2SO4	1	1.7
	<sup>13</sup> VOAs - HCL	4	NA
	<sup>17</sup> Amber Liter	5	NA
	<sup>32</sup> Clear VOA - H2SO4	10	NA
	<sup>38</sup> 250mL brn poly, HCl prsvd	1	1.7
	<sup>40</sup> 500mL Amber, unprsvd	2	NA

Sample    Container Type    Count    p



APPL, Inc.  
908 N Temperance Ave  
Clovis, CA 93611  
www.applinc.com

CHAIN OF CUSTODY RECORD

Phone: (559) 275-2175  
Fax: (559) 275-4422  
coc@applinc.com

C.O.C. 013

88062

Report to: PLEASE PRINT	Invoice to: PLEASE PRINT
Company Name: AECOM Phone: 808-356-5373	Company Name: AECOM Phone: 808-529-7249
Address: 1001 Bishop St, Suite 1600 Honolulu, HI 96813 Fax: 808-523-8950	Address: 1001 Bishop St, Suite 1600 Honolulu, HI 96813 Fax: 808-523-8950
Attn: Margie Pascua	Attn: Mary Basano
Email: margie.pascua@aecom.com	Email: mary.basano@aecom.com; usapimaging@aecom.com

Project Name/Number CV18F0126 / 60571032	Sampler (Print)					No. of Containers	Matrix					Analysis Requested/Method Number												Date Shipped: 05/05/19					
	Sampler (Signature)						Aq	Sed.	Soil																			Carrier: FedEx	
Purchase Order Number 102604	Sample Identification	Location	Date Collected	Time Collected	Time Zone																							Waybill No.:	Comments:
	ERH758	HDMW2253-03 - Trip Blank			HST	4	X					X																	
	ERH759	HDMW2253-03			HST	24	X					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
<p>*Analyze TPH w/SGT only if TPH-d/o detected.</p> <p>TPH-d/o &amp; PAHS need liquid-liquid extraction.</p>																													

Shuttle Temperature: 3.0	Turnaround Requested: Check one <input type="checkbox"/> Standard 2-3 wk <input checked="" type="checkbox"/> One week <input type="checkbox"/> 3 days <input type="checkbox"/> 24/48 Hrs. <input type="checkbox"/> Other: _____					Sample Disposal: <input type="checkbox"/> Return to client <input checked="" type="checkbox"/> Disposal by Lab (30-day retention)						
Relinquished by sampler: AECOM Bianca Mintz	Date: 2/7/19	Time:	Received by:	Relinquished by:	Date:	Time:	Received by:	Relinquished by:	Date:	Time:	Received by:	
Relinquished by: Bianca Mintz	Date: 2/7/19	Time: 1300	Received by:	Relinquished by:	Date: 02.08.19	Time: 1015	Received at lab by:					



**Agriculture & Priority Pollutants Laboratories, Inc.**

**WOSB. NELAP Accredited.**

d. 559.862.2109 t. 559.275.2175 f. 559.275.4422

a. 908 N. Temperance Ave., Clovis, CA 93611

Website • Email

**DoD accredited for ISM, Dioxins and PCB congeners.**

**Now DoD Certified for PFAS. Contact your PM for details.**

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**From:** Pascua, Margie Fabian. [mailto:Margie.Pascua@aecom.com]

**Sent:** Thursday, February 07, 2019 5:28 PM

**To:** Libby Cheeseborough

**Subject:** RE: CV18F0126: 2019Q1 gwm; potable water

Hi Libby,

Please see COC for samples shipped today. Also, the COC was missing sample collection dates and times—please see below.

ERH758, 02/07/2019, 07:40

ERH759, 02/07/2019, 10:45

This should complete 2019Q1 gwm.

<https://www.fedex.com/apps/fedextrack/?tracknumbers=785379511001>

Thank you,

**Margie Pascua**

*Environmental Scientist*

Environment, West Region, Pacific District

Direct 808.356.5373

---

**From:** Pascua, Margie Fabian.

**Sent:** Tuesday, February 05, 2019 3:41 PM

**To:** Libby Cheeseborough

**Subject:** RE: CV18F0126: 2019Q1 gwm; potable water

Hi Libby,

Just a heads-up that we plan on sending another groundwater sample on Thursday, 02/07 (...this sample was delayed due to the gov't shutdown). That should complete all the monitoring wells to be sampled during 2019Q1 gwm.



COOLER RECEIPT FORM

ARF: 88062

- 1) Project: 60571032 CV18F0126 Red Hill Fuel Storage Date Received: 02/08/19
- 2) Coolers: Number of Coolers: 1
- 3) YES Were custody seals present and intact?  
How many? 2 Name/Date on seal? See Below
- 4) YES Was there a shipping slip? Carrier name: FEDEX
- 5) Type of packing in cooler:  bubble wrap  popcorn  foam  plastic bags  other  
 wet ice  dry ice  no ice  gel ice
- 6) YES Were cooler temperatures acceptable?
- 7) Serial number of certified NIST thermometer use R5
- 8) Cooler temp(s): In °C  
1: 3.0 2: \_\_\_\_\_ 3: \_\_\_\_\_ 4: \_\_\_\_\_ 5: \_\_\_\_\_ 6: \_\_\_\_\_  
7: \_\_\_\_\_ 8: \_\_\_\_\_ 9: \_\_\_\_\_ 10: \_\_\_\_\_ 11: \_\_\_\_\_ 12: \_\_\_\_\_

Chain of custody:

- 9) YES Was a chain of custody received?
- 10) YES Were the custody papers complete/signed in the appropriate places?

Sample Labels:

- 11) YES Were all sample labels complete (sample ID, date/time of sampling, etc.)?
- 12) YES Did all container labels agree with custody papers?

Sample Containers:

- 13) YES Were all containers sealed in separate bags?
- 14) YES Did all containers arrive in good condition:(unbroken, no leakage, no cracked/broken lids)?
- 15) YES Were correct containers and preservatives used for the tests indicated?
- 16) YES Was a sufficient amount of sample sent for tests indicated?
- 17) Yes Were bubbles present in volatile samples?

If yes, the following were received with air bubbles:

Larger than a pea: AZ86199w01-04

Smaller than a pea: \_\_\_\_\_

Preservation Hold time:

- 18) Yes Was a sufficient amount of holding time remaining to analyze the samples?
- 19) Yes Was the pH taken of all non-VOA preserved samples and written on the sample container?
- 20) Yes Was the pH of acid preserved non-VOA samples < 2?
- 21) NA Was the pH of sodium hydroxide preserved samples for Cyanide > 12 and Sulfide >9?
- 22) NO Were unpreserved VOA Vials received?
- 23) NA Are unpreserved VOA vials noted in the ADD TEST FIELD on the ARF?

pH strip lot number: 90B2031

Lab notified if pH was not adequate: \_\_\_\_\_

Notes/Deficiencies:

No time or date on the COC

CUSTODY SEAL

APPL, Inc. (559) 275-2175

Date 2/7/19  
Initials JEK

Personnel receiving samples: ZG  
 Personnel labeling samples: AA  
 Project manager notified: AA  
 Name of client notified: \_\_\_\_\_

Second reviewer: ZG  
 Date/Time of notification 02/08/19  
 Date/Time of notification \_\_\_\_\_

## **SAMPLE RESULTS**

# EPA 8015B TPH LIQ-LIQ

AECOM  
1001 Bishop Street, Suite 1600  
Honolulu, HI 96813

Attn: Margie Pascua  
Project: 60571032 CV18F0126 Red Hill Fuel Storage

**Sample ID: ERH759**

Sample Collection Date: 02/07/19

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

ARF: 88062

**APPL ID: AZ86200**

QCG: #DOC53-190211A-237479

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
EPA 8015B-eL	DIESEL (C10-C24)	25.00 U	40.0	25.00	13.07	ug/L	02/11/19	02/13/19
EPA 8015B-eL	OIL (C24-C40)	40.00 U	40.0	40.00	5.54	ug/L	02/11/19	02/13/19
EPA 8015B-eL	SURROGATE: OCTACOSANE (S)	94.2	60-142			%	02/11/19	02/13/19
EPA 8015B-eL	SURROGATE: ORTHO-TERPHENYL (S)	94.8	56-125			%	02/11/19	02/13/19

Quant Method: DOC0117.M  
Run #: 212020  
Instrument: Apollo  
Sequence: 190212  
Dilution Factor: 1  
Initials: DPO

Printed: 02/14/19 10:48:03 AM  
APPL-F1-SC-NoMC-REG MDLs-DOD

# EPA 8270D SIM LIQ-LIQ

AECOM  
1001 Bishop Street, Suite 1600  
Honolulu, HI 96813

Attn: Margie Pascua  
Project: 60571032 CV18F0126 Red Hill Fuel Storage

**Sample ID: ERH759**

Sample Collection Date: 02/07/19

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

ARF: 88062

**APPL ID: AZ86200**

QCG: #SIM53-190212A-237531

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
8270D-SIM	1-METHYLNAPHTHALENE	0.10 U	0.2	0.10	0.04	ug/L	02/12/19	02/15/19
8270D-SIM	2-METHYLNAPHTHALENE	0.10 U	0.2	0.10	0.04	ug/L	02/12/19	02/15/19
8270D-SIM	NAPHTHALENE	0.10 U	0.2	0.10	0.04	ug/L	02/12/19	02/15/19
8270D-SIM	SURROGATE: 2-METHYLNAPHTHALEN	114	39-114			%	02/12/19	02/15/19
8270D-SIM	SURROGATE: FLUORANTHENE-D10 (S	96.7	58-120			%	02/12/19	02/15/19

Quant Method: L0122.M  
Run #: 0122L328  
Instrument: Linus  
Sequence: L190122  
Dilution Factor: 1  
Initials: MA

Printed: 02/15/19 9:44:06 AM  
APPL-F1-SC-NoMC-REG MDLs-DOD

## EPA 8270D WATER

AECOM  
1001 Bishop Street, Suite 1600  
Honolulu, HI 96813

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

Attn: Margie Pascua

Project: 60571032 CV18F0126 Red Hill Fuel Storage

**Sample ID: ERH759**

Sample Collection Date: 02/07/19

ARF: 88062

**APPL ID: AZ86200**

QCG: #87DC5-190212A-237533

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
EPA 8270D	ETHANE, ISOTHIOCYANATO-	7.8 T	TIC			TIC ug/L	02/12/19	02/15/19
EPA 8270D	PHENOL	4.00 U	5.0	4.00	1.00	ug/L	02/12/19	02/15/19
EPA 8270D	SURROGATE: 2,4,6-TRIBROMOPHENO	104	43-140			%	02/12/19	02/15/19
EPA 8270D	SURROGATE: 2-FLUOROBIPHENYL (S)	91.0	44-119			%	02/12/19	02/15/19
EPA 8270D	SURROGATE: 2-FLUOROPHENOL (S)	88.6	19-119			%	02/12/19	02/15/19
EPA 8270D	SURROGATE: NITROBENZENE-D5 (S)	91.5	44-120			%	02/12/19	02/15/19
EPA 8270D	SURROGATE: PHENOL-D6 (S)	90.5	10-115			%	02/12/19	02/15/19
EPA 8270D	SURROGATE: TERPHENYL-D14 (S)	88.4	50-134			%	02/12/19	02/15/19

T = Tentatively identified compound.

Quant Method: Y0208NC.M
Run #: 0208Y102
Instrument: Yoda
Sequence: Y190208
Dilution Factor: 1
Initials: AAB

Printed: 03/18/19 9:25:45 AM  
APPL-F1-SC-NoMC-REG MDLs-DOD

# EPA 8270D MODIFIED WATER

AECOM  
1001 Bishop Street, Suite 1600  
Honolulu, HI 96813

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

Attn: Margie Pascua  
Project: 60571032 CV18F0126 Red Hill Fuel Storage

ARF: 88062

**Sample ID: ERH759**

**APPL ID: AZ86200**

Sample Collection Date: 02/07/19

QCG: #87DME-190213A-237524

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
EPA 8270D	2-(2-METHOXYETHOXY)-ETHANOL	80.0 U	100	80.0	40.0	ug/L	02/13/19	02/14/19

Quant Method: YMEE1128.M  
Run #: 1128Y123  
Instrument: Yoda  
Sequence: Y181128M  
Dilution Factor: 1  
Initials: AAB

Printed: 02/15/19 6:44:14 AM  
APPL-F1-SC-NoMC-REG MDLs-DOD

# EPA 8260B BTEX WATER

AECOM  
1001 Bishop Street, Suite 1600  
Honolulu, HI 96813

Attn: Margie Pascua  
Project: 60571032 CV18F0126 Red Hill Fuel Storage

**Sample ID: ERH758**  
Sample Collection Date: 02/07/19

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

ARF: 88062  
**APPL ID: AZ86199**  
QCG: #86BTO-190212AL-237773

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
EPA 8260B	BENZENE	0.30 U	1.0	0.30	0.15	ug/L	02/12/19	02/12/19
EPA 8260B	ETHYLBENZENE	0.50 U	1.0	0.50	0.23	ug/L	02/12/19	02/12/19
EPA 8260B	TOLUENE	0.30 U	1.0	0.30	0.15	ug/L	02/12/19	02/12/19
EPA 8260B	XYLENES (TOTAL)	0.30 U	2.0	0.30	0.15	ug/L	02/12/19	02/12/19
EPA 8260B	SURROGATE: 1,2-DICHLOROETHANE-	107	81-118			%	02/12/19	02/12/19
EPA 8260B	SURROGATE: 4-BROMOFLUOROBENZ	92.2	85-114			%	02/12/19	02/12/19
EPA 8260B	SURROGATE: DIBROMOFLUOROMETH	100	80-119			%	02/12/19	02/12/19
EPA 8260B	SURROGATE: TOLUENE-D8 (S)	99.6	89-112			%	02/12/19	02/12/19

Quant Method: L0211W.M
Run #: 0212L21
Instrument: Loki
Sequence: 190211
Dilution Factor: 1
Initials: DG

*Printed: 02/22/19 11:28:31 AM*  
APPL-F1-SC-NoMC-REG MDLs-DOD

# EPA 8260B BTEX WATER

AECOM  
1001 Bishop Street, Suite 1600  
Honolulu, HI 96813

Attn: Margie Pascua  
Project: 60571032 CV18F0126 Red Hill Fuel Storage

**Sample ID: ERH759**

Sample Collection Date: 02/07/19

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

ARF: 88062

**APPL ID: AZ86200**

QCG: #86BTO-190212AL-237773

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
EPA 8260B	BENZENE	0.30 U	1.0	0.30	0.15	ug/L	02/12/19	02/12/19
EPA 8260B	ETHYLBENZENE	0.50 U	1.0	0.50	0.23	ug/L	02/12/19	02/12/19
EPA 8260B	TOLUENE	0.30 U	1.0	0.30	0.15	ug/L	02/12/19	02/12/19
EPA 8260B	XYLENES (TOTAL)	0.30 U	2.0	0.30	0.15	ug/L	02/12/19	02/12/19
EPA 8260B	SURROGATE: 1,2-DICHLOROETHANE-	115	81-118			%	02/12/19	02/12/19
EPA 8260B	SURROGATE: 4-BROMOFLUOROBENZ	97.6	85-114			%	02/12/19	02/12/19
EPA 8260B	SURROGATE: DIBROMOFLUOROMETH	108	80-119			%	02/12/19	02/12/19
EPA 8260B	SURROGATE: TOLUENE-D8 (S)	106	89-112			%	02/12/19	02/12/19

Quant Method: L0211W.M  
Run #: 0212L22  
Instrument: Loki  
Sequence: 190211  
Dilution Factor: 1  
Initials: DG

Printed: 02/22/19 11:28:31 AM  
APPL-F1-SC-NoMC-REG MDLs-DOD



# EPA 8260B GRO WATER

AECOM  
1001 Bishop Street, Suite 1600  
Honolulu, HI 96813

Attn: Margie Pascua  
Project: 60571032 CV18F0126 Red Hill Fuel Storage

**Sample ID: ERH758**

Sample Collection Date: 02/07/19

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

ARF: 88062

**APPL ID: AZ86199**

QCG: #GRO86-190212AL-237777

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
EPA 8260B	GASOLINE RANGE ORGANICS	18.0 U	20	18.0	8.6	ug/L	02/12/19	02/12/19
EPA 8260B	SURROGATE: 4-BROMOFLUOROBENZ	92.2	85-114			%	02/12/19	02/12/19

Quant Method: LGAS0201.M  
Run #: 0212L21  
Instrument: Loki  
Sequence: 190211  
Dilution Factor: 1  
Initials: DG

Printed: 02/22/19 11:29:42 AM  
APPL-F1-SC-NoMC-REG MDLs-DOD

# EPA 8260B GRO WATER

AECOM  
1001 Bishop Street, Suite 1600  
Honolulu, HI 96813

Attn: Margie Pascua  
Project: 60571032 CV18F0126 Red Hill Fuel Storage

**Sample ID: ERH759**

Sample Collection Date: 02/07/19

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

ARF: 88062

**APPL ID: AZ86200**

QCG: #GRO86-190212AL-237777

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
EPA 8260B	GASOLINE RANGE ORGANICS	18.0 U	20	18.0	8.6	ug/L	02/12/19	02/12/19
EPA 8260B	SURROGATE: 4-BROMOFLUOROBENZ	97.6	85-114			%	02/12/19	02/12/19

Quant Method: LGAS0201.M
Run #: 0212L22
Instrument: Loki
Sequence: 190211
Dilution Factor: 1
Initials: DG

Printed: 02/22/19 11:29:42 AM  
APPL-F1-SC-NoMC-REG MDLs-DOD

# METHANE

AECOM  
1001 Bishop Street, Suite 1600  
Honolulu, HI 96813

Attn: Margie Pascua  
Project: 60571032 CV18F0126 Red Hill Fuel Storage

**Sample ID: ERH758**

Sample Collection Date: 02/07/19

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

ARF: 88062

**APPL ID: AZ86199**

QCG: #RSKME-190213A-237436

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
RSK 175	METHANE	1.00 U	5.0	1.00	0.25	ug/L	02/13/19	02/13/19

Quant Method: RSK0120.M  
Run #: 19021305  
Instrument: Rocky  
Sequence: 190120  
Dilution Factor: 1  
Initials: CMO

Printed: 02/13/19 10:20:46 AM  
APPL-F1-SC-NoMC-REG MDLs-DOD

# METHANE

AECOM  
1001 Bishop Street, Suite 1600  
Honolulu, HI 96813

Attn: Margie Pascua  
Project: 60571032 CV18F0126 Red Hill Fuel Storage

**Sample ID: ERH759**

Sample Collection Date: 02/07/19

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

ARF: 88062

**APPL ID: AZ86200**

QCG: #RSKME-190213A-237436

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
RSK 175	METHANE	1.00 U	5.0	1.00	0.25	ug/L	02/13/19	02/13/19

Quant Method: RSK0120.M  
Run #: 19021306  
Instrument: Rocky  
Sequence: 190120  
Dilution Factor: 1  
Initials: CMO

Printed: 02/13/19 10:20:46 AM  
APPL-F1-SC-NoMC-REG MDLs-DOD

## Wet Lab Analysis

AECOM  
1001 Bishop Street, Suite 1600  
Honolulu, HI 96813

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

Attn: Margie Pascua

Project: 60571032 CV18F0126 Red Hill Fuel Storage

**Sample ID: ERH759**

Sample Collection Date: 02/07/19

**APPL ID: AZ86200**

ARF: 88062

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
EPA 300.0	CHLORIDE	82.4	5.0	1.00	0.40	mg/L	5	02/09/19	02/09/19
EPA 300.0	NITRATE	0.85	0.5	0.18	0.04	mg/L	1	02/08/19	02/08/19
EPA 300.0	SULFATE	29.4	1.0	0.20	0.09	mg/L	1	02/08/19	02/08/19
EPA 353.2	NITRATE-NITRITE-N	0.19	0.10	0.100	0.028	mg/L	1	02/13/19	02/13/19
SM 2320B	BICARBONATE AS CaCO3	54.7	2.0	1.70	0.85	mg/L	1	02/13/19	02/13/19
SM 2320B	CARBONATE AS CaCO3	1.70 U	2.0	1.70	0.85	mg/L	1	02/13/19	02/13/19
SM 2320B	TOTAL ALKALINITY AS CaCO3	54.7	2.0	1.70	0.85	mg/L	1	02/13/19	02/13/19
SM3500FeB	FERROUS IRON	0.85 J	1.0	0.32	0.16	mg/L	1	02/08/19	02/08/19
SW846 9060A	TOTAL ORGANIC CARBON	0.26 J	0.93	0.350	0.130	mg/L	1	02/13/19	02/13/19

J = Estimated value.

Printed: 02/17/19 9:37:58 AM

APPL-F1-SC-NoMC-REG MDLs

# QC FORMS

# EPA 8015B-eLL

Form 2 & 8

## Surrogate Recovery

Lab Name: APPL, Inc.

SDG No: 88062

Case No: 88062

Date Analyzed: 02/13/19

Matrix: WATER

Instrument: Apollo

APPL ID.	Client Sample No.	SURROGATE: OCTACOSANE (S)			SURROGATE: ORTHO-TERPHENYL (S)		
		Limits	Result	Qualifier	Limits	Result	Qualifier
190211A-BLK	Blank	60-142	104		56-125	99.9	
190211A-LCS	Lab Control Spike	60-142	100		56-125	95.3	
190211A-LCSD	Lab Control SpikeD	60-142	98.5		56-125	98.4	
AZ86200	ERH759	60-142	94.2		56-125	94.8	

Comments: Batch: #DOC53-190211A

Printed: 02/14/19 10:48:10 AM  
Form 2 & 8, Surrogate Recovery Summary

# EPA 8015B-eL

Form 4

## Blank Summary

Lab Name: APPL, Inc.

SDG No: 88062

Case No: 88062

Date Analyzed: 02/13/19

Matrix: WATER

Instrument: Apollo

Blank ID: 190211A-BLK

Time Analyzed: 1523

<b>APPL ID.</b>	<b>Client Sample No.</b>	<b>File ID.</b>	<b>Date Analyzed</b>
190211A-BLK	Blank	212016	02/13/19 1523
190211A-LCS	Lab Control Spike	212017	02/13/19 1543
190211A-LCSD	Lab Control SpikeD	212018	02/13/19 1603
AZ86200	ERH759	212020	02/13/19 1643

Comments: Batch: #DOC53-190211A

Printed: 02/14/19 10:48:07 AM  
Form 4, Blank Summary



**Method Blank**  
**EPA 8015B TPH LIQ-LIQ**

Blank Name/QCG: **190211W-86200 - 237479**  
Batch ID: #DOC53-190211A

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

Sample Type	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
BLANK	DIESEL (C10-C24)	25.00 U	40.0	25.00	13.07	ug/L	02/11/19	02/13/19
BLANK	OIL (C24-C40)	40.00 U	40.0	40.00	5.54	ug/L	02/11/19	02/13/19
BLANK	SURROGATE: OCTACOSANE (S)	104	60-142			%	02/11/19	02/13/19
BLANK	SURROGATE: ORTHO-TERPHEN	99.9	56-125			%	02/11/19	02/13/19

Quant Method: DOC0117.M  
Run #: 212016  
Instrument: Apollo  
Sequence: 190212  
Initials: DPO

GC SC-Blank-REG MDLs-DOD  
Printed: 02/14/19 10:48:11 AM

# EPA 8015B-eL

Form 4

## LCS Summary

Lab Name: APPL, Inc.

SDG No: 88062

Case No: 88062

Date Analyzed: 02/13/19

Matrix: WATER

Instrument: Apollo

LCS ID: 190211A-LCS

Time Analyzed: 1543

<u>APPL ID.</u>	<u>Client Sample No.</u>	<u>File ID.</u>	<u>Date Analyzed</u>
190211A-BLK	Blank	212016	02/13/19 1523
190211A-LCS	Lab Control Spike	212017	02/13/19 1543
190211A-LCSD	Lab Control SpikeD	212018	02/13/19 1603
AZ86200	ERH759	212020	02/13/19 1643

Comments: Batch: #DOC53-190211A

Printed: 02/14/19 10:48:05 AM  
Form 4, LCS Summary

## Laboratory Control Spike Recoveries

### EPA 8015B TPH LIQ-LIQ

APPL ID: 190211W-86200 LCS - 237479  
 Batch ID: #DOC53-190211A

APPL Inc.  
 908 North Temperance Avenue  
 Clovis, CA 93611

Compound Name	Spike Lvl ug/L	SPK Result ug/L	DUP Result ug/L	SPK % Recovery	DUP % Recovery	Recovery Limits	RPD %	RPD Limits
DIESEL (C10-C24)	1250	1220	1260	97.6	101	36-132	3.2	30
OIL (C24-C40)	1250	1190	1270	95.2	102	41-113	6.5	30
<hr/>								
SURROGATE: OCTACOSANE (S)	75.0	75.2	73.9	100	98.5	60-142		
SURROGATE: ORTHO-TERPHENYL (S)	75.0	71.5	73.8	95.3	98.4	56-125		
<hr/>								

Comments: \_\_\_\_\_

<u>Primary</u>	<u>SPK</u>	<u>DUP</u>
Quant Method :	DOC0117.M	DOC0117.M
Extraction Date :	02/11/19	02/11/19
Analysis Date :	02/13/19	02/13/19
Instrument :	Apollo	Apollo
Run :	212017	212018
Initials :	DPO	

# 8270D-SIM

Form 2 & 8

## Surrogate Recovery

Lab Name: APPL, Inc.

SDG No: 88062

Case No: 88062

Date Analyzed: 02/15/19

Matrix: WATER

Instrument: Linus

APPL ID.	Client Sample No.	SURROGATE: 2-METHYLNAPHTHALENE-D10 (S)			SURROGATE: FLUORANTHENE-D10 (S)		
		Limits	Result	Qualifier	Limits	Result	Qualifier
190212A-BLK	Blank	39-114	105		58-120	92.0	
190212A-LCS	Lab Control Spike	39-114	99.8		58-120	88.5	
190212A-LCSD	Lab Control SpikeD	39-114	86.6		58-120	85.4	
AZ86200	ERH759	39-114	114		58-120	96.7	

Comments: Batch: #SIM53-190212A

Printed: 02/15/19 9:44:29 AM  
Form 2 & 8, Surrogate Recovery Summary

# 8270D-SIM

Form 4

## Blank Summary

Lab Name: APPL, Inc.

SDG No: 88062

Case No: 88062

Date Analyzed: 02/15/19

Matrix: WATER

Instrument: Linus

Blank ID: 190212A-BLK

Time Analyzed: 0741

APPL ID.	Client Sample No.	File ID.	Date Analyzed
190212A-BLK	Blank	0122L325	02/15/19 0741
190212A-LCS	Lab Control Spike	0122L326	02/15/19 0803
190212A-LCSD	Lab Control SpikeD	0122L327	02/15/19 0825
AZ86200	ERH759	0122L328	02/15/19 0848

Comments: Batch: #SIM53-190212A

Printed: 02/15/19 9:44:30 AM  
Form 4, Blank Summary

**Method Blank**  
**EPA 8270D SIM LIQ-LIQ**

Blank Name/QCG: **190212W-86200 - 237531**

Batch ID: #SIM53-190212A

APPL Inc.

908 North Temperance Avenue

Clovis, CA 93611

Sample Type	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
BLANK	1-METHYLNAPHTHALENE	0.10 U	0.2	0.10	0.04	ug/L	02/12/19	02/15/19
BLANK	2-METHYLNAPHTHALENE	0.10 U	0.2	0.10	0.04	ug/L	02/12/19	02/15/19
BLANK	NAPHTHALENE	0.10 U	0.2	0.10	0.04	ug/L	02/12/19	02/15/19
BLANK	SURROGATE: 2-METHYLNAPHT	105	39-114			%	02/12/19	02/15/19
BLANK	SURROGATE: FLUORANTHENE-	92.0	58-120			%	02/12/19	02/15/19

Quant Method:L0122.M  
Run #:0122L325  
Instrument:Linus  
Sequence:L190122  
Initials:MA

GC SC-Blank-REG MDLs-DOD

Printed: 02/15/19 9:44:05 AM

# 8270D-SIM

Form 4

## LCS Summary

Lab Name: APPL, Inc.

SDG No: 88062

Case No: 88062

Date Analyzed: 02/15/19

Matrix: WATER

Instrument: Linus

LCS ID: 190212A-LCS

Time Analyzed: 0803

APPL ID.	Client Sample No.	File ID.	Date Analyzed
190212A-BLK	Blank	0122L325	02/15/19 0741
190212A-LCS	Lab Control Spike	0122L326	02/15/19 0803
190212A-LCSD	Lab Control SpikeD	0122L327	02/15/19 0825
AZ86200	ERH759	0122L328	02/15/19 0848

Comments: Batch: #SIM53-190212A

Printed: 02/15/19 9:44:30 AM  
Form 4, LCS Summary

**Laboratory Control Spike Recoveries**  
**EPA 8270D SIM LIQ-LIQ**

APPL ID: 190212W-86200 LCS - 237531  
 Batch ID: #SIM53-190212A

APPL Inc.  
 908 North Temperance Avenue  
 Clovis, CA 93611

Compound Name	Spike Lvl ug/L	SPK Result ug/L	DUP Result ug/L	SPK % Recovery	DUP % Recovery	Recovery Limits	RPD %	RPD Limits
1-METHYLNAPHTHALENE	6.25	5.70	4.88	91.2	78.1	41-115	15.5	20
2-METHYLNAPHTHALENE	6.25	5.76	5.08	92.2	81.3	39-114	12.5	20
NAPHTHALENE	6.25	5.38	4.73	86.1	75.7	43-114	12.9	20
SURROGATE: 2-METHYLNAPHTHALEN	6.25	6.24	5.41	99.8	86.6	39-114		
SURROGATE: FLUORANTHENE-D10 (S)	6.25	5.53	5.34	88.5	85.4	58-120		

Comments: \_\_\_\_\_

	<u>Primary</u>	<u>SPK</u>	<u>DUP</u>
Quant Method :	L0122.M	L0122.M	L0122.M
Extraction Date :	02/12/19	02/12/19	02/12/19
Analysis Date :	02/15/19	02/15/19	02/15/19
Instrument :	Linus	Linus	Linus
Run :	0122L326	0122L327	0122L327
Initials :	MA		



Form 5  
Tune Summary

Lab Name: APPL Inc.  
Case No: \_\_\_\_\_  
Matrix: Water  
ID: 0122L002.D

SDG No: \_\_\_\_\_  
Date Analyzed: 01/22/19  
Instrument: Linus  
Time Analyzed: 9:21

	Client Sample No.	APPL ID.	File ID.	Date Analyzed
1		0.1 SIM 01/18/19	0122L003.D	01/22/19 9:37
2		0.2 SIM 01/18/19	0122L004.D	01/22/19 9:59
3		0.5 SIM 01/18/19	0122L005.D	01/22/19 10:21
4		1 SIM 01/18/19	0122L006.D	01/22/19 10:43
5		5 SIM 01/18/19	0122L007.D	01/22/19 11:30
6		10 SIM 01/18/19	0122L008.D	01/22/19 11:53
7		50 SIM 01/18/19	0122L009.D	01/22/19 12:15
8		100 SIM 01/18/19	0122L010.D	01/22/19 12:37
9		SS SIM 01/18/19	0122L011.D	01/22/19 12:59
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20				
21				
22				

m/e

51 9.95 - 80% of mass 198	52.3
68 0 - 2.05% of mass 69	0.0
70 0 - 2% of mass 69	0.8
127 10 - 80% of mass 198	58.6
197 0 - 2% of mass 198	0.0
198 100 - 100% of mass 198	100.0
199 5 - 9% of mass 198	6.7
275 10 - 60% of mass 198	22.8
365 1 - 100% of mass 198	3.3
441 0.01 - 24% of mass 442	16.7
442 50 - 150% of mass 198	68.2
443 15 - 24% of mass 442	19.2

Form 5  
Tune Summary

Lab Name: APPL Inc.  
Case No: 88062  
Matrix: Water  
ID: 0122L323.D

SDG No: 88062  
Date Analyzed: 02/15/19  
Instrument: Linus  
Time Analyzed: 6:27

Client Sample No.	APPL ID.	File ID.	Date Analyzed	
1		5 SIM 01/18/19 (2)	0122L324.D	02/15/19 6:43
2	Blank	190212A BLK 1/800	0122L325.D	02/15/19 7:41
3	Lab Control Spike	190212A LCS-2 1/800	0122L326.D	02/15/19 8:03
4	Lab Control SpikeD	190212A LCSD-2 1/800	0122L327.D	02/15/19 8:25
5	ERH759	AZ86200W20 1/800	0122L328.D	02/15/19 8:48
6		5 SIM 01/18/19 (2)	0122L333.D	02/15/19 14:48
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19				
20				
21				
22				

m/e

51 9.95 - 80% of mass 198	<u>52.3</u>
68 0 - 2.05% of mass 69	<u>0.0</u>
70 0 - 2% of mass 69	<u>0.8</u>
127 10 - 80% of mass 198	<u>57.3</u>
197 0 - 2% of mass 198	<u>0.0</u>
198 100 - 100% of mass 198	<u>100.0</u>
199 5 - 9% of mass 198	<u>6.7</u>
275 10 - 60% of mass 198	<u>21.9</u>
365 1 - 100% of mass 198	<u>3.0</u>
441 0.01 - 24% of mass 442	<u>17.6</u>
442 50 - 150% of mass 198	<u>64.0</u>
443 15 - 24% of mass 442	<u>19.7</u>

8A  
INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: APPL Inc. Contract: Review  
 Lab Code: \_\_\_\_\_ SDG No.: 88062  
 Lab File ID (Standard): 0122L324.D Date Analyzed: 02/15/19  
 Instrument ID: Linus Time Analyzed: 6:43  
 GC Column: \_\_\_\_\_ ID: \_\_\_\_\_ Heated Purge: (Y/N) \_\_\_\_\_

		Napthalene-D8(IS)		Acenaphthene-D10(IS)		Phenanthrene-D10(IS)	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD		25691	4.05	11751	6.07	22752	7.80
UPPER LIMIT		51382	4.22	23502	6.24	45504	7.97
LOWER LIMIT		12846	3.88	5876	5.90	11376	7.63
SAMPLE NO.							
01	190212A BLK 1/800	18764	4.05	9143	6.07	18630	7.81
02	190212A LCS-2 1/800	19137	4.05	9392	6.07	19179	7.80
03	190212A LCSD-2 1/800	22461	4.05	10266	6.07	20105	7.80
04	AZ86200W20 1/800	17952	4.05	8984	6.07	17983	7.81
05	5 SIM 01/18/19 (2)	22518	4.05	10148	6.07	19759	7.80
06							
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22							

AREA UPPER LIMIT = +100% of internal standard area.  
 AREA LOWER LIMIT = -50% of internal standard area.  
 RT UPPER LIMIT = +0.17 minutes of internal standard RT  
 RT LOWER LIMIT = -0.17 minutes of internal standard RT

# Column used to flag values outside QC limits with an asterisk.  
 \* Values outside of QC limits.

8A  
INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: APPL Inc. Contract: Review  
 Lab Code: \_\_\_\_\_ SDG No.: 88062  
 Lab File ID (Standard): 0122L324.D Date Analyzed: 02/15/19  
 Instrument ID: Linus Time Analyzed: 6:43  
 GC Column: \_\_\_\_\_ ID: \_\_\_\_\_ Heated Purge: (Y/N) \_\_\_\_\_

		Chrysene-D12(IS)		Perylene-D12(IS)					
		AREA	#	RT	#	AREA	#	RT	#
12 HOUR STD		30129		10.91		31101		13.34	
UPPER LIMIT		60258		11.08		62202		13.51	
LOWER LIMIT		15065		10.74		15551		13.17	
SAMPLE									
NO.									
01	190212A BLK 1/800	25798		10.92		25598		13.35	
02	190212A LCS-2 1/800	26464		10.91		26357		13.34	
03	190212A LCSD-2 1/800	26743		10.91		27180		13.33	
04	AZ86200W20 1/800	25152		10.92		25305		13.35	
05	5 SIM 01/18/19 (2)	26539		10.91		26041		13.35	
06									
07									
08									
09									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									

AREA UPPER LIMIT = +100% of internal standard area.  
 AREA LOWER LIMIT = -50% of internal standard area.  
 RT UPPER LIMIT = +0.17 minutes of internal standard RT  
 RT LOWER LIMIT = -0.17 minutes of internal standard RT

# Column used to flag values outside QC limits with an asterisk.  
 \* Values outside of QC limits.

# EPA 8270D

Form 2 & 8

## Surrogate Recovery

Lab Name: APPL, Inc.

SDG No: 88062

Case No: 88062

Date Analyzed: 02/15/19

Matrix: WATER

Instrument: Yoda

APPL ID.	Client Sample No.	SURROGATE: 2,4,6-TRIBROMOPHENOL (S)			SURROGATE: 2-FLUORBIPHENYL (S)		
		Limits	Result	Qualifier	Limits	Result	Qualifier
190212A-BLK	Blank	43-140	117		44-119	105	
190212A-LCS	Lab Control Spike	43-140	114		44-119	101	
190212A-LCSD	Lab Control SpikeD	43-140	100		44-119	86.4	
AZ86200	ERH759	43-140	104		44-119	91.0	

Comments: Batch: #87DC5-190212A

Printed: 02/15/19 10:13:56 AM  
Form 2 & 8, Surrogate Recovery Summary

# EPA 8270D

Form 2 & 8

## Surrogate Recovery

Lab Name: APPL, Inc.

SDG No: 88062

Case No: 88062

Date Analyzed: 02/15/19

Matrix: WATER

Instrument: Yoda

APPL ID.	Client Sample No.	SURROGATE: 2-FLUOROPHENOL (S)			SURROGATE: NITROBENZENE-D5 (S)		
		Limits	Result	Qualifier	Limits	Result	Qualifier
190212A-BLK	Blank	19-119	125	#	44-120	118	
190212A-LCS	Lab Control Spike	19-119	111		44-120	110	
190212A-LCSD	Lab Control SpikeD	19-119	90.8		44-120	89.6	
AZ86200	ERH759	19-119	88.6		44-120	91.5	

Comments: Batch: #87DC5-190212A

# = Recovery outside of Control Limits on Sample.

Printed: 02/15/19 10:13:57 AM  
Form 2 & 8, Surrogate Recovery Summary

# EPA 8270D

Form 2 & 8

## Surrogate Recovery

Lab Name: APPL, Inc.

SDG No: 88062

Case No: 88062

Date Analyzed: 02/15/19

Matrix: WATER

Instrument: Yoda

APPL ID.	Client Sample No.	SURROGATE: PHENOL-D6 (S)			SURROGATE: TERPHENYL-D14 (S)		
		Limits	Result	Qualifier	Limits	Result	Qualifier
190212A-BLK	Blank	10-115	121	#	50-134	106	
190212A-LCS	Lab Control Spike	10-115	112		50-134	102	
190212A-LCSD	Lab Control SpikeD	10-115	91.6		50-134	89.6	
AZ86200	ERH759	10-115	90.5		50-134	88.4	

Comments: Batch: #87DC5-190212A

# = Recovery outside of Control Limits on Sample.

Printed: 02/15/19 10:13:57 AM  
Form 2 & 8, Surrogate Recovery Summary

# EPA 8270D

Form 4

## Blank Summary

Lab Name: APPL, Inc.

SDG No: 88062

Case No: 88062

Date Analyzed: 02/15/19

Matrix: WATER

Instrument: Yoda

Blank ID: 190212A-BLK

Time Analyzed: 0808

<b>APPL ID.</b>	<b>Client Sample No.</b>	<b>File ID.</b>	<b>Date Analyzed</b>
190212A-BLK	Blank	0208Y099	02/15/19 0808
190212A-LCS	Lab Control Spike	0208Y100	02/15/19 0836
190212A-LCSD	Lab Control Spiked	0208Y101	02/15/19 0903
AZ86200	ERH759	0208Y102	02/15/19 0931

Comments: Batch: #87DC5-190212A

Printed: 02/15/19 10:13:57 AM  
Form 4, Blank Summary



**Method Blank**  
**EPA 8270D WATER**

Blank Name/QCG: **190212W-86200 - 237533**  
Batch ID: #87DC5-190212A

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

Sample Type	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
BLANK	PHENOL	4.00 U	5.0	4.00	1.00	ug/L	02/12/19	02/15/19
BLANK	SURROGATE: 2,4,6-TRIBROMOP	117	43-140			%	02/12/19	02/15/19
BLANK	SURROGATE: 2-FLUORBIPHENY	105	44-119			%	02/12/19	02/15/19
BLANK	SURROGATE: 2-FLUOROPHENO	125 #	19-119			%	02/12/19	02/15/19
BLANK	SURROGATE: NITROBENZENE-	118	44-120			%	02/12/19	02/15/19
BLANK	SURROGATE: PHENOL-D6 (S)	121 #	10-115			%	02/12/19	02/15/19
BLANK	SURROGATE: TERPHENYL-D14 (	106	50-134			%	02/12/19	02/15/19

# = Recovery (or RPD) is outside QC limits.

<p>Quant Method: Y0208NC.M Run #: 0208Y099 Instrument: Yoda Sequence: Y190208 Initials: AAB</p>
---

GC SC-Blank-REG MDLs-DOD  
Printed: 02/15/19 10:13:35 AM

**EPA 8270D**

Form 4

**LCS Summary**

Lab Name: APPL, Inc.  
Case No: 88062  
Matrix: WATER  
LCS ID: 190212A-LCS

SDG No: 88062  
Date Analyzed: 02/15/19  
Instrument: Yoda  
Time Analyzed: 0836

APPL ID.	Client Sample No.	File ID.	Date Analyzed
190212A-BLK	Blank	0208Y099	02/15/19 0808
190212A-LCS	Lab Control Spike	0208Y100	02/15/19 0836
190212A-LCSD	Lab Control SpikeD	0208Y101	02/15/19 0903
AZ86200	ERH759	0208Y102	02/15/19 0931

Comments: Batch: #87DC5-190212A

## Laboratory Control Spike Recoveries

### EPA 8270D WATER

APPL ID: **190212W-86200 LCS - 237533**  
 Batch ID: #87DC5-190212A

APPL Inc.  
 908 North Temperance Avenue  
 Clovis, CA 93611

Compound Name	Spike Lvl ug/L	SPK Result ug/L	DUP Result ug/L	SPK % Recovery	DUP % Recovery	Recovery Limits	RPD %	RPD Limits
PHENOL	62.5	87.5	71.9	140 #	115	10-115	19.6	20
SURROGATE: 2,4,6-TRIBROMOPHENOL	250	285	250	114	100	43-140		
SURROGATE: 2-FLUOROBIPHENYL (S)	125	126	108	101	86.4	44-119		
SURROGATE: 2-FLUOROPHENOL (S)	250	277	227	111	90.8	19-119		
SURROGATE: NITROBENZENE-D5 (S)	125	137	112	110	89.6	44-120		
SURROGATE: PHENOL-D6 (S)	250	279	229	112	91.6	10-115		
SURROGATE: TERPHENYL-D14 (S)	125	128	112	102	89.6	50-134		

# = Recovery is outside QC limits.

Comments:

<u>Primary</u>	<u>SPK</u>	<u>DUP</u>
Quant Method :	Y0208NC.M	Y0208NC.M
Extraction Date :	02/12/19	02/12/19
Analysis Date :	02/15/19	02/15/19
Instrument :	Yoda	Yoda
Run :	0208Y100	0208Y101
Initials :	AAB	

Form 5  
Tune Summary

Lab Name: APPL Inc.  
Case No: \_\_\_\_\_  
Matrix: Soil  
ID: 0208Y002.D

SDG No: \_\_\_\_\_  
Date Analyzed: 02/08/19  
Instrument: Yoda  
Time Analyzed: 14:57

Client Sample No.	APPL ID.	File ID.	Date Analyzed
1	4ug/mL 8270 02/05/1	0208Y003.D	02/08/19 15:12
2	5ug/mL 8270 02/05/1	0208Y004.D	02/08/19 15:40
3	10ug/mL 8270 02/05/	0208Y005.D	02/08/19 16:08
4	20ug/mL 8270 02/05/	0208Y006.D	02/08/19 16:36
5	40ug/mL 8270 02/05/	0208Y007.D	02/08/19 17:03
6	50ug/mL 8270 02/05/1	0208Y008.D	02/08/19 17:31
7	60ug/mL 8270 02/05/1	0208Y009.D	02/08/19 17:59
8	80ug/mL 8270 02/05/1	0208Y010.D	02/08/19 18:27
9	100ug/mL 8270 02/05/	0208Y011.D	02/08/19 18:54
10	SS 8270 02/05/19	0208Y012.D	02/08/19 19:22
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20			
21			
22			

m/e

51 9.95 - 80.04% of mass 198	37.9
68 0 - 2% of mass 69	0.0
70 0 - 2% of mass 69	0.6
127 10 - 80% of mass 198	52.0
197 0 - 2% of mass 198	0.0
198 100 - 100% of mass 198.05	100.0
199 5 - 9% of mass 198	6.7
275 10 - 60% of mass 198	26.5
365 1 - 100% of mass 198	3.3
441 0.01 - 24% of mass 442	16.8
442 50 - 150% of mass 198.05	96.1
443 15 - 24% of mass 442	19.5

Form 5  
Tune Summary

Lab Name: APPL Inc.  
 Case No: 88062  
 Matrix: Water  
 ID: 0208Y096.D

SDG No: 88062  
 Date Analyzed: 02/15/19  
 Instrument: Yoda  
 Time Analyzed: 6:48

	Client Sample No.	APPL ID.	File ID.	Date Analyzed
1		50ug/mL 8270 02/05/1	0208Y097.D	02/15/19 7:03
2	Blank	190212A BLK 1/800	0208Y099.D	02/15/19 8:08
3	Lab Control Spike	190212A LCS-1 1/800	0208Y100.D	02/15/19 8:36
4	Lab Control Spiked	190212A LCSD-1 1/800	0208Y101.D	02/15/19 9:03
5	ERH759	AZ86200W20 1/800	0208Y102.D	02/15/19 9:31
6		50ug/mL 8270 02/05/1	0208Y124.D	02/15/19 19:41
7				
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18				
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20				
21				
22				

m/e

51 9.95 - 80.04% of mass 198	41.7
68 0 - 2% of mass 69	0.0
70 0 - 2% of mass 69	0.4
127 10 - 80% of mass 198	53.3
197 0 - 2% of mass 198	0.0
198 100 - 100% of mass 197.95	100.0
199 5 - 9% of mass 198	6.9
275 10 - 60% of mass 198	25.2
365 1 - 100% of mass 198	3.1
441 0.01 - 24% of mass 442	6.2
442 50 - 150% of mass 197.95	89.1
443 15 - 24% of mass 442	19.7

8A  
INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: APPL Inc. Contract: Review  
 Lab Code: \_\_\_\_\_ SDG No.: 88062  
 Lab File ID (Standard): 0208Y097.D Date Analyzed: 02/15/19  
 Instrument ID: Yoda Time Analyzed: 7:03  
 GC Column: \_\_\_\_\_ ID: \_\_\_\_\_ Heated Purge: (Y/N) \_\_\_\_\_

	1,4-dichlorobenzene-D4(IS)		Naphthalene-D8(IS)		Acenaphthene-D10(IS)		
	AREA #	RT #	AREA #	RT #	AREA #	RT #	
12 HOUR STD	580977	5.42	2494950	6.86	1319730	8.87	
UPPER LIMIT	1161954	5.59	4989900	7.03	2639460	9.04	
LOWER LIMIT	290489	5.25	1247475	6.69	659865	8.70	
SAMPLE NO.							
01	190212A BLK 1/800	316179	5.41	1448160	6.85	834682	8.87
02	190212A LCS-1 1/800	344279	5.41	1465340	6.85	820439	8.87
03	190212A LCSD-1 1/800	413561	5.41	1743010	6.85	924196	8.88
04	AZ86200W20 1/800	446101	5.41	1869370	6.85	969725	8.87
05	50ug/mL 8270 02/05/19	555138	5.42	2378830	6.86	1253520	8.87
06							
07							
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09							
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12							
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16							
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22							

AREA UPPER LIMIT = +100% of internal standard area.  
 AREA LOWER LIMIT = -50% of internal standard area.  
 RT UPPER LIMIT = +0.17 minutes of internal standard RT  
 RT LOWER LIMIT = -0.17 minutes of internal standard RT

# Column used to flag values outside QC limits with an asterisk.  
 \* Values outside of QC limits.

INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: APPL Inc.

Contract: Review

Lab Code: \_\_\_\_\_

SDG No.: 88062

Lab File ID (Standard): 0208Y097.D

Date Analyzed: 02/15/19

Instrument ID: Yoda

Time Analyzed: 7:03

GC Column: \_\_\_\_\_

ID: \_\_\_\_\_ Heated Purge: (Y/N) \_\_\_\_\_

		Phenanthrene-D10(IS)		Chrysene-D12(IS)		Perylene-D12(IS)	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD		2474090	10.61	2139160	13.71	2085690	15.57
UPPER LIMIT		4948180	10.78	4278320	13.88	4171380	15.74
LOWER LIMIT		1237045	10.44	1069580	13.54	1042845	15.40
SAMPLE NO.							
01	190212A BLK 1/800	1589940	10.61	1405660	13.70	1339730	15.56
02	190212A LCS-1 1/800	1558530	10.61	1385870	13.70	1331980	15.57
03	190212A LCSD-1 1/800	1749600	10.61	1528810	13.70	1511120	15.57
04	AZ86200W20 1/800	1839200	10.61	1637240	13.70	1598080	15.56
05	50ug/mL 8270 02/05/19	2356460	10.61	2069080	13.71	1981070	15.57
06							
07							
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21							
22							

AREA UPPER LIMIT = +100% of internal standard area.  
 AREA LOWER LIMIT = -50% of internal standard area.  
 RT UPPER LIMIT = +0.17 minutes of internal standard RT  
 RT LOWER LIMIT = -0.17 minutes of internal standard RT

# Column used to flag values outside QC limits with an asterisk.  
 \* Values outside of QC limits.

# EPA 8270D

Form 4

## Blank Summary

Lab Name: APPL, Inc.

SDG No: 88062

Case No: 88062

Date Analyzed: 02/14/19

Matrix: WATER

Instrument: Yoda

Blank ID: 190213A-BLK

Time Analyzed: 1346

<u>APPL ID.</u>	<u>Client Sample No.</u>	<u>File ID.</u>	<u>Date Analyzed</u>
190213A-BLK	Blank	1128Y118	02/14/19 1346
AZ86200	ERH759	1128Y123	02/14/19 1637
190213A-LCS	Lab Control Spike	1128Y124	02/14/19 1700
190213A-LCSD	Lab Control SpikeD	1128Y125	02/14/19 1724

Comments: Batch: #87DME-190213A

Printed: 02/15/19 7:05:23 AM  
Form 4, Blank Summary



**Method Blank**  
**EPA 8270D MODIFIED WATER**

Blank Name/QCG: **190213W-86200 - 237524**  
Batch ID: #87DME-190213A

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

Sample Type	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
BLANK	2-(2-METHOXYETHOXY)-ETHAN	80.0 U	100	80.0	40.0	ug/L	02/13/19	02/14/19

Quant Method: YMEE1128.M  
Run #: 1128Y118  
Instrument: Yoda  
Sequence: Y181128M  
Initials: AAB

GC SC-Blank-REG MDLs-DOD  
Printed: 02/15/19 6:44:13 AM

# EPA 8270D

Form 4

## LCS Summary

Lab Name: APPL, Inc.

SDG No: 88062

Case No: 88062

Date Analyzed: 02/14/19

Matrix: WATER

Instrument: Yoda

LCS ID: 190213A-LCS

Time Analyzed: 1700

<u>APPL ID.</u>	<u>Client Sample No.</u>	<u>File ID.</u>	<u>Date Analyzed</u>
190213A-BLK	Blank	1128Y118	02/14/19 1346
AZ86200	ERH759	1128Y123	02/14/19 1637
190213A-LCS	Lab Control Spike	1128Y124	02/14/19 1700
190213A-LCSD	Lab Control SpikeD	1128Y125	02/14/19 1724

Comments: Batch: #87DME-190213A

Printed: 02/15/19 7:05:23 AM  
Form 4, LCS Summary

**Laboratory Control Spike Recoveries**  
**EPA 8270D MODIFIED WATER**

APPL ID: 190213W-86200 LCS - 237524  
 Batch ID: #87DME-190213A

APPL Inc.  
 908 North Temperance Avenue  
 Clovis, CA 93611

Compound Name	Spike Lvl ug/L	SPK Result ug/L	DUP Result ug/L	SPK % Recovery	DUP % Recovery	Recovery Limits	RPD %	RPD Limits
2-(2-METHOXYETHOXY)-ETHANOL	80.0	49.7	54.3	62.1	67.9	30-130	8.8	20

Comments: \_\_\_\_\_

<u>Primary</u>	<u>SPK</u>	<u>DUP</u>
Quant Method :	YMEE1128.M	YMEE1128.M
Extraction Date :	02/13/19	02/13/19
Analysis Date :	02/14/19	02/14/19
Instrument :	Yoda	Yoda
Run :	1128Y124	1128Y125
Initials :	AAB	

Form 5  
Tune Summary

Lab Name: APPL Inc.  
 Case No: \_\_\_\_\_  
 Matrix: Water  
 ID: 1128Y002.D

SDG No: \_\_\_\_\_  
 Date Analyzed: 11/28/18  
 Instrument: Yoda  
 Time Analyzed: 7:30

Client Sample No.	APPL ID.	File ID.	Date Analyzed
1	50ug/ml MEE 08/01/18	1128Y004.D	11/28/18 8:08
2	100ug/ml MEE 08/01/1	1128Y005.D	11/28/18 8:32
3	200ug/ml MEE 08/01/1	1128Y006.D	11/28/18 8:55
4	400ug/ml MEE 08/01/1	1128Y007.D	11/28/18 9:19
5	600ug/ml MEE 08/01/1	1128Y008.D	11/28/18 9:43
6	800ug/ml MEE 08/01/1	1128Y009.D	11/28/18 10:06
7	1000ug/ml MEE 08/01/	1128Y010.D	11/28/18 10:30
8	500ug/ml MEE 08/01/1	1128Y012.D	11/28/18 11:17
9	SS ug/ml MEE 08/01/1	1128Y014.D	11/28/18 12:26
10			
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20			
21			
22			

m/e

51 9.95 - 80.04% of mass 198	<u>37.6</u>
68 0 - 2.04% of mass 69	<u>0.0</u>
70 0 - 2.04% of mass 69	<u>0.4</u>
127 10 - 80% of mass 198	<u>49.3</u>
197 0 - 2% of mass 198	<u>0.0</u>
198 100 - 100% of mass 198	<u>100.0</u>
199 5 - 9% of mass 198	<u>6.6</u>
275 10 - 60% of mass 198	<u>27.6</u>
365 1 - 100% of mass 198	<u>3.7</u>
441 0.01 - 24% of mass 442	<u>15.6</u>
442 50 - 150% of mass 198	<u>104.9</u>
443 15 - 24% of mass 442	<u>19.5</u>

Form 5  
Tune Summary

Lab Name: APPL Inc.  
 Case No: 88062  
 Matrix: Water  
 ID: 1128Y116.D

SDG No: 88062  
 Date Analyzed: 02/14/19  
 Instrument: Yoda  
 Time Analyzed: 8:44

Client Sample No.	APPL ID.	File ID.	Date Analyzed
1	500ug/ml MEE 12/19/1	1128Y117.D	02/14/19 10:52
2	Blank	190213A BIK 2/500	02/14/19 13:46
3	ERH759	AZ86200W18 2/500	02/14/19 16:37
4	Lab Control Spike	190213A LCS-1 2/500	02/14/19 17:00
5	Lab Control SpikeD	190213A LCSD-1 2/50	02/14/19 17:24
6	500ug/ml MEE 12/19/1	1128Y126.D	02/14/19 17:48
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21			
22			

m/e

51 9.95 - 80.04% of mass 198	<u>41.4</u>
68 0 - 2.04% of mass 69	<u>0.0</u>
70 0 - 2.04% of mass 69	<u>0.4</u>
127 10 - 80% of mass 198	<u>53.6</u>
197 0 - 2% of mass 198	<u>0.0</u>
198 100 - 100% of mass 197.95	<u>100.0</u>
199 5 - 9% of mass 198	<u>6.7</u>
275 10 - 60% of mass 198	<u>24.6</u>
365 1 - 100% of mass 198	<u>2.9</u>
441 0.01 - 24% of mass 442	<u>5.9</u>
442 50 - 150% of mass 197.95	<u>82.9</u>
443 15 - 24% of mass 442	<u>19.8</u>

8A  
INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: APPL Inc. Contract: Review  
 Lab Code: \_\_\_\_\_ SDG No.: 88062  
 Lab File ID (Standard): 1128Y117.D Date Analyzed: 02/14/19  
 Instrument ID: Yoda Time Analyzed: 10:52  
 GC Column: \_\_\_\_\_ ID: \_\_\_\_\_ Heated Purge: (Y/N) \_\_\_\_\_

	1,4-dichlorobenzene-D4(IS)		Naphthalene-D8(IS)		Acenaphthene-D10(IS)		
	AREA #	RT #	AREA #	RT #	AREA #	RT #	
12 HOUR STD	504571	5.19	2014390	6.61	1043680	8.62	
UPPER LIMIT	1009142	5.36	4028780	6.78	2087360	8.79	
LOWER LIMIT	252286	5.02	1007195	6.44	521840	8.45	
SAMPLE NO.							
01	190213A Blk 2/500	529059	5.19	2121650	6.61	1107180	8.62
02	AZ86200W18 2/500	1006790	5.20	4173650	6.61	2190020	8.62
03	190213A LCS-1 2/500	327005	5.19	1321350	6.61	688702	8.62
04	190213A LCSD-1 2/500	317374	5.19	1462450	6.61	786053	8.62
05	500ug/ml MEE 12/19/18	456011	5.19	1859370	6.61	970630	8.62
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AREA UPPER LIMIT = +100% of internal standard area.  
 AREA LOWER LIMIT = -50% of internal standard area.  
 RT UPPER LIMIT = +0.17 minutes of internal standard RT  
 RT LOWER LIMIT = -0.17 minutes of internal standard RT

# Column used to flag values outside QC limits with an asterisk.  
 \* Values outside of QC limits.

**EPA 8260B**

Form 2 & 8

**Surrogate Recovery**

Lab Name: APPL, Inc.  
Case No: 88062  
Matrix: WATER

SDG No: 88062  
Date Analyzed: 02/12/19  
Instrument: Loki

APPL ID.	Client Sample No.	SURROGATE: 1,2-DICHLOROETHANE-D4 (S)			SURROGATE: 4-BROMOFLUOROBENZENE (S)		
		Limits	Result	Qualifier	Limits	Result	Qualifier
190212AL-LCS	Lab Control Spike	81-118	90.0		85-114	87.2	
190212AL-LCSD	Lab Control SpikeD	81-118	93.6		85-114	88.0	
190212AL-BLK	Blank	81-118	97.9		85-114	111	
AZ86199	ERH758	81-118	107		85-114	92.2	
AZ86200	ERH759	81-118	115		85-114	97.6	

Comments: Batch: #86BTO-190212AL

Printed: 02/22/19 11:34:11 AM  
Form 2 & 8, Surrogate Recovery Summary

# EPA 8260B

Form 2 & 8

## Surrogate Recovery

Lab Name: APPL, Inc.

SDG No: 88062

Case No: 88062

Date Analyzed: 02/12/19

Matrix: WATER

Instrument: Loki

APPL ID.	Client Sample No.	SURROGATE: DIBROMOFLUOROMETHANE (S)			SURROGATE: TOLUENE-D8 (S)		
		Limits	Result	Qualifier	Limits	Result	Qualifier
190212AL-LCS	Lab Control Spike	80-119	82.4		89-112	90.4	
190212AL-LCSD	Lab Control SpikeD	80-119	86.0		89-112	91.2	
190212AL-BLK	Blank	80-119	97.2		89-112	112	
AZ86199	ERH758	80-119	100		89-112	99.6	
AZ86200	ERH759	80-119	108		89-112	106	

Comments: Batch: #86BTO-190212AL

Printed: 02/22/19 11:34:11 AM  
Form 2 & 8, Surrogate Recovery Summary



**EPA 8260B**

Form 4

**Blank Summary**

Lab Name: APPL, Inc.  
Case No: 88062  
Matrix: WATER  
Blank ID: 190212AL-BLK

SDG No: 88062  
Date Analyzed: 02/12/19  
Instrument: Loki  
Time Analyzed: 1356

APPL ID.	Client Sample No.	File ID.	Date Analyzed
190212AL-LCS	Lab Control Spike	0212L04	02/12/19 0848
190212AL-LCSD	Lab Control SpikeD	0212L05	02/12/19 0915
190212AL-BLK	Blank	0212L15	02/12/19 1356
AZ86199	ERH758	0212L21	02/12/19 1645
AZ86200	ERH759	0212L22	02/12/19 1713

Comments: Batch: #86BTO-190212AL

**Method Blank**  
**EPA 8260B BTEX WATER**

Blank Name/QCG: **190212W-86199 - 237773**  
Batch ID: #86BTO-190212AL

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

Sample Type	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
BLANK	BENZENE	0.30 U	1.0	0.30	0.15	ug/L	02/12/19	02/12/19
BLANK	ETHYLBENZENE	0.50 U	1.0	0.50	0.23	ug/L	02/12/19	02/12/19
BLANK	TOLUENE	0.30 U	1.0	0.30	0.15	ug/L	02/12/19	02/12/19
BLANK	XYLENES (TOTAL)	0.30 U	2.0	0.30	0.15	ug/L	02/12/19	02/12/19
BLANK	SURROGATE: 1,2-DICHLOROET	97.9	81-118			%	02/12/19	02/12/19
BLANK	SURROGATE: 4-BROMOFLUORO	111	85-114			%	02/12/19	02/12/19
BLANK	SURROGATE: DIBROMOFLUOR	97.2	80-119			%	02/12/19	02/12/19
BLANK	SURROGATE: TOLUENE-D8 (S)	112	89-112			%	02/12/19	02/12/19

Quant Method: L0220W.M  
Run #: 0212L15  
Instrument: Loki  
Sequence: 190211  
Initials: DG

GC SC-Blank-REG MDLs-DOD  
Printed: 02/22/19 11:28:33 AM

# EPA 8260B

Form 4

## LCS Summary

Lab Name: APPL, Inc.

SDG No: 88062

Case No: 88062

Date Analyzed: 02/12/19

Matrix: WATER

Instrument: Loki

LCS ID: 190212AL-LCS

Time Analyzed: 0848

<u>APPL ID.</u>	<u>Client Sample No.</u>	<u>File ID.</u>	<u>Date Analyzed</u>
190212AL-LCS	Lab Control Spike	0212L04	02/12/19 0848
190212AL-LCSD	Lab Control SpikeD	0212L05	02/12/19 0915
190212AL-BLK	Blank	0212L15	02/12/19 1356
AZ86199	ERH758	0212L21	02/12/19 1645
AZ86200	ERH759	0212L22	02/12/19 1713

Comments: Batch: #86BTO-190212AL

Printed: 02/22/19 11:28:19 AM  
Form 4, LCS Summary

## Laboratory Control Spike Recoveries

### EPA 8260B BTEX WATER

APPL ID: 190212W-86199 LCS - 237773  
 Batch ID: #86BTO-190212AL

APPL Inc.  
 908 North Temperance Avenue  
 Clovis, CA 93611

Compound Name	Spike Lvl ug/L	SPK Result ug/L	DUP Result ug/L	SPK % Recovery	DUP % Recovery	Recovery Limits	RPD %	RPD Limits
BENZENE	10.00	8.94	8.86	89.4	88.6	79-120	0.90	20
ETHYLBENZENE	10.00	9.62	8.75	96.2	87.5	79-121	9.5	20
TOLUENE	10.00	9.03	9.27	90.3	92.7	80-121	2.6	20
XYLENES (TOTAL)	30.0	29.8	28.2	99.3	94.0	79-121	5.5	20
-----								
SURROGATE: 1,2-DICHLOROETHANE-D	25.0	22.5	23.4	90.0	93.6	81-118		
SURROGATE: 4-BROMOFLUOROBENZE	25.0	21.8	22.0	87.2	88.0	85-114		
SURROGATE: DIBROMOFLUOROMETH	25.0	20.6	21.5	82.4	86.0	80-119		
SURROGATE: TOLUENE-D8 (S)	25.0	22.6	22.8	90.4	91.2	89-112		
-----								

Comments: \_\_\_\_\_

<u>Primary</u>	<u>SPK</u>	<u>DUP</u>
Quant Method :	L0211W.M	L0211W.M
Extraction Date :	02/12/19	02/12/19
Analysis Date :	02/12/19	02/12/19
Instrument :	Loki	Loki
Run :	0212L04	0212L05
Initials :	DG	

Form 5  
Tune Summary

Lab Name: APPL Inc.  
Case No: \_\_\_\_\_  
Matrix: Water  
ID: 0211L01.D

SDG No: \_\_\_\_\_  
Date Analyzed: 02/11/19  
Instrument: Loki  
Time Analyzed: 7:39

Client Sample No.	APPL ID.	File ID.	Date Analyzed
1	0.3ug/L VOC STD 2/11	0211L03.D	02/11/19 8:32
2	0.5ug/L VOC STD 2/11	0211L04.D	02/11/19 9:00
3	1.0ug/L VOC STD 2/11	0211L05.D	02/11/19 9:28
4	2.0ug/L VOC STD 2/11	0211L06.D	02/11/19 9:56
5	5.0ug/L VOC STD 2/11	0211L07.D	02/11/19 10:24
6	10ug/L VOC STD 2/11/	0211L08.D	02/11/19 10:52
7	20ug/L VOC STD 2/11/	0211L09.D	02/11/19 11:20
8	40ug/L VOC STD 2/11/	0211L10.D	02/11/19 11:48
9	50ug/L VOC STD 2/11/	0211L11.D	02/11/19 12:16
10	100ug/L VOC STD 2/11	0211L12.D	02/11/19 12:44
11	(SS) 10ug/L VOC STD	0211L15.D	02/11/19 14:09
12			
13			
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19			
20			
21			
22			

m/e

50 15 - 40% of mass 95	<u>18.7</u>
75 30 - 60% of mass 95	<u>52.4</u>
95 100 - 100% of mass 95	<u>100.0</u>
96 5 - 9% of mass 95	<u>6.4</u>
173 0 - 2% of mass 174	<u>0.0</u>
174 50 - 100% of mass 95	<u>94.9</u>
175 5 - 9% of mass 174	<u>8.9</u>
176 94.95 - 101% of mass 174	<u>97.4</u>
177 5 - 9% of mass 176	<u>7.3</u>

Form 5  
Tune Summary

Lab Name: APPL Inc.  
 Case No: 88062  
 Matrix: Water  
 ID: 0212L01.D

SDG No: 88062  
 Date Analyzed: 02/12/19  
 Instrument: Loki  
 Time Analyzed: 7:26

	Client Sample No.	APPL ID.	File ID.	Date Analyzed
1	Lab Control Spike	190212A CCV/LCS 10u	0212L04.D	02/12/19 8:48
2	Lab Control SpikeD	190212A LCSD 10ug/L	0212L05.D	02/12/19 9:15
3	Blank	190212A BLK	0212L15.D	02/12/19 13:56
4	ERH758	AZ86199W01	0212L21.D	02/12/19 16:45
5	ERH759	AZ86200W01	0212L22.D	02/12/19 17:13
6		Ending CCV 10ug/L 02	0212L26.D	02/12/19 19:05
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m/e

50 15 - 40% of mass 95	<u>19.8</u>
75 30 - 60% of mass 95	<u>53.0</u>
95 100 - 100% of mass 95	<u>100.0</u>
96 5 - 9% of mass 95	<u>7.2</u>
173 0 - 2% of mass 174	<u>0.0</u>
174 50 - 100% of mass 95	<u>90.9</u>
175 5 - 9% of mass 174	<u>7.8</u>
176 94.95 - 101% of mass 174	<u>95.8</u>
177 5 - 9% of mass 176	<u>7.8</u>

8A  
INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: APPL Inc. Contract: \_\_\_\_\_  
 Lab Code: \_\_\_\_\_ SDG No.: \_\_\_\_\_  
 Lab File ID (Standard): 0211L08.D Date Analyzed: 02/11/19  
 Instrument ID: Loki Time Analyzed: 10:52  
 GC Column: \_\_\_\_\_ ID: \_\_\_\_\_ Heated Purge: (Y/N) \_\_\_\_\_

		Fluorobenzene (IS)		Chlorobenzene-D5 (IS)		1,4-Dichlorobenzene-D (IS)	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD		248256	6.50	187584	9.96	101024	12.53
UPPER LIMIT		496512	6.67	375168	10.13	202048	12.70
LOWER LIMIT		124128	6.33	93792	9.79	50512	12.36
SAMPLE NO.							
01	(SS) 10ug/L VOC STD 2	274496	6.50	219520	9.96	113728	12.53
02							
03							
04							
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AREA UPPER LIMIT = +100% of internal standard area.  
 AREA LOWER LIMIT = -50% of internal standard area.  
 RT UPPER LIMIT = +0.17 minutes of internal standard RT  
 RT LOWER LIMIT = -0.17 minutes of internal standard RT

# Column used to flag values outside QC limits with an asterisk.  
 \* Values outside of QC limits.

8A  
INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: APPL Inc. Contract: Review  
 Lab Code: \_\_\_\_\_ SDG No.: 88062  
 Lab File ID (Standard): 0212L04.D Date Analyzed: 02/12/19  
 Instrument ID: Loki Time Analyzed: 8:48  
 GC Column: \_\_\_\_\_ ID: \_\_\_\_\_ Heated Purge: (Y/N) \_\_\_\_\_

	Fluorobenzene (IS)		Chlorobenzene-D5 (IS)		1,4-Dichlorobenzene-D (IS)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	302656	6.50	232704	9.96	119360	12.53
UPPER LIMIT	605312	6.67	465408	10.13	238720	12.70
LOWER LIMIT	151328	6.33	116352	9.79	59680	12.36
SAMPLE NO.						
01 190212A LCSD 10ug/L	293568	6.50	233344	9.96	122904	12.53
02 190212A BLK	242368	6.50	181568	9.96	90616	12.53
03 AZ86199W01	246272	6.50	197504	9.96	93784	12.53
04 AZ86200W01	228096	6.50	185088	9.96	85576	12.53
05 Ending CCV 10ug/L 02/	236992	6.50	187136	9.96	101008	12.53
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AREA UPPER LIMIT = +100% of internal standard area.  
 AREA LOWER LIMIT = -50% of internal standard area.  
 RT UPPER LIMIT = +0.17 minutes of internal standard RT  
 RT LOWER LIMIT = -0.17 minutes of internal standard RT

# Column used to flag values outside QC limits with an asterisk.  
 \* Values outside of QC limits.



# EPA 8260B

Form 2 & 8

## Surrogate Recovery

Lab Name: APPL, Inc.

SDG No: 88062

Case No: 88062

Date Analyzed: 02/12/19

Matrix: WATER

Instrument: Loki

APPL ID.	Client Sample No.	SURROGATE: 4-BROMOFLUOROBENZENE (S)			Limits	Result	Qualifier
		Limits	Result	Qualifier			
190212AL-LCS	Lab Control Spike	85-114	89.6				
190212AL-LCSD	Lab Control Spiked	85-114	73.6	*			
190212AL-BLK	Blank	85-114	111				
AZ86199	ERH758	85-114	92.2				
AZ86200	ERH759	85-114	97.6				

Comments: Batch: #GRO86-190212AL

\* = Recovery outside of Control Limits on QC Sample.

Printed: 02/22/19 11:43:59 AM  
Form 2 & 8, Surrogate Recovery Summary

# EPA 8260B

Form 4

## Blank Summary

Lab Name: APPL, Inc.

SDG No: 88062

Case No: 88062

Date Analyzed: 02/12/19

Matrix: WATER

Instrument: Loki

Blank ID: 190212AL-BLK

Time Analyzed: 1356

<u>APPL ID.</u>	<u>Client Sample No.</u>	<u>File ID.</u>	<u>Date Analyzed</u>
190212AL-LCS	Lab Control Spike	0212L10	02/12/19 1136
190212AL-LCSD	Lab Control SpikeD	0212L11	02/12/19 1204
190212AL-BLK	Blank	0212L15	02/12/19 1356
AZ86199	ERH758	0212L21	02/12/19 1645
AZ86200	ERH759	0212L22	02/12/19 1713

Comments: Batch: #GRO86-190212AL

Printed: 02/22/19 11:29:26 AM  
Form 4, Blank Summary

**Method Blank**  
**EPA 8260B GRO WATER**

Blank Name/QCG: **190212W-86113 - 237777**

Batch ID: #GRO86-190212AL

APPL Inc.

908 North Temperance Avenue

Clovis, CA 93611

Sample Type	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
BLANK	GASOLINE RANGE ORGANICS	18.0 U	20	18.0	8.6	ug/L	02/12/19	02/12/19
BLANK	SURROGATE: 4-BROMOFLUORO	111	85-114			%	02/12/19	02/12/19

Quant Method: LGAS0201.M  
Run #: 0212L15  
Instrument: Loki  
Sequence: 190211  
Initials: DG

GC SC-Blank-REG MDLs-DOD  
Printed: 02/22/19 11:29:44 AM

# **EPA 8260B**

Form 4

## **LCS Summary**

Lab Name: APPL, Inc.

SDG No: 88062

Case No: 88062

Date Analyzed: 02/12/19

Matrix: WATER

Instrument: Loki

LCS ID: 190212AL-LCS

Time Analyzed: 1136

<b>APPL ID.</b>	<b>Client Sample No.</b>	<b>File ID.</b>	<b>Date Analyzed</b>
190212AL-LCS	Lab Control Spike	0212L10	02/12/19 1136
190212AL-LCSD	Lab Control SpikeD	0212L11	02/12/19 1204
190212AL-BLK	Blank	0212L15	02/12/19 1356
AZ86199	ERH758	0212L21	02/12/19 1645
AZ86200	ERH759	0212L22	02/12/19 1713

Comments: Batch: #GRO86-190212AL

Printed: 02/22/19 11:29:24 AM  
Form 4, LCS Summary

**Laboratory Control Spike Recoveries**  
**EPA 8260B GRO WATER**

APPL ID: 190212W-86113 LCS - 237777  
 Batch ID: #GRO86-190212AL

APPL Inc.  
 908 North Temperance Avenue  
 Clovis, CA 93611

Compound Name	Spike Lvl ug/L	SPK Result ug/L	DUP Result ug/L	SPK % Recovery	DUP % Recovery	Recovery Limits	RPD %	RPD Limits
GASOLINE RANGE ORGANICS	300	437	268	146 #	89.3	78-122	47.9 #	20
SURROGATE: 4-BROMOFLUOROBENZE	25.0	22.4	18.4	89.6	73.6 #	85-114		

# = Recovery is outside QC limits.

Comments: \_\_\_\_\_

	<u>SPK</u>	<u>DUP</u>
Quant Method :	LGAS0201.M	LGAS0201.M
Extraction Date :	02/12/19	02/12/19
Analysis Date :	02/12/19	02/12/19
Instrument :	Loki	Loki
Run :	0212L10	0212L11
Initials :	DG	

# RSK 175

Form 4

## Blank Summary

Lab Name: APPL, Inc.

SDG No: 88062

Case No: 88062

Date Analyzed: 02/13/19

Matrix: WATER

Instrument: Rocky

Blank ID: 190213A-BLK

Time Analyzed: 0940

APPL ID.	Client Sample No.	File ID.	Date Analyzed
190213A-LCS	Lab Control Spike	19021300	02/13/19 0927
190213A-LCSD	Lab Control SpikeD	19021303	02/13/19 0936
190213A-BLK	Blank	19021304	02/13/19 0940
AZ86199	ERH758	19021305	02/13/19 0942
AZ86200	ERH759	19021306	02/13/19 0944

Comments: Batch: #RSKME-190213A

Printed: 02/13/19 10:20:39 AM  
Form 4, Blank Summary

**Method Blank**  
**METHANE**

Blank Name/QCG: **190213W-86199 - 237436**  
Batch ID: #RSKME-190213A

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

Sample Type	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
BLANK	METHANE	1.00 U	5.0	1.00	0.25	ug/L	02/13/19	02/13/19

Quant Method:RSK0120.M  
Run #:19021304  
Instrument:Rocky  
Sequence:190120  
Initials:CMO

GC SC-Blank-REG MDLs-DOD  
Printed: 02/13/19 10:20:49 AM

# RSK 175

Form 4

## LCS Summary

Lab Name: APPL, Inc.

SDG No: 88062

Case No: 88062

Date Analyzed: 02/13/19

Matrix: WATER

Instrument: Rocky

LCS ID: 190213A-LCS

Time Analyzed: 0927

<b>APPL ID.</b>	<b>Client Sample No.</b>	<b>File ID.</b>	<b>Date Analyzed</b>
190213A-LCS	Lab Control Spike	19021300	02/13/19 0927
190213A-LCSD	Lab Control SpikeD	19021303	02/13/19 0936
190213A-BLK	Blank	19021304	02/13/19 0940
AZ86199	ERH758	19021305	02/13/19 0942
AZ86200	ERH759	19021306	02/13/19 0944

Comments: Batch: #RSKME-190213A

Printed: 02/13/19 10:20:36 AM  
Form 4, LCS Summary



# Laboratory Control Spike Recoveries

## METHANE

APPL ID: 190213W-86199 LCS - 237436

Batch ID: #RSKME-190213A

APPL Inc.

908 North Temperance Avenue

Clovis, CA 93611

Compound Name	Spike Lvl ug/L	SPK Result ug/L	DUP Result ug/L	SPK % Recovery	DUP % Recovery	Recovery Limits	RPD %	RPD Limits
METHANE	83.4	92.7	76.2	111	91.4	72-125	19.5	30

Comments: \_\_\_\_\_

<u>Primary</u>	<u>SPK</u>	<u>DUP</u>
Quant Method :	RSK0120.M	RSK0120.M
Extraction Date :	02/13/19	02/13/19
Analysis Date :	02/13/19	02/13/19
Instrument :	Rocky	Rocky
Run :	19021300	19021303
Initials :	CMO	

# SM3500FeB

Form 4

## Blank Summary

Lab Name: APPL, Inc. SDG No: 88062  
Case No: 88062 Date Analyzed: 02/08/19  
Matrix: WATER Instrument: Manual Spec  
Blank ID: 190208A1-BLK Time Analyzed: 0840

APPL ID.	Client Sample No.	File ID.	Date Analyzed
190208A1-BLK	Blank	12	02/08/19 0840
190208A1-LCS	Lab Control Spike	13	02/08/19 0841
190208A1-LCSD	Lab Control SpikeD	14	02/08/19 0842
AZ86200	ERH759	30	02/08/19 1108

Comments: Batch: #35FE-190208A1

# WETLAB BLANK

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

Method	Analyte	Result	LOQ	LOD	DL	Units	Prep Date	Analysis Date	QC Group
SM3500Fe	FERROUS IRON	0.32 U	1.0	0.32	0.16	mg/L	02/08/19	02/08/19	#35FE-190208A1-AZ86200

Wetlab SC-Blank-REG MDLs  
Printed: 02/17/19 9:38:03 AM

**EPA 300.0**

Form 4

**Blank Summary**

Lab Name: APPL, Inc.  
Case No: 88062  
Matrix: WATER  
Blank ID: 190208A2-BLK

SDG No: 88062  
Date Analyzed: 02/08/19  
Instrument: Charlie  
Time Analyzed: 1355

APPL ID.	Client Sample No.	File ID.	Date Analyzed
190208A2-BLK	Blank	30	02/08/19 1355
190208A2-LCS	Lab Control Spike	31	02/08/19 1402
190208A2-LCSD	Lab Control SpikeD	32	02/08/19 1410
AZ86200	ERH759	33	02/08/19 1417

Comments: Batch: #300W-190208A2

# WETLAB BLANK

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

Method	Analyte	Result	LOQ	LOD	DL	Units	Prep Date	Analysis Date	QC Group
EPA 300.0	NITRATE	0.18 U	0.5	0.18	0.04	mg/L	02/08/19	02/08/19	#300W-190208A2-AZ86200
EPA 300.0	SULFATE	0.20 U	1.0	0.20	0.09	mg/L	02/08/19	02/08/19	#300W-190208A2-AZ86200

Wetlab SC-Blank-REG MDLs  
Printed: 02/17/19 9:38:03 AM

# EPA 300.0

Form 4

## Blank Summary

Lab Name: APPL, Inc.

SDG No: 88062

Case No: 88062

Date Analyzed: 02/09/19

Matrix: WATER

Instrument: Charlie

Blank ID: 190209A2-BLK

Time Analyzed: 0817

<b>APPL ID.</b>	<b>Client Sample No.</b>	<b>File ID.</b>	<b>Date Analyzed</b>
190209A2-BLK	Blank	2	02/09/19 0817
AZ86200	ERH759	29	02/09/19 1352
190209A2-LCS	Lab Control Spike	3	02/09/19 0824
190209A2-LCSD	Lab Control SpikeD	4	02/09/19 0832

Comments: Batch: #300WD-190209A2

Printed: 02/17/19 9:38:01 AM  
Form 4, Blank Summary

# WETLAB BLANK

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

Method	Analyte	Result	LOQ	LOD	DL	Units	Prep Date	Analysis Date	QC Group
EPA 300.0	CHLORIDE	0.20 U	1.0	0.20	0.08	mg/L	02/09/19	02/09/19	#300WD-190209A2-AZ86200

Wetlab SC-Blank-REG MDLs  
Printed: 02/17/19 9:38:03 AM

# EPA 353.2

Form 4

## Blank Summary

Lab Name: APPL, Inc.

SDG No: 88062

Case No: 88062

Date Analyzed: 02/13/19

Matrix: WATER

Instrument: EVE

Blank ID: 190213A-BLK

Time Analyzed: 1455

<b>APPL ID.</b>	<b>Client Sample No.</b>	<b>File ID.</b>	<b>Date Analyzed</b>
190213A-BLK	Blank	12	02/13/19 1455
190213A-LCS	Lab Control Spike	13	02/13/19 1456
190213A-LCSD	Lab Control SpikeD	14	02/13/19 1457
AZ86200	ERH759	16	02/13/19 1459

Comments: Batch: #35OF-190213A

Printed: 02/17/19 9:38:01 AM

Form 4, Blank Summary



# WETLAB BLANK

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

Method	Analyte	Result	LOQ	LOD	DL	Units	Prep Date	Analysis Date	QC Group
EPA 353.2	NITRATE-NITRITE-N	0.100 U	0.10	0.100	0.028	mg/L	02/13/19	02/13/19	#35OF-190213A-AZ86200

Wetlab SC-Blank-REG MDLs  
Printed: 02/17/19 9:38:03 AM

# SM 2320B

Form 4

## Blank Summary

Lab Name: APPL, Inc.

SDG No: 88062

Case No: 88062

Date Analyzed: 02/13/19

Matrix: WATER

Instrument: Tiamo

Blank ID: 190213A1-BLK

Time Analyzed: 1318

APPL ID.	Client Sample No.	File ID.	Date Analyzed
190213A1-BLK	Blank	1	02/13/19 1318
190213A1-LCS	Lab Control Spike	2	02/13/19 1321
190213A1-LCSD	Lab Control SpikeD	3	02/13/19 1331
AZ86200	ERH759	4	02/13/19 1350

Comments: Batch: #232W-190213A1

Printed: 02/17/19 9:38:01 AM  
Form 4, Blank Summary

# WETLAB BLANK

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

Method	Analyte	Result	LOQ	LOD	DL	Units	Prep Date	Analysis Date	QC Group
SM 2320B	BICARBONATE AS CA	2.6	2.0	1.70	0.85	mg/L	02/13/19	02/13/19	#232W-190213A1-AZ86200
SM 2320B	CARBONATE AS CACO	1.70 U	2.0	1.70	0.85	mg/L	02/13/19	02/13/19	#232W-190213A1-AZ86200
SM 2320B	TOTAL ALKALINITY AS	2.6	2.0	1.70	0.85	mg/L	02/13/19	02/13/19	#232W-190213A1-AZ86200

Wetlab SC-Blank-REG MDLs  
Printed: 02/17/19 9:38:03 AM

**SW846 9060A**

Form 4

**Blank Summary**

Lab Name: APPL, Inc.  
Case No: 88062  
Matrix: WATER  
Blank ID: 190213A-BLK

SDG No: 88062  
Date Analyzed: 02/13/19  
Instrument: Manual  
Time Analyzed: 0923

APPL ID.	Client Sample No.	File ID.	Date Analyzed
AZ86200	ERH759		02/13/19 1032
190213A-LCS	Lab Control Spike		02/13/19 1148
190213A-LCSD	Lab Control SpikeD		02/13/19 1223
190213A-BLK	Blank		02/13/19 0923

Comments: Batch: #TOCDOCW-19021

# WETLAB BLANK

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

Method	Analyte	Result	LOQ	LOD	DL	Units	Prep Date	Analysis Date	QC Group
SW846 90	TOTAL ORGANIC CAR	0.31 J	0.93	0.350	0.130	mg/L	02/13/19	02/13/19	CDOCW-190213A-AZ85643

J = Estimated value.

Wetlab SC-Blank-REG MDLs  
Printed: 02/17/19 9:38:03 AM

# SM3500FeB

Form 4

## LCS Summary

Lab Name: APPL, Inc.

SDG No: 88062

Case No: 88062

Date Analyzed: 02/08/19

Matrix: WATER

Instrument: Manual Spec

LCS ID: 190208A1-LCS

Time Analyzed: 0841

<b>APPL ID.</b>	<b>Client Sample No.</b>	<b>File ID.</b>	<b>Date Analyzed</b>
190208A1-BLK	Blank	12	02/08/19 0840
190208A1-LCS	Lab Control Spike	13	02/08/19 0841
190208A1-LCSD	Lab Control SpikeD	14	02/08/19 0842
AZ86200	ERH759	30	02/08/19 1108

Comments: Batch: #35FE-190208A1

Printed: 02/17/19 9:38:08 AM  
Form 4, LCS Summary

## Laboratory Control Spike Recoveries

### WETLAB

APPL Inc.  
 908 North Temperance Avenue  
 Clovis, CA 93611

Method	Compound Name	Spike Lvl mg/L	SPK Res mg/L	DUP Res mg/L	SPK % Recov	DUP % Recov	RPD	RPD Max	QC Limits	Extract Date-Spk	Analysis Date-Spk	Extract Date-Dup	Analysis Date-Dup	QC Group
SM3500Fe	FERROUS IRON	3.00	3.12	3.03	104	101	2.9	20	80-120	02/08/19	02/08/19	02/08/19	02/08/19	#35FE-190208A1-AZ86200

Comments: \_\_\_\_\_

# EPA 300.0

Form 4

## LCS Summary

Lab Name: APPL, Inc.

SDG No: 88062

Case No: 88062

Date Analyzed: 02/08/19

Matrix: WATER

Instrument: Charlie

LCS ID: 190208A2-LCS

Time Analyzed: 1402

<b>APPL ID.</b>	<b>Client Sample No.</b>	<b>File ID.</b>	<b>Date Analyzed</b>
190208A2-BLK	Blank	30	02/08/19 1355
190208A2-LCS	Lab Control Spike	31	02/08/19 1402
190208A2-LCSD	Lab Control SpikeD	32	02/08/19 1410
AZ86200	ERH759	33	02/08/19 1417

Comments: Batch: #300W-190208A2

Printed: 02/17/19 9:38:08 AM  
Form 4, LCS Summary



# Laboratory Control Spike Recoveries

## WETLAB

APPL Inc.  
 908 North Temperance Avenue  
 Clovis, CA 93611

Method	Compound Name	Spike Lvl mg/L	SPK Res mg/L	DUP Res mg/L	SPK % Recov	DUP % Recov	RPD	RPD Max	QC Limits	Extract Date-Spk	Analysis Date-Spk	Extract Date-Dup	Analysis Date-Dup	QC Group
EPA 300.0	NITRATE	22.1	22.1	22.1	100	100	0.0	20	90-110	02/08/19	02/08/19	02/08/19	02/08/19	#300W-190208A2-AZ8620
EPA 300.0	SULFATE	25.0	24.4	24.4	97.6	97.6	0.0	20	90-110	02/08/19	02/08/19	02/08/19	02/08/19	#300W-190208A2-AZ8620

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

# EPA 300.0

Form 4

## LCS Summary

Lab Name: APPL, Inc.

SDG No: 88062

Case No: 88062

Date Analyzed: 02/09/19

Matrix: WATER

Instrument: Charlie

LCS ID: 190209A2-LCS

Time Analyzed: 0824

<u>APPL ID.</u>	<u>Client Sample No.</u>	<u>File ID.</u>	<u>Date Analyzed</u>
190209A2-BLK	Blank	2	02/09/19 0817
AZ86200	ERH759	29	02/09/19 1352
190209A2-LCS	Lab Control Spike	3	02/09/19 0824
190209A2-LCSD	Lab Control SpikeD	4	02/09/19 0832

Comments: Batch: #300WD-190209A2

Printed: 02/17/19 9:38:08 AM  
Form 4, LCS Summary

# Laboratory Control Spike Recoveries

## WETLAB

APPL Inc.  
 908 North Temperance Avenue  
 Clovis, CA 93611

Method	Compound Name	Spike Lvl mg/L	SPK Res mg/L	DUP Res mg/L	SPK % Recov	DUP % Recov	RPD	RPD Max	QC Limits	Extract Date-Spk	Analysis Date-Spk	Extract Date-Dup	Analysis Date-Dup	QC Group
EPA 300.0	CHLORIDE	25.0	24.3	24.3	97.2	97.2	0.0	20	90-110	02/09/19	02/09/19	02/09/19	02/09/19	#300WD-190209A2-AZ862

Comments:

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**EPA 353.2**

Form 4

**LCS Summary**

Lab Name: APPL, Inc.  
Case No: 88062  
Matrix: WATER  
LCS ID: 190213A-LCS

SDG No: 88062  
Date Analyzed: 02/13/19  
Instrument: EVE  
Time Analyzed: 1456

<b>APPL ID.</b>	<b>Client Sample No.</b>	<b>File ID.</b>	<b>Date Analyzed</b>
190213A-BLK	Blank	12	02/13/19 1455
190213A-LCS	Lab Control Spike	13	02/13/19 1456
190213A-LCSD	Lab Control SpikeD	14	02/13/19 1457
AZ86200	ERH759	16	02/13/19 1459

Comments: Batch: #35OF-190213A

# Laboratory Control Spike Recoveries

## WETLAB

APPL Inc.  
 908 North Temperance Avenue  
 Clovis, CA 93611

Method	Compound Name	Spike Lvl mg/L	SPK Res mg/L	DUP Res mg/L	SPK % Recov	DUP % Recov	RPD	RPD Max	QC Limits	Extract Analysis Date-Spk	Extract Analysis Date-Spk	Extract Analysis Date-Dup	Extract Analysis Date-Dup	QC Group
EPA 353.2	NITRATE-NITRITE-N	3.00	2.90	2.90	96.7	96.7	0.0	20	90-110	02/13/19	02/13/19	02/13/19	02/13/19	#35OF-190213A-AZ86200

Comments: \_\_\_\_\_

# SM 2320B

Form 4

## LCS Summary

Lab Name: APPL, Inc.

SDG No: 88062

Case No: 88062

Date Analyzed: 02/13/19

Matrix: WATER

Instrument: Tiamo

LCS ID: 190213A1-LCS

Time Analyzed: 1321

APPL ID.	Client Sample No.	File ID.	Date Analyzed
190213A1-BLK	Blank	1	02/13/19 1318
190213A1-LCS	Lab Control Spike	2	02/13/19 1321
190213A1-LCSD	Lab Control SpikeD	3	02/13/19 1331
AZ86200	ERH759	4	02/13/19 1350

Comments: Batch: #232W-190213A1

Printed: 02/17/19 9:38:08 AM  
Form 4, LCS Summary

# Laboratory Control Spike Recoveries

## WETLAB

APPL Inc.  
 908 North Temperance Avenue  
 Clovis, CA 93611

Method	Compound Name	Spike Lvl mg/L	SPK Res mg/L	DUP Res mg/L	SPK % Recov	DUP % Recov	RPD	RPD Max	QC Limits	Extract Analysis Date-Spk	Extract Analysis Date-Dup	QC Group
SM 2320B	BICARBONATE AS CaCO3	250	229	229	91.6	91.6	0.0	20	90-110	02/13/19	02/13/19	#232W-190213A1-AZ8620
SM 2320B	TOTAL ALKALINITY AS CA	250	229	229	91.6	91.6	0.0	20	90-110	02/13/19	02/13/19	#232W-190213A1-AZ8620

Comments: \_\_\_\_\_

**SW846 9060A**

Form 4

**LCS Summary**

Lab Name: APPL, Inc.  
Case No: 88062  
Matrix: WATER  
LCS ID: 190213A-LCS

SDG No: 88062  
Date Analyzed: 02/13/19  
Instrument: Manual  
Time Analyzed: 1148

APPL ID.	Client Sample No.	File ID.	Date Analyzed
AZ86200	ERH759		02/13/19 1032
190213A-LCS	Lab Control Spike		02/13/19 1148
190213A-LCSD	Lab Control SpikeD		02/13/19 1223
190213A-BLK	Blank		02/13/19 0923

Comments: Batch: #TOCDOCW-19021



# Laboratory Control Spike Recoveries

## WETLAB

APPL Inc.  
908 North Temperance Avenue  
Clovis, CA 93611

Method	Compound Name	Spike Lvl mg/L	SPK Res mg/L	DUP Res mg/L	SPK % Recov	DUP % Recov	RPD	RPD Max	QC Limits	Extract Date-Spk	Analysis Date-Spk	Extract Date-Dup	Analysis Date-Dup	QC Group
SW846 90	TOTAL ORGANIC CARBO	2.00	2.19	2.16	110	108	1.4	20	90-110	02/13/19	02/13/19	02/13/19	02/13/19	#TOCDOCW-190213A-AZ8

Comments: \_\_\_\_\_

**ORGANICS  
Calibration Data**

TPH Extractables  
DOC0117

Form 6  
Initial Calibration

Lab Name: APPL, Inc. \_\_\_\_\_

SDG No: \_\_\_\_\_

Case No: \_\_\_\_\_

Initial Cal. Date: 01/17/19 \_\_\_\_\_

Matrix: Water \_\_\_\_\_

Instrument: Apollo \_\_\_\_\_

Initials: \_\_\_\_\_

117002.D    117003.D    117004.D    117005.D    117006.D    117007.D

		Compound	1	2	3	4	5	6					Avg	%RSD	Type	r^2	Q
1	HATM	Diesel (C10-C24)	1247225	1163187	1209913	1221573	1152277	1133164					1187890	3.8	HATM		
2	HBTM	Motor Oil (C24-C40)	1046830	917795	948443	920306	882639	861594					929601	7.0	HBTM		
3	SC	Decanoic Acid(S)	648675	1095549	1090928	1053315	1004335	1065935					993123	17	SC		
4	SA	Ortho-Terphenyl(S)	2315091	2079412	2039254	2009486	1862079	1811493					2019469	8.8	SA		
5	SA	Octacosane(S)	2056338	1855545	1881468	1912913	1840710	1711226					1876367	6.0	SA		
6																	
7																	
8																	
9																	
10																	
11																	
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35																	

1.225349

Quantitation Report (QT Reviewed)

Data File : G:\APOLLO\DATA\190117\117002.D Vial: 2  
 Acq On : 1-17-19 16:38:28 Operator: DP  
 Sample : Diesel / Motor Oil - 1 1/17/19 Inst : Apollo  
 Misc : water Multiplr: 1.00  
 IntFile : events.e  
 Quant Time: Jan 24 13:42 2019 Quant Results File: DOC0117.RES

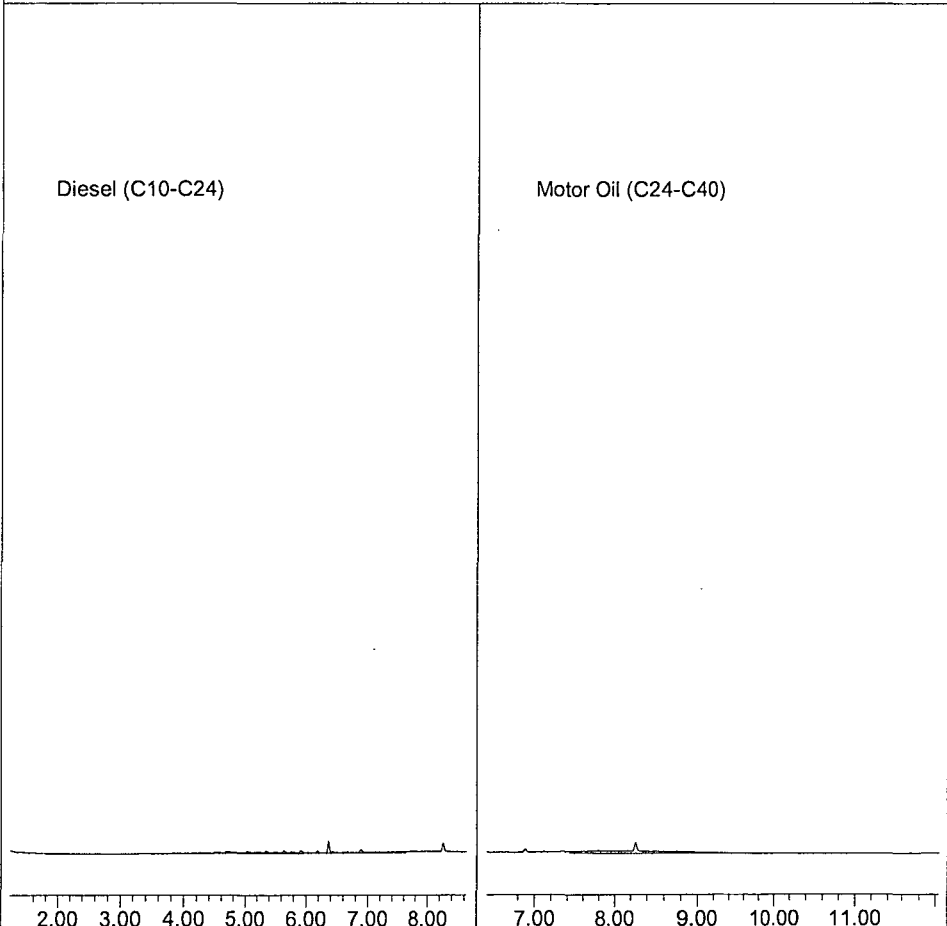
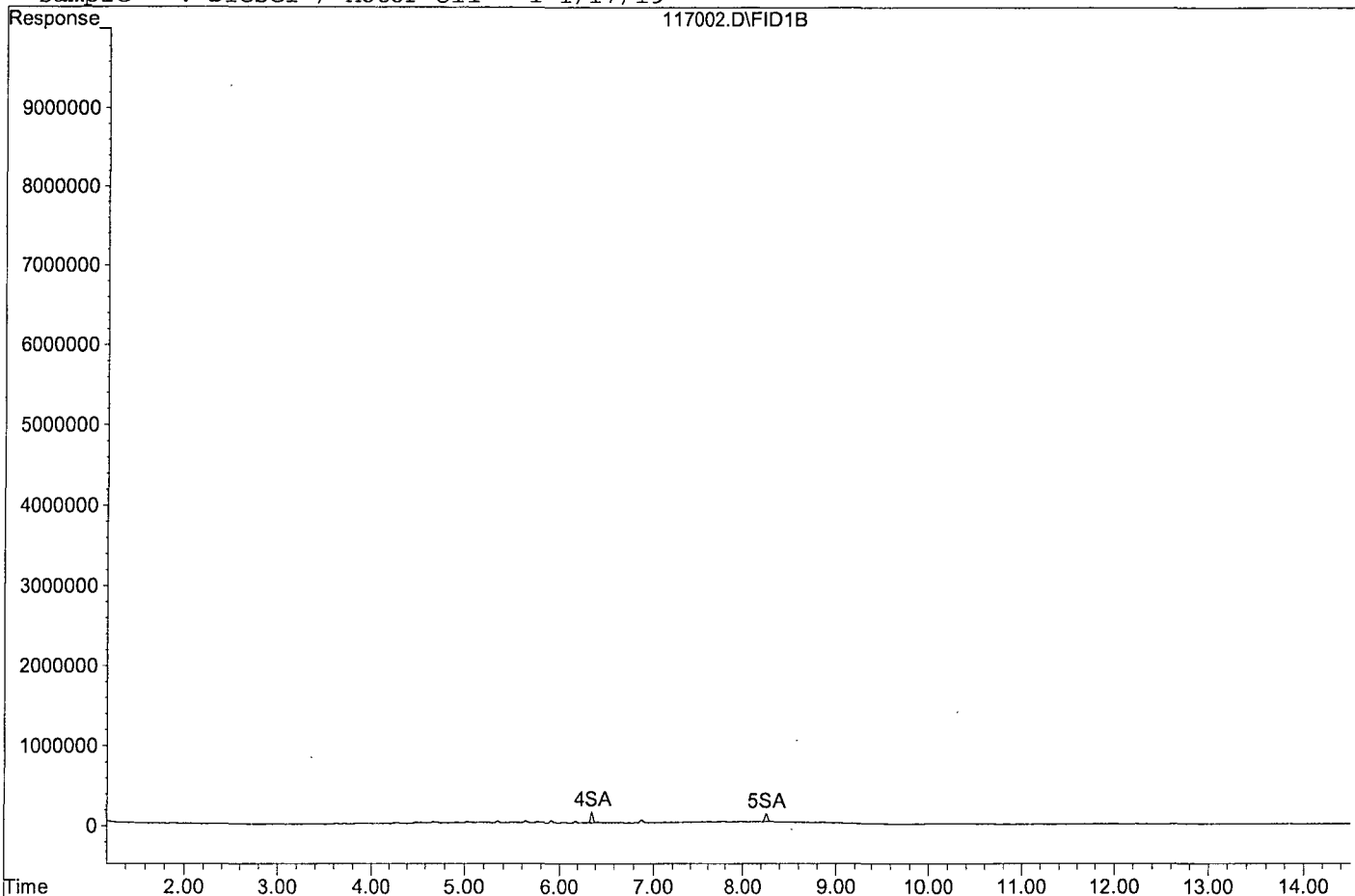
Method : G:\APOLLO\DATA\190117\DOC0117.M (Chemstation Integrator)  
 Title : 8015 B&C  
 Last Update : Thu Jan 24 13:38:12 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 2UL  
 Signal Phase : DB-5  
 Signal Info : FID02A

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
4) SA Ortho-Terphenyl(S)	6.36	2315091	0.573 ppb
Surrogate Spike 30.000		Recovery =	1.91%
5) SA Octacosane(S)	8.26	2056338	0.548 ppb
Surrogate Spike 30.000		Recovery =	1.83%
Target Compounds			
1) HATM Diesel (C10-C24)	4.71	24944497	10.500 ppb
2) HBTM Motor Oil (C24-C40)	9.23	20936598	11.261 ppb

Quantitation Report

Data File: G:\APOLLO\DATA\190117\117002.D  
Sample : Diesel / Motor Oil - 1 1/17/19



Quantitation Report (QT Reviewed)

Data File : G:\APOLLO\DATA\190117\117003.D Vial: 3  
 Acq On : 1-17-19 16:58:29 Operator: DP  
 Sample : Diesel / Motor Oil - 2 1/17/19 Inst : Apollo  
 Misc : water Multiplr: 1.00  
 IntFile : events.e  
 Quant Time: Jan 24 13:42 2019 Quant Results File: DOC0117.RES

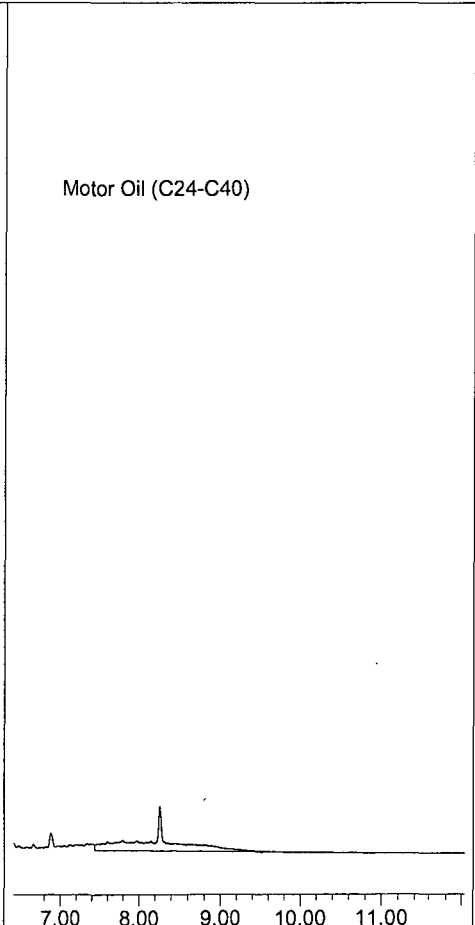
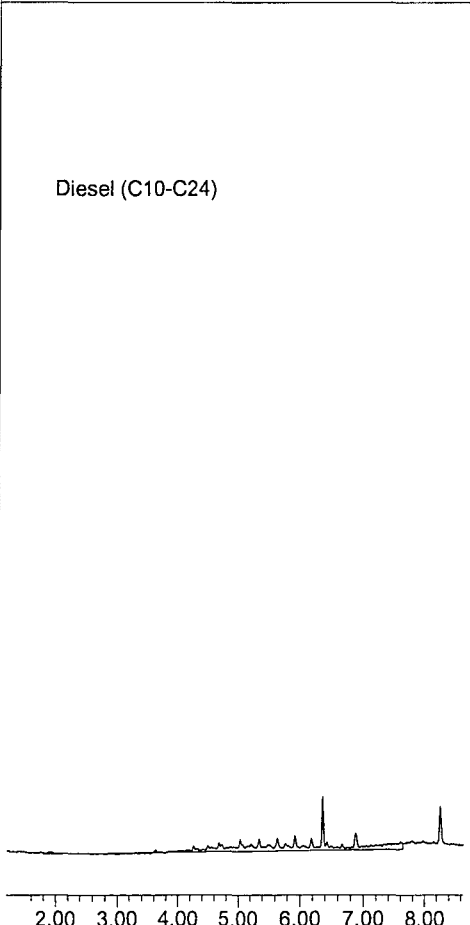
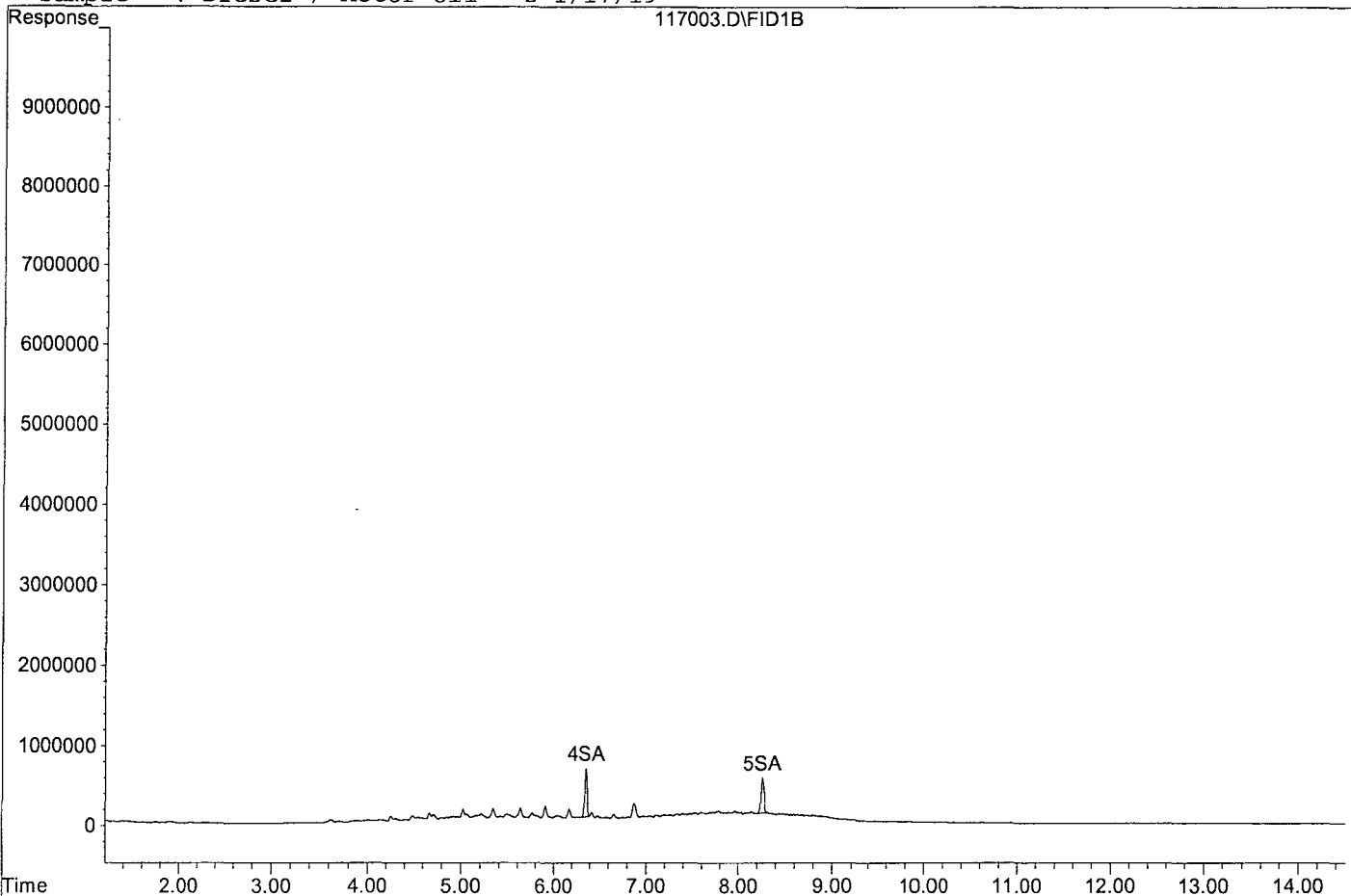
Method : G:\APOLLO\DATA\190117\DOC0117.M (Chemstation Integrator)  
 Title : 8015 B&C  
 Last Update : Thu Jan 24 13:38:12 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 2UL  
 Signal Phase : DB-5  
 Signal Info : FID02A

Compound	R.T.	Response	Conc Units
-----			
System Monitoring Compounds			
4) SA Ortho-Terphenyl(S)	6.36	10397059	2.574 ppb
Surrogate Spike 30.000		Recovery =	8.58%
5) SA Octacosane(S)	8.26	9277725	2.472 ppb
Surrogate Spike 30.000		Recovery =	8.24%
Target Compounds			
1) HATM Diesel (C10-C24)	4.71	116318686	48.960 ppb
2) HBTM Motor Oil (C24-C40)	9.23	91779450	49.365 ppb

Quantitation Report

Data File: G:\APOLLO\DATA\190117\117003.D  
Sample : Diesel / Motor Oil - 2 1/17/19



Data File : G:\APOLLO\DATA\190117\117004.D Vial: 4  
 Acq On : 1-17-19 17:17:50 Operator: DP  
 Sample : Diesel / Motor Oil - 3 1/17/19 Inst : Apollo  
 Misc : water Multiplr: 1.00  
 IntFile : events.e  
 Quant Time: Jan 24 13:42 2019 Quant Results File: DOC0117.RES

Method : G:\APOLLO\DATA\190117\DOC0117.M (Chemstation Integrator)  
 Title : 8015 B&C  
 Last Update : Thu Jan 24 13:38:12 2019  
 Response via : Multiple Level Calibration

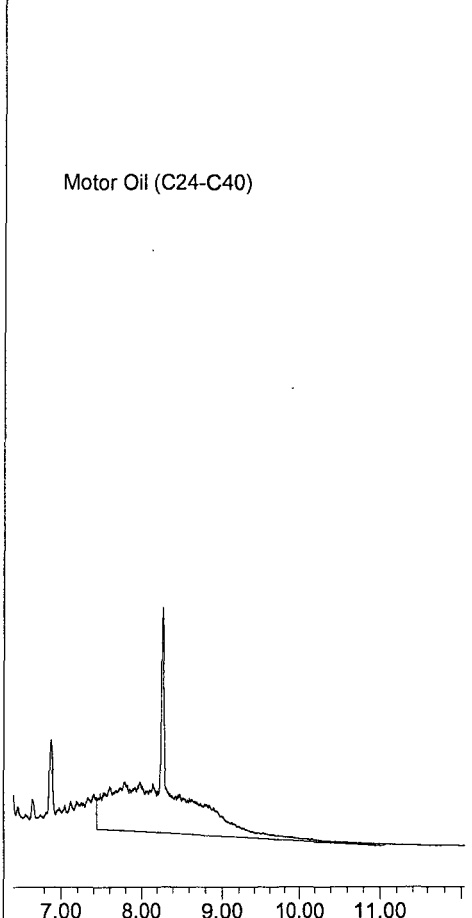
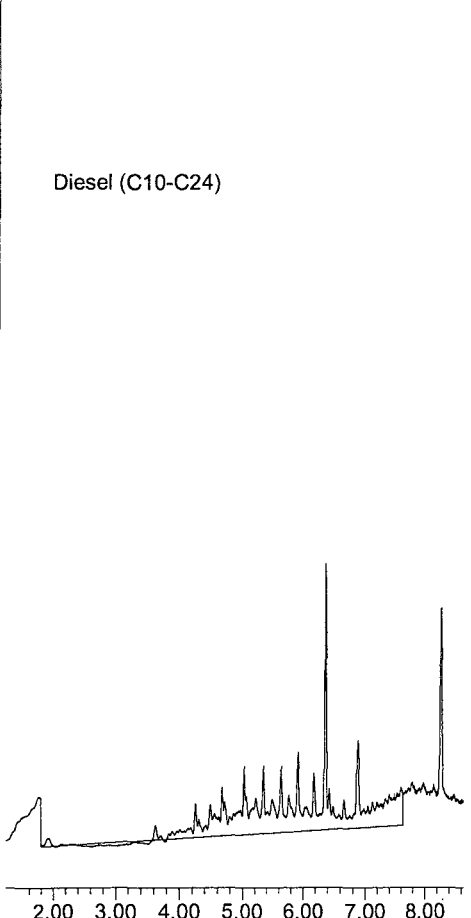
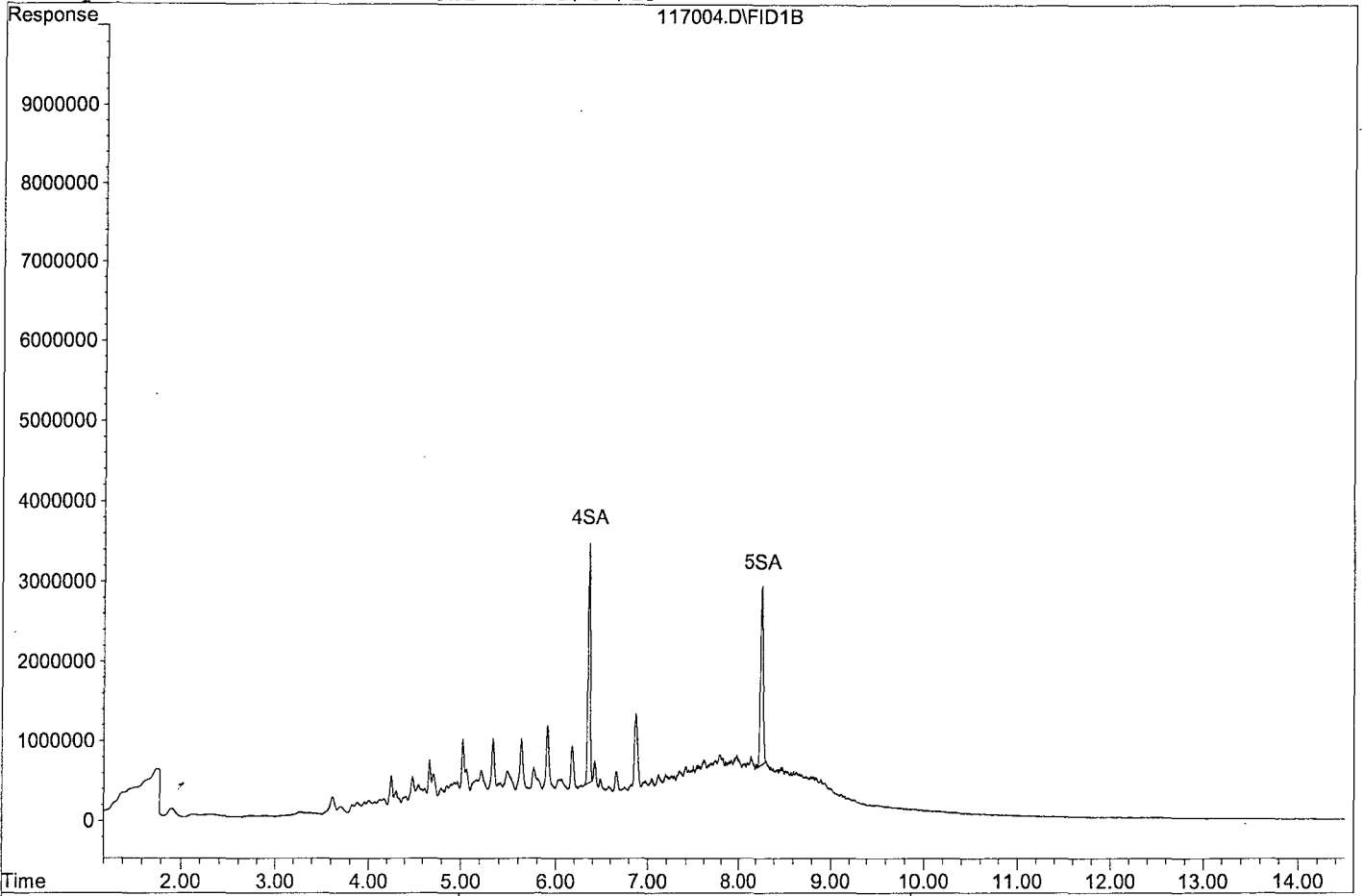
Volume Inj. : 2UL  
 Signal Phase : DB-5  
 Signal Info : FID02A

Compound	R.T.	Response	Conc Units
-----			
System Monitoring Compounds			
4) SA Ortho-Terphenyl(S)	6.36	50981338	12.622 ppb
Surrogate Spike 30.000		Recovery =	42.07%
5) SA Octacosane(S)	8.26	47036708	12.534 ppb
Surrogate Spike 30.000		Recovery =	41.78%
Target Compounds			
1) HATM Diesel (C10-C24)	4.71	604956690	254.635 ppb
2) HBTM Motor Oil (C24-C40)	9.23	474221646	255.067 ppb



Quantitation Report

Data File: G:\APOLLO\DATA\190117\117004.D  
Sample : Diesel / Motor Oil - 3 1/17/19



Data File : G:\APOLLO\DATA\190117\117005.D Vial: 5  
 Acq On : 1-17-19 17:37:44 Operator: DP  
 Sample : Diesel / Motor Oil - 4 1/17/19 Inst : Apollo  
 Misc : water Multiplr: 1.00  
 IntFile : events.e  
 Quant Time: Jan 24 13:42 2019 Quant Results File: DOC0117.RES

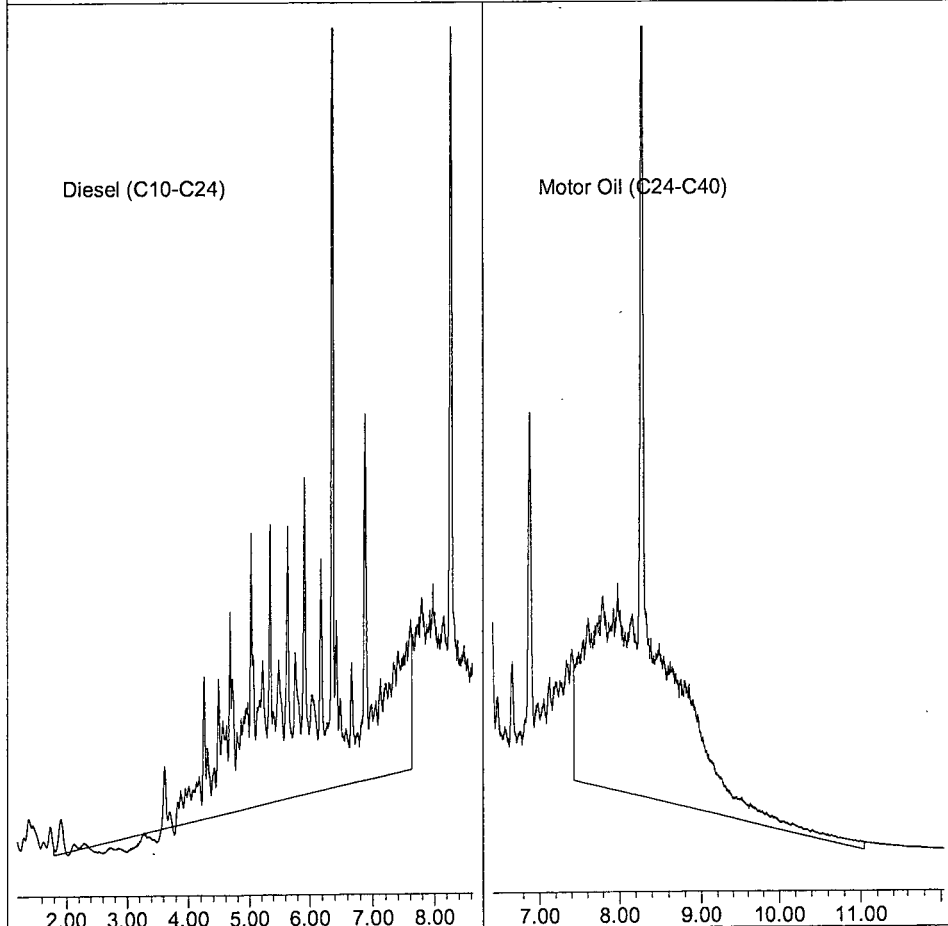
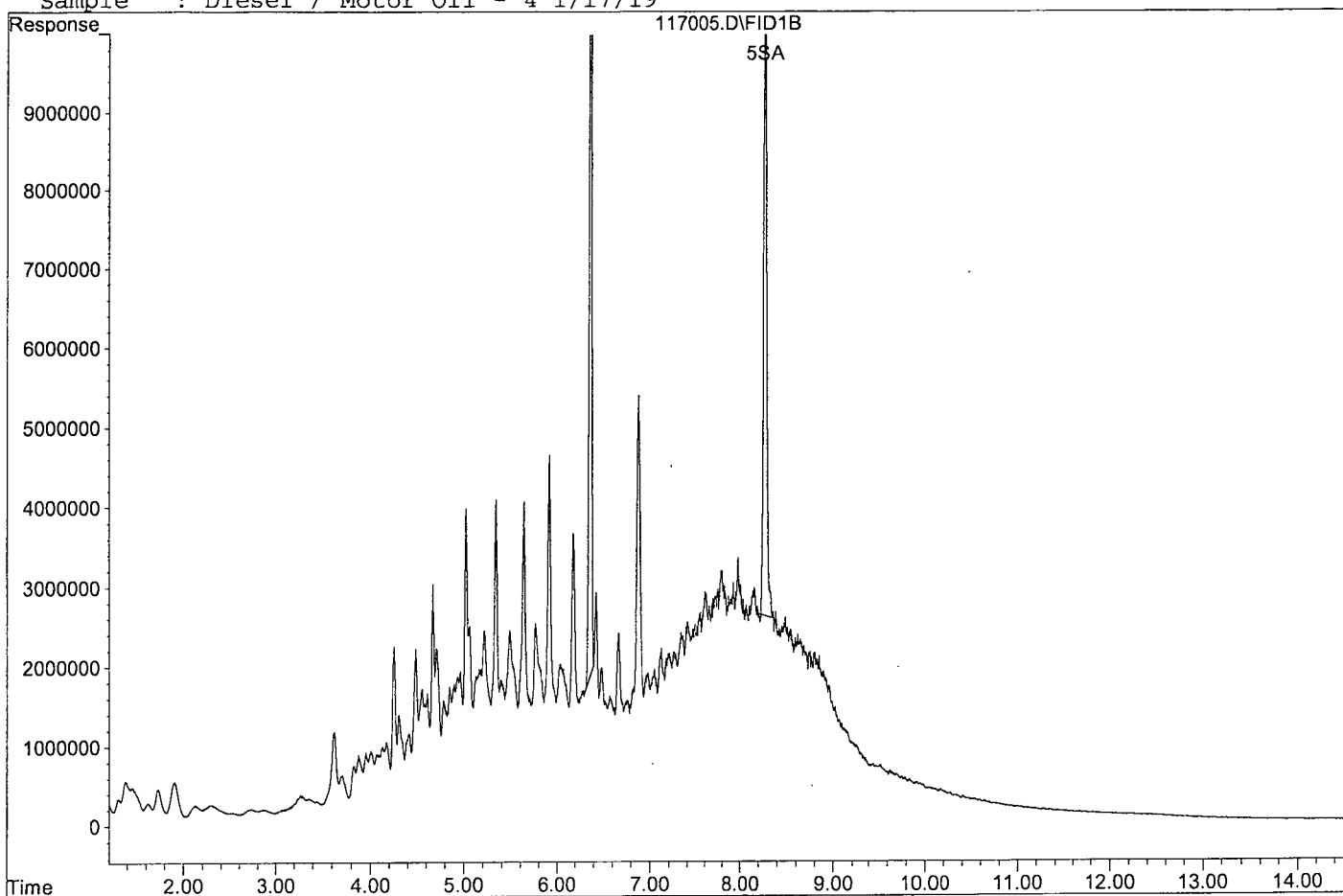
Method : G:\APOLLO\DATA\190117\DOC0117.M (Chemstation Integrator)  
 Title : 8015 B&C  
 Last Update : Thu Jan 24 13:38:12 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 2UL  
 Signal Phase : DB-5  
 Signal Info : FID02A

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
4) SA Ortho-Terphenyl(S)	6.37	200948587	49.753 ppb
Surrogate Spike 30.000		Recovery =	165.84%
5) SA Octacosane(S)	8.27	191291289	50.974 ppb
Surrogate Spike 30.000		Recovery =	169.91%
Target Compounds			
1) HATM Diesel (C10-C24)	4.71	2443146618	1028.356 ppb
2) HBTM Motor Oil (C24-C40)	9.23	1840612778	990.001 ppb

Quantitation Report

Data File: G:\APOLLO\DATA\190117\117005.D  
Sample : Diesel / Motor Oil - 4 1/17/19



Quantitation Report (QT Reviewed)

Data File : G:\APOLLO\DATA\190117\117006.D Vial: 6  
 Acq On : 1-17-19 17:57:32 Operator: DP  
 Sample : Diesel / Motor Oil - 5 1/17/19 Inst : Apollo  
 Misc : water Multiplr: 1.00  
 IntFile : events.e  
 Quant Time: Jan 24 13:42 2019 Quant Results File: DOC0117.RES

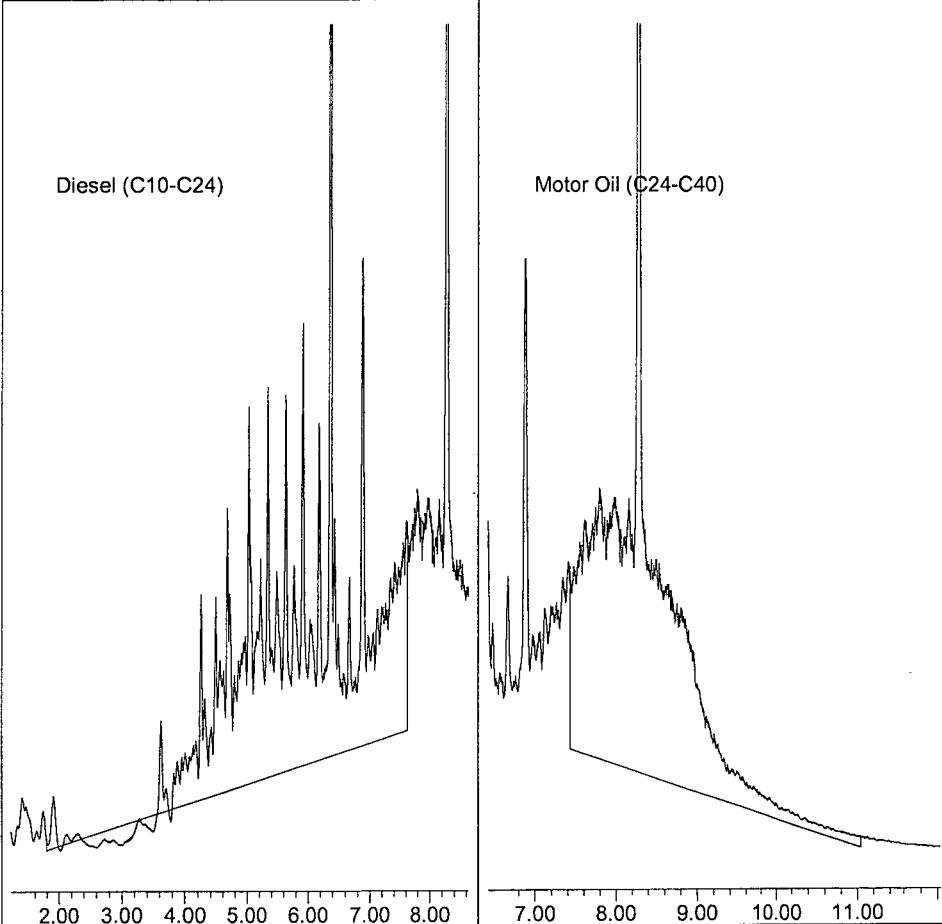
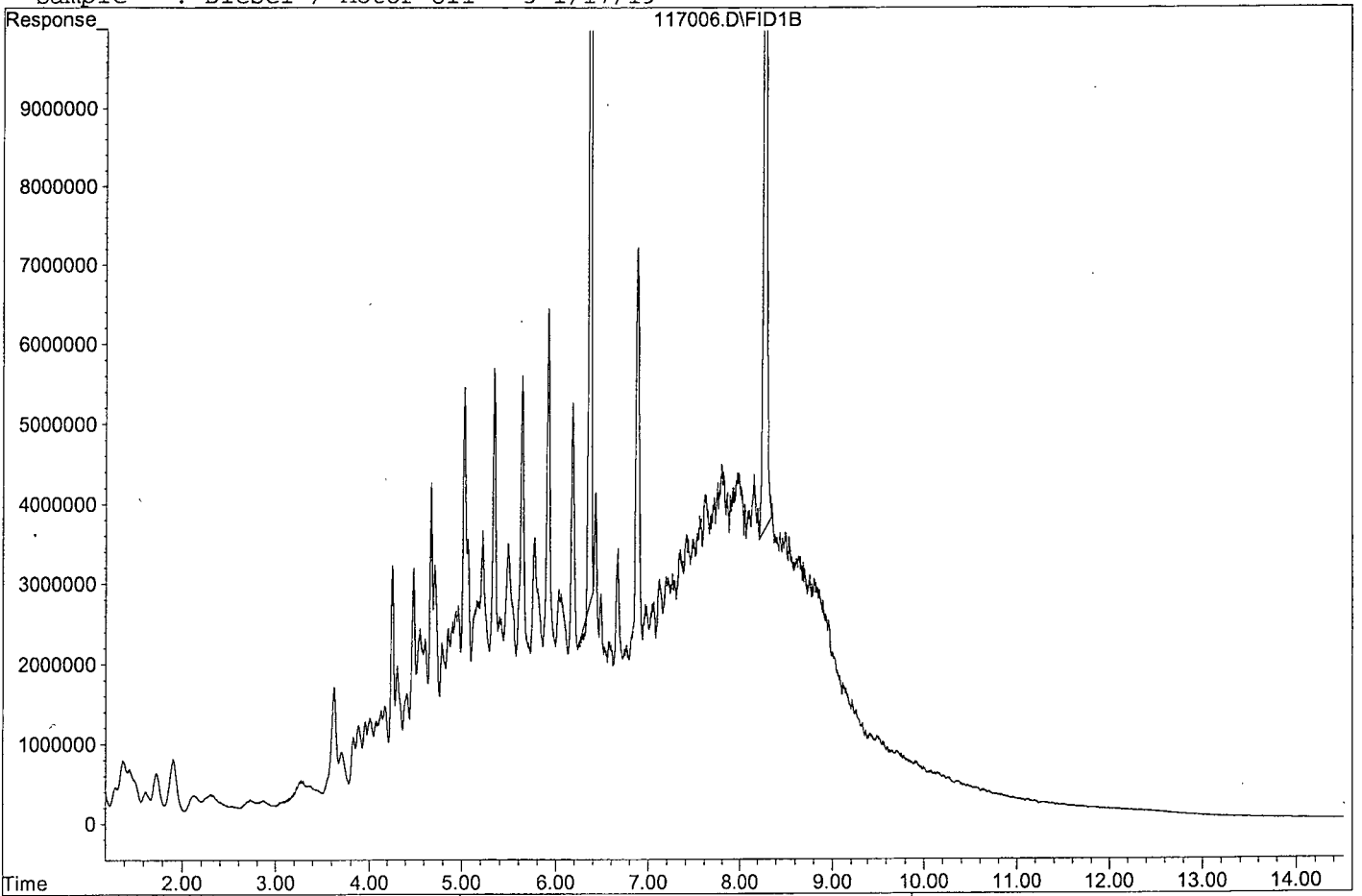
Method : G:\APOLLO\DATA\190117\DOC0117.M (Chemstation Integrator)  
 Title : 8015 B&C  
 Last Update : Thu Jan 24 13:38:12 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 2UL  
 Signal Phase : DB-5  
 Signal Info : FID02A

Compound	R.T.	Response	Conc Units
-----			
System Monitoring Compounds			
4) SA Ortho-Terphenyl(S)	6.37	279311894	69.155 ppb
Surrogate Spike 30.000		Recovery =	230.52%
5) SA Octacosane(S)	8.28	276106552	73.575 ppb
Surrogate Spike 30.000		Recovery =	245.25%
Target Compounds			
1) HATM Diesel (C10-C24)	4.71	3456829820	1455.030 ppb
2) HBTM Motor Oil (C24-C40)	9.23	2647918269	1424.223 ppb

Quantitation Report

Data File: G:\APOLLO\DATA\190117\117006.D  
Sample : Diesel / Motor Oil - 5 1/17/19



Quantitation Report (QT Reviewed)

Data File : G:\APOLLO\DATA\190117\117007.D Vial: 7  
 Acq On : 1-17-19 18:17:22 Operator: DP  
 Sample : Diesel / Motor Oil - 6 1/17/19 Inst : Apollo  
 Misc : water Multiplr: 1.00  
 IntFile : events.e  
 Quant Time: Jan 24 13:42 2019 Quant Results File: DOC0117.RES

Method : G:\APOLLO\DATA\190117\DOC0117.M (Chemstation Integrator)  
 Title : 8015 B&C  
 Last Update : Thu Jan 24 13:38:12 2019  
 Response via : Multiple Level Calibration

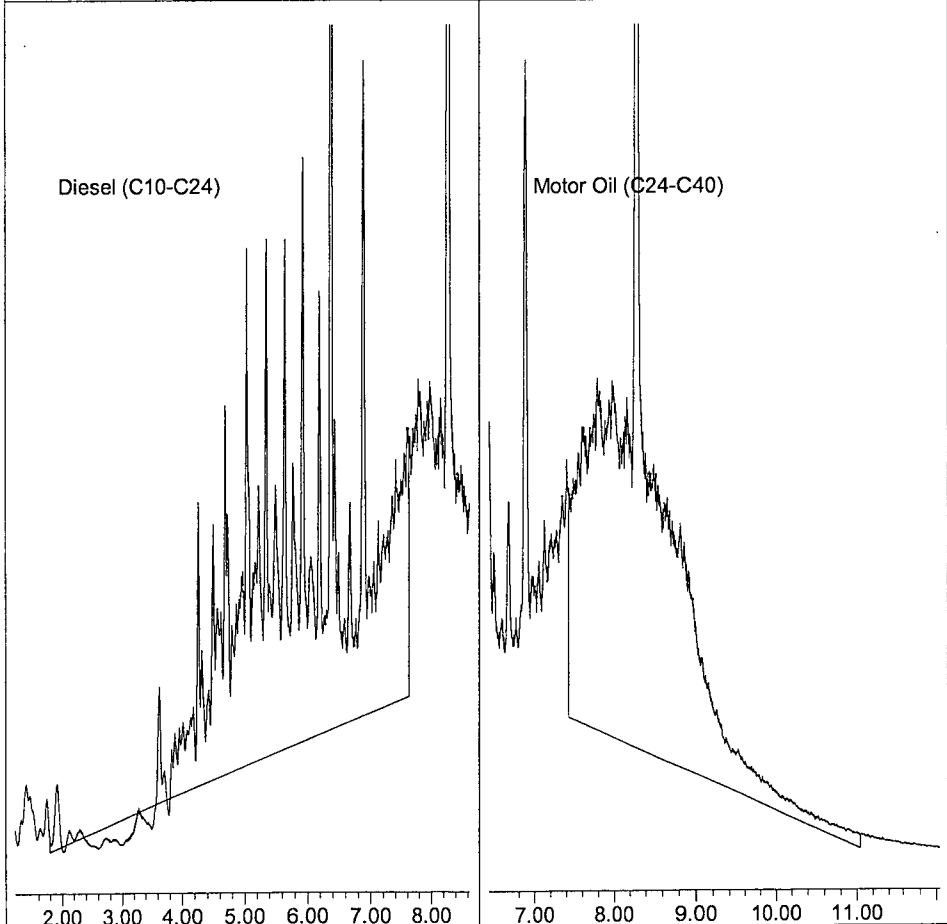
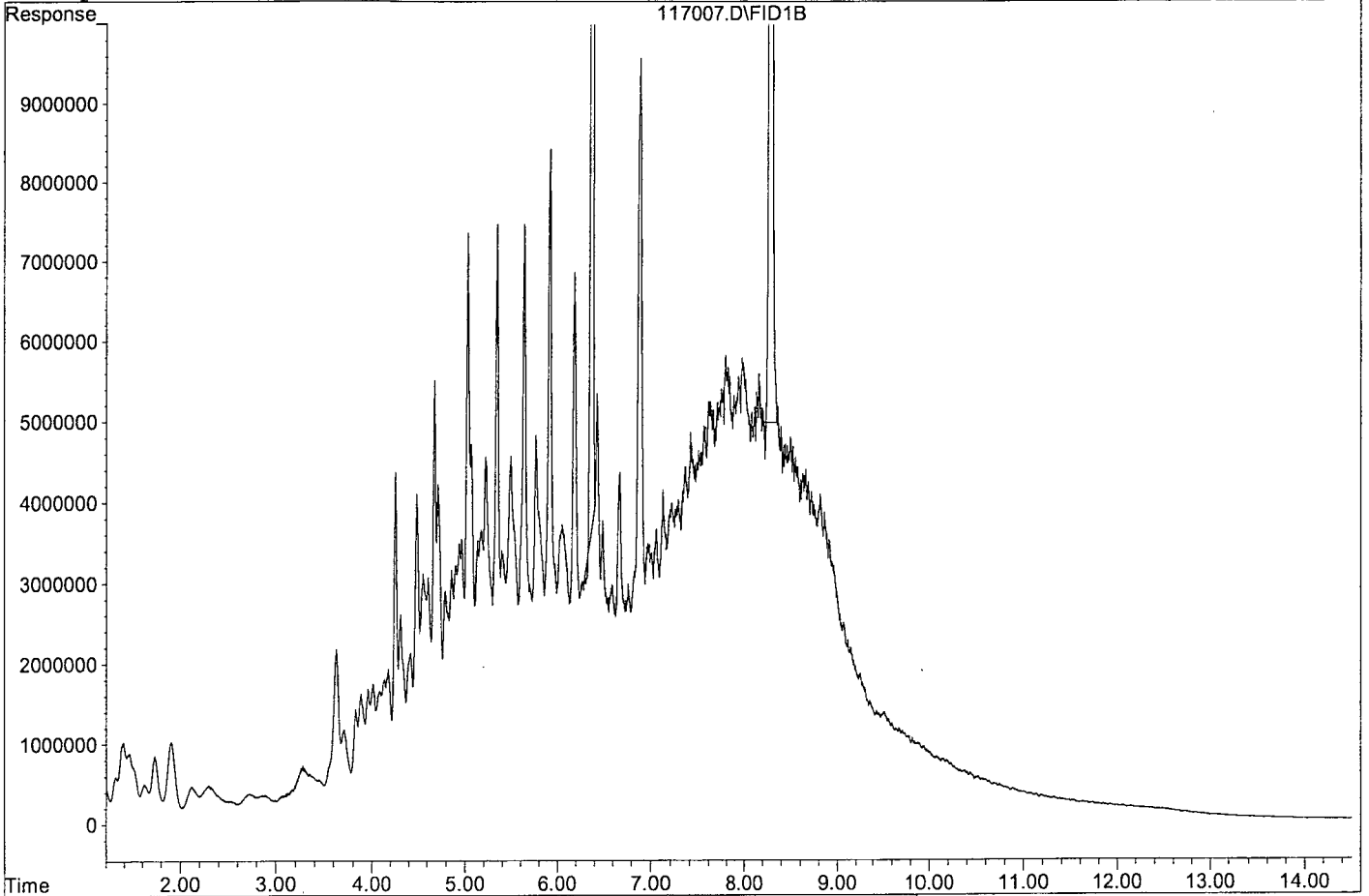
Volume Inj. : 2UL  
 Signal Phase : DB-5  
 Signal Info : FID02A

Compound	R.T.	Response	Conc Units
-----			
System Monitoring Compounds			
4) SA Ortho-Terphenyl(S)	6.38	362298697	89.701 ppb
Surrogate Spike 30.000		Recovery =	299.00%
5) SA Octacosane(S)	8.29	342245296	91.199 ppb
Surrogate Spike 30.000		Recovery =	304.00%
Target Compounds			
1) HATM Diesel (C10-C24)	4.71	4532654243	1907.860 ppb
2) HBTM Motor Oil (C24-C40)	9.23	3446375794	1853.685 ppb

Quantitation Report

Data File: G:\APOLLO\DATA\190117\117007.D

Sample : Diesel / Motor Oil - 6 1/17/19



TPH Extractables  
DOC0117

Form 7

Second Source Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: Water

SDG No: \_\_\_\_\_  
Date Analyzed: 01/17/19  
Instrument: Apollo  
Initial Cal. Date: 01/17/19  
Data File: 117008.D

	Compound	MEAN	CCRF	%D	%Drift
1	HATM Diesel (C10-C24)	1187890	1199930	1.0	HATM
2	HBTM Motor Oil (C24-C40)	929601	923236	0.68	HBTM
3					
4					
5					
6					
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39					
40	Average			0.8	



Quantitation Report (QT Reviewed)

Data File : G:\APOLLO\DATA\190117\117008.D Vial: 8  
 Acq On : 1-17-19 18:37:21 Operator: DP  
 Sample : Diesel / Motor Oil - SS 1/15/19 Inst : Apollo  
 Misc : water Multiplr: 1.00  
 IntFile : events.e  
 Quant Time: Jan 24 13:42 2019 Quant Results File: DOC0117.RES

Method : G:\APOLLO\DATA\190117\DOC0117.M (Chemstation Integrator)  
 Title : 8015 B&C  
 Last Update : Thu Jan 24 13:38:12 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 2UL  
 Signal Phase : DB-5  
 Signal Info : FID02A

Compound	R.T.	Response	Conc Units
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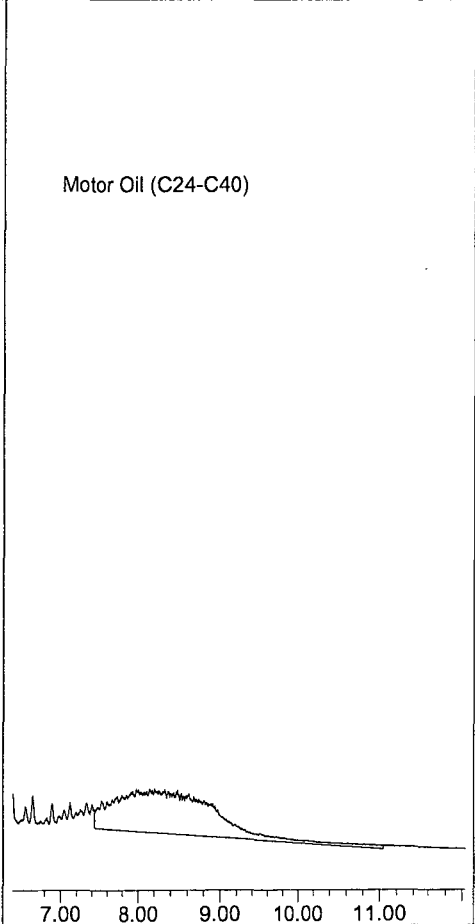
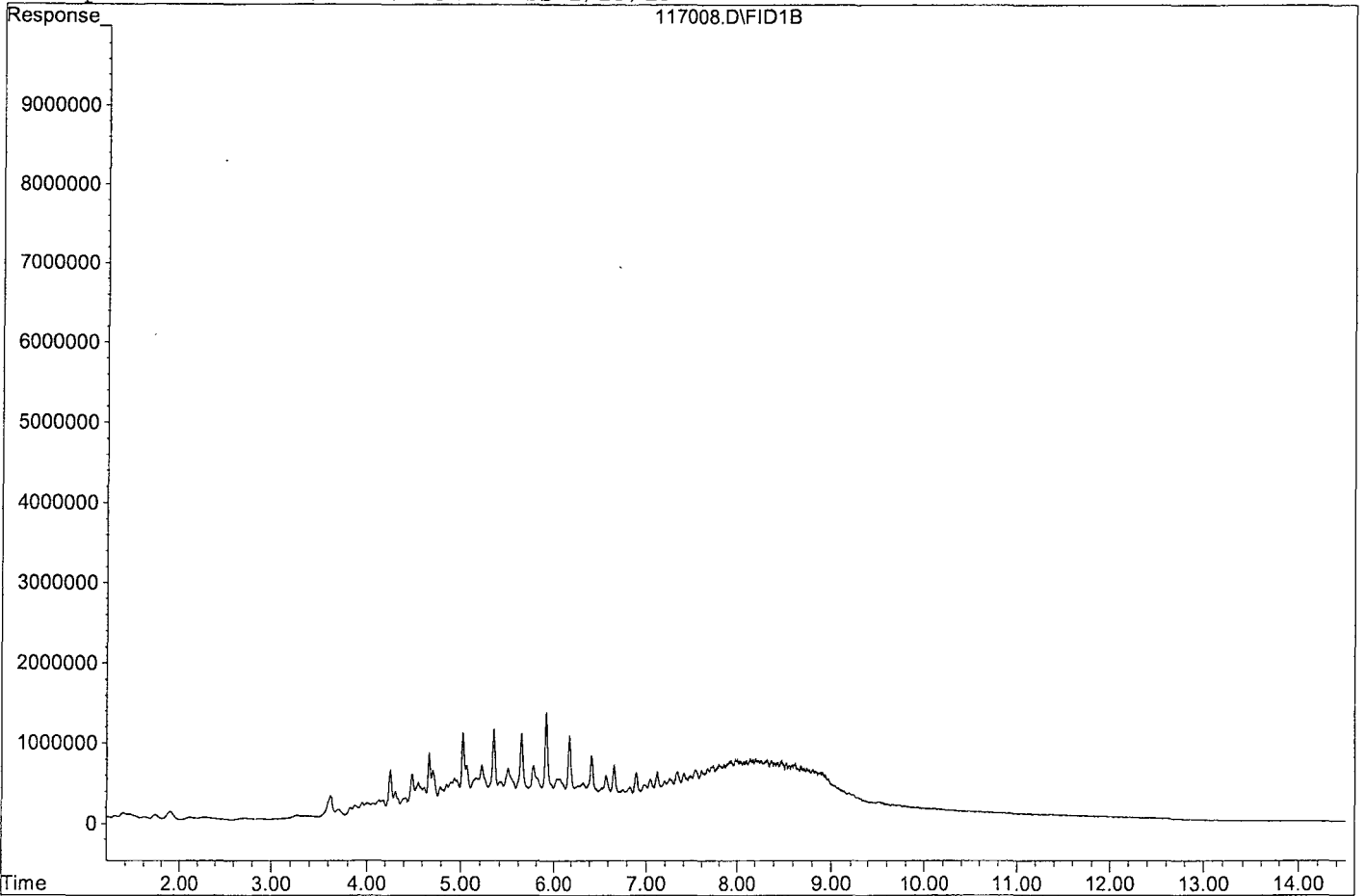
System Monitoring Compounds

Target Compounds

1) HATM Diesel (C10-C24)	4.71	599966004	252.534 ppb
2) HBTM Motor Oil (C24-C40)	9.23	461617841	248.288 ppb

Quantitation Report

Data File: G:\APOLLO\DATA\190117\117008.D  
Sample : Diesel / Motor Oil - SS 1/15/19



TPH Extractables  
DOC0117

Form 7

Continuing Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: Water

SDG No: \_\_\_\_\_  
Date Analyzed: 02/13/19  
Instrument: Apollo  
Initial Cal. Date: 01/17/19  
Data File: 212015.D

	Compound	MEAN	CCRF	%D	%Drift
1	HATM Diesel (C10-C24)	1187890	1150650	3.1	HATM
2	HBTM Motor Oil (C24-C40)	929601	995481	7.1	HBTM
3	SA Ortho-Terphenyl(S)	2019470	2010900	0.42	SA
4	SA Octacosane(S)	1876370	1983950	5.7	SA
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38					
39					
40	Average			4.1	

Data File : G:\APOLLO\DATA\190212\212015.D Vial: 15  
 Acq On : 2-13-19 15:03:50 Operator: DP  
 Sample : Diesel / Motor Oil - 3 1/21/19 Inst : Apollo  
 Misc : water Multiplr: 1.00  
 IntFile : events.e  
 Quant Time: Feb 13 15:31 2019 Quant Results File: DOC0117.RES

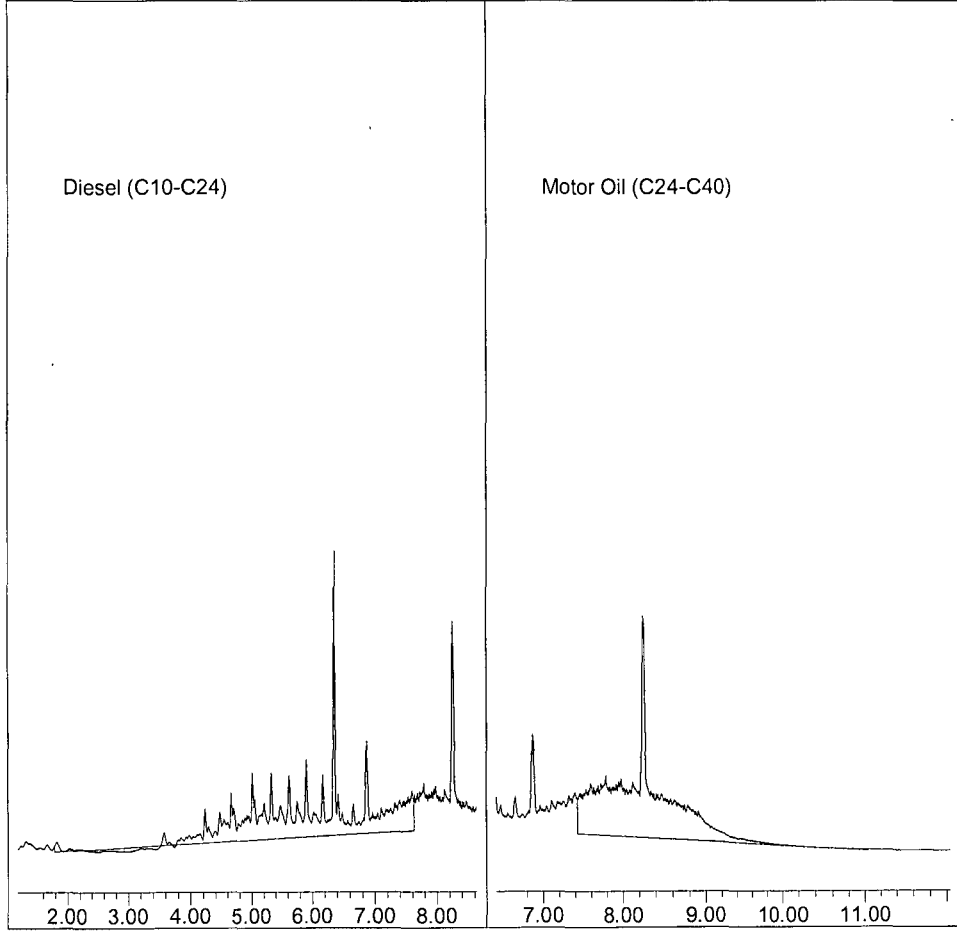
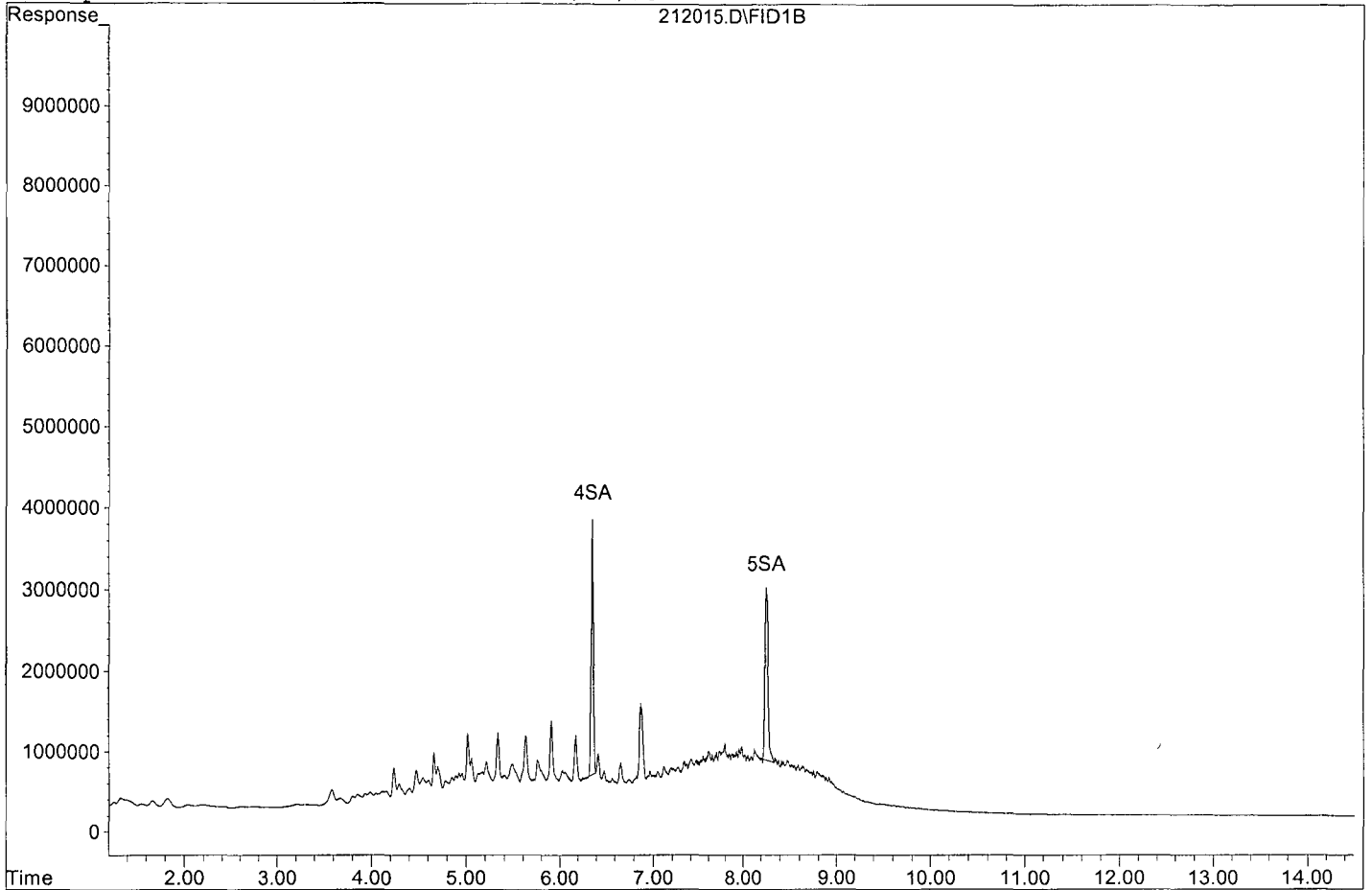
Method : G:\APOLLO\DATA\190211\DOC0117.M (Chemstation Integrator)  
 Title : 8015 B&C  
 Last Update : Thu Jan 24 14:36:29 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 2UL  
 Signal Phase : DB-5  
 Signal Info : FID02A

Compound	R.T.	Response	Conc Units
-----			
System Monitoring Compounds			
4) SA Ortho-Terphenyl(S)	6.36	50272581	12.447 ppb
Surrogate Spike 30.000		Recovery =	41.49%
5) SA Octacosane(S)	8.25	49598766	13.217 ppb
Surrogate Spike 30.000		Recovery =	44.06%
Target Compounds			
1) HATM Diesel (C10-C24)	4.71	575325275	242.163 ppb
2) HBTM Motor Oil (C24-C40)	9.23	497740616	267.717 ppb

Quantitation Report

Data File: G:\APOLLO\DATA\190212\212015.D  
Sample : Diesel / Motor Oil - 3 1/21/19



TPH Extractables  
DOC0117

Form 7

Continuing Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: Water

SDG No: \_\_\_\_\_  
Date Analyzed: 02/13/19  
Instrument: Apollo  
Initial Cal. Date: 01/17/19  
Data File: 212024.D

	Compound	MEAN	CCRF	%D	%Drift
1	HATM Diesel (C10-C24)	1187890	1176700	0.94	HATM
2	HBTM Motor Oil (C24-C40)	929601	952461	2.5	HBTM
3	SA Ortho-Terphenyl(S)	2019470	2005340	0.70	SA
4	SA Octacosane(S)	1876370	1906060	1.6	SA
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38					
39					
40	Average			1.4	

Data File : G:\APOLLO\DATA\190212\212024.D Vial: 24  
 Acq On : 2-13-19 18:03:10 Operator: DP  
 Sample : Diesel / Motor Oil - 3 1/21/19 Inst : Apollo  
 Misc : water Multiplr: 1.00  
 IntFile : events.e  
 Quant Time: Feb 14 10:42 2019 Quant Results File: DOC0117.RES

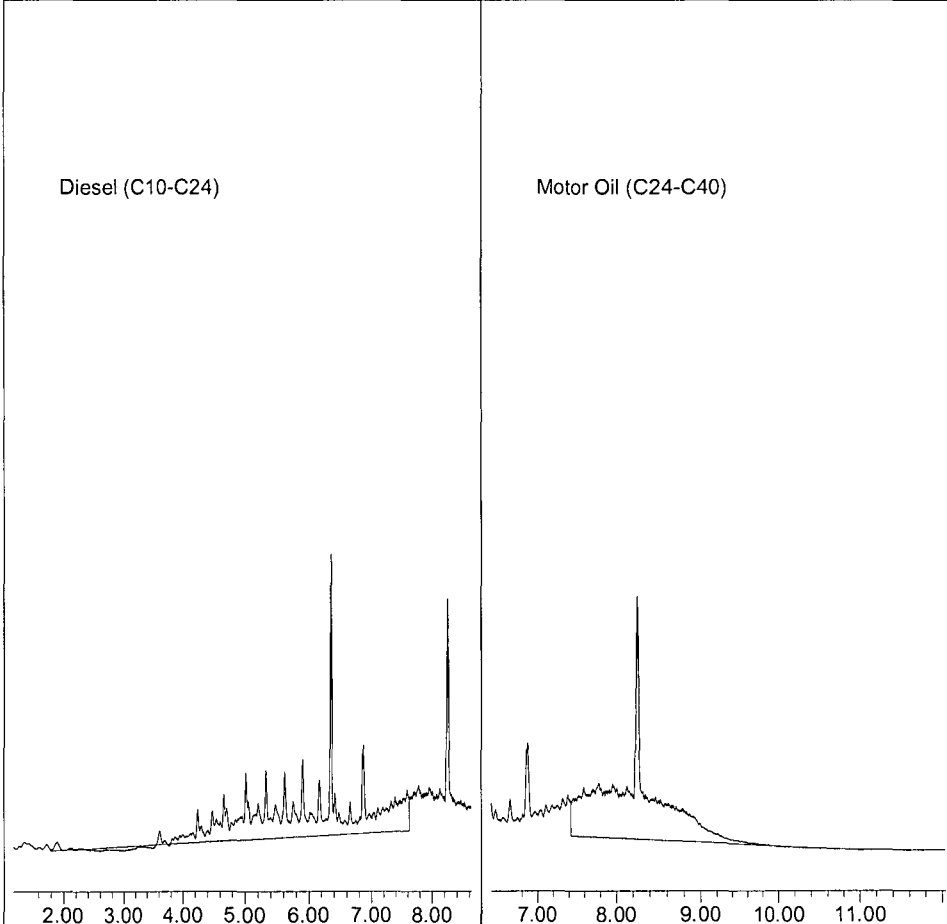
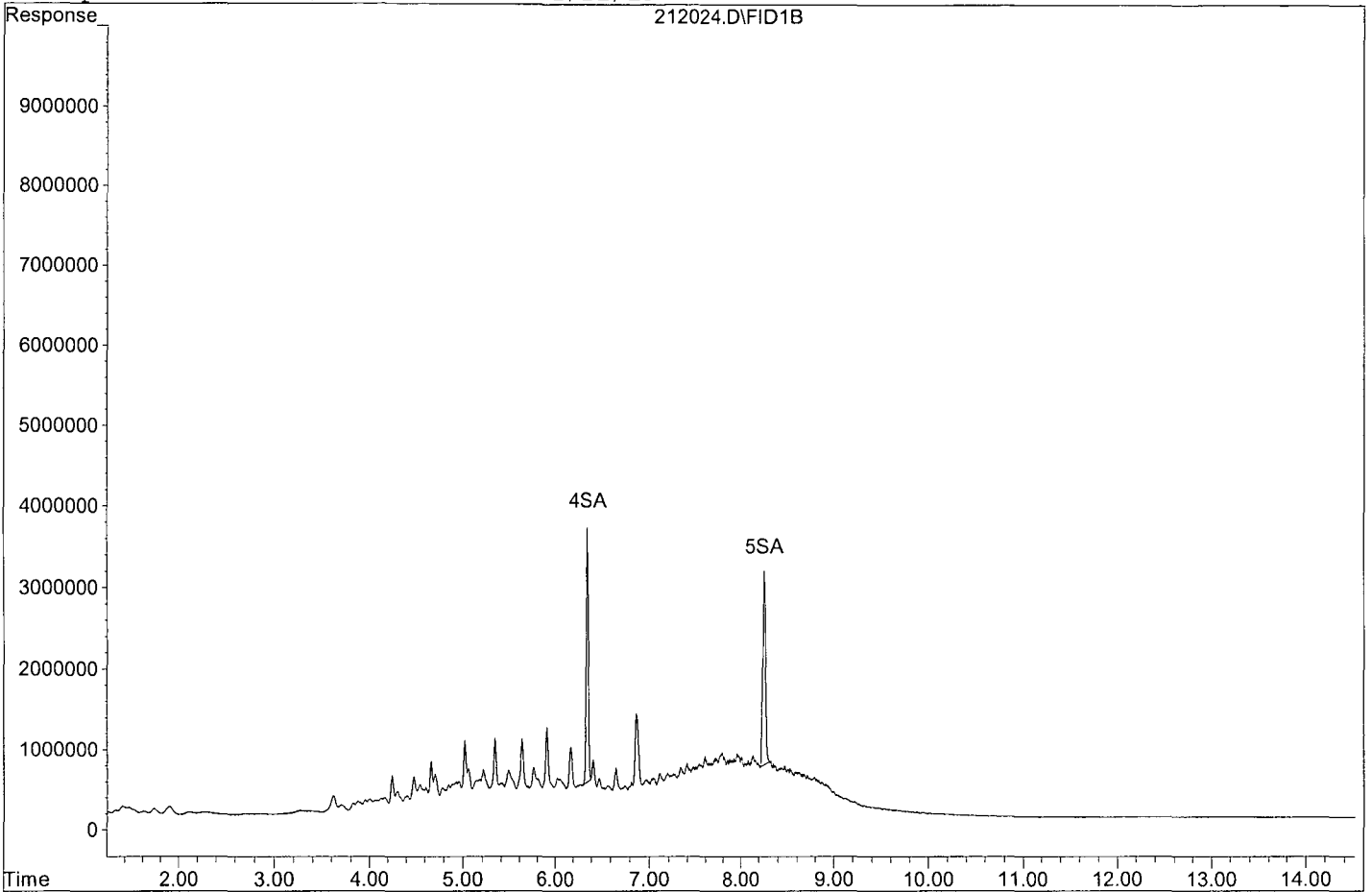
Method : G:\APOLLO\DATA\190211\DOC0117.M (Chemstation Integrator)  
 Title : 8015 B&C  
 Last Update : Thu Jan 24 14:36:29 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 2UL  
 Signal Phase : DB-5  
 Signal Info : FID02A

Compound	R.T.	Response	Conc Units
-----			
System Monitoring Compounds			
4) SA Ortho-Terphenyl(S)	6.36	50133571	12.413 ppb
Surrogate Spike 30.000		Recovery =	41.38%
5) SA Octacosane(S)	8.26	47651420	12.698 ppb
Surrogate Spike 30.000		Recovery =	42.33%
Target Compounds			
1) HATM Diesel (C10-C24)	4.71	588351601	247.646 ppb
2) HBTM Motor Oil (C24-C40)	9.23	476230483	256.148 ppb

Quantitation Report

Data File: G:\APOLLO\DATA\190212\212024.D  
Sample : Diesel / Motor Oil - 3 1/21/19





**ORGANICS**  
**Raw Data**

Data File : G:\APOLLO\DATA\190212\212020.D Vial: 20  
 Acq On : 2-13-19 16:43:25 Operator: DP  
 Sample : AZ86200W24 2/800 Inst : Apollo  
 Misc : water Multiplr: 2.50  
 IntFile : events.e  
 Quant Time: Feb 14 10:42 2019 Quant Results File: DOC0117.RES

Method : G:\APOLLO\DATA\190211\DOC0117.M (Chemstation Integrator)  
 Title : 8015 B&C  
 Last Update : Thu Jan 24 14:36:29 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 2UL  
 Signal Phase : DB-5  
 Signal Info : FID02A

-----  
 Compound R.T. Response Conc Units  
 -----

System Monitoring Compounds

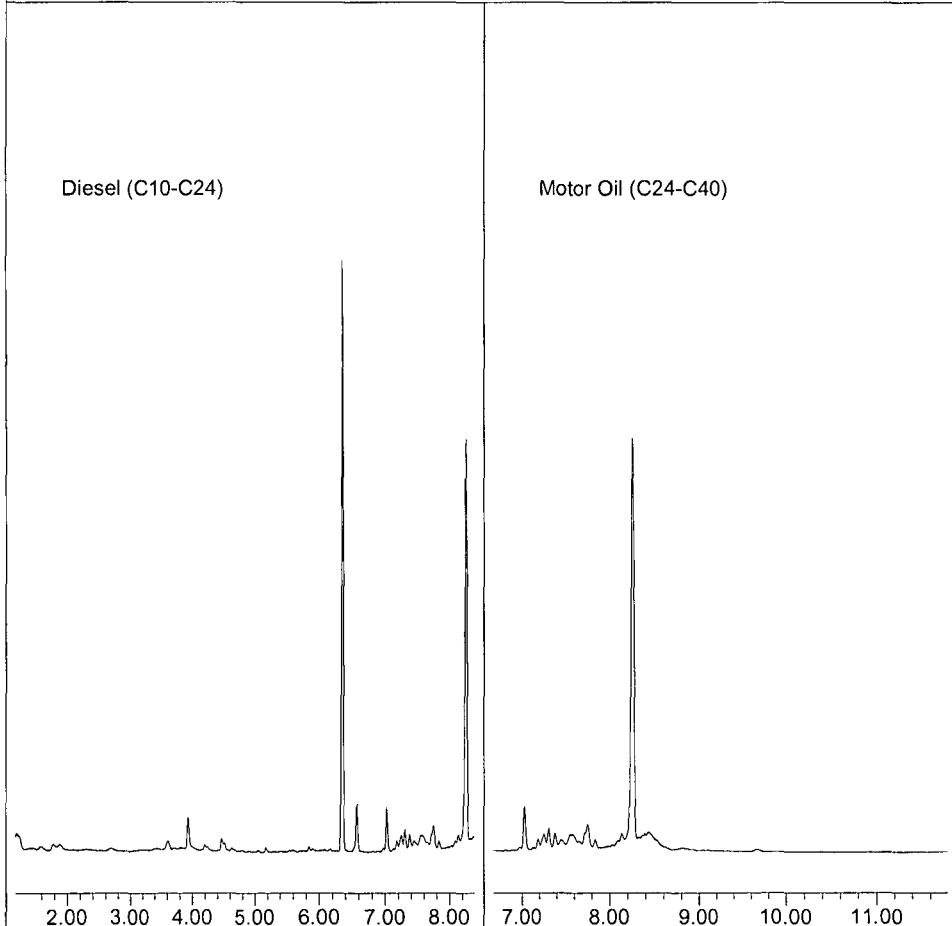
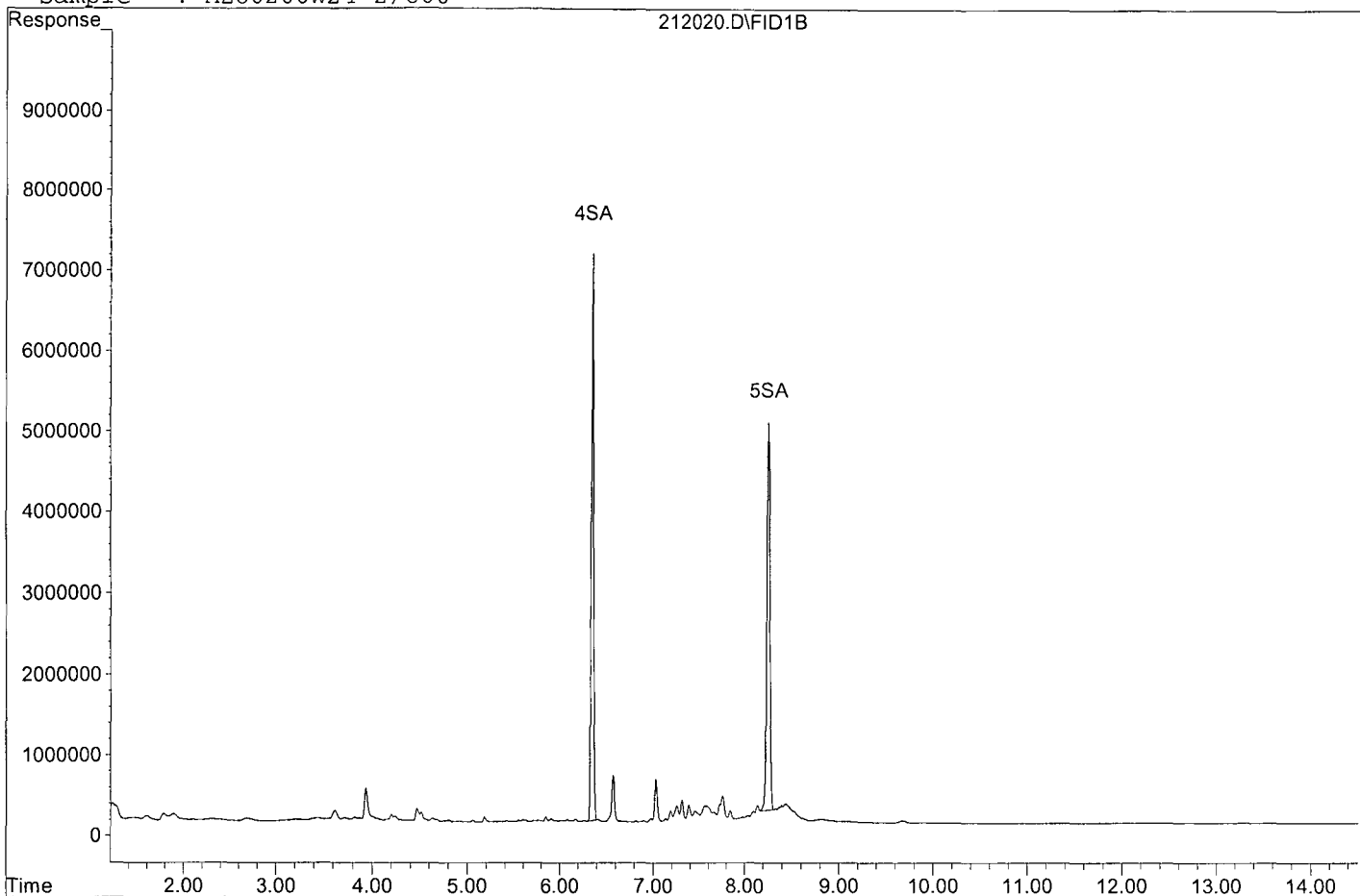
4) SA Ortho-Terphenyl(S)	6.36	114887360	71.112 ppb
Surrogate Spike 75.000		Recovery =	94.82%
5) SA Octacosane(S)	8.25	106016705	70.626 ppb
Surrogate Spike 75.000		Recovery =	94.17%

Target Compounds

Quantitation Report

Data File: G:\APOLLO\DATA\190212\212020.D

Sample : AZ86200W24 2/800



Data File : G:\APOLLO\DATA\190212\212016.D Vial: 16  
 Acq On : 2-13-19 15:23:41 Operator: DP  
 Sample : 190211A BLK 2/800 Inst : Apollo  
 Misc : water Multiplr: 2.50  
 IntFile : events.e  
 Quant Time: Feb 14 10:42 2019 Quant Results File: DOC0117.RES

Method : G:\APOLLO\DATA\190211\DOC0117.M (Chemstation Integrator)  
 Title : 8015 B&C  
 Last Update : Thu Jan 24 14:36:29 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 2UL  
 Signal Phase : DB-5  
 Signal Info : FID02A

Compound	R.T.	Response	Conc Units
----------	------	----------	------------

System Monitoring Compounds

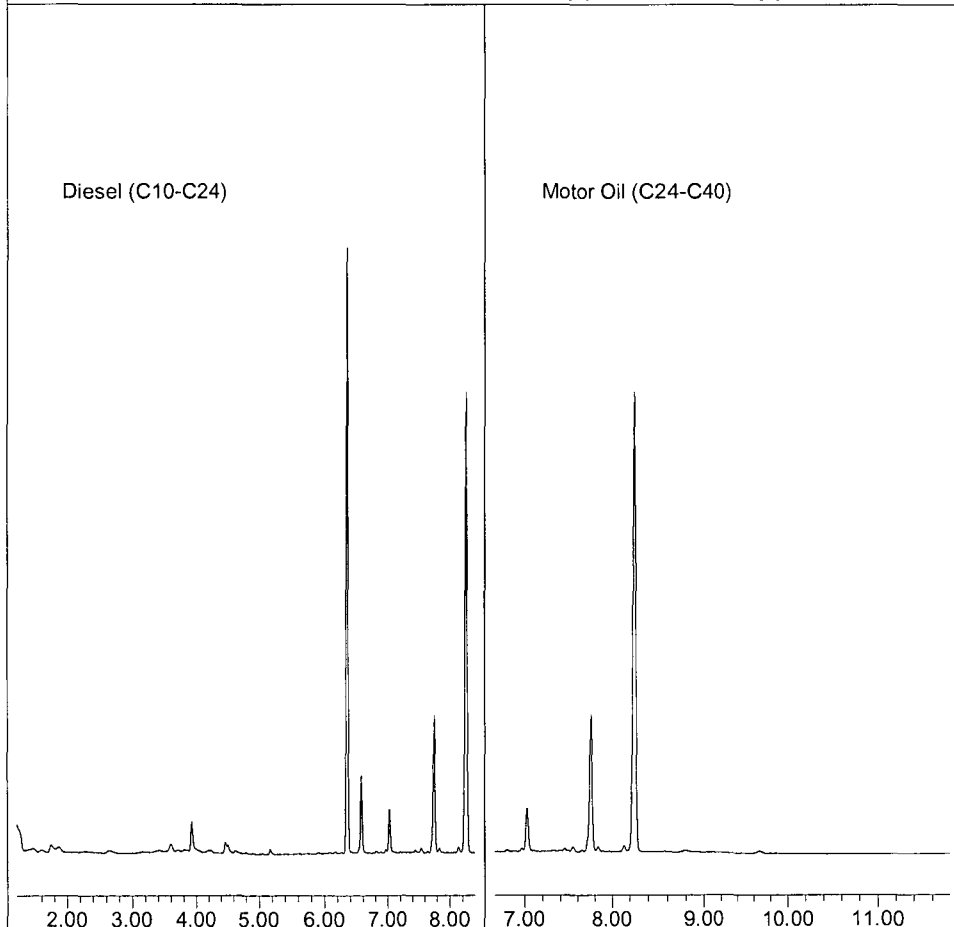
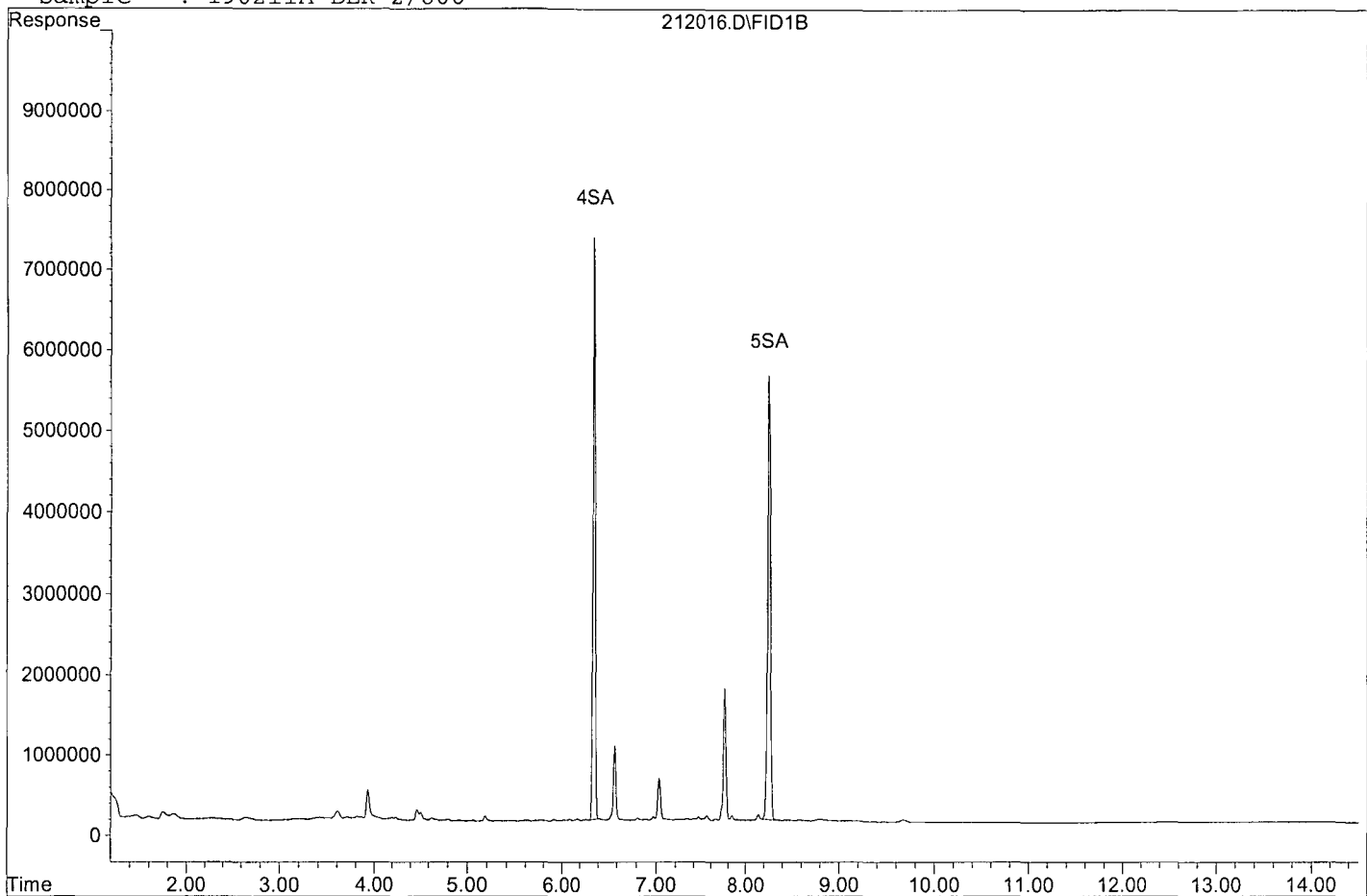
4) SA Ortho-Terphenyl(S)	6.35	121057325	74.931 ppb
Surrogate Spike 75.000		Recovery =	99.91%
5) SA Octacosane(S)	8.25	116775778	77.794 ppb
Surrogate Spike 75.000		Recovery =	103.73%

Target Compounds

Quantitation Report

Data File: G:\APOLLO\DATA\190212\212016.D

Sample : 190211A BLK 2/800



Data File : G:\APOLLO\DATA\190212\212017.D Vial: 17  
 Acq On : 2-13-19 15:43:43 Operator: DP  
 Sample : 190211A LCS-1 2/800 Inst : Apollo  
 Misc : water Multiplr: 2.50  
 IntFile : events.e  
 Quant Time: Feb 14 10:42 2019 Quant Results File: DOC0117.RES

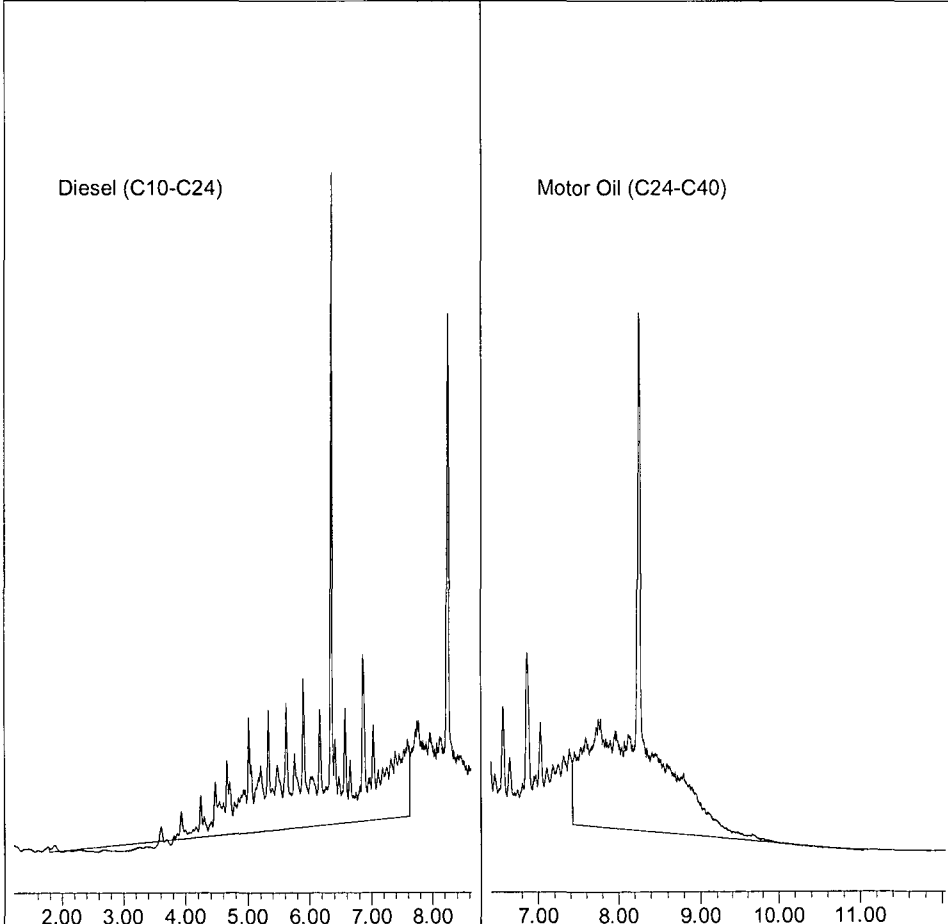
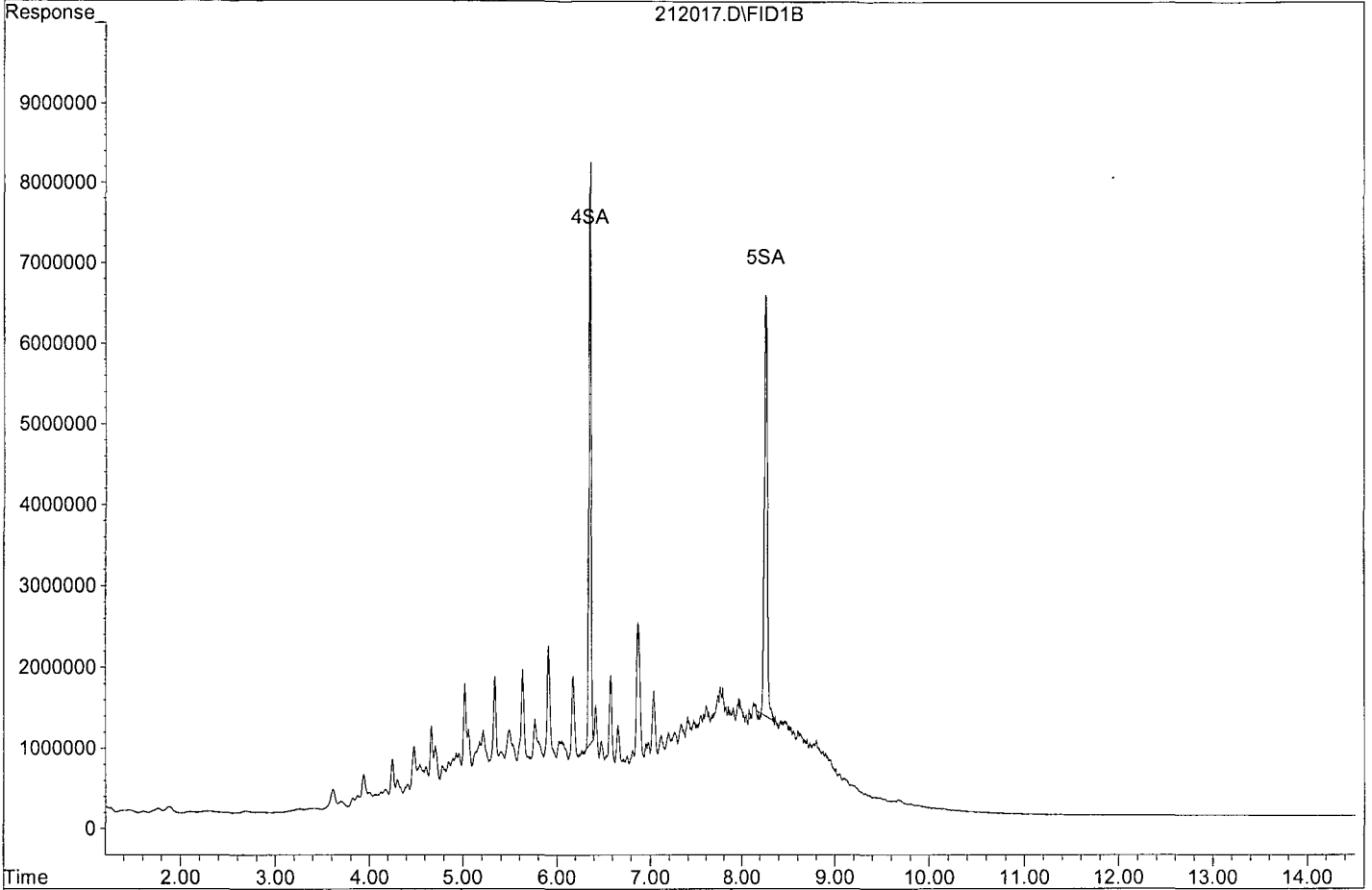
Method : G:\APOLLO\DATA\190211\DOC0117.M (Chemstation Integrator)  
 Title : 8015 B&C  
 Last Update : Thu Jan 24 14:36:29 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 2UL  
 Signal Phase : DB-5  
 Signal Info : FID02A

Compound	R.T.	Response	Conc Units
-----			
System Monitoring Compounds			
4) SA Ortho-Terphenyl(S)	6.36	115513951	71.500 ppb
Surrogate Spike 75.000		Recovery =	95.33%
5) SA Octacosane(S)	8.26	112929145	75.231 ppb
Surrogate Spike 75.000		Recovery =	100.31%
Target Compounds			
1) HATM Diesel (C10-C24)	4.71	1159090102	1219.695 ppb
2) HBTM Motor Oil (C24-C40)	9.23	885276307	1190.398 ppb

Quantitation Report

Data File: G:\APOLLO\DATA\190212\212017.D  
Sample : 190211A LCS-1 2/800



Data File : G:\APOLLO\DATA\190212\212018.D Vial: 18  
 Acq On : 2-13-19 16:03:12 Operator: DP  
 Sample : 190211A LCSD-1 2/800 Inst : Apollo  
 Misc : water Multiplr: 2.50  
 IntFile : events.e  
 Quant Time: Feb 14 10:42 2019 Quant Results File: DOC0117.RES

Method : G:\APOLLO\DATA\190211\DOC0117.M (Chemstation Integrator)  
 Title : 8015 B&C  
 Last Update : Thu Jan 24 14:36:29 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 2UL  
 Signal Phase : DB-5  
 Signal Info : FID02A

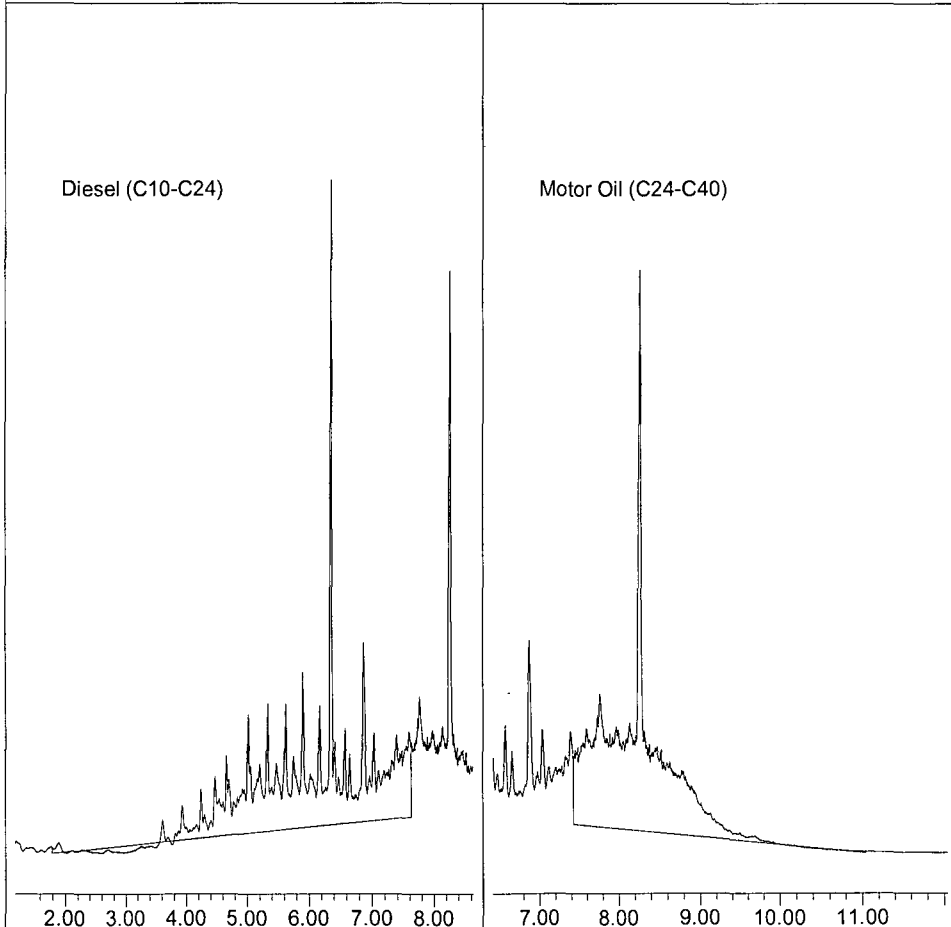
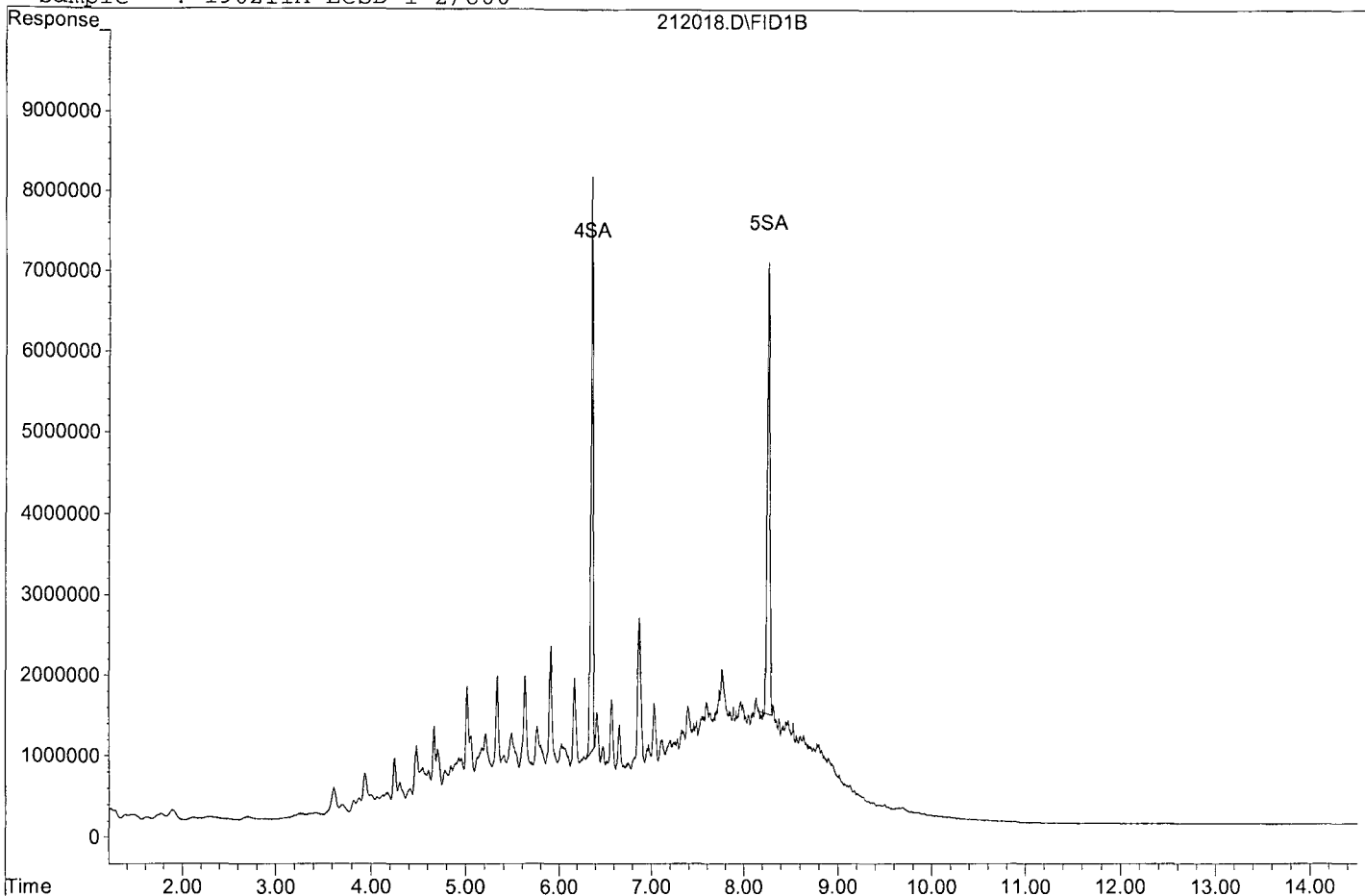
Compound	R.T.	Response	Conc Units
-----			
System Monitoring Compounds			
4) SA Ortho-Terphenyl(S)	6.36	119249891	73.813 ppb
Surrogate Spike 75.000		Recovery =	98.42%
5) SA Octacosane(S)	8.26	110947235	73.911 ppb
Surrogate Spike 75.000		Recovery =	98.55%
Target Compounds			
1) HATM Diesel (C10-C24)	4.71	1192923494	1255.297 ppb
2) HBTM Motor Oil (C24-C40)	9.23	942864093	1267.834 ppb



Quantitation Report

Data File: G:\APOLLO\DATA\190212\212018.D

Sample : 190211A LCSD-1 2/800



Diesel / Motor Oil Calibration Standard										
Prepared: 01/15/19						Prepared By (Initials): DP				
Expires: 01/15/20										
Methylene Chloride Lot No. 56278										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier Part No.	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr.)	Exp. Date (Manufacturer)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
Diesel Fuel #2	Restek	31258	50,000	A0135614-39409	01/15/20	03/31/25	400uL	10mL	MC	2000
Motor Oil	Restek	31464	50,000	A0135245-39351	01/15/20	03/31/25	400uL			2000
THC Surrogate	Phenova	ALO-130161	600	CL12572-39691	08/13/19	06/30/23	1666uL			100
Diesel / Motor Oil Second Source (SS)										
Prepared: 01/15/19						Prepared By (Initials): DP				
Expires: 01/15/20										
Methylene Chloride Lot No. 56278										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier Part No.	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr.)	Exp. Date (Manufacturer)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
Diesel Fuel #2 Second Source	O2SI	G34-011598-03	50,000	G34-319187-38958	08/02/19	09/29/21	50uL	10mL	MC	250
Motor Oil Second Source	O2SI	116390-02-SS	50,000	301142-37652	07/13/19	03/05/22	50uL			
Diesel / Motor Oil Calibration Curve										
Prepared: 01/17/19						Prepared By (Initials): DP				
Expires: 07/17/19										
Methylene Chloride Lot No. 56278										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference to APPL Prep Date	Exp. Date	Exp. Date (Manufacturer)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
Diesel / Motor Oil Calibration STD	APPL	Diesel / Motor Oil - 1	2,000	Prepared 01/17/19	01/15/20	N/A	5uL	1mL	MC	10
Diesel / Motor Oil Calibration STD	APPL	Diesel / Motor Oil - 2	2,000	Prepared 01/17/19	01/15/20	N/A	25uL	1mL	MC	50
Diesel / Motor Oil Calibration STD	APPL	Diesel / Motor Oil - 3	2,000	Prepared 01/17/19	01/15/20	N/A	125uL	1mL	MC	250
Diesel / Motor Oil Calibration STD	APPL	Diesel / Motor Oil - 4	2,000	Prepared 01/17/19	01/15/20	N/A	500uL	1mL	MC	1000
Diesel / Motor Oil Calibration STD	APPL	Diesel / Motor Oil - 5	2,000	Prepared 01/17/19	01/15/20	N/A	750uL	1mL	MC	1500
Diesel / Motor Oil Calibration STD	APPL	Diesel / Motor Oil - 6	2,000	Prepared 01/17/19	01/15/20	N/A	100uL	100uL	N/A	2,000
Diesel / Motor Oil CCV										
Prepared: 01/21/19						Prepared By (Initials): DP				
Expires: 07/22/19										
Methylene Chloride Lot No. 56278										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference to APPL Prep Date	Exp. Date	Exp. Date (Manufacturer)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
Diesel / Motor Oil STD	APPL	Diesel / Motor Oil CCV	2,000	Prepared 01/15/19	01/15/20	N/A	1250uL	10mL	MC	250

**Motor Oil Spike**

Prepared: 11/15/18

Prepared By (Initials): DP

Expires: 11/15/19

Initial Standard Information							Final Standard Information			
Name of Initial Standard (QAU Label)	Supplier	Supplier Part No.	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr.)	Exp. Date (Manufacturer)	From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
Motor Oil Composite	Restek	31464	50,000	A0135245-39352	11/15/19	03/31/25	N/A	N/A	N/A	50,000

**Diesel Spike**

Prepared: 12/11/18

Prepared By (Initials): DP

Expires: 12/11/19

Initial Standard Information							Final Standard Information			
Name of Initial Standard (QAU Label)	Supplier	Supplier Part No.	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr.)	Exp. Date (Manufacturer)	From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
Diesel Fuel #2	Absolute	51046	50,000	111715-39355	12/11/19	11/17/20	N/A	N/A	N/A	50,000

THC Surrogate										
Prepared: 11/21/18					Prepared By (Initials): DP					
Expires: 10/18/19										
Initial Standard Information							Final Standard Information			
Name of Initial Standard (QAU Label)	Supplier	Supplier Part No.	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr.)	Exp. Date (Manufacturer)	From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
O-terphenyl / Octacosane Mix	Phenova	ALO-130161	600	CL12572-39687	10/18/19	06/30/23	N/A	N/A	N/A	600

# Organic Extraction Worksheet









<b>Method</b>	Continuous Liq/Liq TPH-Diesel/MO 3520C	<b>Extraction Set</b>	190211A	<b>Extraction Method</b>	LIQ005	<b>Units</b>	mL
Spiked ID 1	Diesel Spike 1-25-19 EXP 1-25-20	Surrogate ID 1	THC Surrogate 1-25-19 EXP 1-25-20				
Spiked ID 2	Motor Oil Spike 1-15-19 EXP 1-15-20	Surrogate ID 2					
Spiked ID 3		Surrogate ID 3					
Spiked ID 4		Surrogate ID 4					
Spiked ID 5		Surrogate ID 5					
Spiked ID 6		Sufficient Vol for Matrix QC:		no			
Spiked ID 7		Ext. Start Time:		02/11/19 14:00			
Spiked ID 8		Ext. End Time:		02/12/19 8:10			
		GC Requires Extract By:		02/15/19 0:00			
		pH1	2	02/11/19 1:30:00 PM	Water Bath Temp Criteria		35,35,35 °
		pH2					
		pH3					

Spiked By: DL

Date 02/11/19

Witnessed By: CFM

Date 02/11/19

Sample	Sample Container	Spike Amount	Spike ID	Surrogate Amount	Surrogate ID	Extract Amount	Final Volume	pH	Extract Date/Time	Comments
1 190211A Bk				0.100	1	800	2	2	02/11/19 13:35	
					equip	E-HP51 E-WB1				
2 190211A LCS-1		0.020	1,2	0.100	1	800	2	2	02/11/19 13:35	
					equip	E-HP50 E-WB2				
3 190211A LCSD-1		0.020	1,2	0.100	1	800	2	2	02/11/19 13:35	
					equip	E-HP49 E-WB3				
4 AZ86189	AZ86189W28			0.100	1	800	2	2	02/11/19 13:35	88059
					equip	E-HP48 E-WB1				
5 AZ86200	AZ86200W24			0.100	1	800	2	2	02/11/19 13:35	88062
					equip	E-HP47 E-WB2				
6 AZ86274	AZ86274W15			0.100	1	800	2	2	02/11/19 13:35	88071
					equip	E-HP25 E-WB3				
7 AZ86276	AZ86276W18			0.100	1	800	2	2	02/11/19 13:35	88071
					equip	E-HP26 E-WB1				
8 AZ86277	AZ86277W18			0.100	1	800	2	2	02/11/19 13:35	88071
					equip	E-HP27 E-WB2				

Kiz 2/14/19

Solvent and Lot#	
1+1 HCL	11-19-18
PH Strips	HC 849161
Dichloromethane (DCM)	18G194011
Filter Paper	400138
B. Sodium Sulfate	17H095210

Extraction COC Transfer	
Extraction lab employee Initials	KY
GC analyst's initials	Op
Date	2/13/19
Time	2:50
Refrigerator -	H6641

Technician's Initials	
Scanned By	DL
Sample Preparation	DL
Extraction	DL
Concentration	DL
Modified	02/14/19 4:11:06 PM

Reviewed By: *Kiz* Date *2/14/19*  
 Page 138 of 639  
 Ext\_ID 61768

## Injection Log

Directory: G:\APOLLO\DATA\190117\

Vial	FileName	Multiplier	SampleName	Misc Info	Injected
2	117002.D	1	Diesel / Motor Oil - 1 1/17/19	water	1-17-19 16:38:28
3	117003.D	1	Diesel / Motor Oil - 2 1/17/19	water	1-17-19 16:58:29
4	117004.D	1	Diesel / Motor Oil - 3 1/17/19	water	1-17-19 17:17:50
5	117005.D	1	Diesel / Motor Oil - 4 1/17/19	water	1-17-19 17:37:44
6	117006.D	1	Diesel / Motor Oil - 5 1/17/19	water	1-17-19 17:57:32
7	117007.D	1	Diesel / Motor Oil - 6 1/17/19	water	1-17-19 18:17:22
8	117008.D	1	Diesel / Motor Oil - SS 1/15/19	water	1-17-19 18:37:21
15	212015.D	1	Diesel / Motor Oil - 3 1/21/19	water	2-13-19 15:03:50
16	212016.D	2.5	190211A BLK 2/800	water	2-13-19 15:23:41
17	212017.D	2.5	190211A LCS-1 2/800	water	2-13-19 15:43:43
18	212018.D	2.5	190211A LCSD-1 2/800	water	2-13-19 16:03:12
20	212020.D	2.5	AZ86200W24 2/800	water	2-13-19 16:43:25
24	212024.D	1	Diesel / Motor Oil - 3 1/21/19	water	2-13-19 18:03:10

**ORGANICS**  
**Calibration Data**



PAH by GCMS SIM  
EPA 8270 SIM

Form 6  
Initial Calibration

Lab Name: APPL, Inc.

SDG No: \_\_\_\_\_

Case No: \_\_\_\_\_

Initial Cal. Date: 01/22/19

Matrix: \_\_\_\_\_

Instrument: Linus

Initials: \_\_\_\_\_

0122L003.D 0122L004.D 0122L005.D 0122L006.D 0122L007.D 0122L008.D 0122L009.D 0122L010.D

	Compound	0.1	0.2	0.5	1	5	10	50	100			Avg	%RSD	Type	r^2	Q	MRF
1	I	Napthalene-D8(IS)															
2	S	Surrogate Recovery (NBZ)	0.5368	0.4662	0.3581	0.3806	0.4597	0.4513	0.4398	0.4353		0.44	12	S			
3	TM	Napthalene	1.501	1.326	1.089	1.286	1.383	1.355	1.095	1.039		1.3	13	TM			0.700
4	S	2-Methylnapthalene-D10 (2M)	1.165	1.119	0.8912	1.140	1.265	1.295	1.170	1.119		1.1	11	S			
5	TM	2-Methylnapthalene	0.8415	0.7811	0.6384	0.7893	0.8609	0.8572	0.6703	0.6454		0.76	13	TM			0.400
6	TM	1-Methylnapthalene	0.9488	0.7945	0.6729	0.8072	0.8294	0.8268	0.6596	0.6061		0.77	15	TM			
7	I	Acenaphthene-D10(IS)															
8	S	Surrogate Recovery (FBP)	2.032	1.654	1.457	1.744	1.923	1.928	1.728	1.675		1.8	10	S			
9	TM	Acenaphthylene	6.283	5.718	4.707	5.612	6.305	6.346	5.135	4.672		5.6	12	TM			0.900
10	*TM	Acenaphthene	1.920	1.700	1.428	1.705	1.810	1.782	1.400	1.360		1.6	13	*TM			0.900
11	TM	Fluorene	2.106	1.923	1.607	1.975	2.155	2.142	1.716	1.657		1.9	12	TM			0.900
12	I	Phenanthrene-D10(IS)															
13	TM	Phenanthrene	1.596	1.429	1.206	1.461	1.584	1.571	1.261	1.133		1.4	13	TM			0.700
14	TM	Anthracene	1.546	1.378	1.157	1.401	1.639	1.579	1.259	1.212		1.4	13	TM			0.700
15	S	Fluoranthene-D10 (FRT)	1.960	1.740	1.370	1.644	1.947	1.964	1.702	1.672		1.7	12	S			
16	*TM	Fluoranthene	2.487	2.295	1.834	2.252	2.506	2.476	1.900	1.837		2.2	14	*TM			0.600
17	I	Chrysene-D12(IS)															
18	TM	Pyrene	1.754	1.558	1.296	1.539	1.745	1.699	1.421	1.348		1.5	12	TM			0.600
19	S	Surrogate Recovery (TPH)	0.8778	0.8099	0.6667	0.7580	0.8727	0.8657	0.8359	0.7712		0.81	9.0	S			
20	TM	Benz (a) anthracene	1.671	1.359	1.076	1.304	1.538	1.509	1.341	1.262		1.4	13	TM			0.800
21	TM	Chrysene	1.479	1.472	1.188	1.390	1.453	1.388	1.153	1.067		1.3	12	TM			0.700
22	TM	Indeno (1,2,3-cd) pyrene	1.529	1.415	1.156	1.393	1.490	1.490	1.274	1.181		1.4	11	TM			0.500
23	I	Perylene-D12(IS)															
24	TM	Benzo (b) fluoranthene	1.433	1.243	1.096	1.291	1.531	1.603	1.305	1.301		1.4	12	TM			0.700
25	TM	Benzo (k) fluoranthene	1.579	1.319	1.194	1.327	1.553	1.453	1.299	1.266		1.4	10	TM			0.700
26	*TM	Benzo (a) pyrene	1.308	1.224	1.092	1.285	1.456	1.489	1.256	1.223		1.3	10.0	*TM			0.700
27	TM	Dibenz (a,h) anthracene	1.354	1.225	1.012	1.231	1.275	1.310	1.060	1.044		1.2	11	TM			0.400
28	TM	Benzo (g,h,i) perylene	1.377	1.229	1.021	1.247	1.271	1.322	1.097	1.043		1.2	11	TM			0.500
29																	
30																	
31																	
32																	
33																	
34																	
35																	

Data File : M:\LINUS\DATA\L190122\0122L003.D  
 Acq On : 22 Jan 19 9:37  
 Sample : 0.1 SIM 01/18/19  
 Misc :

Vial: 3  
 Operator: MA  
 Inst : Linus  
 Multiplr: 1.00

Quant Time: Jan 22 11:50 2019

Quant Results File: L0122.RES

Quant Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
 Title : EPA 8270  
 Last Update : Tue Jan 22 09:56:33 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SIM\_2

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-D8 (IS)	4.03	136	15835	2.50000	ppb	-0.01
7) Acenaphthene-D10 (IS)	6.07	164	7110	2.50000	ppb	-0.01
12) Phenanthrene-D10 (IS)	7.80	188	13830	2.50000	ppb	-0.01
17) Chrysene-D12 (IS)	10.90	240	20163	2.50000	ppb	-0.02
23) Perylene-D12 (IS)	13.30	264	19644	2.50000	ppb	-0.02
System Monitoring Compounds						
2) Surrogate Recovery (NBZ)	3.22	82	170	0.04555	ppb	0.00
Spiked Amount	5.000					
			Recovery	=	0.920%	
4) 2-Methylnaphthalene-D10 (2)	4.84	152	369	0.03991	ppb	-0.01
Spiked Amount	5.000					
			Recovery	=	0.800%	
8) Surrogate Recovery (FBP)	5.31	172	289	0.04745	ppb	-0.01
Spiked Amount	5.000					
			Recovery	=	0.940%	
15) Fluoranthene-D10 (FRT)	9.20	212	542	0.04079	ppb	0.00
Spiked Amount	5.000					
			Recovery	=	0.820%	
19) Surrogate Recovery (TPH)	9.67	244	354	0.04542	ppb	-0.01
Spiked Amount	5.000					
			Recovery	=	0.900%	
Target Compounds						
3) Naphthalene	4.06	128	951	0.12746	ppb	Qvalue 99
5) 2-Methylnaphthalene	4.88	142	533	0.11867	ppb	97
6) 1-Methylnaphthalene	4.99	142	601	0.13228	ppb	97
9) Acenaphthylene	5.92	152	1787	0.11640	ppb	98
10) Acenaphthene	6.11	154	546	0.12405	ppb	92
11) Fluorene	6.72	166	599	0.11841	ppb	93
13) Phenanthrene	7.83	178	883	0.11967	ppb	98
14) Anthracene	7.89	178	855	0.11674	ppb	99
16) Fluoranthene	9.22	202	1376	0.11919	ppb	98
18) Pyrene	9.48	202	1415	0.12511	ppb	# 89
20) Benz (a) anthracene	10.89	228	1348	0.13332	ppb	96
21) Chrysene	10.95	228	1193	0.12015	ppb	99
22) Indeno (1,2,3-cd) pyrene	14.83	276	1233	0.11749	ppb	# 82
24) Benzo (b) fluoranthene	12.66	252	1126	0.11931	ppb	98
25) Benzo (k) fluoranthene	12.71	252	1241	0.11008	ppb	96
26) Benzo (a) pyrene	13.22	252	1028	0.11184	ppb	98
27) Dibenz (a,h) anthracene	14.85	278	1064	0.12449	ppb	94
28) Benzo (g,h,i) perylene	15.18	276	1082	0.12500	ppb	96

(#) = qualifier out of range (m) = manual integration

Quantitation Report

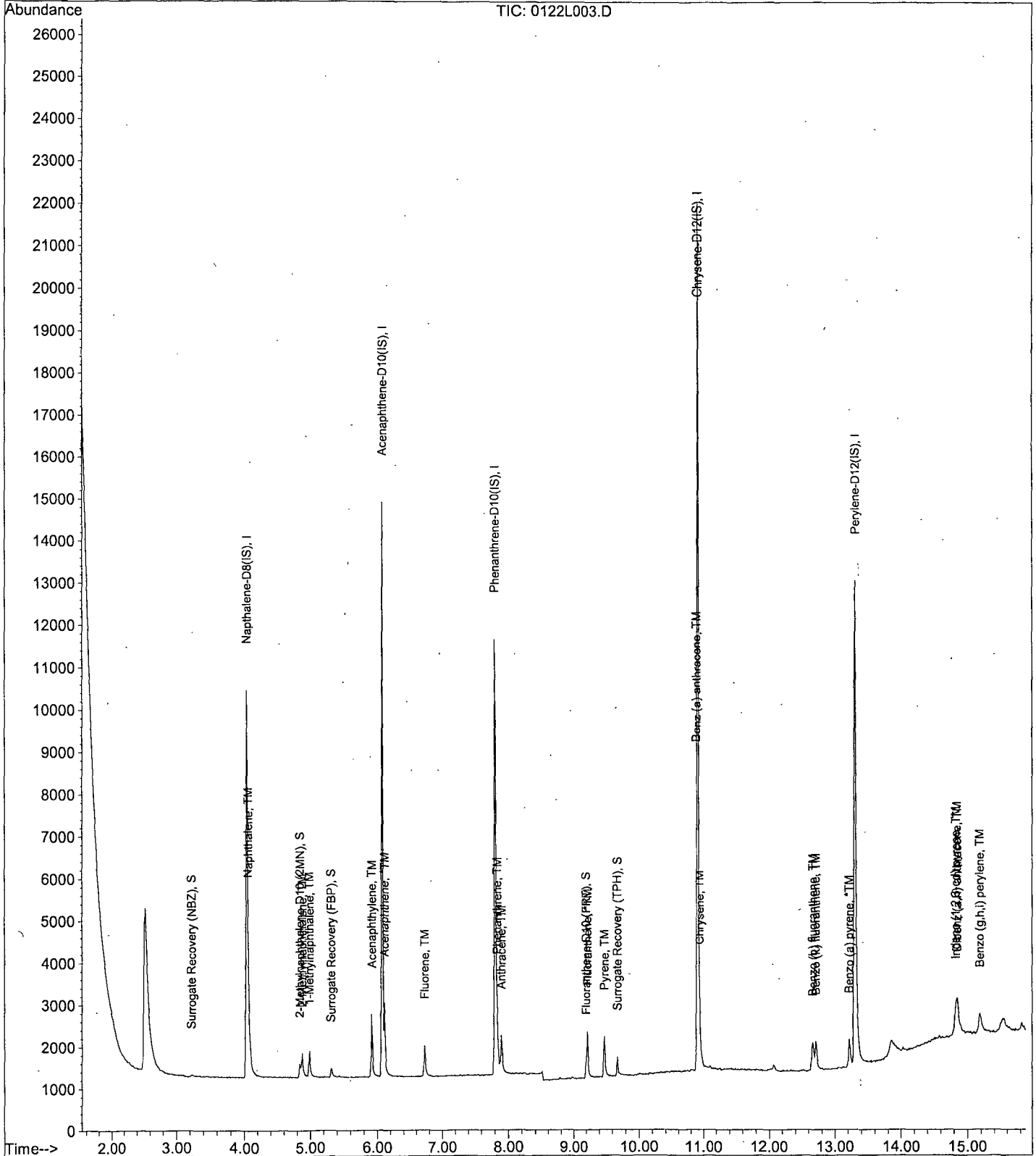
Data File : M:\LINUS\DATA\L190122\0122L003.D  
Acq On : 22 Jan 19 9:37  
Sample : 0.1 SIM 01/18/19  
Misc :

Vial: 3  
Operator: MA  
Inst : Linus  
Multiplr: 1.00

Quant Time: Jan 22 11:50 2019

Quant Results File: L0122.RES

Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
Title : EPA 8270  
Last Update : Tue Jan 22 13:02:31 2019  
Response via : Initial Calibration



Data File : M:\LINUS\DATA\L190122\0122L004.D  
 Acq On : 22 Jan 19 9:59  
 Sample : 0.2 SIM 01/18/19  
 Misc :

Vial: 4  
 Operator: MA  
 Inst : Linus  
 Multiplr: 1.00

Quant Time: Jan 22 11:50 2019

Quant Results File: L0122.RES

Quant Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
 Title : EPA 8270  
 Last Update : Tue Jan 22 11:50:13 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SIM\_2

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-D8 (IS)	4.03	136	18660	2.50000	ppb	-0.01
7) Acenaphthene-D10 (IS)	6.07	164	8631	2.50000	ppb	-0.01
12) Phenanthrene-D10 (IS)	7.80	188	16928	2.50000	ppb	-0.01
17) Chrysene-D12 (IS)	10.90	240	24788	2.50000	ppb	-0.02
23) Perylene-D12 (IS)	13.30	264	24016	2.50000	ppb	-0.02

System Monitoring Compounds

2) Surrogate Recovery (NBZ)	3.24	82	348	0.07912	ppb	0.01
Spiked Amount	5.000		Recovery	= 1.580%		
4) 2-Methylnaphthalene-D10 (2)	4.84	152	835	0.07663	ppb	-0.01
Spiked Amount	5.000		Recovery	= 1.540%		
8) Surrogate Recovery (FBP)	5.31	172	571	0.07723	ppb	-0.01
Spiked Amount	5.000		Recovery	= 1.540%		
15) Fluoranthene-D10 (FRT)	9.20	212	1178	0.07243	ppb	0.00
Spiked Amount	5.000		Recovery	= 1.440%		
19) Surrogate Recovery (TPH)	9.67	244	803	0.08381	ppb	0.00
Spiked Amount	5.000		Recovery	= 1.680%		

Target Compounds

	R.T.	QIon	Response	Conc	Units	Qvalue
3) Naphthalene	4.06	128	1979	0.22509	ppb	99
5) 2-Methylnaphthalene	4.88	142	1166	0.22030	ppb	99
6) 1-Methylnaphthalene	4.99	142	1186	0.22151	ppb	97
9) Acenaphthylene	5.92	152	3948	0.21185	ppb	99
10) Acenaphthene	6.11	154	1174	0.21972	ppb	98
11) Fluorene	6.72	166	1328	0.21626	ppb	100
13) Phenanthrene	7.83	178	1935	0.21425	ppb	99
14) Anthracene	7.89	178	1866	0.20815	ppb	99
16) Fluoranthene	9.22	202	3108	0.21994	ppb	97
18) Pyrene	9.47	202	3089	0.22216	ppb	99
20) Benz (a) anthracene	10.89	228	2695	0.21680	ppb	98
21) Chrysene	10.95	228	2920	0.23921	ppb	96
22) Indeno (1,2,3-cd) pyrene	14.82	276	2806	0.21749	ppb	# 86
24) Benzo (b) fluoranthene	12.65	252	2388	0.20696	ppb	# 98
25) Benzo (k) fluoranthene	12.71	252	2534	0.18385	ppb	99
26) Benzo (a) pyrene	13.22	252	2352	0.20930	ppb	97
27) Dibenz (a,h) anthracene	14.85	278	2354	0.22529	ppb	94
28) Benzo (g,h,i) perylene	15.19	276	2362	0.22319	ppb	95

(#) = qualifier out of range (m) = manual integration

Quantitation Report

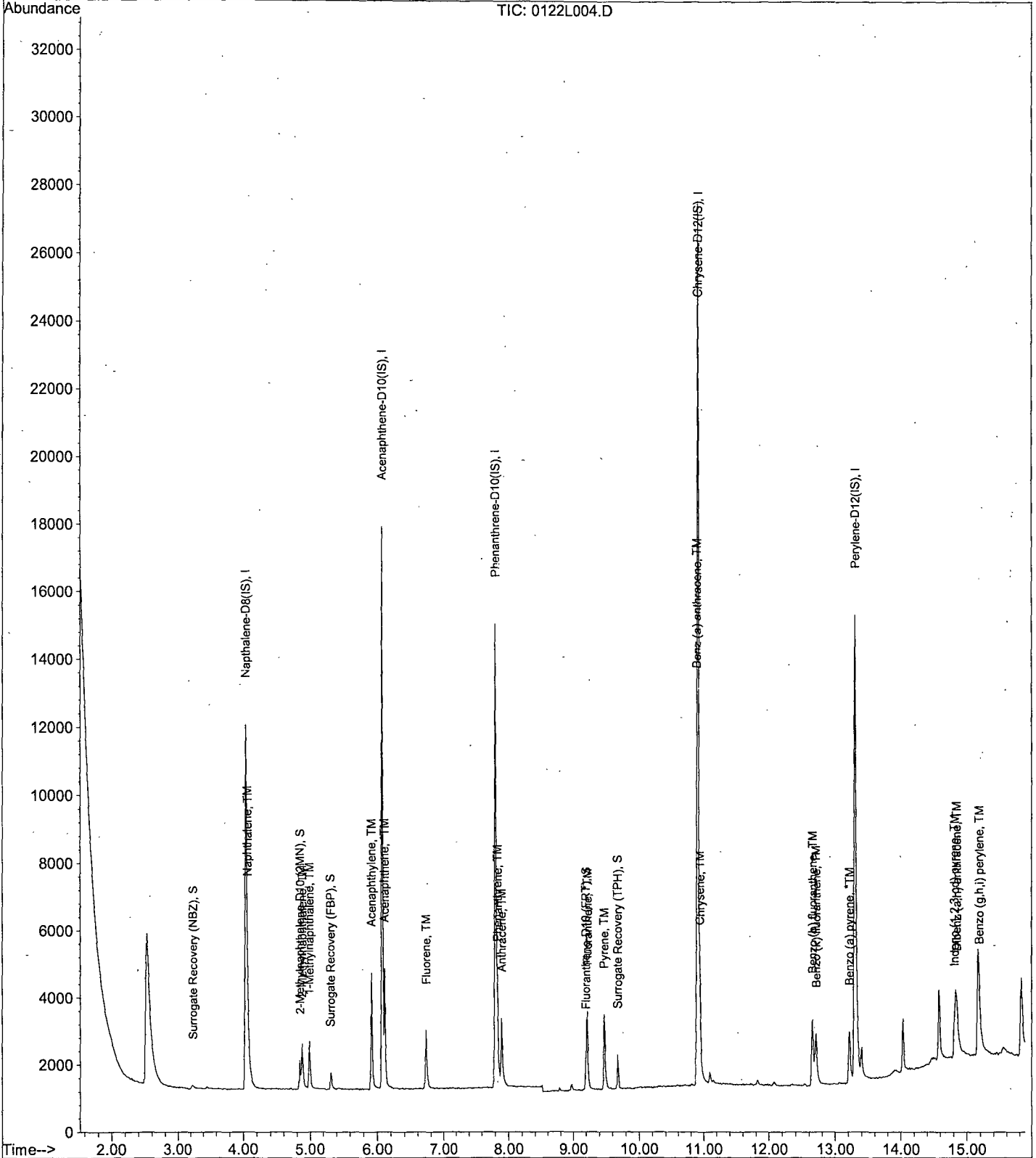
Data File : M:\LINUS\DATA\L190122\0122L004.D  
Acq On : 22 Jan 19 9:59  
Sample : 0.2 SIM 01/18/19  
Misc :

Vial: 4  
Operator: MA  
Inst : Linus  
Multiplr: 1.00

Quant Time: Jan 22 11:50 2019

Quant Results File: L0122.RES

Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
Title : EPA 8270  
Last Update : Tue Jan 22 13:02:31 2019  
Response via : Initial Calibration



Data File : M:\LINUS\DATA\L190122\0122L005.D  
 Acq On : 22 Jan 19 10:21  
 Sample : 0.5 SIM 01/18/19  
 Misc :

Vial: 5  
 Operator: MA  
 Inst : Linus  
 Multiplr: 1.00

Quant Time: Jan 22 11:50 2019

Quant Results File: L0122.RES

Quant Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
 Title : EPA 8270  
 Last Update : Tue Jan 22 11:50:13 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SIM\_2

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-D8 (IS)	4.03	136	19378	2.50000	ppb	-0.01
7) Acenaphthene-D10 (IS)	6.07	164	8194	2.50000	ppb	-0.01
12) Phenanthrene-D10 (IS)	7.80	188	15631	2.50000	ppb	-0.01
17) Chrysene-D12 (IS)	10.90	240	22574	2.50000	ppb	-0.02
23) Perylene-D12 (IS)	13.29	264	21122	2.50000	ppb	-0.03

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Surrogate Recovery (NBZ)	3.22	82	694	0.15194	ppb	0.00
Spiked Amount	5.000					
Recovery				=	3.040%	
4) 2-Methylnaphthalene-D10 (2)	4.84	152	1727	0.15263	ppb	-0.01
Spiked Amount	5.000					
Recovery				=	3.060%	
8) Surrogate Recovery (FBP)	5.31	172	1194	0.17011	ppb	-0.01
Spiked Amount	5.000					
Recovery				=	3.400%	
15) Fluoranthene-D10 (FRT)	9.18	212	2141	0.14256	ppb	-0.01
Spiked Amount	5.000					
Recovery				=	2.860%	
19) Surrogate Recovery (TPH)	9.67	244	1505	0.17248	ppb	0.00
Spiked Amount	5.000					
Recovery				=	3.440%	

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
3) Naphthalene	4.06	128	4220	0.46220	ppb	99
5) 2-Methylnaphthalene	4.88	142	2474	0.45012	ppb	100
6) 1-Methylnaphthalene	4.99	142	2608	0.46906	ppb	95
9) Acenaphthylene	5.92	152	7714	0.43600	ppb	98
10) Acenaphthene	6.11	154	2341	0.46149	ppb	95
11) Fluorene	6.72	166	2634	0.45181	ppb	100
13) Phenanthrene	7.83	178	3771	0.45218	ppb	98
14) Anthracene	7.89	178	3618	0.43707	ppb	99
16) Fluoranthene	9.21	202	5733	0.43937	ppb	# 89
18) Pyrene	9.47	202	5849	0.46191	ppb	93
20) Benz (a) anthracene	10.89	228	4857	0.42905	ppb	98
21) Chrysene	10.93	228	5362	0.48235	ppb	98
22) Indeno (1,2,3-cd) pyrene	14.82	276	5219	0.44419	ppb	# 86
24) Benzo (b) fluoranthene	12.65	252	4632	0.45644	ppb	98
25) Benzo (k) fluoranthene	12.70	252	5045	0.41618	ppb	98
26) Benzo (a) pyrene	13.22	252	4615	0.46695	ppb	99
27) Dibenz (a,h) anthracene	14.84	278	4275	0.46520	ppb	95
28) Benzo (g,h,i) perylene	15.17	276	4311	0.46317	ppb	96

(#) = qualifier out of range (m) = manual integration

Quantitation Report

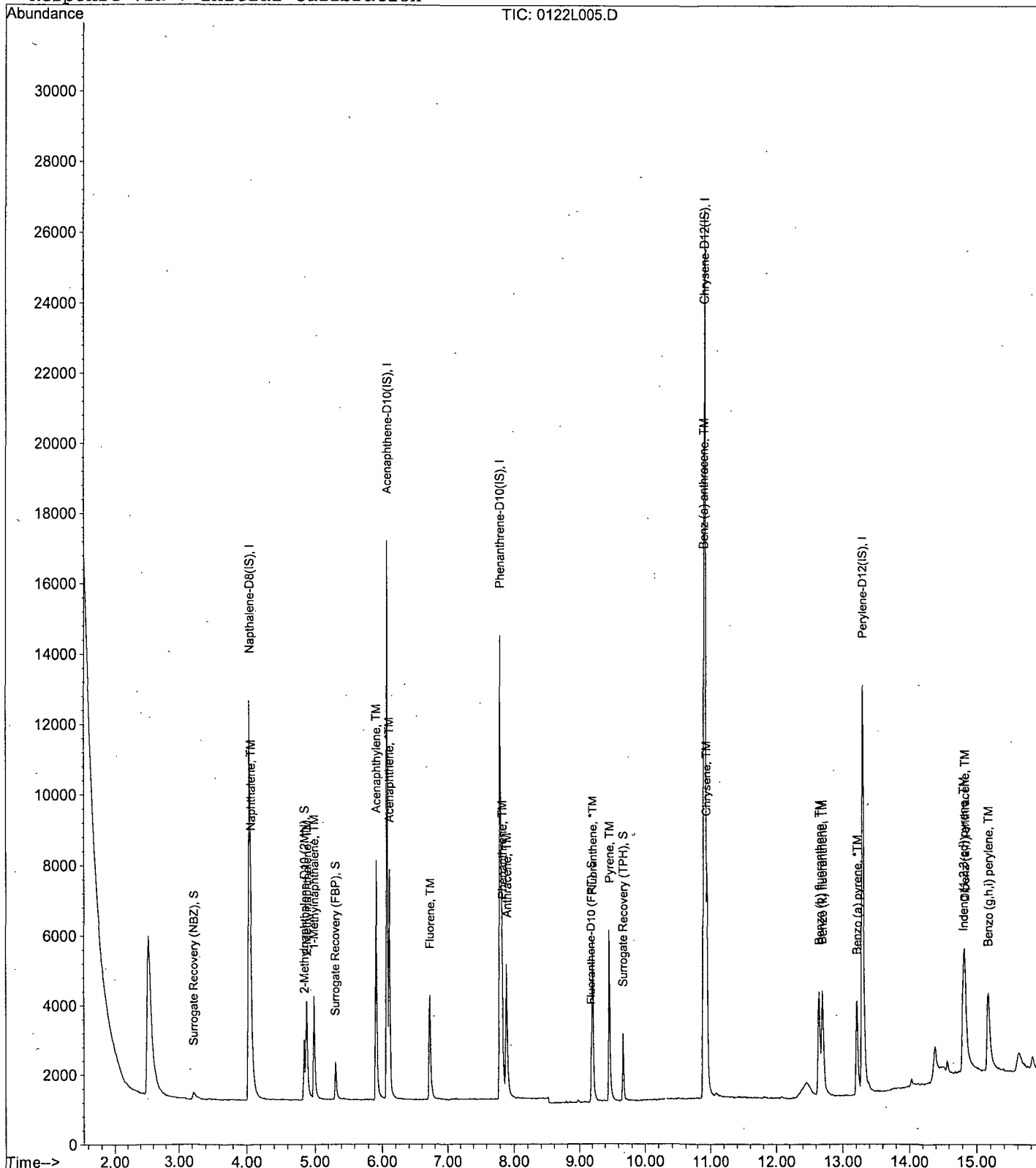
Data File : M:\LINUS\DATA\L190122\0122L005.D  
Acq On : 22 Jan 19 10:21  
Sample : 0.5 SIM 01/18/19  
Misc :

Vial: 5  
Operator: MA  
Inst : Linus  
Multiplr: 1.00

Quant Time: Jan 22 11:50 2019

Quant Results File: L0122.RES

Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
Title : EPA 8270  
Last Update : Tue Jan 22 13:02:31 2019  
Response via : Initial Calibration



Data File : M:\LINUS\DATA\L190122\0122L006.D  
 Acq On : 22 Jan 19 10:43  
 Sample : 1 SIM 01/18/19  
 Misc :

Vial: 6  
 Operator: MA  
 Inst : Linus  
 Multiplr: 1.00

Quant Time: Jan 22 11:50 2019

Quant Results File: L0122.RES

Quant Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
 Title : EPA 8270  
 Last Update : Tue Jan 22 11:50:13 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SIM\_2

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-D8 (IS)	4.03	136	17997	2.50000	ppb	-0.01
7) Acenaphthene-D10 (IS)	6.07	164	8238	2.50000	ppb	-0.01
12) Phenanthrene-D10 (IS)	7.80	188	16224	2.50000	ppb	-0.01
17) Chrysene-D12 (IS)	10.90	240	23806	2.50000	ppb	-0.02
23) Perylene-D12 (IS)	13.29	264	22387	2.50000	ppb	-0.03
System Monitoring Compounds						
2) Surrogate Recovery (NBZ)	3.22	82	1370	0.32296	ppb	0.00
Spiked Amount	5.000		Recovery	=	6.460%	
4) 2-Methylnaphthalene-D10 (2)	4.84	152	4102	0.39034	ppb	-0.01
Spiked Amount	5.000		Recovery	=	7.800%	
8) Surrogate Recovery (FBP)	5.31	172	2874	0.40727	ppb	-0.01
Spiked Amount	5.000		Recovery	=	8.140%	
15) Fluoranthene-D10 (FRT)	9.18	212	5335	0.34225	ppb	-0.01
Spiked Amount	5.000		Recovery	=	6.840%	
19) Surrogate Recovery (TPH)	9.67	244	3609	0.39220	ppb	0.00
Spiked Amount	5.000		Recovery	=	7.840%	
Target Compounds						
3) Naphthalene	4.06	128	9261	1.09215	ppb	Qvalue 99
5) 2-Methylnaphthalene	4.88	142	5682	1.11310	ppb	97
6) 1-Methylnaphthalene	4.99	142	5811	1.12533	ppb	96
9) Acenaphthylene	5.92	152	18493	1.03965	ppb	99
10) Acenaphthene	6.11	154	5619	1.10178	ppb	98
11) Fluorene	6.71	166	6507	1.11018	ppb	96
13) Phenanthrene	7.83	178	9481	1.09531	ppb	97
14) Anthracene	7.89	178	9094	1.05845	ppb	99
16) Fluoranthene	9.21	202	14616	1.07921	ppb	# 93
18) Pyrene	9.47	202	14652	1.09722	ppb	90
20) Benz (a) anthracene	10.89	228	12417	1.04011	ppb	99
21) Chrysene	10.93	228	13234	1.12887	ppb	99
22) Indeno (1,2,3-cd) pyrene	14.80	276	13263	1.07040	ppb	# 88
24) Benzo (b) fluoranthene	12.64	252	11564	1.07514	ppb	# 98
25) Benzo (k) fluoranthene	12.70	252	11886	0.92512	ppb	98
26) Benzo (a) pyrene	13.21	252	11511	1.09889	ppb	99
27) Dibenz (a,h) anthracene	14.83	278	11022	1.13162	ppb	99
28) Benzo (g,h,i) perylene	15.16	276	11170	1.13229	ppb	95



Quantitation Report

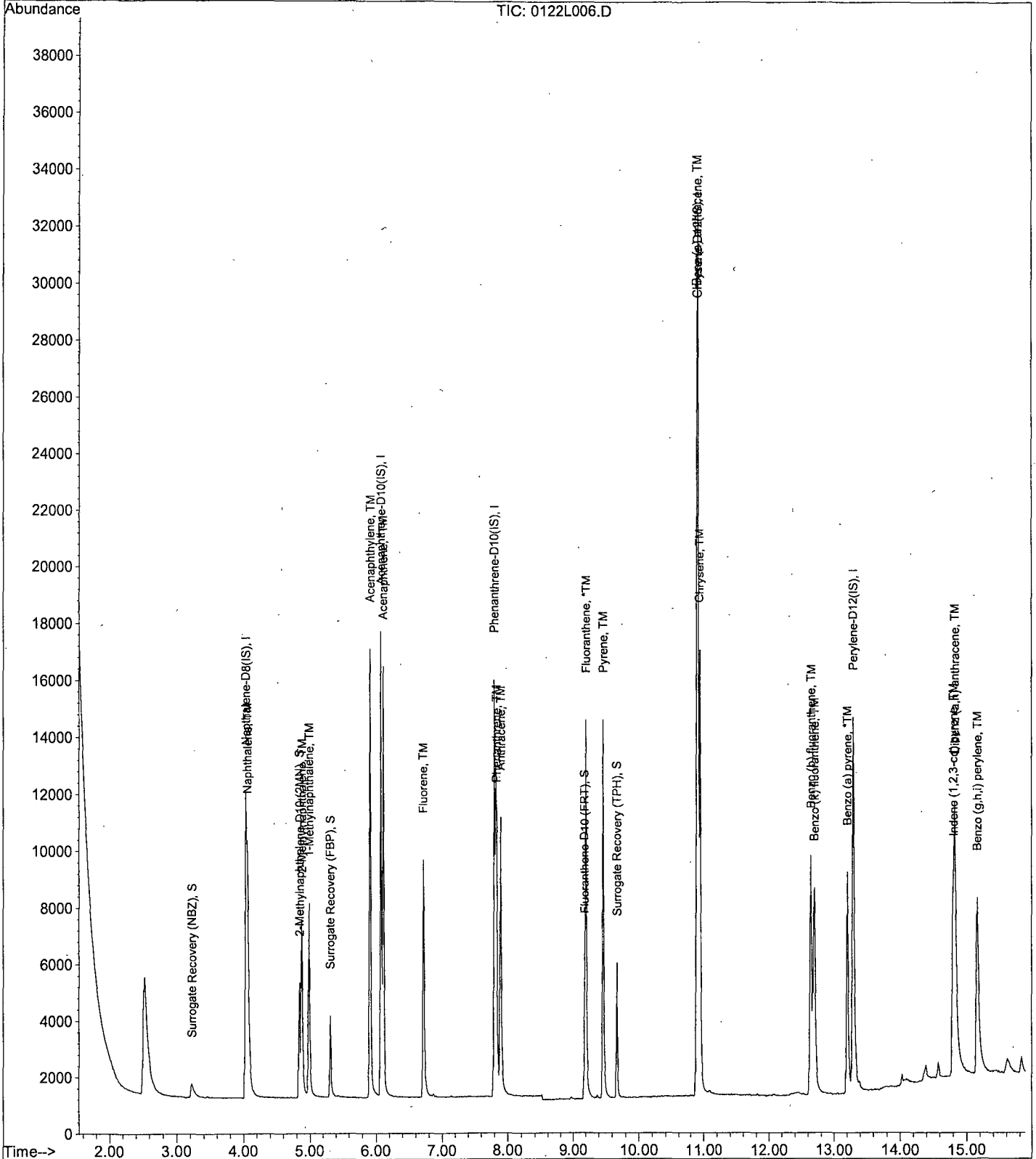
Data File : M:\LINUS\DATA\L190122\L0122L006.D  
 Acq On : 22 Jan 19 10:43  
 Sample : 1 SIM 01/18/19  
 Misc :

Vial: 6  
 Operator: MA  
 Inst : Linus  
 Multiplr: 1.00

Quant Time: Jan 22 11:50 2019

Quant Results File: L0122.RES

Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
 Title : EPA 8270  
 Last Update : Tue Jan 22 13:02:31 2019  
 Response via : Initial Calibration



Data File : M:\LINUS\DATA\L190122\0122L007.D Vial: 7  
 Acq On : 22 Jan 19 11:30 Operator: MA  
 Sample : 5 SIM 01/18/19 Inst : Linus  
 Misc : Multiplr: 1.00

Quant Time: Jan 22 12:47 2019 Quant Results File: L0122.RES

Quant Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
 Title : EPA 8270  
 Last Update : Tue Jan 22 12:47:16 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SIM\_2

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-D8 (IS)	4.03	136	16548	2.50000	ppb	-0.01
7) Acenaphthene-D10 (IS)	6.07	164	7268	2.50000	ppb	-0.01
12) Phenanthrene-D10 (IS)	7.80	188	13995	2.50000	ppb	-0.01
17) Chrysene-D12 (IS)	10.90	240	19950	2.50000	ppb	-0.02
23) Perylene-D12 (IS)	13.30	264	19225	2.50000	ppb	-0.02

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Surrogate Recovery (NBZ)	3.21	82	7607	2.60121	ppb	-0.01
Spiked Amount 5.000			Recovery =	52.020%		
4) 2-Methylnaphthalene-D10 (2)	4.83	152	20941	2.75267	ppb	-0.02
Spiked Amount 5.000			Recovery =	55.060%		
8) Surrogate Recovery (FBP)	5.31	172	13978	2.69964	ppb	-0.01
Spiked Amount 5.000			Recovery =	54.000%		
15) Fluoranthene-D10 (FRT)	9.18	212	27245	2.76398	ppb	-0.01
Spiked Amount 5.000			Recovery =	55.280%		
19) Surrogate Recovery (TPH)	9.67	244	17410	2.68552	ppb	-0.01
Spiked Amount 5.000			Recovery =	53.720%		

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
3) Naphthalene	4.06	128	45784	5.47796	ppb	100
5) 2-Methylnaphthalene	4.87	142	28493	5.66542	ppb	100
6) 1-Methylnaphthalene	4.97	142	27451	5.39862	ppb	100
9) Acenaphthylene	5.90	152	91655	5.61140	ppb	100
10) Acenaphthene	6.11	154	26309	5.54466	ppb	100
11) Fluorene	6.71	166	31330	5.66322	ppb	100
13) Phenanthrene	7.82	178	44335	5.57391	ppb	100
14) Anthracene	7.88	178	45862	5.88051	ppb	100
16) Fluoranthene	9.21	202	70142	5.71546	ppb	100
18) Pyrene	9.46	202	69644	5.66416	ppb	100
20) Benz (a) anthracene	10.89	228	61372	5.59012	ppb	100
21) Chrysene	10.93	228	57972	5.50231	ppb	100
22) Indeno (1,2,3-cd) pyrene	14.79	276	59462	5.44362	ppb	100
24) Benzo (b) fluoranthene	12.64	252	58876	5.66105	ppb	100
25) Benzo (k) fluoranthene	12.68	252	59717	5.64321	ppb	100
26) Benzo (a) pyrene	13.21	252	55980	5.65364	ppb	100
27) Dibenz (a,h) anthracene	14.82	278	49007	5.37458	ppb	100
28) Benzo (g,h,i) perylene	15.15	276	48865	5.30011	ppb	100

Quantitation Report

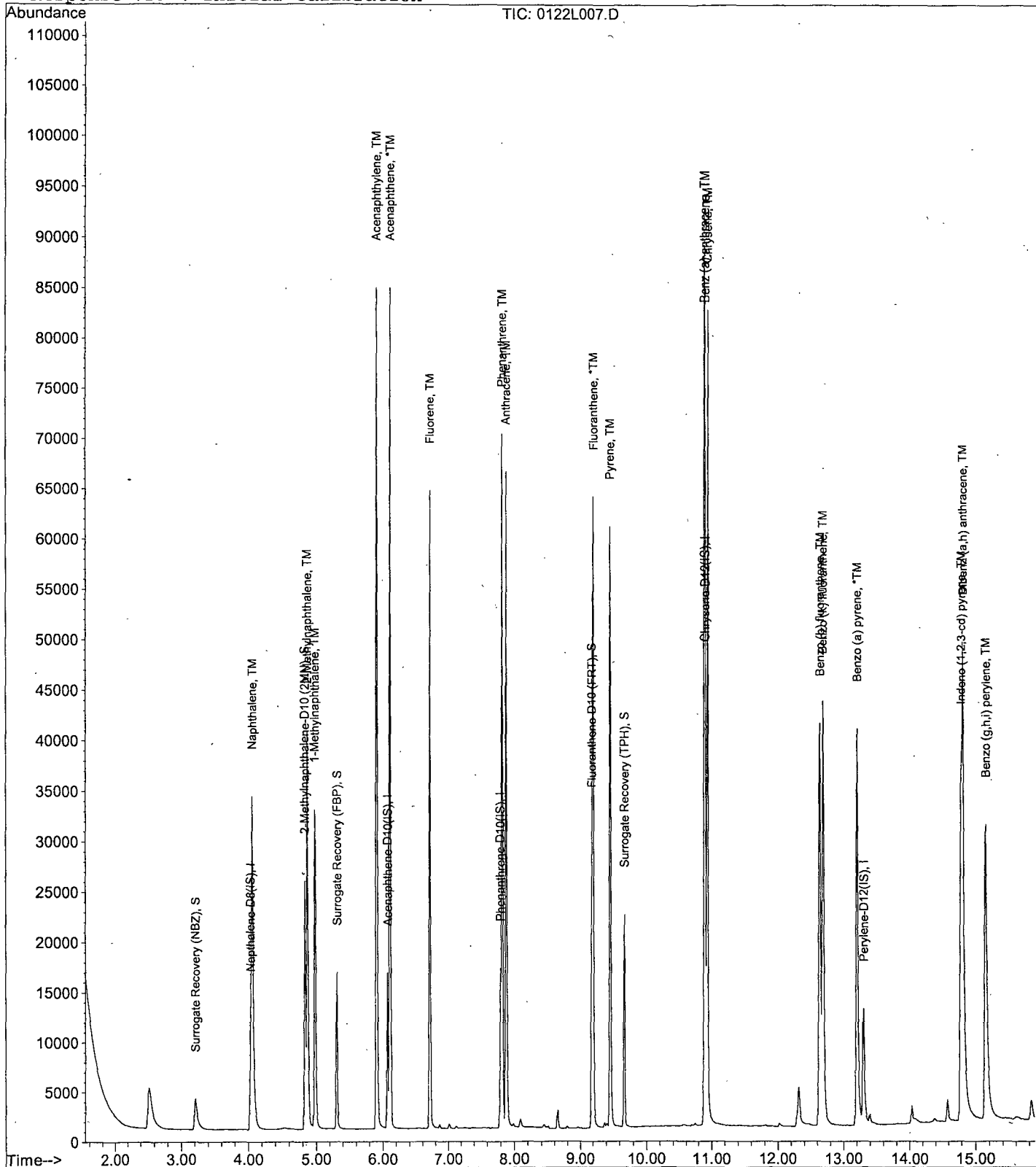
Data File : M:\LINUS\DATA\L190122\0122L007.D  
 Acq On : 22 Jan 19 11:30  
 Sample : 5 SIM 01/18/19  
 Misc :

Vial: 7  
 Operator: MA  
 Inst : Linus  
 Multiplr: 1.00

Quant Time: Jan 22 12:47 2019

Quant Results File: L0122.RES

Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
 Title : EPA 8270  
 Last Update : Tue Jan 22 13:02:31 2019  
 Response via : Initial Calibration



Data File : M:\LINUS\DATA\L190122\0122L008.D  
 Acq On : 22 Jan 19 11:53  
 Sample : 10 SIM 01/18/19  
 Misc :

Vial: 8  
 Operator: MA  
 Inst : Linus  
 Multiplr: 1.00

Quant Time: Feb 5 11:09 2019

Quant Results File: L0122.RES

Quant Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
 Title : EPA 8270  
 Last Update : Tue Jan 22 12:47:40 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SIM\_2

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Napthalene-D8 (IS)	4.03	136	16401	2.50000	ppb	-0.01
7) Acenaphthene-D10 (IS)	6.07	164	7199	2.50000	ppb	-0.01
12) Phenanthrene-D10 (IS)	7.80	188	13870	2.50000	ppb	-0.01
17) Chrysene-D12 (IS)	10.90	240	20037	2.50000	ppb	-0.02
23) Perylene-D12 (IS)	13.29	264	18684	2.50000	ppb	-0.03

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Surrogate Recovery (NBZ)	3.20	82	14805	5.85339	ppb	-0.02
Spiked Amount	5.000					
Recovery				= 117.060%		
4) 2-Methylnaphthalene-D10 (2)	4.83	152	42463	6.47148	ppb	-0.02
Spiked Amount	5.000					
Recovery				= 129.420%		
8) Surrogate Recovery (FBP)	5.31	172	27763	6.17375	ppb	-0.01
Spiked Amount	5.000					
Recovery				= 123.480%		
15) Fluoranthene-D10 (FRT)	9.18	212	54468	6.35262	ppb	-0.01
Spiked Amount	5.000					
Recovery				= 127.060%		
19) Surrogate Recovery (TPH)	9.66	244	34694	6.13619	ppb	-0.02
Spiked Amount	5.000					
Recovery				= 122.720%		

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
3) Naphthalene	4.06	128	88896	11.85448	ppb	100
5) 2-Methylnaphthalene	4.87	142	56236	12.48160	ppb	100
6) 1-Methylnaphthalene	4.97	142	54242	11.87753	ppb	100
9) Acenaphthylene	5.90	152	182742	12.55338	ppb	99
10) Acenaphthene	6.11	154	51321	12.04426	ppb	98
11) Fluorene	6.71	166	61684	12.48808	ppb	99
13) Phenanthrene	7.82	178	87145	12.24258	ppb	100
14) Anthracene	7.88	178	87619	12.57174	ppb	100
16) Fluoranthene	9.21	202	137396	12.46906	ppb	97
18) Pyrene	9.46	202	136155	12.26524	ppb	96
20) Benz (a) anthracene	10.89	228	120980	12.29858	ppb	100
21) Chrysene	10.93	228	111248	11.62149	ppb	99
22) Indeno (1,2,3-cd) pyrene	14.78	276	119439	12.13320	ppb	# 84
24) Benzo (b) fluoranthene	12.63	252	119776	13.26251	ppb	# 97
25) Benzo (k) fluoranthene	12.68	252	108622m	11.78686	ppb	99
26) Benzo (a) pyrene	13.20	252	111267	12.95931	ppb	# 97
27) Dibenz (a,h) anthracene	14.82	278	97893	12.25147	ppb	98
28) Benzo (g,h,i) perylene	15.14	276	98835	12.27085	ppb	# 94

Quantitation Report

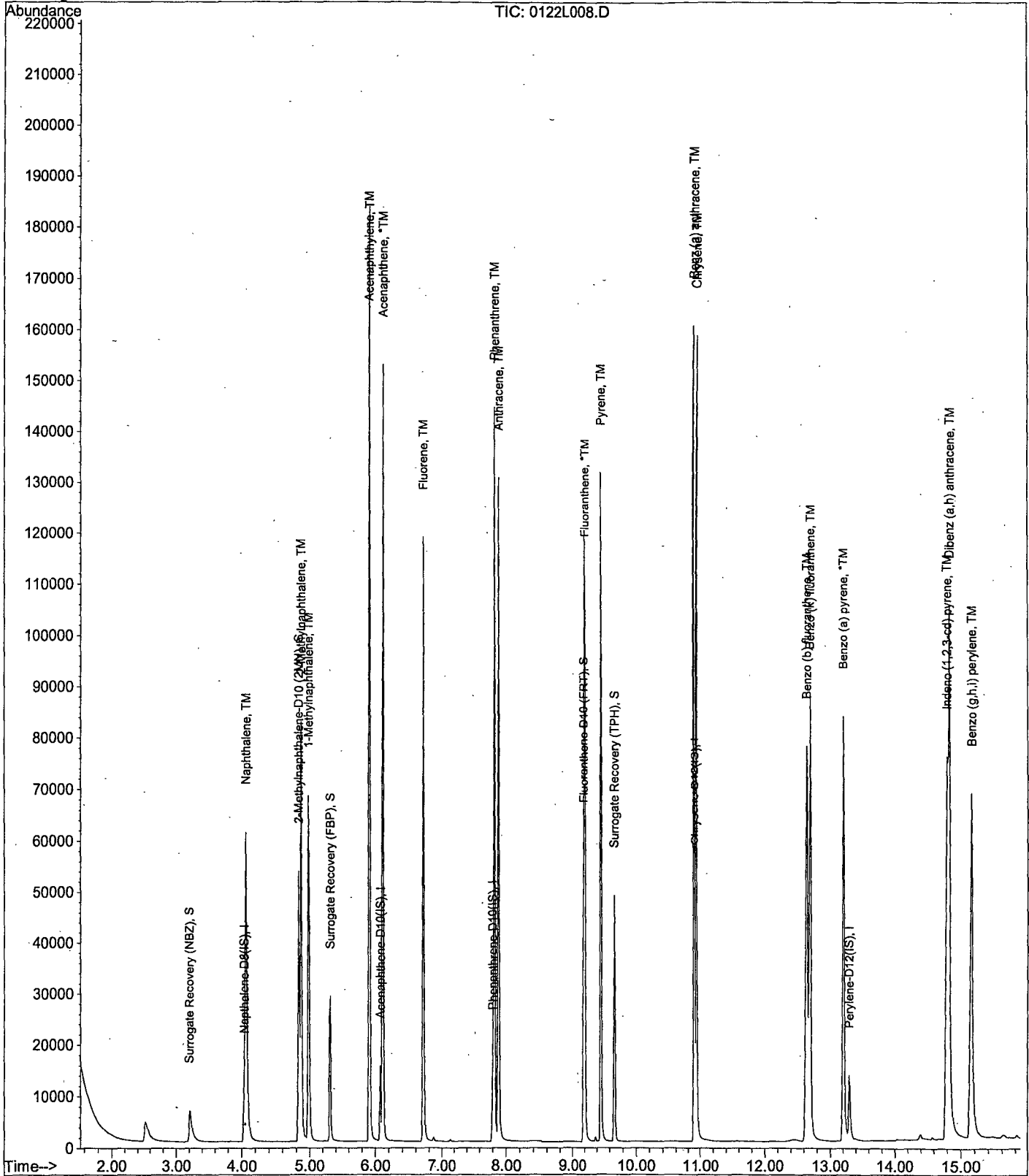
Data File : M:\LINUS\DATA\L190122\0122L008.D  
Acq On : 22 Jan 19 11:53  
Sample : 10 SIM 01/18/19  
Misc :

Vial: 8  
Operator: MA  
Inst : Linus  
Multiplr: 1.00

Quant Time: Feb 5 11:09 2019

Quant Results File: L0122.RES

Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
Title : EPA 8270  
Last Update : Tue Jan 22 13:02:31 2019  
Response via : Initial Calibration

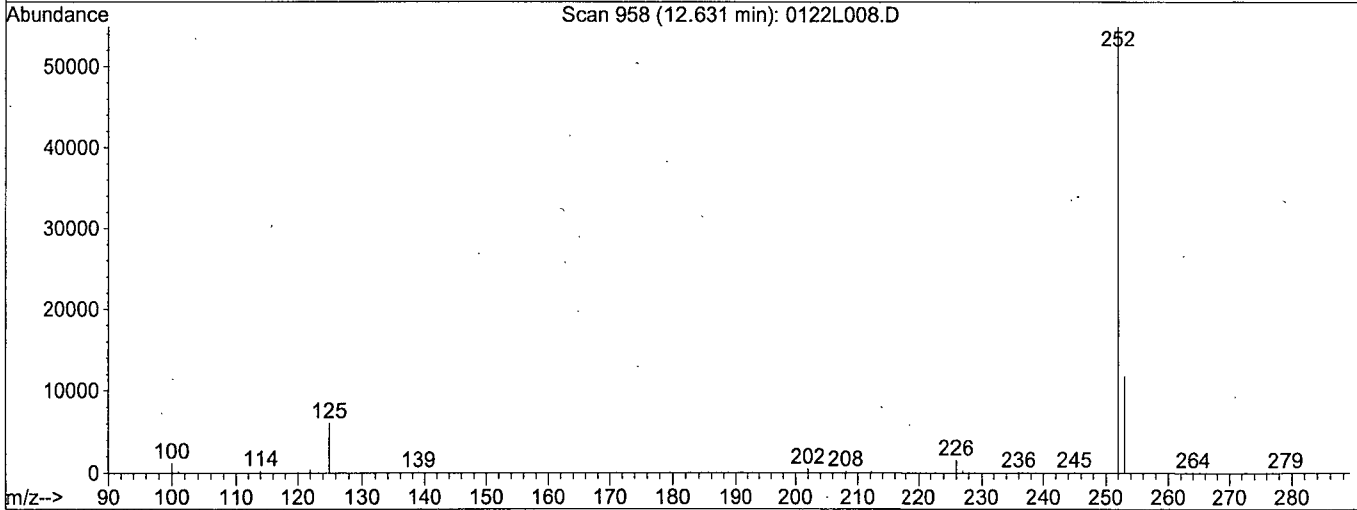
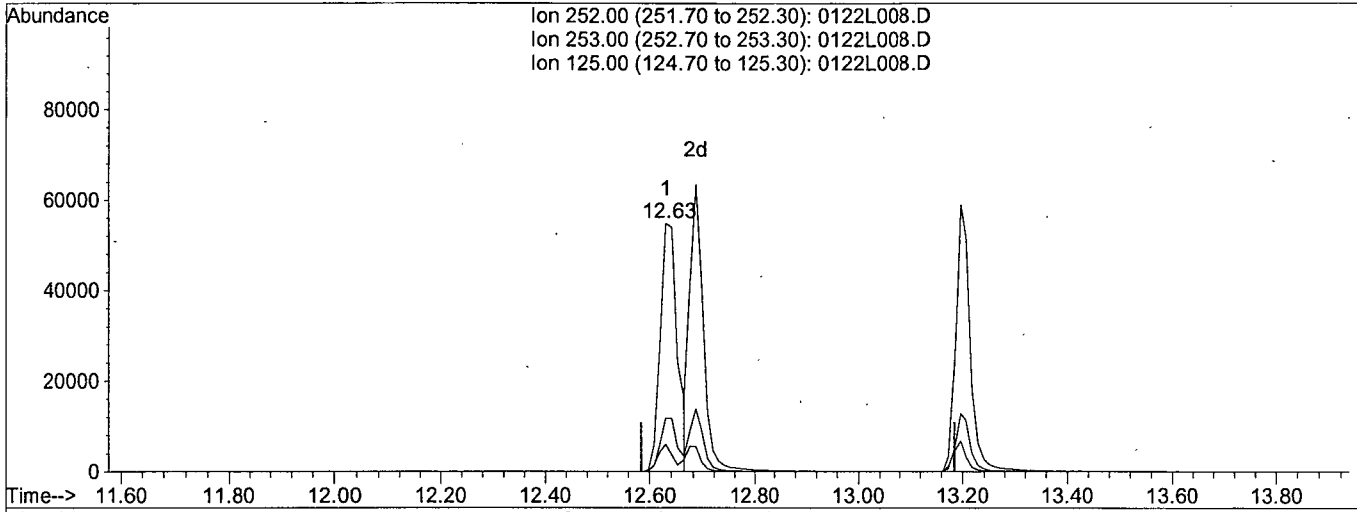


Quantitation Report

Data File : M:\LINUS\DATA\L190122\0122L008.D  
 Acq On : 22 Jan 19 11:53  
 Sample : 10 SIM 01/18/19  
 Misc :  
 Quant Time: Jan 22 12:48 2019

Vial: 8  
 Operator: MA  
 Inst : Linus  
 Multiplr: 1.00  
 Quant Results File: temp.res

Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
 Title : EPA 8270  
 Last Update : Tue Jan 22 13:02:31 2019  
 Response via : Multiple Level Calibration



TIC: 0122L008.D

(25) Benzo (k) fluoranthene (TM)

12.63min 12.9969ppb

response 119773

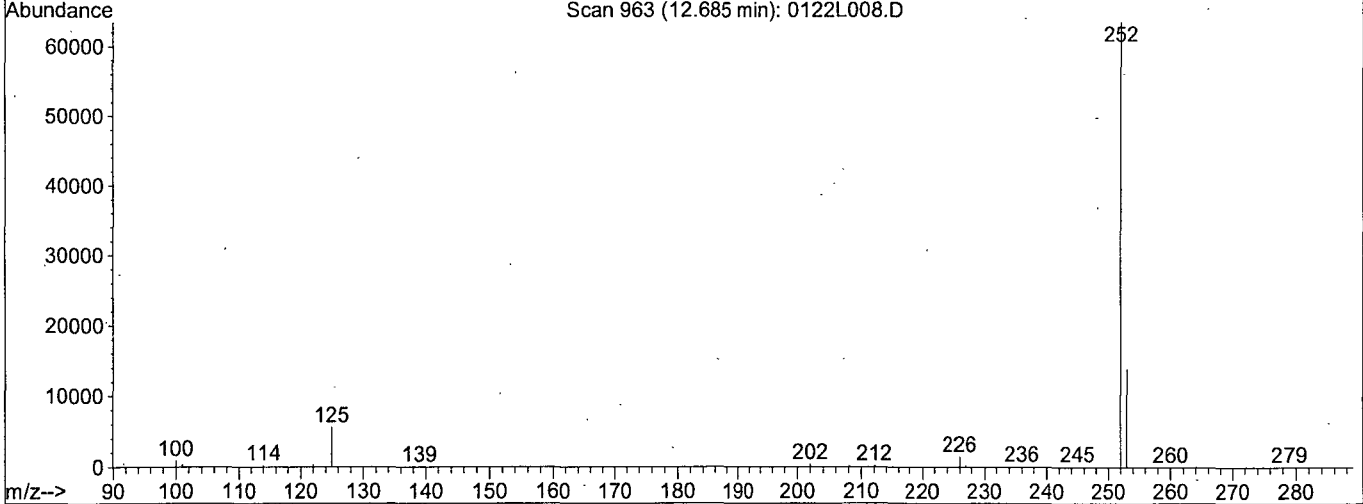
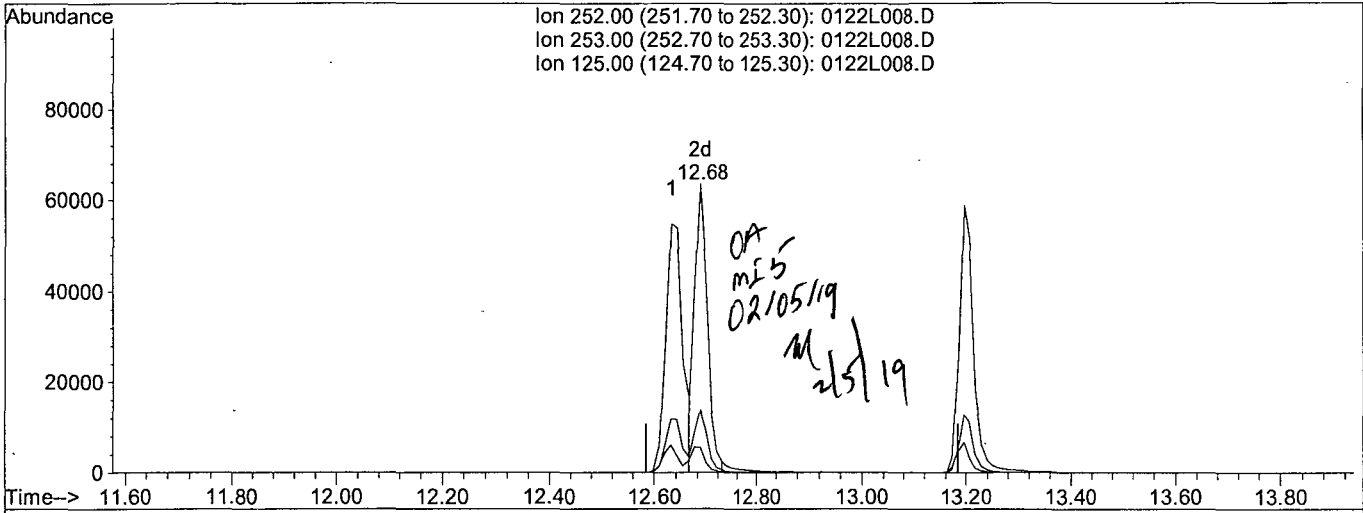
Ion	Exp%	Act%
252.00	100	100
253.00	21.60	21.45
125.00	9.60	10.98
0.00	0.00	0.00

Quantitation Report

Data File : M:\LINUS\DATA\L190122\0122L008.D  
 Acq On : 22 Jan 19 11:53  
 Sample : 10 SIM 01/18/19  
 Misc :  
 Quant Time: Feb 5 11:09 2019

Vial: 8  
 Operator: MA  
 Inst : Linus  
 Multiplr: 1.00  
 Quant Results File: temp.res

Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
 Title : EPA 8270  
 Last Update : Tue Jan 22 13:02:31 2019  
 Response via : Multiple Level Calibration



TIC: 0122L008.D

(25) Benzo (k) fluoranthene (TM)

12.68min 11.7869ppb m

response 108622

Ion	Exp%	Act%
252.00	100	100
253.00	21.60	21.90
125.00	9.60	8.79
0.00	0.00	0.00

Quantitation Report (Not Reviewed)

Data File : M:\LINUS\DATA\L190122\0122L009.D Vial: 9  
 Acq On : 22 Jan 19 12:15 Operator: MA  
 Sample : 50 SIM 01/18/19 Inst : Linus  
 Misc : Multiplr: 1.00

Quant Time: Jan 22 12:49 2019 Quant Results File: L0122.RES

Quant Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
 Title : EPA 8270  
 Last Update : Tue Jan 22 12:48:57 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SIM\_2

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-D8 (IS)	4.03	136	16882	2.50000	ppb	-0.01
7) Acenaphthene-D10 (IS)	6.07	164	7435	2.50000	ppb	-0.01
12) Phenanthrene-D10 (IS)	7.80	188	14943	2.50000	ppb	-0.01
17) Chrysene-D12 (IS)	10.91	240	19605	2.50000	ppb	-0.01
23) Perylene-D12 (IS)	13.29	264	18780	2.50000	ppb	-0.03

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Surrogate Recovery (NBZ)	3.20	82	74252	28.52027	ppb	-0.02
Spiked Amount 5.000			Recovery =	570.400%		
4) 2-Methylnaphthalene-D10 (2)	4.83	152	197601	29.25691	ppb	-0.02
Spiked Amount 5.000			Recovery =	585.140%		
8) Surrogate Recovery (FBP)	5.31	172	128459	27.65911	ppb	-0.01
Spiked Amount 5.000			Recovery =	553.180%		
15) Fluoranthene-D10 (FRT)	9.18	212	254396	27.53979	ppb	-0.01
Spiked Amount 5.000			Recovery =	550.800%		
19) Surrogate Recovery (TPH)	9.67	244	163882	29.62386	ppb	-0.01
Spiked Amount 5.000			Recovery =	592.480%		

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
3) Naphthalene	4.06	128	369785	47.90669	ppb	100
5) 2-Methylnaphthalene	4.87	142	226326	48.80191	ppb	99
6) 1-Methylnaphthalene	4.99	142	222700	47.37585	ppb	94
9) Acenaphthylene	5.92	152	763610	50.79081	ppb	97
10) Acenaphthene	6.11	154	208204	47.31133	ppb	95
11) Fluorene	6.71	166	255227	50.03119	ppb	97
13) Phenanthrene	7.83	178	376921	49.14954	ppb	98
14) Anthracene	7.89	178	376399	50.12843	ppb	99
16) Fluoranthene	9.21	202	567787	47.82815	ppb	# 84
18) Pyrene	9.47	202	556994	51.28126	ppb	99
20) Benz (a) anthracene	10.90	228	525902	54.64017	ppb	100
21) Chrysene	10.95	228	451974	48.25575	ppb	# 98
22) Indeno (1,2,3-cd) pyrene	14.82	276	499473	51.85698	ppb	# 90
24) Benzo (b) fluoranthene	12.65	252	490265	54.00836	ppb	100
25) Benzo (k) fluoranthene	12.72	252	488050	50.37199	ppb	100
26) Benzo (a) pyrene	13.22	252	471645	54.65189	ppb	99
27) Dibenz (a,h) anthracene	14.85	278	398222	49.58336	ppb	# 94
28) Benzo (g,h,i) perylene	15.17	276	411886	50.87625	ppb	99



Quantitation Report

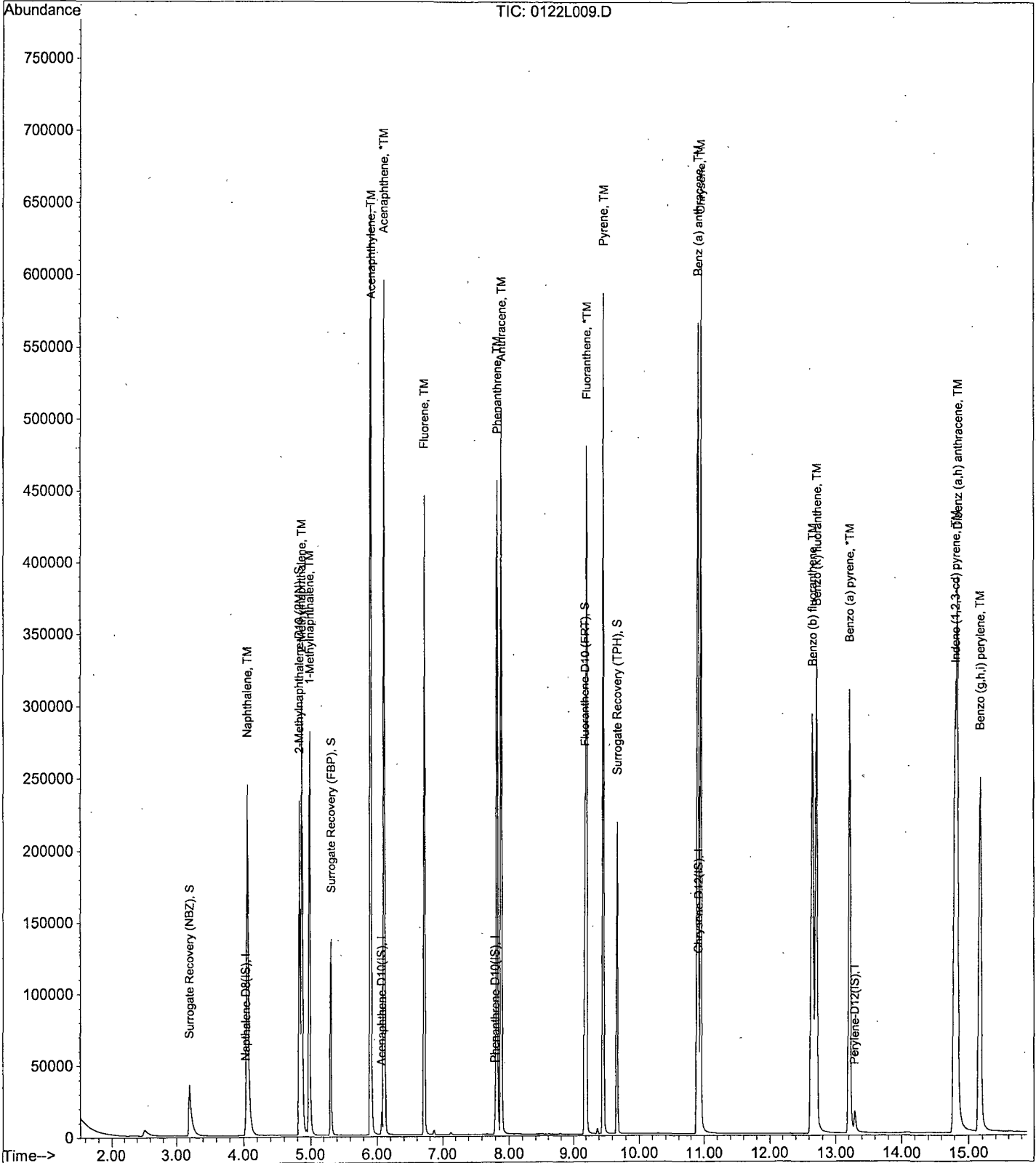
Data File : M:\LINUS\DATA\L190122\0122L009.D  
Acq On : 22 Jan .19 12:15  
Sample : 50 SIM 01/18/19  
Misc :

Vial: 9  
Operator: MA  
Inst : Linus  
Multiplr: 1.00

Quant Time: Jan 22 12:49 2019

Quant Results File: L0122.RES

Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
Title : EPA 8270  
Last Update : Tue Jan 22 13:02:31 2019  
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : M:\LINUS\DATA\L190122\0122L010.D Vial: 10  
 Acq On : 22 Jan 19 12:37 Operator: MA  
 Sample : 100 SIM 01/18/19 Inst : Linus  
 Misc : Multiplr: 1.00

Quant Time: Jan 22 13:02 2019 Quant Results File: L0122.RES

Quant Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
 Title : EPA 8270  
 Last Update : Tue Jan 22 13:02:31 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SIM\_2

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-D8 (IS)	4.03	136	16509	2.50000	ppb	-0.01
7) Acenaphthene-D10 (IS)	6.07	164	7340	2.50000	ppb	-0.01
12) Phenanthrene-D10 (IS)	7.80	188	14625	2.50000	ppb	-0.01
17) Chrysene-D12 (IS)	10.92	240	19570	2.50000	ppb	0.00
23) Perylene-D12 (IS)	13.30	264	18015	2.50000	ppb	-0.02
System Monitoring Compounds						
2) Surrogate Recovery (NBZ)	3.20	82	143716	49.35106	ppb	-0.02
Spiked Amount	5.000		Recovery	=	987.020%	
4) 2-Methylnaphthalene-D10 (2)	4.83	152	369507	48.84651	ppb	-0.02
Spiked Amount	5.000		Recovery	=	976.940%	
8) Surrogate Recovery (FBP)	5.31	172	245947	47.38619	ppb	-0.01
Spiked Amount	5.000		Recovery	=	947.720%	
15) Fluoranthene-D10 (FRT)	9.20	212	489050	47.77794	ppb	0.00
Spiked Amount	5.000		Recovery	=	955.560%	
19) Surrogate Recovery (TPH)	9.67	244	301836	47.76577	ppb	-0.01
Spiked Amount	5.000		Recovery	=	955.320%	
Target Compounds						
3) Naphthalene	4.06	128	686154	82.50506	ppb	99
5) 2-Methylnaphthalene	4.88	142	426189	84.86301	ppb	97
6) 1-Methylnaphthalene	4.99	142	400215	78.89615	ppb	96
9) Acenaphthylene	5.92	152	1371750	83.47032	ppb	99
10) Acenaphthene	6.12	154	399394	83.03305	ppb	99
11) Fluorene	6.72	166	486427	86.73013	ppb	99
13) Phenanthrene	7.83	178	662559	80.60560	ppb	99
14) Anthracene	7.91	178	708940	86.78483	ppb	98
16) Fluoranthene	9.23	202	1074355	83.53801	ppb	# 93
18) Pyrene	9.48	202	1055051	87.24305	ppb	94
20) Benz (a) anthracene	10.91	228	987627	91.25364	ppb	99
21) Chrysene	10.97	228	835356	80.61549	ppb	98
22) Indeno (1,2,3-cd) pyrene	14.86	276	924286	86.44058	ppb	# 71
24) Benzo (b) fluoranthene	12.67	252	937424	96.32808	ppb	# 97
25) Benzo (k) fluoranthene	12.74	252	912491	92.99727	ppb	100
26) Benzo (a) pyrene	13.25	252	880967	94.64847	ppb	# 96
27) Dibenz (a,h) anthracene	14.88	278	752245	87.80959	ppb	# 88
28) Benzo (g,h,i) perylene	15.21	276	751231	86.81489	ppb	# 92

Quantitation Report

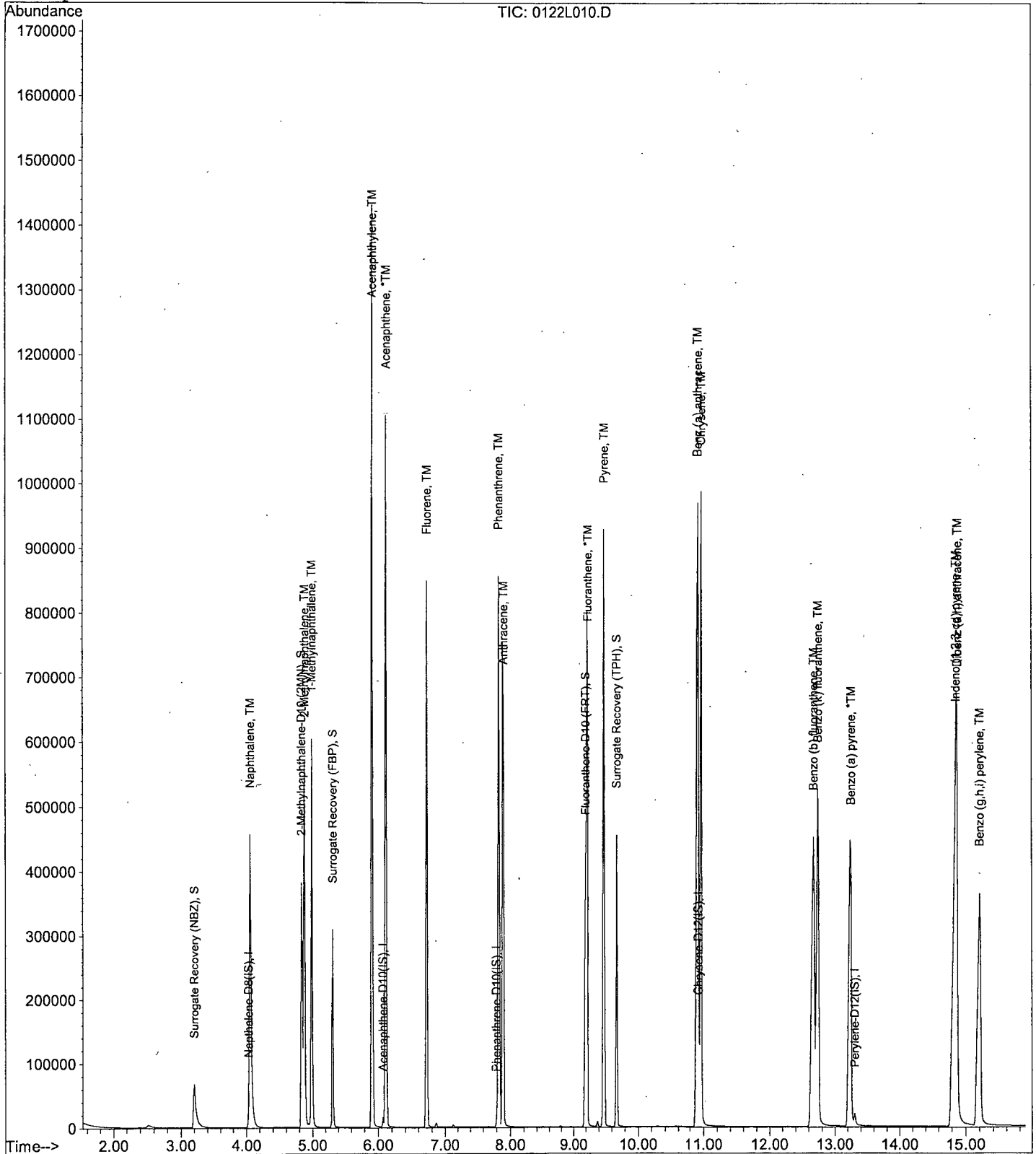
Data File : M:\LINUS\DATA\L190122\0122L010.D  
Acq On : 22 Jan 19 12:37  
Sample : 100 SIM 01/18/19  
Misc :

Vial: 10  
Operator: MA  
Inst : Linus  
Multiplr: 1.00

Quant Time: Jan 22 13:02 2019

Quant Results File: L0122.RES

Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
Title : EPA 8270  
Last Update : Tue Jan 22 13:02:31 2019  
Response via : Initial Calibration



PAH by GCMS SIM  
EPA 8270 SIM

Form 7

Second Source Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: \_\_\_\_\_

SDG No: \_\_\_\_\_  
Date Analyzed: 01/22/19  
Instrument: Linus  
Initial Cal. Date: 01/22/19  
Data File: 0122L011.D

		Compound	MEAN	CCRF	%D	%Drift
1	TM	Naphthalene	1.259	1.319	4.7	TM
2	TM	2-Methylnaphthalene	0.7605	0.8383	10	TM
3	TM	1-Methylnaphthalene	0.7682	0.8611	12	TM
4	TM	Acenaphthylene	5.597	6.034	7.8	TM
5	*TM	Acenaphthene	1.638	1.715	4.7	*TM
6	TM	Fluorene	1.910	2.087	9.2	TM
7	TM	Phenanthrene	1.405	1.525	8.5	TM
8	TM	Anthracene	1.396	1.436	2.8	TM
9	*TM	Fluoranthene	2.198	2.322	5.6	*TM
10	TM	Pyrene	1.545	1.638	6.0	TM
11	TM	Benz (a) anthracene	1.383	1.444	4.5	TM
12	TM	Chrysene	1.324	1.416	6.9	TM
13	TM	Indeno (1,2,3-cd) pyrene	1.366	1.426	4.4	TM
14	TM	Benzo (b) fluoranthene	1.350	1.445	7.0	TM
15	TM	Benzo (k) fluoranthene	1.374	1.606	17	TM
16	*TM	Benzo (a) pyrene	1.292	1.370	6.1	*TM
17	TM	Dibenz (a,h) anthracene	1.189	1.313	10	TM
18	TM	Benzo (g,h,i) perylene	1.201	1.300	8.3	TM
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Average

7.5

Data File : M:\LINUS\DATA\L190122\0122L011.D Vial: 11  
 Acq On : 22 Jan 19 12:59 Operator: MA  
 Sample : SS SIM 01/18/19 Inst : Linus  
 Misc : Multiplr: 1.00

Quant Time: Feb 5 14:36 2019 Quant Results File: L0122.RES

Quant Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
 Title : EPA 8270  
 Last Update : Tue Jan 22 13:02:31 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SIM\_2

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Napthalene-D8 (IS)	4.03	136	15442	2.50	ppb	-0.01
7) Acenaphthene-D10 (IS)	6.07	164	6948	2.50	ppb	-0.01
12) Phenanthrene-D10 (IS)	7.80	188	13744	2.50	ppb	-0.01
17) Chrysene-D12 (IS)	10.90	240	19942	2.50	ppb	-0.02
23) Perylene-D12 (IS)	13.29	264	18334	2.50	ppb	-0.03

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Surrogate Recovery (NBZ)	0.00	82	0d	0.00	ppb	
Spiked Amount	5.000		Recovery	=	0.000%	
4) 2-Methylnaphthalene-D10 (2)	0.00	152	0d	0.00	ppb	
Spiked Amount	5.000		Recovery	=	0.000%	
8) Surrogate Recovery (FBP)	0.00	172	0d	0.00	ppb	
Spiked Amount	5.000		Recovery	=	0.000%	
15) Fluoranthene-D10 (FRT)	0.00	212	0d	0.00	ppb	
Spiked Amount	5.000		Recovery	=	0.000%	
19) Surrogate Recovery (TPH)	0.00	244	0d	0.00	ppb	
Spiked Amount	5.000		Recovery	=	0.000%	

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
3) Naphthalene	4.06	128	40738	5.24	ppb	100
5) 2-Methylnaphthalene	4.87	142	25890	5.51	ppb	97
6) 1-Methylnaphthalene	4.99	142	26593	5.60	ppb	94
9) Acenaphthylene	5.90	152	83849	5.39	ppb	100
10) Acenaphthene	6.11	154	23838	5.24	ppb	100
11) Fluorene	6.71	166	28998	5.46	ppb	99
13) Phenanthrene	7.82	178	41914	5.43	ppb	99
14) Anthracene	7.88	178	39465	5.14	ppb	99
16) Fluoranthene	9.21	202	63819	5.28	ppb	100
18) Pyrene	9.46	202	65311	5.30	ppb	97
20) Benz (a) anthracene	10.88	228	57608	5.22	ppb	96
21) Chrysene	10.93	228	56462	5.35	ppb	98
22) Indeno (1,2,3-cd) pyrene	14.78	276	56868	5.22	ppb	# 91
24) Benzo (b) fluoranthene	12.63	252	52976	5.35	ppb	99
25) Benzo (k) fluoranthene	12.68	252	58877	5.84	ppb	# 96
26) Benzo (a) pyrene	13.20	252	50232	5.30	ppb	98
27) Dibenz (a,h) anthracene	14.82	278	48137	5.52	ppb	98
28) Benzo (g,h,i) perylene	15.14	276	47680	5.41	ppb	95

Quantitation Report

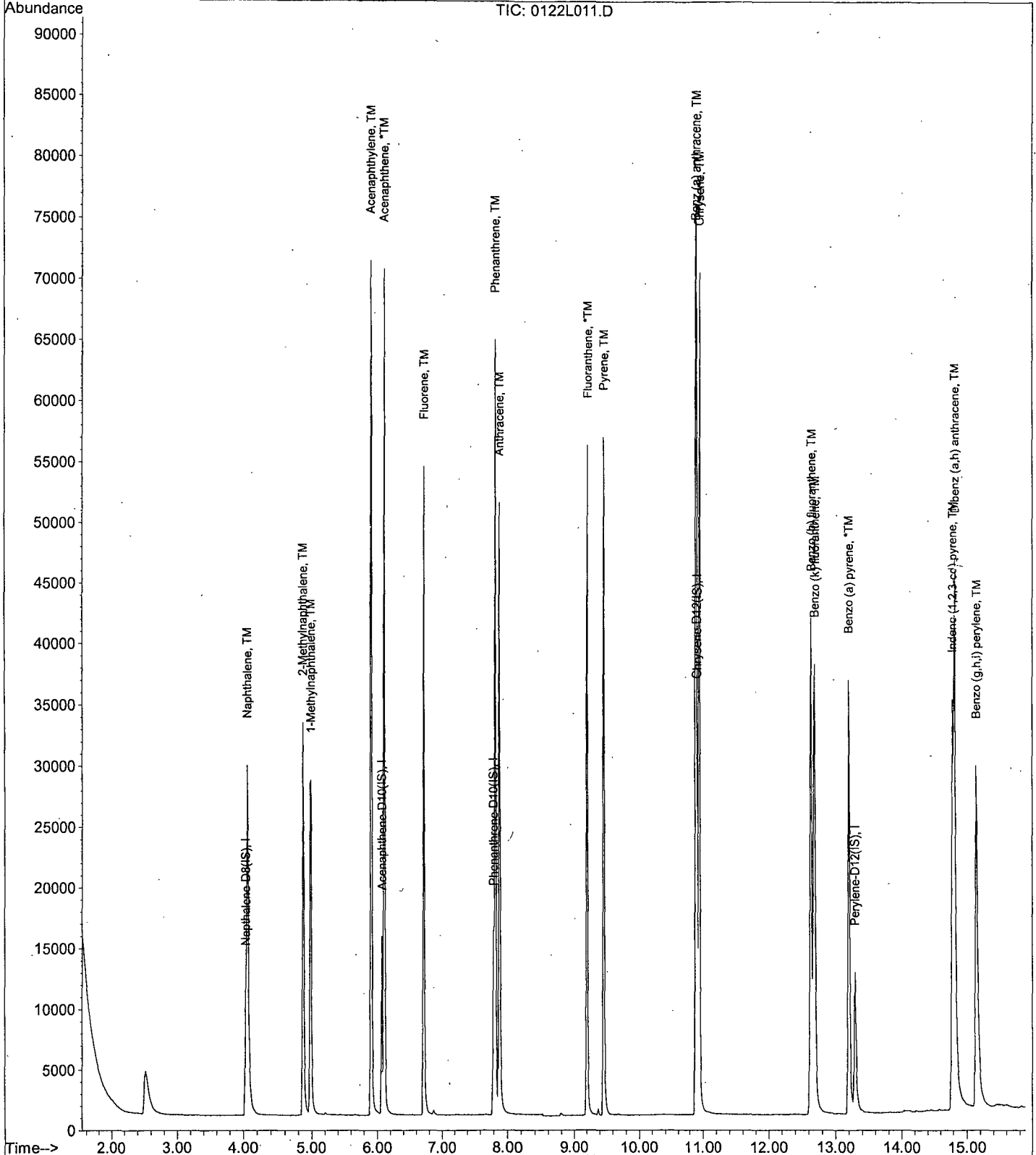
Data File : M:\LINUS\DATA\L190122\0122L011.D  
 Acq On : 22 Jan 19 12:59  
 Sample : SS SIM 01/18/19  
 Misc :

Vial: 11  
 Operator: MA  
 Inst : Linus  
 Multiplr: 1.00

Quant Time: Feb 5 14:36 2019

Quant Results File: L0122.RES

Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
 Title : EPA 8270  
 Last Update : Tue Jan 22 13:02:31 2019  
 Response via : Initial Calibration



PAH by GCMS SIM  
EPA 8270 SIM

Form 7

Continuing Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: \_\_\_\_\_

SDG No: \_\_\_\_\_  
Date Analyzed: 02/15/19  
Instrument: Linus  
Initial Cal. Date: 01/22/19  
Data File: 0122L324.D

		Compound	MEAN	CCRF	%D	%Drift
1	I	Napthalene-D8(IS)	ISTD			I
2	S	Surrogate Recovery (NBZ)	0.4410	0.4503	2.1	S
3	TM	Naphthalene	1.259	1.215	3.6	TM
4	S	2-Methylnaphthalene-D10 (2MN)	1.146	1.263	10	S
5	TM	2-Methylnaphthalene	0.7605	0.7639	0.45	TM
6	TM	1-Methylnaphthalene	0.7682	0.7534	1.9	TM
7	I	Acenaphthene-D10(IS)	ISTD			I
8	S	Surrogate Recovery (FBP)	1.768	1.788	1.1	S
9	TM	Acenaphthylene	5.597	5.474	2.2	TM
10	*TM	Acenaphthene	1.638	1.561	4.7	*TM
11	TM	Fluorene	1.910	1.900	0.53	TM
12	I	Phenanthrene-D10(IS)	ISTD			I
13	TM	Phenanthrene	1.405	1.380	1.8	TM
14	TM	Anthracene	1.396	1.475	5.6	TM
15	S	Fluoranthene-D10 (FRT)	1.750	1.833	4.8	S
16	*TM	Fluoranthene	2.198	2.091	4.9	*TM
17	I	Chrysene-D12(IS)	ISTD			I
18	TM	Pyrene	1.545	1.648	6.7	TM
19	S	Surrogate Recovery (TPH)	0.8072	0.8755	8.5	S
20	TM	Benz (a) anthracene	1.383	1.417	2.5	TM
21	TM	Chrysene	1.324	1.412	6.7	TM
22	TM	Indeno (1,2,3-cd) pyrene	1.366	1.555	14	TM
23	I	Perylene-D12(IS)	ISTD			I
24	TM	Benzo (b) fluoranthene	1.350	1.403	3.9	TM
25	TM	Benzo (k) fluoranthene	1.374	1.430	4.1	TM
26	*TM	Benzo (a) pyrene	1.292	1.355	4.9	*TM
27	TM	Dibenz (a,h) anthracene	1.189	1.256	5.6	TM
28	TM	Benzo (g,h,i) perylene	1.201	1.256	4.6	TM
29						
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Average

4.6

Quantitation Report (Not Reviewed)

Data File : M:\LINUS\DATA\L190122\0122L324.D Vial: 24  
 Acq On : 15 Feb 19 6:43 Operator: MA  
 Sample : 5 SIM 01/18/19 (2) Inst : Linus  
 Misc : Multiplr: 1.00

Quant Time: Feb 15 7:17 2019 Quant Results File: L0122.RES

Quant Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
 Title : EPA 8270  
 Last Update : Tue Jan 22 13:02:31 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SIM\_2

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Napthalene-D8 (IS)	4.05	136	25691	2.50000	ppb	0.00
7) Acenaphthene-D10 (IS)	6.07	164	11751	2.50000	ppb	-0.01
12) Phenanthrene-D10 (IS)	7.80	188	22752	2.50000	ppb	-0.01
17) Chrysene-D12 (IS)	10.91	240	30129	2.50000	ppb	-0.01
23) Perylene-D12 (IS)	13.34	264	31101	2.50000	ppb	0.01
System Monitoring Compounds						
2) Surrogate Recovery (NBZ)	3.24	82	11568	2.55264	ppb	0.01
Spiked Amount	5.000		Recovery	=	51.060%	
4) 2-Methylnaphthalene-D10 (2)	4.83	152	32455	2.75697	ppb	-0.02
Spiked Amount	5.000		Recovery	=	55.140%	
8) Surrogate Recovery (FBP)	5.30	172	21012	2.52871	ppb	-0.02
Spiked Amount	5.000		Recovery	=	50.580%	
15) Fluoranthene-D10 (FRT)	9.18	212	41706	2.61908	ppb	-0.01
Spiked Amount	5.000		Recovery	=	52.380%	
19) Surrogate Recovery (TPH)	9.67	244	26377	2.71130	ppb	-0.01
Spiked Amount	5.000		Recovery	=	54.220%	
Target Compounds						
3) Naphthalene	4.06	128	62411	4.82236	ppb	99
5) 2-Methylnaphthalene	4.87	142	39251	5.02235	ppb	100
6) 1-Methylnaphthalene	4.99	142	38712	4.90397	ppb	95
9) Acenaphthylene	5.90	152	128658	4.89007	ppb	100
10) Acenaphthene	6.11	154	36676	4.76269	ppb	96
11) Fluorene	6.71	166	44658	4.97362	ppb	100
13) Phenanthrene	7.82	178	62818	4.91248	ppb	99
14) Anthracene	7.89	178	67111	5.28086	ppb	98
16) Fluoranthene	9.21	202	95160	4.75628	ppb #	87
18) Pyrene	9.47	202	99330	5.33512	ppb	97
20) Benz (a) anthracene	10.90	228	85381	5.12418	ppb	97
21) Chrysene	10.95	228	85084	5.33336	ppb #	97
22) Indeno (1,2,3-cd) pyrene	14.84	276	93726	5.69348	ppb #	85
24) Benzo (b) fluoranthene	12.67	252	87260	5.19388	ppb	99
25) Benzo (k) fluoranthene	12.72	252	88959	5.20435	ppb	98
26) Benzo (a) pyrene	13.24	252	84303	5.24635	ppb #	97
27) Dibenz (a,h) anthracene	14.86	278	78116	5.28181	ppb	99
28) Benzo (g,h,i) perylene	15.21	276	78136	5.23036	ppb	96



Quantitation Report

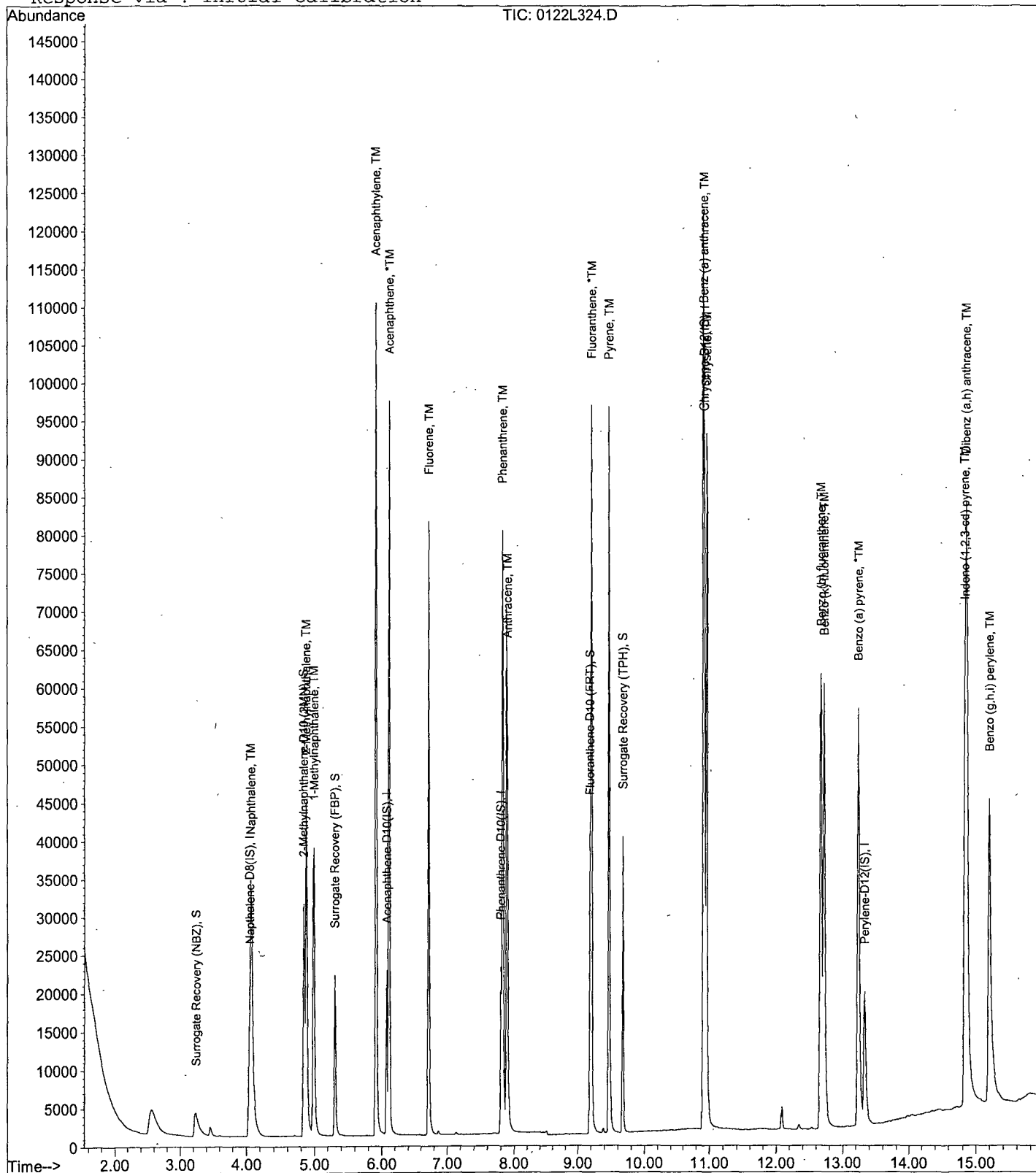
Data File : M:\LINUS\DATA\L190122\0122L324.D  
 Acq On : 15 Feb 19 6:43  
 Sample : 5 SIM 01/18/19 (2)  
 Misc :

Vial: 24  
 Operator: MA  
 Inst : Linus  
 Multiplr: 1.00

Quant Time: Feb 15 7:17 2019

Quant Results File: L0122.RES

Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
 Title : EPA 8270  
 Last Update : Tue Jan 22 13:02:31 2019  
 Response via : Initial Calibration



PAH by GCMS SIM  
EPA 8270 SIM

Form 7

Continuing Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: \_\_\_\_\_

SDG No: \_\_\_\_\_  
Date Analyzed: 02/15/19  
Instrument: Linus  
Initial Cal. Date: 01/22/19  
Data File: 0122L333.D

		Compound	MEAN	CCRF	%D	%Drift
1	I	Napthalene-D8(IS)	ISTD			I
2	S	Surrogate Recovery (NBZ)	0.4410	0.4647	5.4	S
3	TM	Napthalene	1.259	1.227	2.5	TM
4	S	2-Methylnapthalene-D10 (2MN)	1.146	1.255	9.5	S
5	TM	2-Methylnapthalene	0.7605	0.7612	0.10	TM
6	TM	1-Methylnapthalene	0.7682	0.7439	3.2	TM
7	I	Acenaphthene-D10(IS)	ISTD			I
8	S	Surrogate Recovery (FBP)	1.768	1.796	1.6	S
9	TM	Acenaphthylene	5.597	5.488	1.9	TM
10	*TM	Acenaphthene	1.638	1.573	4.0	*TM
11	TM	Fluorene	1.910	1.920	0.49	TM
12	I	Phenanthrene-D10(IS)	ISTD			I
13	TM	Phenanthrene	1.405	1.415	0.68	TM
14	TM	Anthracene	1.396	1.400	0.23	TM
15	S	Fluoranthene-D10 (FRT)	1.750	1.845	5.5	S
16	*TM	Fluoranthene	2.198	2.127	3.3	*TM
17	I	Chrysene-D12(IS)	ISTD			I
18	TM	Pyrene	1.545	1.597	3.4	TM
19	S	Surrogate Recovery (TPH)	0.8072	0.8875	9.9	S
20	TM	Benz (a) anthracene	1.383	1.469	6.3	TM
21	TM	Chrysene	1.324	1.285	2.9	TM
22	TM	Indeno (1,2,3-cd) pyrene	1.366	1.452	6.3	TM
23	I	Perylene-D12(IS)	ISTD			I
24	TM	Benzo (b) fluoranthene	1.350	1.322	2.1	TM
25	TM	Benzo (k) fluoranthene	1.374	1.522	11	TM
26	*TM	Benzo (a) pyrene	1.292	1.351	4.6	*TM
27	TM	Dibenz (a,h) anthracene	1.189	1.247	4.9	TM
28	TM	Benzo (g,h,i) perylene	1.201	1.223	1.8	TM
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32						
33						
34						
35						
36						
37						
38						
39						
40						

Average

4.0

Data File : M:\LINUS\DATA\L190122\0122L333.D  
 Acq On : 15 Feb 19 14:48  
 Sample : 5' SIM 01/18/19 (2)  
 Misc :

Vial: 33  
 Operator: MA  
 Inst : Linus  
 Multiplr: 1.00

Quant Time: Feb 15 15:15 2019

Quant Results File: L0122.RES

Quant Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
 Title : EPA 8270  
 Last Update : Tue Jan 22 13:02:31 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SIM\_2

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-D8 (IS)	4.05	136	22518	2.50000	ppb	0.00
7) Acenaphthene-D10 (IS)	6.07	164	10148	2.50000	ppb	-0.01
12) Phenanthrene-D10 (IS)	7.80	188	19759	2.50000	ppb	-0.01
17) Chrysene-D12 (IS)	10.91	240	26539	2.50000	ppb	-0.01
23) Perylene-D12 (IS)	13.35	264	26041	2.50000	ppb	0.02
<b>System Monitoring Compounds</b>						
2) Surrogate Recovery (NBZ)	3.22	82	10464	2.63439	ppb	0.00
Spiked Amount	5.000		Recovery	=	52.680%	
4) 2-Methylnaphthalene-D10 (2)	4.83	152	28253	2.73821	ppb	-0.02
Spiked Amount	5.000		Recovery	=	54.760%	
8) Surrogate Recovery (FBP)	5.30	172	18226	2.53990	ppb	-0.02
Spiked Amount	5.000		Recovery	=	50.800%	
15) Fluoranthene-D10 (FRT)	9.18	212	36464	2.63675	ppb	-0.01
Spiked Amount	5.000		Recovery	=	52.740%	
19) Surrogate Recovery (TPH)	9.67	244	23553	2.74852	ppb	0.00
Spiked Amount	5.000		Recovery	=	54.980%	
<b>Target Compounds</b>						
						Qvalue
3) Naphthalene	4.07	128	55272	4.87254	ppb	100
5) 2-Methylnaphthalene	4.87	142	34283	5.00479	ppb	100
6) 1-Methylnaphthalene	4.99	142	33502	4.84199	ppb	94
9) Acenaphthylene	5.90	152	111391	4.90256	ppb	99
10) Acenaphthene	6.11	154	31923	4.80030	ppb	98
11) Fluorene	6.71	166	38961	5.02456	ppb	99
13) Phenanthrene	7.82	178	55905	5.03410	ppb	99
14) Anthracene	7.89	178	55309	5.01142	ppb	99
16) Fluoranthene	9.21	202	84044	4.83698	ppb	# 84
18) Pyrene	9.47	202	84757	5.16820	ppb	99
20) Benz (a) anthracene	10.90	228	77987	5.31356	ppb	97
21) Chrysene	10.96	228	68213	4.85423	ppb	99
22) Indeno (1,2,3-cd) pyrene	14.85	276	77053	5.31382	ppb	# 81
24) Benzo (b) fluoranthene	12.67	252	68865	4.89544	ppb	# 97
25) Benzo (k) fluoranthene	12.72	252	79267	5.53842	ppb	99
26) Benzo (a) pyrene	13.24	252	70343	5.22819	ppb	# 97
27) Dibenz (a,h) anthracene	14.87	278	64934	5.24362	ppb	98
28) Benzo (g,h,i) perylene	15.21	276	63673	5.09041	ppb	# 90

(#) = qualifier out of range (m) = manual integration  
 0122L333.D L0122.M Fri Feb 15 15:15:17 2019

Quantitation Report

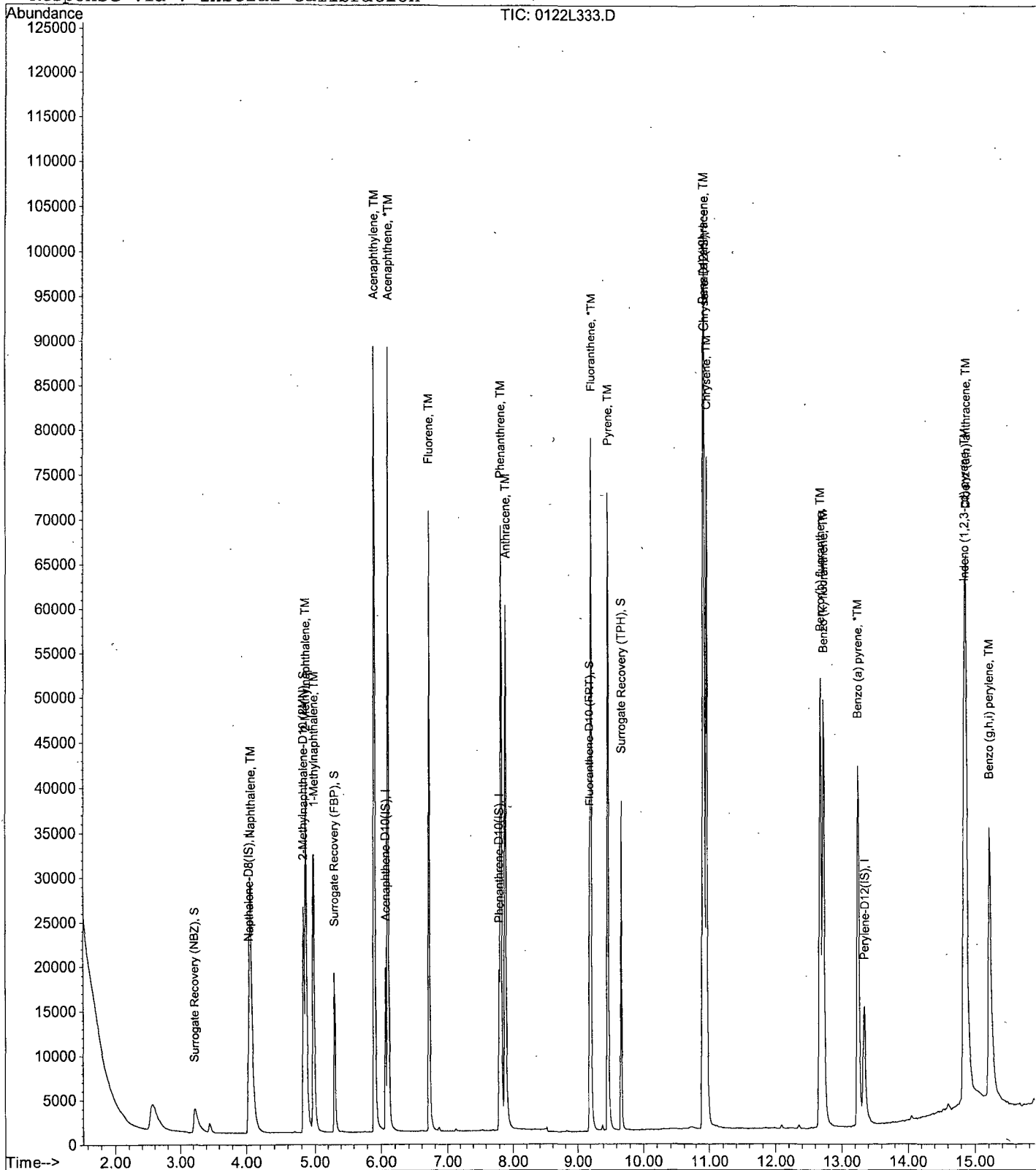
Data File : M:\LINUS\DATA\L190122\0122L333.D  
 Acq On : 15 Feb 19 14:48  
 Sample : 5 SIM 01/18/19 (2)  
 Misc :

Vial: 33  
 Operator: MA  
 Inst : Linus  
 Multiplr: 1.00

Quant Time: Feb 15 15:15 2019

Quant Results File: L0122.RES

Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
 Title : EPA 8270  
 Last Update : Tue Jan 22 13:02:31 2019  
 Response via : Initial Calibration



**ORGANICS**  
**Raw Data**

Data File : M:\LINUS\DATA\L190122\0122L328.D Vial: 28  
 Acq On : 15 Feb 19 8:48 Operator: MA  
 Sample : AZ86200W20 1/800 Inst : Linus  
 Misc : Multiplr: 1.25

Quant Time: Feb 15 9:31 2019 Quant Results File: L0122.RES

Quant Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
 Title : EPA 8270  
 Last Update : Tue Jan 22 13:02:31 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SIM\_2

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Napthalene-D8 (IS)	4.05	136	17952	2.5000	ppb	0.00
7) Acenaphthene-D10 (IS)	6.07	164	8984	2.5000	ppb	-0.01
12) Phenanthrene-D10 (IS)	7.81	188	17983	2.5000	ppb	0.00
17) Chrysene-D12 (IS)	10.92	240	25152	2.5000	ppb	0.00
23) Perylene-D12 (IS)	13.35	264	25305	2.5000	ppb	0.02
System Monitoring Compounds						
2) Surrogate Recovery (NBZ)	3.21	82	280879	110.8737	ppb	-0.01
Spiked Amount	6.250		Recovery	=	1773.984%	
4) 2-Methylnaphthalene-D10 (2)	4.84	152	46731	7.1012	ppb	-0.01
Spiked Amount	6.250		Recovery	=	113.616%	
8) Surrogate Recovery (FBP)	5.31	172	477858	94.0255	ppb	-0.01
Spiked Amount	6.250		Recovery	=	1504.400%	
15) Fluoranthene-D10 (FRT)	9.20	212	60879	6.0462	ppb	0.00
Spiked Amount	6.250		Recovery	=	96.736%	
19) Surrogate Recovery (TPH)	9.68	244	598490	92.1151	ppb	0.00
Spiked Amount	6.250		Recovery	=	1473.840%	

Target Compounds Qvalue

Quantitation Report

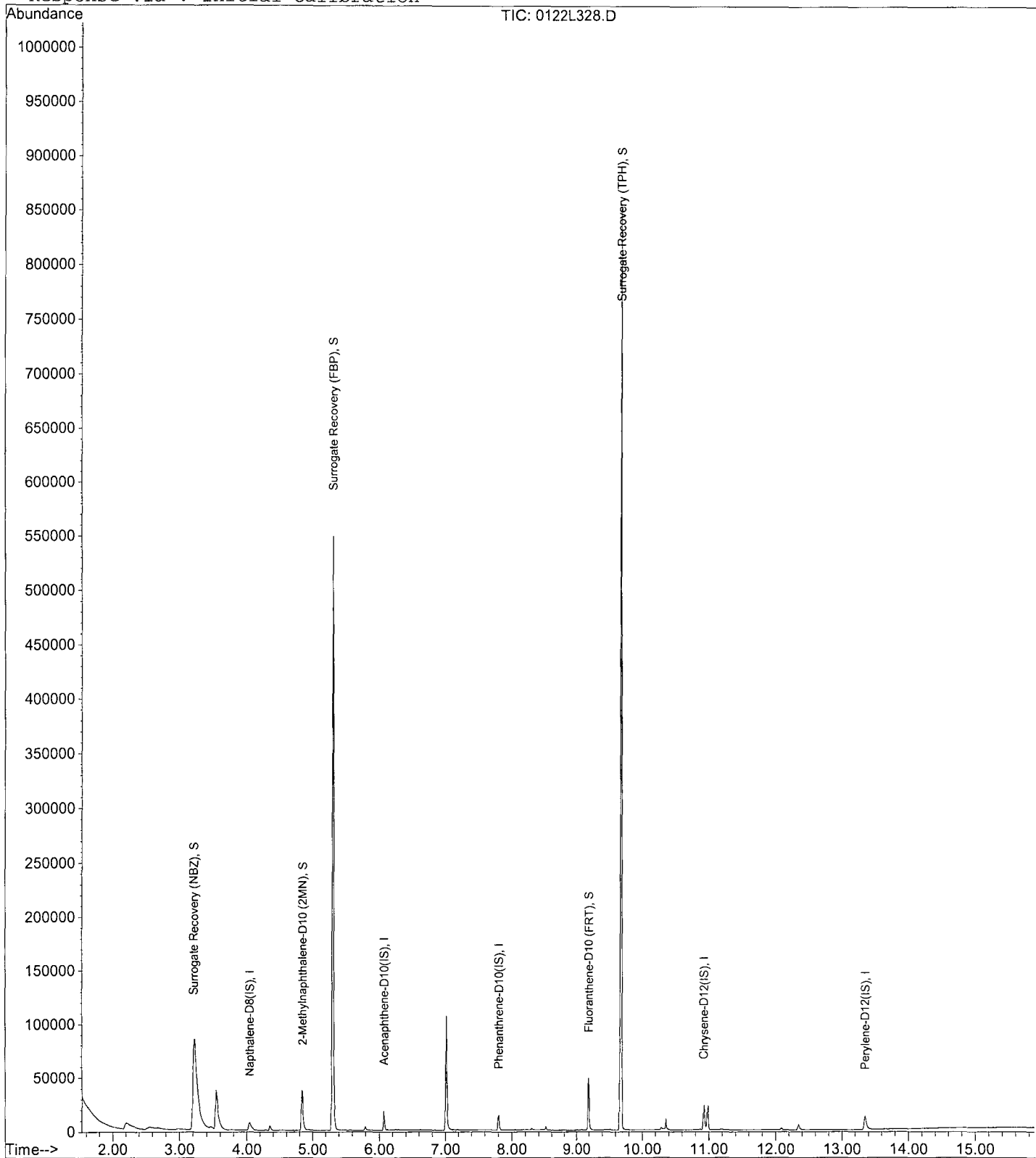
Data File : M:\LINUS\DATA\L190122\0122L328.D  
Acq On : 15 Feb 19 8:48  
Sample : AZ86200W20 1/800  
Misc :

Vial: 28  
Operator: MA  
Inst : Linus  
Multiplr: 1.25

Quant Time: Feb 15 9:31 2019

Quant Results File: L0122.RES

Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
Title : EPA 8270  
Last Update : Tue Jan 22 13:02:31 2019  
Response via : Initial Calibration



Data File : M:\LINUS\DATA\L190122\0122L325.D Vial: 25  
 Acq On : 15 Feb 19 7:41 Operator: MA  
 Sample : 190212A BLK 1/800 Inst : Linus  
 Misc : Multiplr: 1.25

Quant Time: Feb 15 9:32 2019 Quant Results File: L0122.RES

Quant Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
 Title : EPA 8270  
 Last Update : Tue Jan 22 13:02:31 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SIM\_2

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Napthalene-D8 (IS)	4.05	136	18764	2.5000	ppb	0.00
7) Acenaphthene-D10 (IS)	6.07	164	9143	2.5000	ppb	-0.01
12) Phenanthrene-D10 (IS)	7.81	188	18630	2.5000	ppb	0.00
17) Chrysene-D12 (IS)	10.92	240	25798	2.5000	ppb	0.00
23) Perylene-D12 (IS)	13.35	264	25598	2.5000	ppb	0.02

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Surrogate Recovery (NBZ)	3.21	82	277430	104.7732	ppb	-0.01
Spiked Amount	6.250		Recovery	= 1676.368%		
4) 2-Methylnaphthalene-D10 (2)	4.83	152	45149	6.5639	ppb	-0.02
Spiked Amount	6.250		Recovery	= 105.024%		
8) Surrogate Recovery (FBP)	5.31	172	474569	91.7544	ppb	-0.01
Spiked Amount	6.250		Recovery	= 1468.064%		
15) Fluoranthene-D10 (FRT)	9.20	212	59984	5.7505	ppb	0.00
Spiked Amount	6.250		Recovery	= 92.000%		
19) Surrogate Recovery (TPH)	9.68	244	580812	87.1558	ppb	0.00
Spiked Amount	6.250		Recovery	= 1394.496%		

Target Compounds Qvalue



Quantitation Report

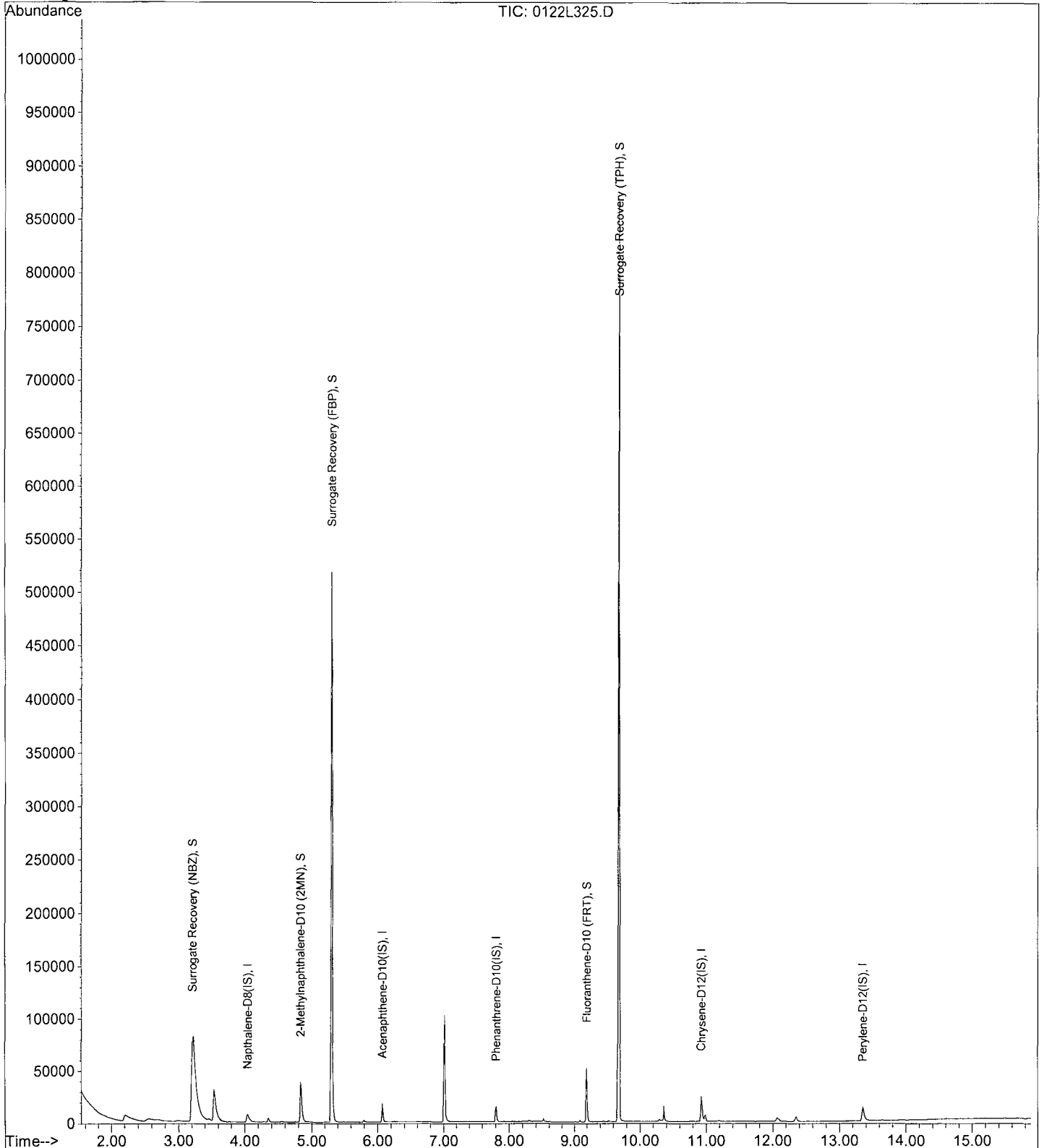
Data File : M:\LINUS\DATA\L190122\0122L325.D  
Acq On : 15 Feb 19 7:41  
Sample : 190212A BLK 1/800  
Misc :

Vial: 25  
Operator: MA  
Inst : Linus  
Multiplr: 1.25

Quant Time: Feb 15 9:32 2019

Quant Results File: L0122.RES

Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
Title : EPA 8270  
Last Update : Tue Jan 22 13:02:31 2019  
Response via : Initial Calibration



Data File : M:\LINUS\DATA\L190122\0122L326.D  
 Acq On : 15 Feb 19 8:03  
 Sample : 190212A LCS-2 1/800  
 Misc :

Vial: 26  
 Operator: MA  
 Inst : Linus  
 Multiplr: 1.25

Quant Time: Feb 15 8:41 2019

Quant Results File: L0122.RES

Quant Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
 Title : EPA 8270  
 Last Update : Tue Jan 22 13:02:31 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SIM\_2

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-D8 (IS)	4.05	136	19137	2.5000	ppb	0.00
7) Acenaphthene-D10 (IS)	6.07	164	9392	2.5000	ppb	-0.01
12) Phenanthrene-D10 (IS)	7.80	188	19179	2.5000	ppb	-0.01
17) Chrysene-D12 (IS)	10.91	240	26464	2.5000	ppb	-0.01
23) Perylene-D12 (IS)	13.34	264	26357	2.5000	ppb	0.01
System Monitoring Compounds						
2) Surrogate Recovery (NBZ)	3.26	82	1259	0.4662	ppb	0.04
Spiked Amount	6.250		Recovery	=	7.456%	
4) 2-Methylnaphthalene-D10 (2)	4.83	152	43795	6.2430	ppb	-0.02
Spiked Amount	6.250		Recovery	=	99.888%	
8) Surrogate Recovery (FBP)	5.30	172	28	0.0053	ppb	-0.02
Spiked Amount	6.250		Recovery	=	0.080%	
15) Fluoranthene-D10 (FRT)	9.18	212	59363	5.5280	ppb	-0.01
Spiked Amount	6.250		Recovery	=	88.448%	
19) Surrogate Recovery (TPH)	9.68	244	170	0.0249	ppb	0.00
Spiked Amount	6.250		Recovery	=	0.400%	
Target Compounds						
3) Naphthalene	4.07	128	41503	5.3814	ppb	100
5) 2-Methylnaphthalene	4.87	142	26818	5.7584	ppb	99
6) 1-Methylnaphthalene	4.99	142	26832	5.7039	ppb	95
9) Acenaphthylene	5.90	152	86363	5.1337	ppb	99
10) Acenaphthene	6.11	154	25811	5.2421	ppb	97
11) Fluorene	6.71	166	31320	5.4553	ppb	100
13) Phenanthrene	7.82	178	46268	5.3654	ppb	100
14) Anthracene	7.89	178	45146	5.2679	ppb	99
16) Fluoranthene	9.21	202	70636	5.2353	ppb	# 88
18) Pyrene	9.47	202	68894	5.2660	ppb	99
20) Benz (a) anthracene	10.90	228	61379	5.2423	ppb	98
21) Chrysene	10.96	228	65763	5.8664	ppb	98
22) Indeno (1,2,3-cd) pyrene	14.85	276	66313	5.7326	ppb	# 78
24) Benzo (b) fluoranthene	12.67	252	58403	5.1274	ppb	# 98
25) Benzo (k) fluoranthene	12.72	252	66147	5.7079	ppb	99
26) Benzo (a) pyrene	13.24	252	54881	5.0376	ppb	# 97
27) Dibenz (a,h) anthracene	14.87	278	55227	5.5079	ppb	97
28) Benzo (g,h,i) perylene	15.21	276	54894	5.4199	ppb	# 92

(#) = qualifier out of range (m) = manual integration  
 0122L326.D L0122.M Mon Feb 18 10:26:32 2019

Quantitation Report

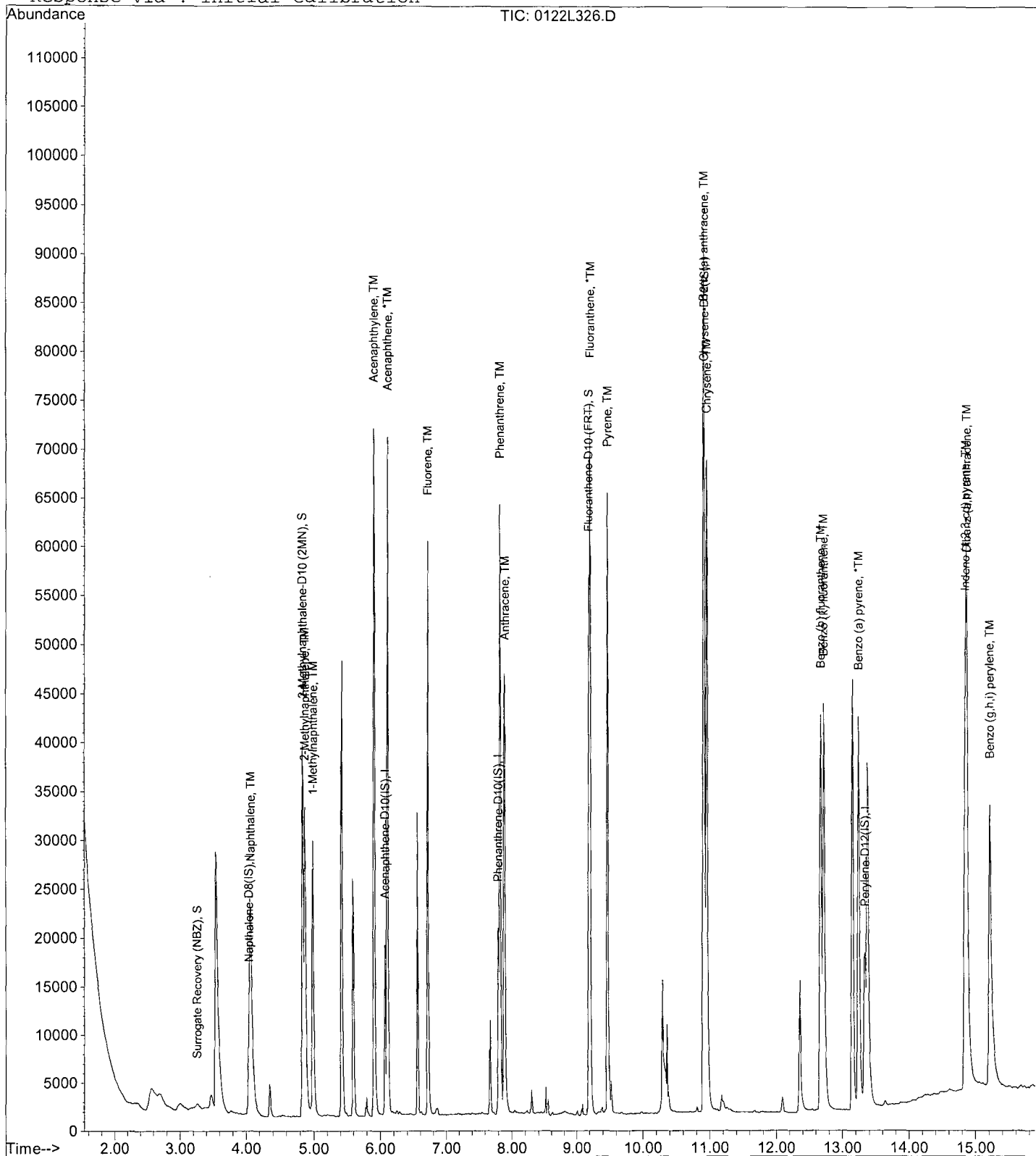
Data File : M:\LINUS\DATA\L190122\0122L326.D  
Acq On : 15 Feb 19 8:03  
Sample : 190212A LCS-2 1/800  
Misc :

Vial: 26  
Operator: MA  
Inst : Linus  
Multiplr: 1.25

Quant Time: Feb 15 8:41 2019

Quant Results File: L0122.RES

Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
Title : EPA 8270  
Last Update : Tue Jan 22 13:02:31 2019  
Response via : Initial Calibration



Data File : M:\LINUS\DATA\L190122\0122L327.D Vial: 27  
 Acq On : 15 Feb 19 8:25 Operator: MA  
 Sample : 190212A LCSD-2 1/800 Inst : Linus  
 Misc : Multiplr: 1.25

Quant Time: Feb 15 9:30 2019 Quant Results File: L0122.RES

Quant Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
 Title : EPA 8270  
 Last Update : Tue Jan 22 13:02:31 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SIM\_2

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-D8 (IS)	4.05	136	22461	2.5000	ppb	0.00
7) Acenaphthene-D10 (IS)	6.07	164	10266	2.5000	ppb	-0.01
12) Phenanthrene-D10 (IS)	7.80	188	20105	2.5000	ppb	-0.01
17) Chrysene-D12 (IS)	10.91	240	26743	2.5000	ppb	-0.01
23) Perylene-D12 (IS)	13.33	264	27180	2.5000	ppb	0.00
System Monitoring Compounds						
2) Surrogate Recovery (NBZ)	3.19	82	322	0.1016	ppb	-0.04
Spiked Amount	6.250		Recovery	=	1.632%	
4) 2-Methylnaphthalene-D10 (2)	4.83	152	44546	5.4103	ppb	-0.02
Spiked Amount	6.250		Recovery	=	86.560%	
8) Surrogate Recovery (FBP)	5.30	172	12	0.0021	ppb	-0.02
Spiked Amount	6.250		Recovery	=	0.032%	
15) Fluoranthene-D10 (FRT)	9.18	212	60066	5.3359	ppb	-0.01
Spiked Amount	6.250		Recovery	=	85.376%	
19) Surrogate Recovery (TPH)	9.68	244	57	0.0083	ppb	0.00
Spiked Amount	6.250		Recovery	=	0.128%	
Target Compounds						
3) Naphthalene	4.07	128	42787	4.7269	ppb	100
5) 2-Methylnaphthalene	4.87	142	27776	5.0814	ppb	99
6) 1-Methylnaphthalene	4.99	142	26959	4.8828	ppb	94
9) Acenaphthylene	5.90	152	88400	4.8074	ppb	100
10) Acenaphthene	6.11	154	25920	4.8160	ppb	96
11) Fluorene	6.71	166	31950	5.0913	ppb	98
13) Phenanthrene	7.82	178	46342	5.1265	ppb	99
14) Anthracene	7.89	178	46126	5.1343	ppb	99
16) Fluoranthene	9.21	202	69416	4.9079	ppb	# 86
18) Pyrene	9.47	202	69545	5.2603	ppb	99
20) Benz (a) anthracene	10.90	228	62041	5.2436	ppb	98
21) Chrysene	10.96	228	64680	5.7096	ppb	98
22) Indeno (1,2,3-cd) pyrene	14.85	276	67028	5.7340	ppb	# 74
24) Benzo (b) fluoranthene	12.67	252	62090	5.2861	ppb	99
25) Benzo (k) fluoranthene	12.72	252	64308	5.3812	ppb	99
26) Benzo (a) pyrene	13.24	252	55566	4.9460	ppb	98
27) Dibenzo (a,h) anthracene	14.87	278	55832	5.3996	ppb	96
28) Benzo (g,h,i) perylene	15.22	276	54463	5.2146	ppb	95

(#) = qualifier out of range (m) = manual integration  
 0122L327.D L0122.M Mon Feb 18 10:26:34 2019

Quantitation Report

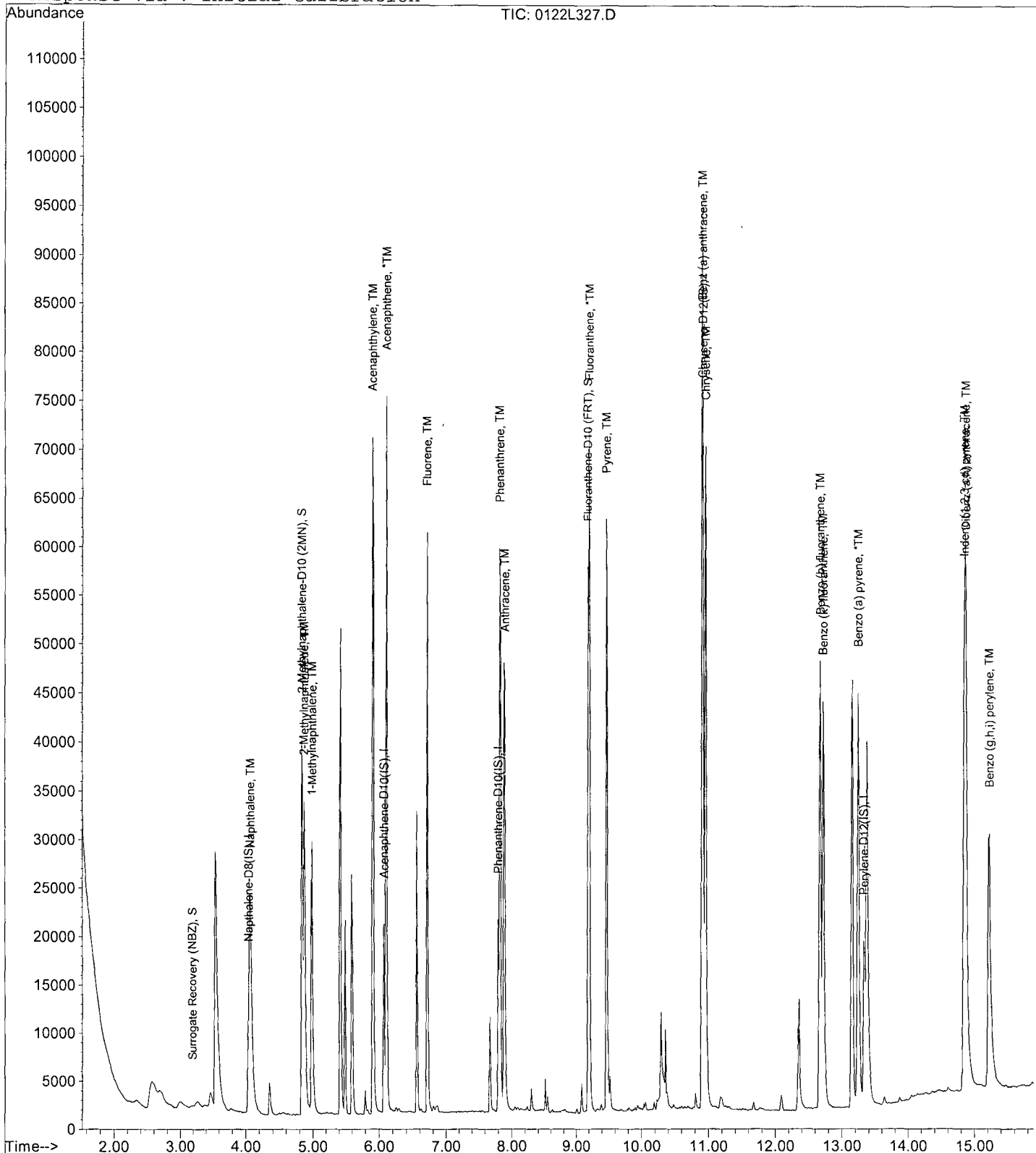
Data File : M:\LINUS\DATA\L190122\0122L327.D  
Acq On : 15 Feb 19 8:25  
Sample : 190212A LCSD-2 1/800  
Misc :

Vial: 27  
Operator: MA  
Inst : Linus  
Multiplr: 1.25

Quant Time: Feb 15 9:30 2019

Quant Results File: L0122.RES

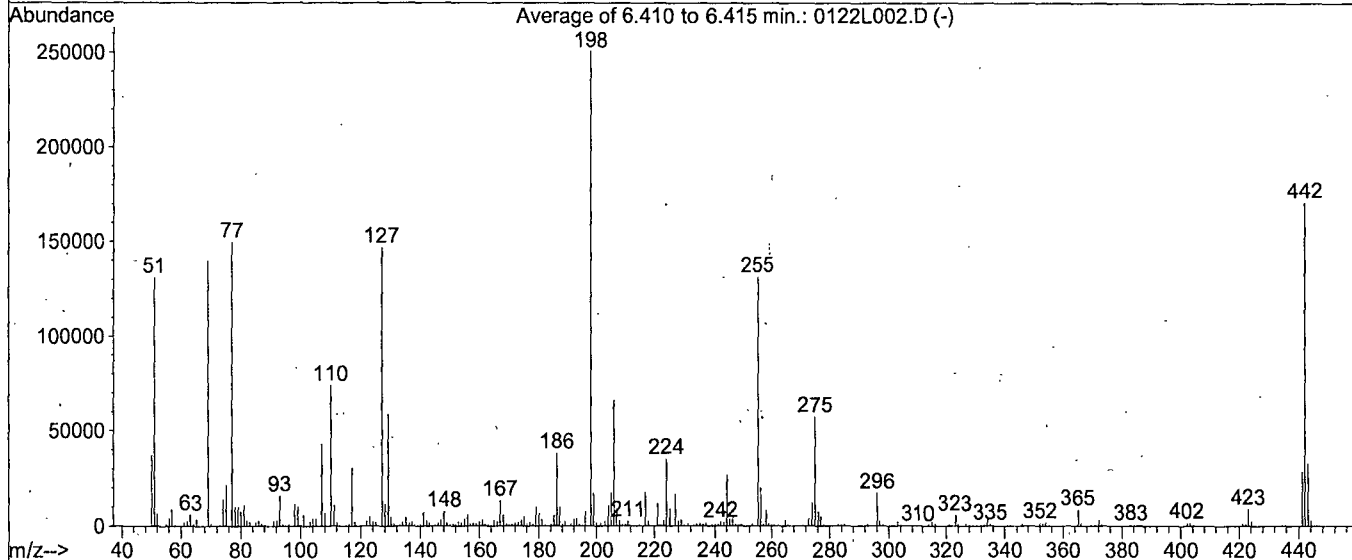
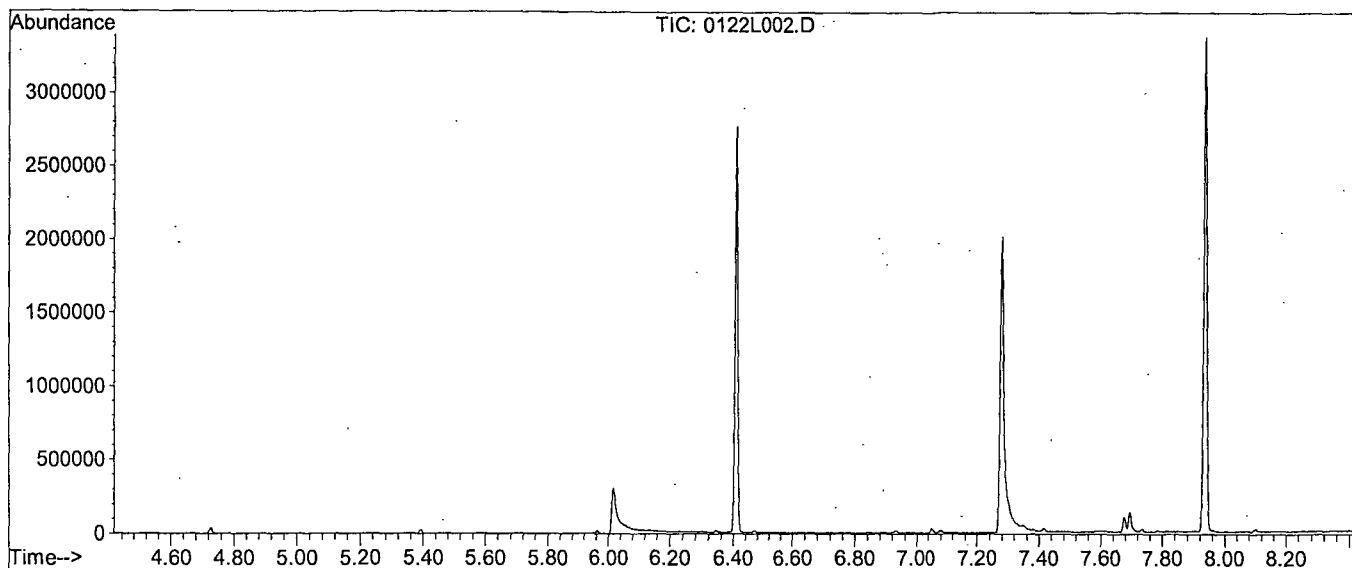
Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
Title : EPA 8270  
Last Update : Tue Jan 22 13:02:31 2019  
Response via : Initial Calibration



Data File : M:\LINUS\DATA\L190122\0122L002.D  
 Acq On : 22 Jan 19 9:21  
 Sample : SV Tune 10/11/18  
 Misc :

Vial: 2  
 Operator: MA  
 Inst : Linus  
 Multiplr: 1.00

Method : M:\LINUS\DATA\L190122\L0115.M (RTE Integrator)  
 Title : EPA 8270



AutoFind: Scans 1536, 1537, 1538; Background Corrected with Scan 1526

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result
51	198	10	80	52.3	131012	PASS
68	69	0.00	2	0.0	0	PASS
70	69	0.00	2	0.8	1098	PASS
127	198	10	80	58.6	146811	PASS
197	198	0.00	2	0.0	0	PASS
198	198	100	100	100.0	250517	PASS
199	198	5	9	6.7	16904	PASS
275	198	10	60	22.8	57021	PASS
365	198	1	100	3.3	8323	PASS
441	442	0.01	24	16.7	28459	PASS
442	198	50	150	68.2	170773	PASS
443	442	15	24	19.2	32747	PASS

Data File Name: 0122L002.D  
Data File Path: M:\LINUS\DATA\190122\  
Operator: MA  
Date Acquired: 22 Jan 2019 09:21  
Method File: DFTPP2.M  
Sample Name: SV Tune 10/11/18  
Vial Number: 2  
Instrument Name: Linus

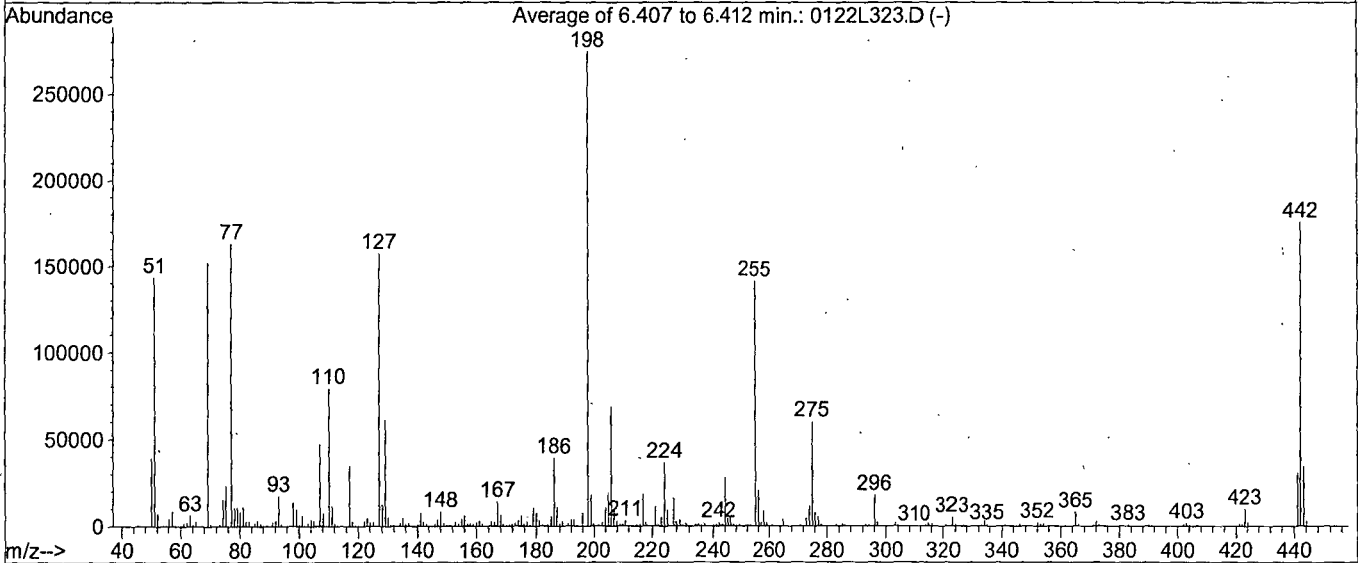
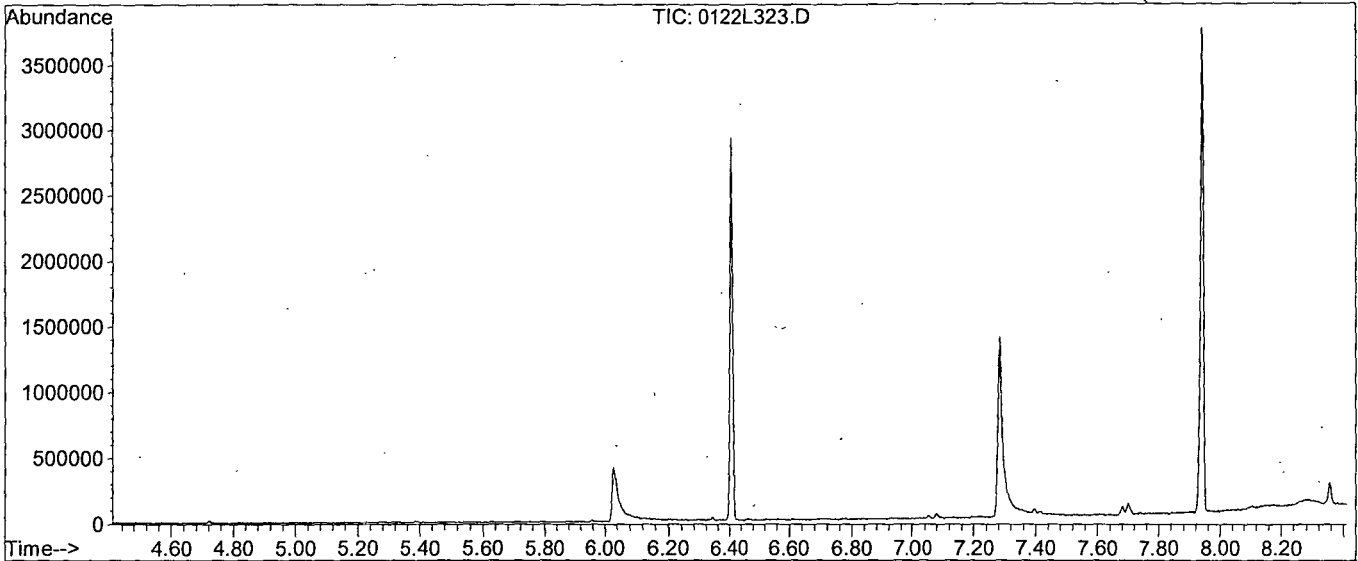
#	Name	Ret Time	Target Response
1)	DDT	7.95	23063100
2)	DDD	7.71	1029070
3)	DDE	7.88	0

Breakdown 4.27

Data File : M:\LINUS\DATA\L190122\0122L323.D  
 Acq On : 15 Feb 19 6:27  
 Sample : SV TUNE 11/10/18  
 Misc :

Vial: 23  
 Operator: MA  
 Inst : Linus  
 Multiplr: 1.00

Method : M:\LINUS\DATA\L190122\L0122.M (RTE Integrator)  
 Title : EPA 8270



AutoFind: Scans 1535, 1536, 1537; Background Corrected with Scan 1526

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	52.3	143747	PASS
68	69	0.00	2	0.0	0	PASS
70	69	0.00	2	0.8	1233	PASS
127	198	10	80	57.3	157507	PASS
197	198	0.00	2	0.0	0	PASS
198	198	100	100	100.0	274795	PASS
199	198	5	9	6.7	18278	PASS
275	198	10	60	21.9	60109	PASS
365	198	1	100	3.0	8118	PASS
441	442	0.01	24	17.6	31013	PASS
442	198	50	150	64.0	175936	PASS
443	442	15	24	19.7	34632	PASS



Data File Name: 0122L323.D  
Data File Path: M:\LINUS\DATA\190122\  
Operator: MA  
Date Acquired: 15 Feb 2019 06:27  
Method File: DFTPP2.M  
Sample Name: SV TUNE 11/10/18  
Vial Number: 23  
Instrument Name: Linus

#	Name	Ret Time	Target Response
1)	DDT	7.95	25654400
2)	DDD	7.71	670236
3)	DDE	7.88	0

Breakdown 2.55

# Organic Extraction Worksheet

<b>Method</b>	Continuous Liquid/Liquid SVOC 3520C	<b>Extraction Set</b>	190212A	<b>Extraction Method</b>	LIQ003	<b>Units</b>	mL
Spiked ID 1	8270T Spike 1-30-19 EXP 10-20-19	Surrogate ID 1	8270 Surrogate 12-6-18 EXP 10-17-19				
Spiked ID 2	Sim Spike 1-30-19 EXP 1-30-20	Surrogate ID 2	SIM Surrogate 1-24-19 EXP 6-7-19				
Spiked ID 3	DMTHX SPK 200ug/MI 1-23-19 exp 7-23-19	Surrogate ID 3					
Spiked ID 4	HEXACHLOROPHENE Amplue 10,000ug/mL 2-12-19 exp 2-12-20	Surrogate ID 4					
Spiked ID 5		Surrogate ID 5					
Spiked ID 6		Sufficient Vol for Matrix QC:		NO			
Spiked ID 7		Ext. Start Time:		02/12/19 14:00, 02/13/19 11:30			
Spiked ID 8		Ext. End Time:		02/13/19 8:00, 02/14/19 07:00, 02/14/19 11:10			
		GC Requires Extract By:		02/15/19 0:00			
pH1	2	02/12/19 1:15:00 PM	Water Bath Temp Criteria		78 °C		
pH2	14	2/13/19 11:10:00 AM					
pH3							

Spiked By: DL

Date 02/12/19

Witnessed By: YL

Date 02/12/19

Sample	Sample Container	Spike Amount	Spike ID	Surrogate Amount	Surrogate ID	Extract Amount	Final Volume	pH	Extract Date/Time	Comments
1	190212A Blk			1,0.050	1,2	800	1	2/1	02/12/19 13:07	
					equip	E-HP51 E-WB6				
2	190212A LCS-1	0.250	1	1	1	800	1	2/1	02/12/19 13:07	
					equip	E-HP50 E-WB6				
3	190212A LCS-2	0.0250	2	0.050	2	800	1	2/1	02/12/19 13:07	
					equip	E-HP49 E-WB6				
4	190212A LCS-3	0.250,0.045	3,4	1	1	800	1	2/1	02/12/19 13:07	
					equip	E-HP48 E-WB6				
5	190212A LCSD-1	0.250	1	1	1	800	1	2/1	02/12/19 13:07	
					equip	E-HP47 E-WB6				
6	190212A LCSD-2	0.0250	2	0.050	2	800	1	2/1	02/12/19 13:07	
					equip	E-HP25 E-WB6				
7	190212A LCSD-3	0.250,0.045	3,4	1	1	800	1	2/1	02/12/19 13:07	
					equip	E-HP26 E-WB6				
8	AZ86189 AZ86189W31			1,0.050	1,2	800	1	2/1	02/12/19 13:07	88059
					equip	E-HP27 E-WB6				
9	AZ86200 AZ86200W20			1,0.050	1,2	800	1	2/1	02/12/19 13:07	88062
					equip	E-HP28 E-WB6				
10	AZ86276 AZ86276W12			1,0.050	1,2	800	1	2/1	02/12/19 13:07	88071
					equip	E-HP29 E-WB6				
11	AZ86277 AZ86277W14			1,0.050	1,2	800	1	2/1	02/12/19 13:07	88071
					equip	E-HP30 E-WB6				

*KL 2/14/19*

Solvent and Lot#	
PH Strips	hc 849161
Dichloromethane (DCM)	18g19401
1+1 H2SO4	11-28-18
10N NaOH	1-8-19
Filter Paper	400147
Acidified Na2SO4	11-27-18
B. Na2SO4	17h095210

Extraction COC Transfer	
Extraction lab employee Initials	KY
GC analyst's initials	OA
Date	02/15/19
Time	7:17
Refrigerator	GC-C

Technician's Initials	
Scanned By	DL
Sample Preparation	DL
Extraction	DL
Concentration	DL
Modified	02/14/19 4:52:01 PM

Reviewed By: *KL* Page 182 of 630 Date *2/14/19*

Name of Final Standard SIM Curve Prep'd By (Initials) GA  
 Prep Date 01/18/19  
 Exp Date 06/01/19

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
1.0 ug/mL SIM	APPL	1.0 ug/mL SIM	1.0 ug/mL	01/18/19	06/01/19	10 uL	100uL	MC 56258.90uL	0.1ug/mL
SIM Internal Standard	APPL	SIM Internal Standard	125 ug/mL	11/06/18	11/06/19	2 uL			2.5ug/mL
1.0 ug/mL SIM	APPL	1.0 ug/mL SIM	1.0 ug/mL	01/18/19	06/01/19	20 uL	100uL	MC 56258.80uL	0.2 ug/mL
SIM Internal Standard	APPL	SIM Internal Standard	125 ug/mL	11/06/18	11/06/19	2 uL			2.5ug/mL
5.0 ug/mL SIM	APPL	5.0 ug/mL SIM	5.0 ug/mL	01/18/19	06/01/19	10 uL	100uL	MC 56258.90uL	0.5 ug/mL
SIM Internal Standard	APPL	SIM Internal Standard	125 ug/mL	11/06/18	11/06/19	2 uL			2.5ug/mL
5.0 ug/mL SIM	APPL	5.0 ug/mL SIM	5.0 ug/mL	01/18/19	06/01/19	20 uL	100uL	MC 56258.80 uL	1.0 ug/mL
SIM Internal Standard	APPL	SIM Internal Standard	125 ug/mL	11/06/18	11/06/19	2 uL			2.5ug/mL
PAH SIM STOCK	APPL	PAH SIM STOCK	200 ug/mL	CL13117-40078	12/28/19	5 uL	200uL	MC 56258.190uL	5.0 ug/mL
SIM 2S SURROGATE	APPL	SIM 2S SURR	100 ug/mL	06/07/18	06/01/19	5 uL			2.5ug/mL
SIM Internal Standard	APPL	SIM Internal Standard	125 ug/mL	11/06/18	11/06/19	4 uL			2.5ug/mL
PAH SIM STOCK	APPL	PAH SIM STOCK	200 ug/mL	CL13117-40078	12/28/19	5 uL	100 uL	MC 56258.90 uL	10.ug/mL
SIM 2S SURROGATE	APPL	SIM 2S SURROGATE	100 ug/mL	06/07/18	06/01/19	5 uL			2.5ug/mL
SIM Internal Standard	APPL	SIM Internal Standard	125 ug/mL	11/06/18	11/06/19	2 uL			2.5ug/mL
PAH SIM STOCK	APPL	PAH SIM STOCK	200	CL13117-40078	12/28/19	25 uL	100uL	MC 56258.50 uL	50.ug/mL
SIM 2S SURROGATE	APPL	SIM 2S SURROGATE	100 ug/mL	06/07/18	06/01/19	25 uL			2.5ug/mL
SIM Internal Standard	APPL	SIM Internal Standard	125 ug/mL	11/06/18	11/06/19	2 uL			2.5ug/mL
PAH SIM STOCK	APPL	PAH SIM STOCK	200 ug/mL	CL13117-40078	12/28/19	50 uL	100uL	na	100ug/mL
SIM 2S SURROGATE	APPL	SIM 2S SURROGATE	100 ug/mL	06/07/18	06/01/19	50 uL			2.5ug/mL
SIM Internal Standard	APPL	SIM Internal Standard	125 ug/mL	11/06/18	11/06/19	2 uL			2.5ug/mL

Name of Final Standard 8270 PAH SIM Second Source Prep'd By (Initials) GA  
 Prep Date 01/18/19  
 Exp Date 06/01/19

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
PAH SIM SS Stock	Phenova	AL0-130490	200 ug/mL	CL13121-40082	12/28/19	5 uL	200uL	MC 56258.195uL	5.ug/mL
SIM Internal Standard	APPL	SIM Internal Standard	125 ug/mL	11/06/18	11/06/19	4 uL			2.5ug/mL

Name of Final Standard 8270 SIM PAH Internal Standard  
 Prep Date 11/06/18  
 Exp Date 11/06/19

Prep'd By (Initials) GA

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
SV Internal Standard	Restek	31206	2000 ug/mL	A0130603-38560	11/06/19	350 uL	5,600 uL	MC 56258 5,250 uL	125 ug/mL

Name of Final Standard PAH SIM Spike (Ampules)  
 Prep Date 12/17/18  
 Exp Date 12/17/19

Prep'd By (Initials) OA

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
8270D PAH SIM	O2SI	110780-01	200 ug/mL	353450-39730	12/17/19	1 mL	1 mL	NA	200ug/mL

Name of  
Final  
Standard

SIM Surrogate

Prep'd By (Initials)

GA

Prep Date 01/24/19

Exp Date 06/07/19

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Allquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
Sim Surrogate Deuterated	Restek	33913	2000 ug/mL	A0131716 - 38554 A0137718 - 39318	06/07/19 01/24/20	1250 uL	25 mL	Acetone #1017171	100 ug/mL

## Injection Log

Directory: M:\LINUS\DATA\L190122\

Vial	FileName	Multiplier	SampleName	Misc Info	Injected
2	0122L002.D	1	SV Tune	10/11/18	22 Jan 19 9:21
3	0122L003.D	1	0.1 SIM	01/18/19	22 Jan 19 9:37
4	0122L004.D	1	0.2 SIM	01/18/19	22 Jan 19 9:59
5	0122L005.D	1	0.5 SIM	01/18/19	22 Jan 19 10:21
6	0122L006.D	1	1 SIM	01/18/19	22 Jan 19 10:43
7	0122L007.D	1	5 SIM	01/18/19	22 Jan 19 11:30
8	0122L008.D	1	10 SIM	01/18/19	22 Jan 19 11:53
9	0122L009.D	1	50 SIM	01/18/19	22 Jan 19 12:15
10	0122L010.D	1	100 SIM	01/18/19	22 Jan 19 12:37
11	0122L011.D	1	SS SIM	01/18/19	22 Jan 19 12:59
23	0122L323.D	1	SV TUNE	11/10/18	15 Feb 19 6:27
24	0122L324.D	1	5 SIM	01/18/19 (2)	15 Feb 19 6:43
25	0122L325.D	1.25	190212A BLK	1/800	15 Feb 19 7:41
26	0122L326.D	1.25	190212A LCS-2	1/800	15 Feb 19 8:03
27	0122L327.D	1.25	190212A LCSD-2	1/800	15 Feb 19 8:25
28	0122L328.D	1.25	AZ86200W20	1/800	15 Feb 19 8:48
33	0122L333.D	1	5 SIM	01/18/19 (2)	15 Feb 19 14:48

**ORGANICS**  
**Calibration Data**

Semi-Volatile Analysis by GC-MS  
EPA 8270

Form 6  
Initial Calibration

Lab Name: APPL, Inc.

Case No: \_\_\_\_\_

Matrix: \_\_\_\_\_

SDG No: \_\_\_\_\_

Initial Cal. Date: 02/08/19

Instrument: Yoda

Initials: \_\_\_\_\_

0208Y003.D 0208Y004.D 0208Y005.D 0208Y006.D 0208Y007.D 0208Y008.D 0208Y009.D 0208Y010.D 0208Y011.D

		Compound	4	5	10	20	40	50	60	80	100		Avg	%RSD	Type	r <sup>2</sup>	Q	MRF	
1	I	1,4-dichlorobenzene-D4(IS)	ISTD																
2	L	1,4-Dioxane			0.0758	0.1590	0.1522	0.1438	0.1456	0.1468			0.14	22	L	0.993			
3	TM	n-Nitrosodimethylamine		0.3432	0.3038	0.2455	0.2737	0.2550	0.2480	0.2275	0.2323		0.27	15	TM				
4	TML	Pyridine			1.409	1.029	0.8204	0.7197	0.6751	0.6421	0.6189		0.84	34	TML	0.996			
5	S	2-Fluorophenol (S)		1.193	1.316	1.280	1.322	1.285	1.280	1.266	1.231		1.3	3.3	S				
6	S	Phenol-D6 (S)		1.632	1.779	1.720	1.766	1.692	1.685	1.665	1.597		1.7	3.7	S				
7	*TM	Phenol		1.949	1.943	1.799	1.943	1.717	1.683	1.677	1.629		1.8	7.5	*TM			0.800	
8	TM	Aniline		1.464	1.362	1.255	1.606	1.408	1.486	1.359			1.4	7.9	TM				
9	TM	Bis (2-chloroethyl) ether		1.084	0.9200	0.8398	0.9128	0.8361	0.8068	0.7956	0.7912		0.87	11	TM			0.700	
10	TM	2-Chlorophenol		1.414	1.414	1.289	1.331	1.244	1.224	1.214	1.185		1.3	6.9	TM			0.800	
11	TM	1,3-DCB		1.540	1.498	1.345	1.379	1.308	1.274	1.266	1.255		1.4	8.0	TM				
12	*TM	1,4-DCB		1.627	1.522	1.360	1.407	1.328	1.287	1.299	1.276		1.4	9.1	*TM				
13	TM	Benzyl alcohol		0.4333	0.5511	0.5758	0.6851	0.6469	0.6503	0.6740	0.6928		0.61	14	TM				
14	TM	1,2-DCB		1.488	1.463	1.281	1.335	1.243	1.217	1.212	1.189		1.3	8.9	TM				
15	TM	2-Methylphenol		1.208	1.238	1.146	1.170	1.087	1.064	1.055	1.041		1.1	6.6	TM			0.700	
16	TM	Bis (2-chloroisopropyl) ether		1.440	1.407	1.297	1.333	1.237	1.214	1.201	1.173		1.3	7.7	TM			0.010	
17	TM	Acetophenone		1.976	1.924	1.760	1.814	1.682	1.629	1.623	1.561		1.7	8.6	TM			0.010	
18	TM	3&4-Methylphenol		1.453	1.480	1.364	1.428	1.310	1.279	1.253	1.201		1.3	7.5	TM			0.600	
19	**TM	n-Nitrosodi-n-propylamine		1.172	1.142	1.037	1.051	0.9664	0.9384	0.9249	0.8902		1.0	10	**TM			0.500	
20	TM	Hexachloroethane		0.5855	0.5555	0.5078	0.5338	0.5003	0.4900	0.4886	0.4891		0.52	7.0	TM			0.300	
21	I	Napthalene-D8(IS)	ISTD																
22	S	Nitrobenzene-D5(S)		0.3676	0.3712	0.3600	0.3760	0.3701	0.3622	0.3632	0.3615		0.37	1.5	S				
23	TM	Nitrobenzene		0.3833	0.3864	0.3423	0.3676	0.3424	0.3284	0.3292	0.3282		0.35	7.0	TM			0.200	
24	TM	Isophorone		0.6775	0.6527	0.5956	0.6362	0.6002	0.5729	0.5750	0.5779		0.61	6.5	TM			0.400	
25	*TM	2-Nitrophenol		0.1686	0.1720	0.1617	0.1732	0.1638	0.1576	0.1589	0.1597		0.16	3.7	*TM			0.100	
26	TM	2,4-Dimethylphenol		0.2940	0.2944	0.2656	0.2821	0.2649	0.2522	0.2524	0.2530		0.27	6.7	TM			0.200	
27	TML	Benzoic acid		0.0650	0.1206	0.1617	0.2138	0.2063	0.2071	0.2171			0.17	34	TML	0.998			
28	TM	Bis (2-chloroethoxy) methane		0.4139	0.3938	0.3604	0.3747	0.3543	0.3421	0.3383	0.3352		0.36	7.7	TM			0.300	
29	*TM	2,4-Dichlorophenol		0.2684	0.2658	0.2410	0.2564	0.2414	0.2301	0.2306	0.2279		0.25	6.6	*TM			0.200	
30	TM	1,2,4-Trichlorobenzene		0.3022	0.2873	0.2594	0.2739	0.2549	0.2451	0.2434	0.2428		0.26	8.4	TM				
31	TM	3,4-Dimethylphenol		0.4585	0.4216	0.3853	0.4114	0.3835	0.3682	0.3685	0.3649		0.40	8.3	TM				
32	TM	Napthalene		1.031	0.9835	0.8779	0.9134	0.8596	0.8180	0.8126	0.8032		0.89	9.4	TM			0.700	
33	TM	4-Chloroaniline		0.3577	0.3592	0.3410	0.3689	0.3501	0.3331	0.3223	0.2724		0.34	9.0	TM			0.010	
34	TM	2,6-Dichlorophenol		0.2733	0.2641	0.2376	0.2515	0.2345	0.2227	0.2219	0.2160		0.24	8.7	TM				
35	TM	Hexachloropropene		0.1621	0.1674	0.1560	0.1712	0.1629	0.1575	0.1552	0.1565		0.16	3.6	TM				



## Form 6

## Initial Calibration

Lab Name: APPL, Inc.

SDG No: \_\_\_\_\_

Case No: \_\_\_\_\_

Initial Cal. Date: 02/08/19

Matrix: \_\_\_\_\_

Instrument: Yoda

Initials: \_\_\_\_\_

		Compound	4	5	10	20	40	50	60	80	100		Avg	%RSD	Type		Q
36	*TM	Hexachlorobutadiene		0.1614	0.1500	0.1349	0.1443	0.1343	0.1299	0.1305	0.1291		0.14	8.3	*TM		0.010
37	TM	Caprolactum		0.1462	0.1432	0.1272	0.1286	0.1215	0.1161	0.1161	0.1158		0.13	9.6	TM		0.010
38	*TM	4-Chloro-3-methylphenol		0.2956	0.2805	0.2617	0.2833	0.2665	0.2548	0.2597	0.2589		0.27	5.4	*TM		0.200
39	TM	2-Methylnaphthalene		0.6515	0.6259	0.5648	0.5865	0.5600	0.5343	0.5322	0.5247		0.57	8.1	TM		0.400
40	TM	1-Methylnaphthalene		0.6764	0.6469	0.5903	0.6091	0.5794	0.5506	0.5433	0.5390		0.59	8.4	TM		
41	I	Acenaphthene-D10(IS)	ISTD														
42	**TML	Hexachlorocyclopentadiene		0.0832	0.1263	0.1573	0.2143	0.2088	0.2162	0.2294	0.2327		0.18	30	**TML	0.998	0.050
43	TM	1,2,4,5-Tetrachlorobenzene		0.5414	0.5071	0.4596	0.4843	0.4471	0.4370	0.4296	0.4291		0.47	8.7	TM		0.010
44	*TM	2,4,6-Trichlorophenol		0.3507	0.3399	0.3153	0.3377	0.3070	0.3036	0.3047	0.3036		0.32	6.0	*TM		0.200
45	TM	2,4,5-Trichlorophenol		0.3709	0.3607	0.3290	0.3589	0.3292	0.3221	0.3228	0.3203		0.34	6.1	TM		0.200
46	S	2-Fluorobiphenyl(S)		1.357	1.362	1.291	1.326	1.287	1.271	1.249	1.227		1.3	3.8	S		
47	TM	1,1'-Biphenyl		1.633	1.532	1.390	1.457	1.356	1.320	1.294	1.279		1.4	8.9	TM		0.010
48	TM	2-Chloronaphthalene		1.219	1.163	1.049	1.094	1.015	0.9817	0.9755	0.9658		1.1	8.8	TM		0.800
49	TM	2-Nitroaniline		0.3694	0.3689	0.3433	0.3849	0.3524	0.3419	0.3463	0.3475		0.36	4.4	TM		0.010
50	TM	Dimethyl phthalate		1.391	1.316	1.220	1.271	1.177	1.134	1.133	1.135		1.2	7.9	TM		0.010
51	TM	2,6-DNT		0.2809	0.2959	0.2787	0.2953	0.2801	0.2678	0.2712	0.2729		0.28	3.7	TM		0.200
52	TM	Acenaphthylene		1.893	1.820	1.652	1.721	1.617	1.532	1.536	1.516		1.7	8.5	TM		0.900
53	TM	3-Nitroaniline		0.3194	0.3316	0.3172	0.3436	0.3189	0.3070	0.3099	0.2916		0.32	4.9	TM		0.010
54	*TM	Acenaphthene		1.267	1.183	1.063	1.095	1.021	0.9827	0.9657	0.9604		1.1	10	*TM		0.900
55	**TML	2,4-Dinitrophenol		0.0202	0.0719	0.1090	0.1707	0.1658	0.1689	0.1818	0.1707		0.13	45	**TML	0.996	0.010
56	**TM	4-Nitrophenol		0.2113	0.2389	0.2304	0.1976	0.1877	0.1937	0.2137	0.2164		0.21	8.4	**TM		0.010
57	TM	Dibenzofuran		1.749	1.680	1.485	1.525	1.434	1.355	1.341	1.311		1.5	11	TM		0.800
58	TM	2,4-DNT		0.3680	0.4064	0.3775	0.3966	0.3699	0.3567	0.3573	0.3506		0.37	5.3	TM		0.200
59	TM	2,3,4,6-Tetrachlorophenol		0.2689	0.2641	0.2418	0.2641	0.2432	0.2379	0.2338	0.2360		0.25	5.8	TM		0.010
60	TM	Diethyl phthalate		1.373	1.285	1.157	1.199	1.101	1.071	1.065	1.078		1.2	9.7	TM		0.010
61	TM	4-Chlorophenyl phenyl ether		0.6826	0.6452	0.5853	0.5920	0.5573	0.5275	0.5204	0.5057		0.58	11	TM		0.400
62	TM	Fluorene		1.442	1.362	1.212	1.257	1.173	1.118	1.096	1.067		1.2	11	TM		0.900
63	TM	4-Nitroaniline		0.3057	0.3228	0.2898	0.3222	0.3009	0.2902	0.2856	0.2620		0.30	6.8	TM		0.010
64	S	2,4,6-Tribromopheno(S)		0.1284	0.1315	0.1284	0.1364	0.1321	0.1313	0.1312	0.1348		0.13	2.1	S		
65	I	Phenanthrene-D10(IS)	ISTD														
66	TML	4,6-Dinitro-2-methylphenol		0.0441	0.0901	0.1042	0.1348	0.1238	0.1237	0.1252	0.1274		0.11	27	TML	0.998	0.010
67	TM	Diphenyl amine		0.5767	0.5596	0.4975	0.5274	0.4799	0.4551	0.4497	0.4344		0.50	11	TM		
68	*TM	n-Nitrosodiphenylamine		0.5767	0.5596	0.4975	0.5274	0.4799	0.4551	0.4497	0.4344		0.50	11	*TM		0.010
69	TM	1,2-Diphenylhydrazine		0.7642	0.7620	0.6861	0.7308	0.6737	0.6328	0.7396	0.7297		0.71	6.5	TM		
70	TM	4-Bromophenyl phenyl ether		0.1782	0.1739	0.1587	0.1689	0.1559	0.1503	0.1516	0.1490		0.16	7.1	TM		0.100

Semi-Volatile Analysis by GC-MS  
EPA 8270

Form 6  
Initial Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: \_\_\_\_\_

SDG No: \_\_\_\_\_  
Initial Cal. Date: 02/08/19  
Instrument: Yoda

Initials: \_\_\_\_\_

		Compound	4	5	10	20	40	50	60	80	100	Avg	%RSD	Type		Q
71	TM	Hexachlorobenzene		0.1718	0.1689	0.1514	0.1620	0.1491	0.1437	0.1453	0.1469	0.15	7.2	TM		0.100
72	TM	Atrazine		0.1721	0.1762	0.1665	0.1816	0.1711	0.1661	0.1638	0.1641	0.17	3.7	TM		0.010
73	*TM	Pentachlorophenol		0.0743	0.0884	0.0872	0.1004	0.0951	0.0909	0.0950	0.0917	0.09	8.6	*TM		0.050
74	TM	Phenanthrene		1.089	1.043	0.9124	0.9682	0.8998	0.8566	0.8468	0.8355	0.93	10	TM		0.700
75	TM	Anthracene		1.095	1.067	0.9507	0.9889	0.9246	0.8857	0.8843	0.8673	0.96	9.0	TM		0.700
76	TM	Carbazol		0.9901	0.9681	0.8648	0.9185	0.8465	0.8088	0.8085	0.8039	0.88	8.5	TM		0.010
77	TM	Di-n-butylphthalate		1.120	1.124	1.024	1.090	1.011	0.9641	0.9733	0.9570	1.0	6.7	TM		0.010
78	*TM	Fluoranthene		1.145	1.102	0.9729	1.037	0.9607	0.9149	0.9153	0.9021	0.99	9.2	*TM		0.600
79	I	Chrysene-D12(IS)	ISTD													
80	TM	Benzidine		0.4977	0.4602	0.4308	0.4514	0.4230	0.4054	0.3945	0.2950	0.42	14	TM		
81	TM	Pyrene		1.362	1.314	1.174	1.245	1.164	1.092	1.104	1.076	1.2	8.9	TM		0.600
82	S	Terphenyl-D14(S)		0.8182	0.8339	0.7851	0.8313	0.8071	0.8096	0.8029	0.7967	0.81	2.1	S		
83	TM	Butyl benzylphthalate		0.5735	0.5736	0.5203	0.5709	0.5349	0.5138	0.5260	0.5136	0.54	5.0	TM		0.010
84	TM	3,3'-Dichlorobenzidine		0.4022	0.3925	0.3624	0.3953	0.3655	0.3481	0.3473	0.2985	0.36	9.3	TM		0.010
85	TM	Benz (a) anthracene		1.176	1.125	1.025	1.084	1.003	0.9520	0.9546	0.9415	1.0	8.5	TM		0.800
86	TM	Bis (2-ethylhexyl) phthalate		0.8376	0.8332	0.7321	0.7991	0.7290	0.6999	0.7062	0.6701	0.75	8.5	TM		0.010
87	TM	Chrysene		1.134	1.080	0.9324	1.021	0.9537	0.9197	0.9325	0.9297	0.99	8.2	TM		0.700
88	*TM	Di-n-octylphthalate		1.304	1.319	1.213	1.353	1.272	1.229	1.232	1.204	1.3	4.3	*TM		0.010
89	I	Perylene-D12(IS)	ISTD													
90	TM	Benzo (b) fluoranthene		1.104	1.075	1.037	1.105	0.9909	1.038	1.013	1.083	1.1	4.0	TM		0.700
91	TM	Benzo (k) fluoranthene		1.161	1.082	0.8954	1.022	0.9517	0.8305	0.8989	0.8046	0.96	13	TM		0.700
92	*TM	Benzo (a) pyrene	0.9861	1.004	0.9949	0.8818	0.9939	0.9155	0.8825	0.9015	0.8964	0.94	5.7	*TM		0.700
93	TM	Indeno (1,2,3-cd) pyrene		1.058	1.020	0.9324	1.040	0.9547	0.9226	0.9520	0.9365	0.98	5.5	TM		0.500
94	TM	Dibenz (a,h) anthracene	0.9306	0.9532	0.9277	0.8326	0.9317	0.8578	0.8317	0.8523	0.8439	0.88	5.6	TM		0.400
95	TM	Benzo (g,h,i) perylene		0.9128	0.8883	0.7909	0.8832	0.8059	0.7832	0.8076	0.7914	0.83	6.3	TM		0.500
96																
97																
98																
99																
100																
101																
102																
103																
104																
105																

Data File : M:\YODA\DATA\Y190208\0208Y003.D  
 Acq On : 8 Feb 19 15:12  
 Sample : 4ug/mL 8270 02/05/19  
 Misc :

Vial: 3  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Quant Time: Feb 11 9:31 2019

Quant Results File: Y0208NC.RES

Quant Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Mon Feb 11 09:30:25 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.42	152	490997	40.00000	ppb	0.00
21) Napthalene-D8 (IS)	6.86	136	2065848	40.00000	ppb	0.00
41) Acenaphthene-D10 (IS)	8.87	164	1087574	40.00000	ppb	0.00
65) Phenanthrene-D10 (IS)	10.61	188	2085482	40.00000	ppb	0.00
79) Chrysene-D12 (IS)	13.70	240	1828600	40.00000	ppb	-0.01
89) Perylene-D12 (IS)	15.57	264	1755424	40.00000	ppb	0.00

System Monitoring Compounds

5) 2-Fluorophenol (S)	0.00	112	0d	0.00000	ppb	
Spiked Amount 200.000			Recovery =	0.000%		
6) Phenol-D6 (S)	0.00	99	0d	0.00000	ppb	
Spiked Amount 200.000			Recovery =	0.000%		
22) Nitrobenzene-D5 (S)	0.00	82	0d	0.00000	ppb	
Spiked Amount 100.000			Recovery =	0.000%		
46) 2-Fluorobiphenyl (S)	0.00	172	0d	0.00000	ppb	
Spiked Amount 100.000			Recovery =	0.000%		
64) 2,4,6-Tribromophenol (S)	0.00	330	0d	0.00000	ppb	
Spiked Amount 200.000			Recovery =	0.000%		
82) Terphenyl-D14 (S)	0.00	244	0d	0.00000	ppb	
Spiked Amount 100.000			Recovery =	0.000%		

Target Compounds

	R.T.	QIon	Response	Conc	Units	Qvalue
92) Benzo (a) pyrene	15.48	252	173099	4.18161	ppb	97
94) Dibenz (a,h) anthracene	17.49	278	163363	4.19409	ppb	98

Quantitation Report

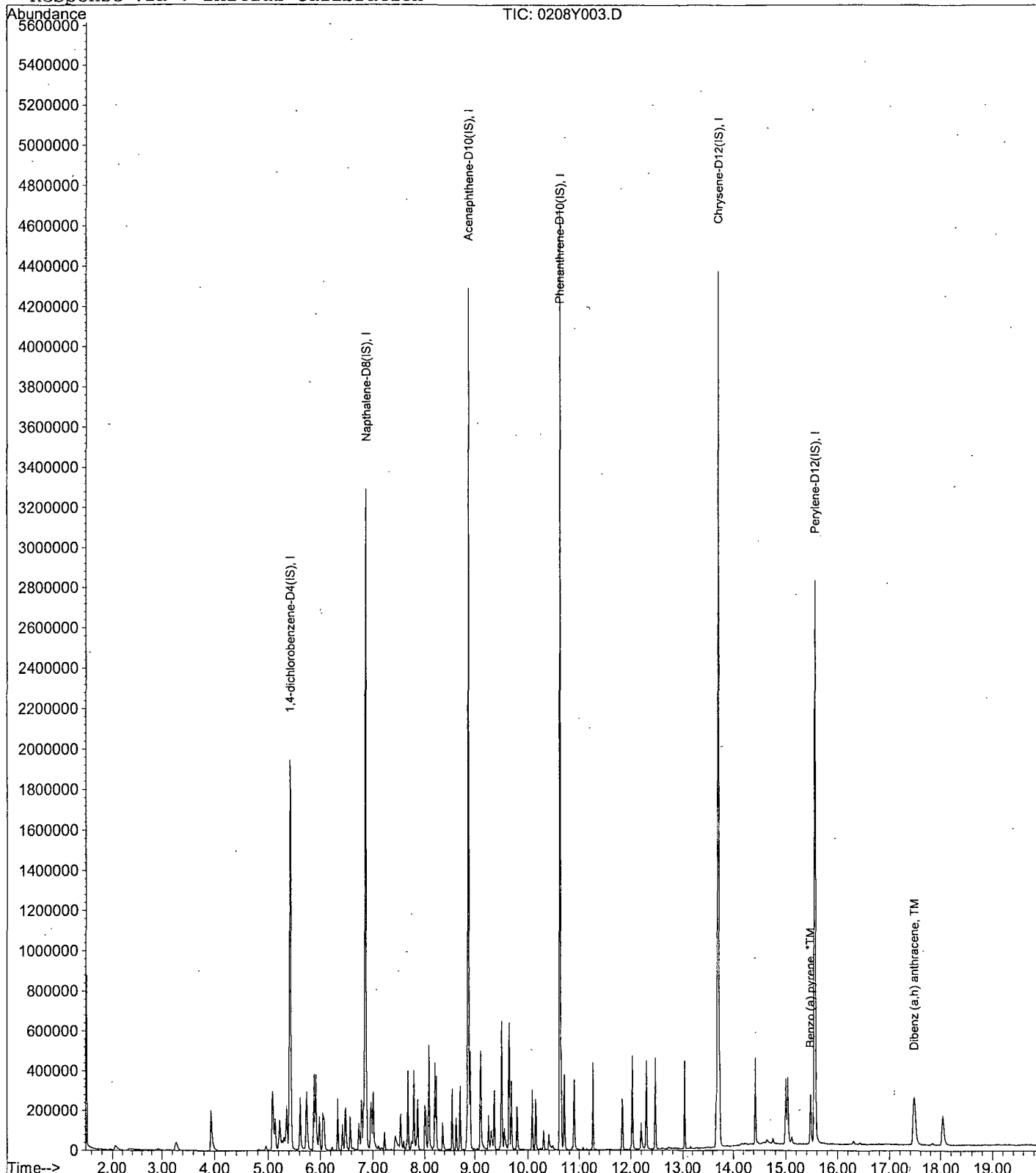
Data File : M:\YODA\DATA\Y190208\0208Y003.D  
Acq On : 8 Feb 19 15:12  
Sample : 4ug/mL 8270 02/05/19  
Misc :

Vial: 3  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Feb 11 9:31 2019

Quant Results File: Y0208NC.RES

Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Tue Feb 12 12:50:28 2019  
Response via : Initial Calibration



Data File : M:\YODA\DATA\Y190208\0208Y004.D  
 Acq On : 8 Feb 19 15:40  
 Sample : 5ug/mL 8270 02/05/19  
 Misc :

Vial: 4  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Quant Time: Feb 11 12:40 2019

Quant Results File: Y0208NC.RES

Quant Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTÉ Integrator)  
 Title : EPA 8270C  
 Last Update : Mon Feb 11 10:30:07 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.42	152	490188	40.00000	ppb	0.00
21) Napthalene-D8 (IS)	6.86	136	2052090	40.00000	ppb	0.00
41) Acenaphthene-D10 (IS)	8.87	164	1079382	40.00000	ppb	0.00
65) Phenanthrene-D10 (IS)	10.61	188	2120474	40.00000	ppb	0.00
79) Chrysene-D12 (IS)	13.70	240	1857726	40.00000	ppb	0.00
89) Perylene-D12 (IS)	15.57	264	1759012	40.00000	ppb	0.00

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
5) 2-Fluorophenol (S)	3.93	112	146195	9.38185	ppb	0.06
Spiked Amount 200.000			Recovery	=	4.691%	
6) Phenol-D6 (S)	5.08	99	199959	9.64329	ppb	0.04
Spiked Amount 200.000			Recovery	=	4.822%	
22) Nitrobenzene-D5 (S)	6.05	82	94299	5.01551	ppb	0.00
Spiked Amount 100.000			Recovery	=	5.016%	
46) 2-Fluorobiphenyl (S)	8.08	172	183054	5.23326	ppb	0.00
Spiked Amount 100.000			Recovery	=	5.233%	
64) 2,4,6-Tribromophenol (S)	9.80	330	34650	9.74573	ppb	0.00
Spiked Amount 200.000			Recovery	=	4.873%	
82) Terphenyl-D14 (S)	12.47	244	190007	5.04712	ppb	0.00
Spiked Amount 100.000			Recovery	=	5.047%	

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) 1,4-Dioxane	1.72	58	248	0.25579		# 1
3) n-Nitrosodimethylamine	2.04	42	21026	6.44720	ppb	100
4) Pyridine	2.29	79	9821	1.26377	ppb	100
7) Phenol	5.10	94	119427	5.43673	ppb	95
8) Aniline	5.13	93	78221m	4.35839	ppb	92
9) Bis (2-chloroethyl) ether	5.13	63	66417	6.20613	ppb	88
10) 2-Chlorophenol	5.23	128	86654	5.48398	ppb	99
11) 1,3-DCB	5.36	146	94332	5.66853	ppb	98
12) 1,4-DCB	5.45	146	99689	5.86004	ppb	99
13) Benzyl alcohol	5.62	108	26552	3.53072	ppb	92
14) 1,2-DCB	5.62	146	91168	5.70812	ppb	99
15) 2-Methylphenol	5.74	107	74004	5.36345	ppb	98
16) Bis (2-chloroisopropyl) et	5.73	45	88246	5.59195	ppb	82
17) Acetophenone	5.88	105	121069	5.65826	ppb	76
18) 3&4-Methylphenol	5.91	107	178102	10.79830	ppb	97
19) n-Nitrosodi-n-propylamine	5.88	70	71786	5.77035	ppb	98
20) Hexachloroethane	5.99	117	35877	5.64282	ppb	90
23) Nitrobenzene	6.07	77	98317	5.46042	ppb	99
24) Isophorone	6.34	82	173796	5.54463	ppb	99
25) 2-Nitrophenol	6.43	139	43242	5.12615	ppb	95
26) 2,4-Dimethylphenol	6.48	122	75406	5.44738	ppb	98
27) Benzoic acid	6.62	105	16669	5.85079	ppb	94
28) Bis (2-chloroethoxy) metha	6.57	93	106174	5.68439	ppb	98
29) 2,4-Dichlorophenol	6.73	162	68847	5.47293	ppb	99
30) 1,2,4-Trichlorobenzene	6.78	180	77523	5.73192	ppb	99
31) 3,4-Dimethylphenol	6.82	107	117617	5.80097	ppb	96
32) Napthalene	6.88	128	264469	5.80914	ppb	100
33) 4-Chloroaniline	7.00	127	91765	5.29071	ppb	96
34) 2,6-Dichlorophenol	6.95	162	70093	5.68839	ppb	99
35) Hexachloropropene	6.97	213	41593	5.03211	ppb	95
36) Hexachlorotadiene	7.01	225	41392	5.79207	ppb	99
37) Caprolactum	7.42	55	37503	5.76408	ppb	99

(#) = qualifier out of range (m) = manual integration

Data File : M:\YODA\DATA\Y190208\0208Y004.D  
 Acq On : 8 Feb 19 15:40  
 Sample : 5ug/mL 8270 02/05/19  
 Misc :

Vial: 4  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Quant Time: Feb 11 12:40 2019

Quant Results File: Y0208NC.RES

Quant Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Mon Feb 11 10:30:07 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
38) 4-Chloro-3-methylphenol	7.52	107	75831	5.47213	ppb	99
39) 2-Methylnaphthalene	7.67	142	167111	5.68988	ppb	100
40) 1-Methylnaphthalene	7.78	142	173498	5.71391	ppb	99
42) Hexachlorocyclopentadiene	7.83	237	11219	7.00018	ppb #	96
43) 1,2,4,5-Tetrachlorobenzene	7.86	216	73041	5.79740	ppb	96
44) 2,4,6-Trichlorophenol	8.00	196	47320	5.47455	ppb	99
45) 2,4,5-Trichlorophenol	8.08	196	50046	5.46678	ppb	96
47) 1,1'-Biphenyl	8.21	154	220270	5.79889	ppb	98
48) 2-Chloronaphthalene	8.23	162	164504	5.76358	ppb	97
49) 2-Nitroaniline	8.36	65	49840	5.17642	ppb	98
50) Dimethyl phthalate	8.56	163	187724	5.69230	ppb	98
51) 2,6-DNT	8.64	165	37898	5.00967	ppb	85
52) Acenaphthylene	8.72	152	255394	5.69817	ppb	99
53) 3-Nitroaniline	8.85	138	43092	5.03120	ppb	97
54) Acenaphthene	8.91	154	170923	5.93510	ppb	100
55) 2,4-Dinitrophenol	8.99	184	2724	6.02238	ppb #	47
56) 4-Nitrophenol	9.12	65	28503	5.00140	ppb	87
57) Dibenzofuran	9.12	168	235987	5.88919	ppb	99
58) 2,4-DNT	9.11	165	49645	4.93400	ppb	87
59) 2,3,4,6-Tetrachlorophenol	9.26	232	36285	5.40606	ppb	97
60) Diethyl phthalate	9.37	149	185214	5.88580	ppb	97
61) 4-Chlorophenyl phenyl ethe	9.50	204	92102	5.91529	ppb	90
62) Fluorene	9.51	166	194596	5.93064	ppb	99
63) 4-Nitroaniline	9.55	138	41244	5.13940	ppb #	84
66) 4,6-Dinitro-2-methylphenol	9.59	198	11687	4.46790	ppb #	66
67) Diphenyl amine	9.65	169	305735	11.59168	ppb	99
68) n-Nitrosodiphenylamine	9.65	169	305735	11.59168	ppb	99
69) 1,2-Diphenylhydrazine	9.69	77	202563	5.34515	ppb	95
70) 4-Bromophenyl phenyl ether	10.08	248	47222	5.53986	ppb	91
71) Hexachlorobenzene	10.15	284	45531	5.54624	ppb #	84
72) Atrazine	10.29	200	22809	2.52795	ppb	98
73) Pentachlorophenol	10.40	266	19693	4.11077	ppb	97
74) Phenanthrene	10.64	178	288614	5.84545	ppb	99
75) Anthracene	10.69	178	290366	5.71732	ppb	100
76) Carbazol	10.90	167	262445	5.65053	ppb	99
77) Di-n-butylphthalate	11.28	149	296908	5.42199	ppb	99
78) Fluoranthene	12.03	202	303438	5.76029	ppb	98
80) Benzidine	12.20	184	115580	5.92903	ppb	99
81) Pyrene	12.30	202	316173	5.71521	ppb	99
83) Butyl benzylphthalate	13.03	149	133185	5.30246	ppb	96
84) 3,3'-Dichlorobenzidine	13.66	252	93393	5.52471	ppb	99
85) Benz (a) anthracene	13.69	228	273142	5.69590	ppb	99
86) Bis (2-ethylhexyl) phthala	13.68	149	194514	5.57756	ppb	98
87) Chrysene	13.73	228	263264	5.73799	ppb	99
88) Di-n-octylphthalate	14.43	149	302801	5.15107	ppb	96
90) Benzo (b) fluoranthene	15.00	252	242673	5.22770	ppb	99
91) Benzo (k) fluoranthene	15.04	252	255210	6.07205	ppb	100
92) Benzo (a) pyrene	15.47	252	220679	5.34091	ppb	99
93) Indeno (1,2,3-cd) pyrene	17.46	276	232605	5.41428	ppb	98
94) Dibenz (a,h) anthracene	17.49	278	209584	5.38758	ppb	96
95) Benzo (g,h,i) perylene	18.05	276	200713	5.47970	ppb	99

Quantitation Report

Data File : M:\YODA\DATA\Y190208\0208Y004.D

Acq On : 8 Feb 19 15:40

Sample : 5ug/mL 8270 02/05/19

Misc :

Vial: 4

Operator: MA

Inst : Yoda

Multiplr: 1.00

Quant Time: Feb 11 12:40 2019

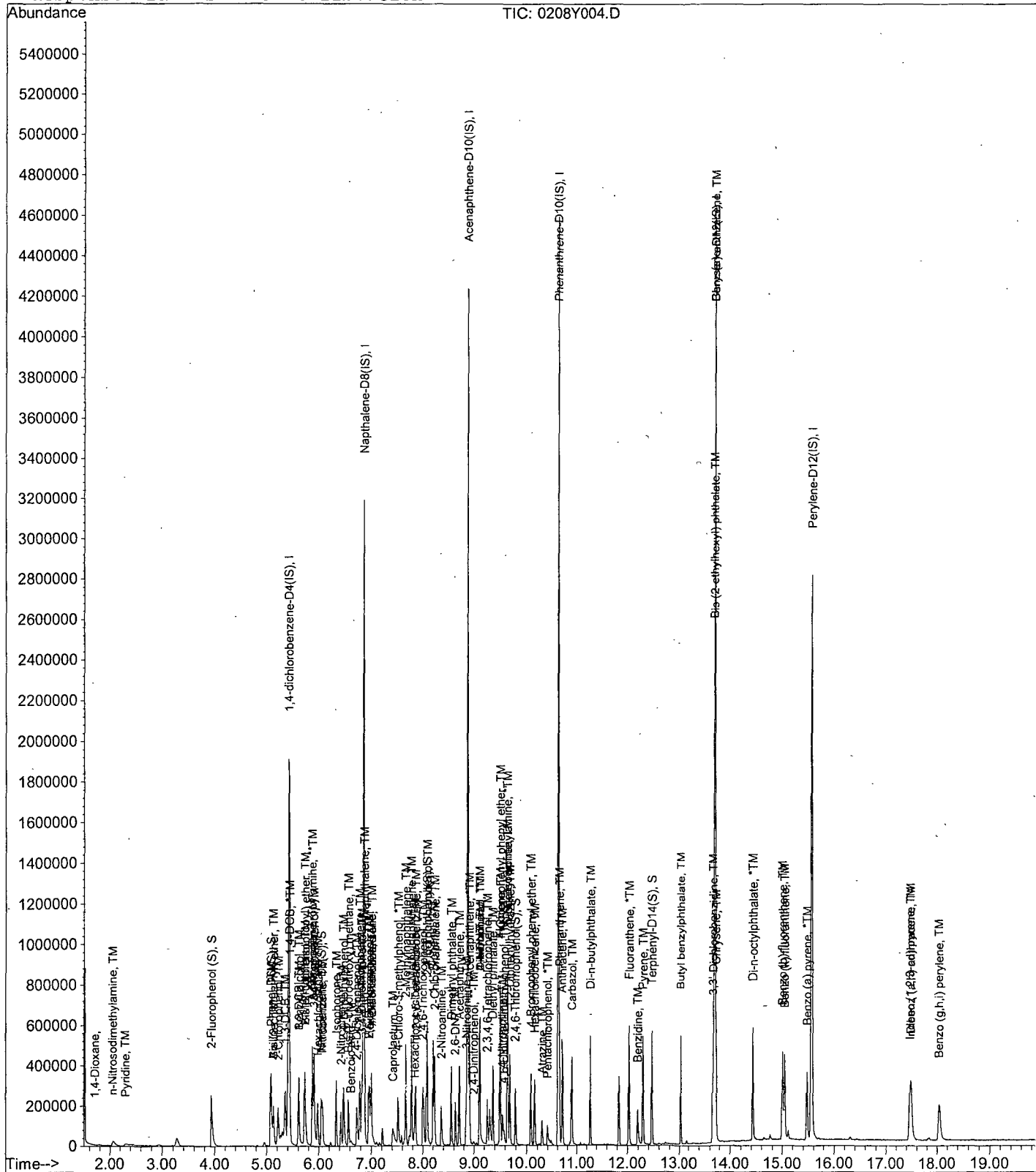
Quant Results File: Y0208NC.RES

Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)

Title : EPA 8270C

Last Update : Tue Feb 12 12:50:28 2019

Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : M:\YODA\DATA\Y190208\0208Y005.D  
 Acq On : 8 Feb 19 16:08  
 Sample : 10ug/mL 8270 02/05/19  
 Misc :

Vial: 5  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Quant Time: Feb 11 12:27 2019

Quant Results File: Y0208NC.RES

Quant Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Mon Feb 11 09:29:35 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.42	152	520373	40.00000	ppb	0.01
21) Napthalene-D8 (IS)	6.86	136	2240885	40.00000	ppb	0.00
41) Acenaphthene-D10 (IS)	8.88	164	1202186	40.00000	ppb	0.00
65) Phenanthrene-D10 (IS)	10.61	188	2280067	40.00000	ppb	0.00
79) Chrysene-D12 (IS)	13.70	240	2007761	40.00000	ppb	0.00
89) Perylene-D12 (IS)	15.57	264	1924394	40.00000	ppb	0.00

System Monitoring Compounds

5) 2-Fluorophenol (S)	3.93	112	342315	20.75878	ppb	0.05
Spiked Amount 200.000			Recovery =	10.380%		
6) Phenol-D6 (S)	5.07	99	462992	21.16083	ppb	0.03
Spiked Amount 200.000			Recovery =	10.581%		
22) Nitrobenzene-D5 (S)	6.05	82	207977	10.20153	ppb	0.00
Spiked Amount 100.000			Recovery =	10.202%		
46) 2-Fluorobiphenyl (S)	8.09	172	409453	10.49638	ppb	0.00
Spiked Amount 100.000			Recovery =	10.496%		
64) 2,4,6-Tribromophenol (S)	9.80	330	79030	19.93062	ppb	0.00
Spiked Amount 200.000			Recovery =	9.966%		
82) Terphenyl-D14 (S)	12.47	244	418549	10.22848	ppb	0.00
Spiked Amount 100.000			Recovery =	10.228%		

Target Compounds

	R.T.	QIon	Response	Conc	Units	Qvalue
2) 1,4-Dioxane	1.79	58	986	0.67849		# 1
3) n-Nitrosodimethylamine	2.03	42	39526	11.85627	ppb	99
4) Pyridine	2.17	79	183302m	28.11043	ppb	100
7) Phenol	5.09	94	252765	10.89194	ppb	98
8) Aniline	5.13	93	177209	8.60461	ppb	# 97
9) Bis (2-chloroethyl) ether	5.13	63	119683	10.99115	ppb	92
10) 2-Chlorophenol	5.22	128	184008	11.05430	ppb	98
11) 1,3-DCB	5.36	146	194929	11.01503	ppb	99
12) 1,4-DCB	5.44	146	198044	11.01023	ppb	97
13) Benzyl alcohol	5.62	108	71691	8.98110	ppb	98
14) 1,2-DCB	5.62	146	190276	11.25620	ppb	99
15) 2-Methylphenol	5.73	107	161017	11.05294	ppb	97
16) Bis (2-chloroisopropyl) et	5.73	45	183003	11.05354	ppb	98
17) Acetophenone	5.89	105	250304	11.11643	ppb	78
18) 3&4-Methylphenol	5.91	107	384996	22.09253	ppb	99
19) n-Nitrosodi-n-propylamine	5.88	70	148541	11.40055	ppb	98
20) Hexachloroethane	5.98	117	72264	10.76084	ppb	94
23) Nitrobenzene	6.07	77	216452	11.07456	ppb	98
24) Isophorone	6.34	82	365650	10.75961	ppb	99
25) 2-Nitrophenol	6.43	139	96352	10.38245	ppb	98
26) 2,4-Dimethylphenol	6.48	122	164938	10.90532	ppb	100
27) Benzoic acid	6.61	105	67590	6.27661	ppb	96
28) Bis (2-chloroethoxy) metha	6.57	93	220598	10.82101	ppb	98
29) 2,4-Dichlorophenol	6.72	162	148888	10.80543	ppb	99
30) 1,2,4-Trichlorobenzene	6.79	180	160947	10.81674	ppb	100
31) 3,4-Dimethylphenol	6.82	107	236174	10.79447	ppb	100
32) Napthalene	6.88	128	550960	11.06889	ppb	99
33) 4-Chloroaniline	6.98	127	201236	10.69511	ppb	95
34) 2,6-Dichlorophenol	6.95	162	147929	10.98398	ppb	98
35) Hexachloropropene	6.97	213	93793	10.18118	ppb	95
36) Hexachlorobutadiene	7.01	225	84057	10.70766	ppb	98
37) Caprolactum	7.39	55	80220	11.68684	ppb	97



Data File : M:\YODA\DATA\Y190208\0208Y005.D  
 Acq On : 8 Feb 19 16:08  
 Sample : 10ug/mL 8270 02/05/19  
 Misc :

Vial: 5  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Quant Time: Feb 11 12:27 2019

Quant Results File: Y0208NC.RES

Quant Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Mon Feb 11 09:29:35 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
38) 4-Chloro-3-methylphenol	7.52	107	157141	10.61156	ppb	91
39) 2-Methylnaphthalene	7.67	142	350643	10.93991	ppb	99
40) 1-Methylnaphthalene	7.78	142	362411	10.93523	ppb	100
42) Hexachlorocyclopentadiene	7.84	237	37961	6.21436	ppb	99
43) 1,2,4,5-Tetrachlorobenzene	7.85	216	152395	10.77474	ppb	97
44) 2,4,6-Trichlorophenol	8.00	196	102156	10.56985	ppb	99
45) 2,4,5-Trichlorophenol	8.07	196	108392	10.71861	ppb	96
47) 1,1'-Biphenyl	8.21	154	460581	10.86405	ppb	98
48) 2-Chloronaphthalene	8.24	162	349422	10.99735	ppb	96
49) 2-Nitroaniline	8.37	65	110865	10.43745	ppb	92
50) Dimethyl phthalate	8.56	163	395380	10.77265	ppb	99
51) 2,6-DNT	8.64	165	88942	10.52845	ppb	79
52) Acenaphthylene	8.71	152	547130	11.00212	ppb	99
53) 3-Nitroaniline	8.84	138	99669	10.45770	ppb	92
54) Acenaphthene	8.91	154	355661	11.09028	ppb	99
55) 2,4-Dinitrophenol	8.98	184	21614	4.46453	ppb	94
56) 4-Nitrophenol	9.11	65	71798	11.38358	ppb	77
57) Dibenzofuran	9.12	168	504840	11.31834	ppb	99
58) 2,4-DNT	9.11	165	122136	10.86703	ppb	95
59) 2,3,4,6-Tetrachlorophenol	9.27	232	79384	10.60993	ppb	95
60) Diethyl phthalate	9.38	149	386180	11.09443	ppb	98
61) 4-Chlorophenyl phenyl ethe	9.51	204	193913	11.16120	ppb	95
62) Fluorene	9.52	166	409353	11.26500	ppb	100
63) 4-Nitroaniline	9.55	138	97008	10.61370	ppb	94
66) 4,6-Dinitro-2-methylphenol	9.58	198	51378	7.51560	ppb	97
67) Diphenyl amine	9.65	169	637915	23.05112	ppb	100
68) n-Nitrosodiphenylamine	9.65	169	637915	23.05112	ppb	100
69) 1,2-Diphenylhydrazine	9.69	77	434375	10.74758	ppb	96
70) 4-Bromophenyl phenyl ether	10.08	248	99121	10.68953	ppb	90
71) Hexachlorobenzene	10.15	284	96257	10.74539	ppb	87
72) Atrazine	10.29	200	50229	5.15251	ppb	94
73) Pentachlorophenol	10.40	266	50399	9.69828	ppb	95
74) Phenanthrene	10.64	178	594462	11.17813	ppb	100
75) Anthracene	10.70	178	608356	11.09162	ppb	100
76) Carbazol	10.89	167	551839	11.03273	ppb	98
77) Di-n-butylphthalate	11.28	149	640504	10.86096	ppb	99
78) Fluoranthene	12.03	202	628238	11.09987	ppb	96
80) Benzidine	12.19	184	230989	11.49075	ppb	95
81) Pyrene	12.29	202	659549	11.04339	ppb	99
83) Butyl benzylphthalate	13.04	149	287922	10.58794	ppb	88
84) 3,3'-Dichlorobenzidine	13.66	252	197013	10.89414	ppb	99
85) Benz (a) anthracene	13.69	228	564748	11.13545	ppb	100
86) Bis (2-ethylhexyl) phthala	13.68	149	418198	11.11981	ppb	97
87) Chrysene	13.73	228	542315	10.97313	ppb	100
88) Di-n-octylphthalate	14.44	149	662191	10.46008	ppb	97
90) Benzo (b) fluoranthene	15.00	252	517257	10.18165	ppb	98
91) Benzo (k) fluoranthene	15.04	252	520494	11.78449	ppb	99
92) Benzo (a) pyrene	15.48	252	478647	10.53226	ppb	100
93) Indeno (1,2,3-cd) pyrene	17.47	276	490619	10.42069	ppb	99
94) Dibenz (a,h) anthracene	17.49	278	446337	10.44457	ppb	98
95) Benzo (g,h,i) perylene	18.05	276	427364	10.69750	ppb	98

(#) = qualifier out of range (m) = manual integration

0208Y005.D Y0208NC.M

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Quantitation Report

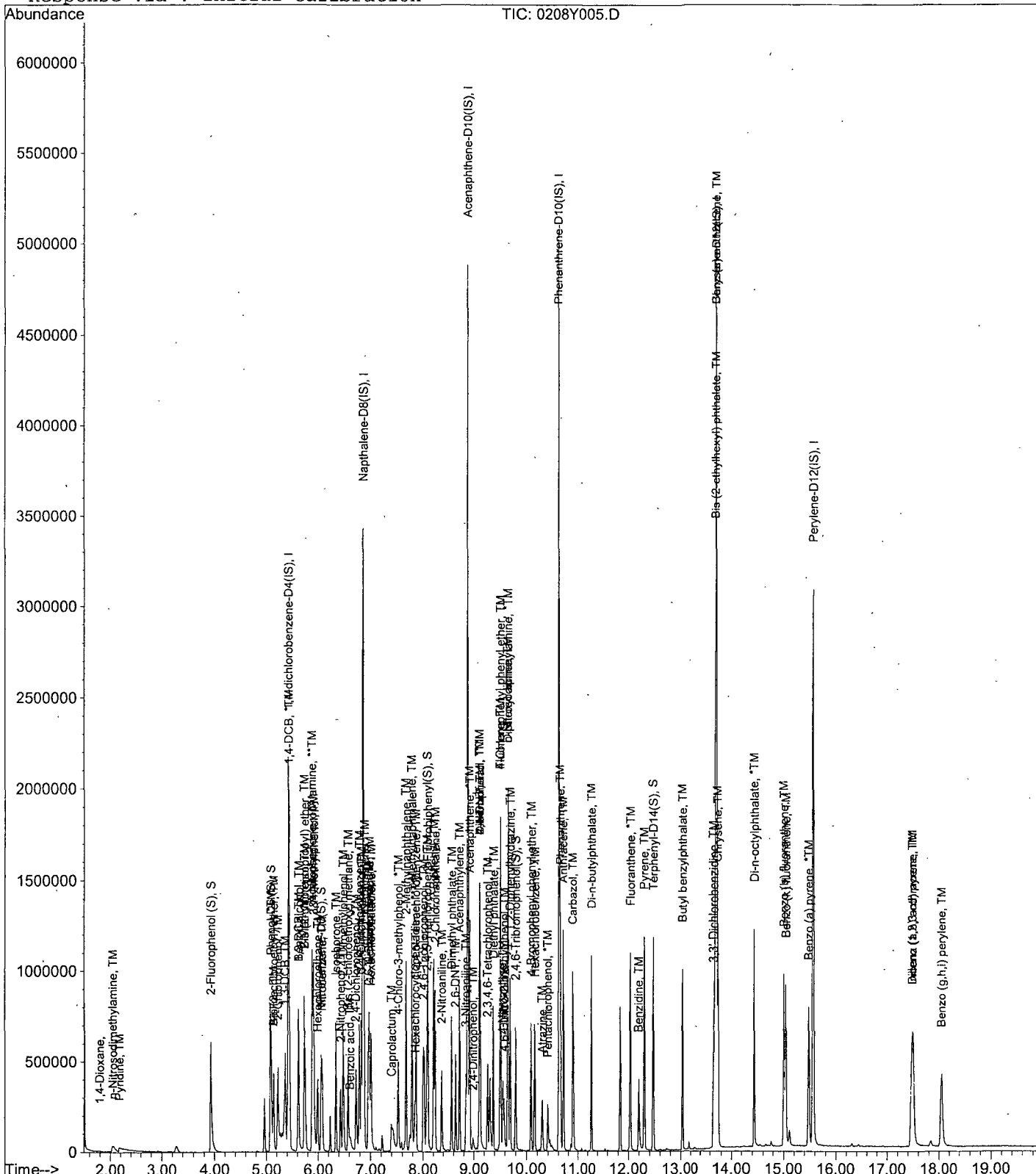
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Acq On : 8 Feb 19 16:08  
Sample : 10ug/mL 8270 02/05/19  
Misc :

Vial: 5  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Feb 11 12:27 2019

Quant Results File: Y0208NC.RES

Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Tue Feb 12 12:50:28 2019  
Response via : Initial Calibration



Data File : M:\YODA\DATA\Y190208\0208Y006.D  
 Acq On : 8 Feb 19 16:36  
 Sample : 20ug/mL 8270 02/05/19  
 Misc :

Vial: 6  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Quant Time: Feb 11 12:28 2019

Quant Results File: Y0208NC.RES

Quant Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Mon Feb 11 09:27:18 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.42	152	526857	40.00000	ppb	0.00
21) Napthalene-D8 (IS)	6.86	136	2287128	40.00000	ppb	0.00
41) Acenaphthene-D10 (IS)	8.87	164	1225308	40.00000	ppb	0.00
65) Phenanthrene-D10 (IS)	10.61	188	2354912	40.00000	ppb	0.00
79) Chrysene-D12 (IS)	13.71	240	2044785	40.00000	ppb	0.00
89) Perylene-D12 (IS)	15.57	264	1974212	40.00000	ppb	0.00

System Monitoring Compounds

5) 2-Fluorophenol (S)	3.92	112	674241	40.38435	ppb	0.04
Spiked Amount 200.000			Recovery =	20.192%		
6) Phenol-D6 (S)	5.06	99	906037	40.90036	ppb	0.02
Spiked Amount 200.000			Recovery =	20.450%		
22) Nitrobenzene-D5 (S)	6.05	82	411683	19.78527	ppb	0.00
Spiked Amount 100.000			Recovery =	19.785%		
46) 2-Fluorobiphenyl (S)	8.08	172	791129	19.89799	ppb	0.00
Spiked Amount 100.000			Recovery =	19.898%		
64) 2,4,6-Tribromophenol (S)	9.80	330	157332	38.92892	ppb	0.00
Spiked Amount 200.000			Recovery =	19.465%		
82) Terphenyl-D14 (S)	12.47	244	802661	19.26022	ppb	0.00
Spiked Amount 100.000			Recovery =	19.260%		

Target Compounds

	R.T.	QIon	Response	Conc	Units	Qvalue
2) 1,4-Dioxane	1.78	58	4189m	3.11082		20
3) n-Nitrosodimethylamine	2.01	42	64679	19.16243	ppb	100
4) Pyridine	2.08	79	271101m	41.06326	ppb	100
7) Phenol	5.08	94	473930	20.17086	ppb	98
8) Aniline	5.13	93	330491	15.84992	ppb	# 98
9) Bis (2-chloroethyl) ether	5.13	63	221239	20.06755	ppb	94
10) 2-Chlorophenol	5.21	128	339455	20.14183	ppb	96
11) 1,3-DCB	5.36	146	354219	19.76984	ppb	98
12) 1,4-DCB	5.44	146	358221	19.67015	ppb	98
13) Benzyl alcohol	5.62	108	151677	18.76750	ppb	99
14) 1,2-DCB	5.62	146	337375	19.71255	ppb	98
15) 2-Methylphenol	5.73	107	301783	20.46082	ppb	98
16) Bis (2-chloroisopropyl) et	5.73	45	341626	20.38055	ppb	99
17) Acetophenone	5.88	105	463627	20.33706	ppb	83
18) 3&4-Methylphenol	5.90	107	718634	40.73043	ppb	98
19) n-Nitrosodi-n-propylamine	5.88	70	273100	20.70251	ppb	97
20) Hexachloroethane	5.99	117	133772	19.67486	ppb	88
23) Nitrobenzene	6.08	77	391472	19.62432	ppb	92
24) Isophorone	6.34	82	681057	19.63558	ppb	96
25) 2-Nitrophenol	6.43	139	184911	19.52230	ppb	98
26) 2,4-Dimethylphenol	6.48	122	303691	19.67337	ppb	99
27) Benzoic acid	6.62	105	184927	16.82566	ppb	99
28) Bis (2-chloroethoxy) metha	6.58	93	412104	19.80625	ppb	99
29) 2,4-Dichlorophenol	6.72	162	275641	19.59997	ppb	99
30) 1,2,4-Trichlorobenzene	6.79	180	296640	19.53316	ppb	98
31) 3,4-Dimethylphenol	6.82	107	440579	19.72978	ppb	100
32) Napthalene	6.88	128	1003960	19.76194	ppb	100
33) 4-Chloroaniline	6.96	127	389931	20.30469	ppb	99
34) 2,6-Dichlorophenol	6.95	162	271687	19.76535	ppb	98
35) Hexachloropropene	6.97	213	178366	18.97006	ppb	98
36) Hexachlorobutadiene	7.01	225	154278	19.25545	ppb	99
37) Caprolactum	7.38	55	145405	20.75501	ppb	99

(#) = qualifier out of range (m) = manual integration

Data File : M:\YODA\DATA\Y190208\0208Y006.D  
 Acq On : 8 Feb 19 16:36  
 Sample : 20ug/mL 8270 02/05/19  
 Misc :

Vial: 6  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Quant Time: Feb 11 12:28 2019

Quant Results File: Y0208NC.RES

Quant Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Mon Feb 11 09:27:18 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
38) 4-Chloro-3-methylphenol	7.52	107	299226	19.79785	ppb	89
39) 2-Methylnaphthalene	7.67	142	645911	19.74470	ppb	99
40) 1-Methylnaphthalene	7.78	142	675029	19.95622	ppb	98
42) Hexachlorocyclopentadiene	7.84	237	96374	15.47907	ppb	100
43) 1,2,4,5-Tetrachlorobenzene	7.86	216	281551	19.53077	ppb	100
44) 2,4,6-Trichlorophenol	8.00	196	193175	19.61021	ppb	100
45) 2,4,5-Trichlorophenol	8.07	196	201582	19.55777	ppb	95
47) 1,1'-Biphenyl	8.21	154	851700	19.71055	ppb	99
48) 2-Chloronaphthalene	8.23	162	642488	19.83944	ppb	99
49) 2-Nitroaniline	8.36	65	210305	19.42567	ppb	99
50) Dimethyl phthalate	8.56	163	747185	19.97388	ppb	99
51) 2,6-DNT	8.64	165	170728	19.82844	ppb	89
52) Acenaphthylene	8.72	152	1012398	19.97393	ppb	99
53) 3-Nitroaniline	8.85	138	194353	20.00755	ppb	92
54) Acenaphthene	8.91	154	651432	19.92974	ppb	100
55) 2,4-Dinitrophenol	8.98	184	66762	13.52995	ppb	# 74
56) 4-Nitrophenol	9.07	65	141166	21.95953	ppb	96
57) Dibenzofuran	9.11	168	909695	20.01020	ppb	99
58) 2,4-DNT	9.11	165	231264	20.18839	ppb	97
59) 2,3,4,6-Tetrachlorophenol	9.26	232	148169	19.42957	ppb	96
60) Diethyl phthalate	9.37	149	708960	19.98313	ppb	99
61) 4-Chlorophenyl phenyl ethe	9.51	204	358603	20.25090	ppb	97
62) Fluorene	9.51	166	742686	20.05234	ppb	99
63) 4-Nitroaniline	9.56	138	177548	19.05905	ppb	100
66) 4,6-Dinitro-2-methylphenol	9.59	198	122694	17.37731	ppb	# 77
67) Diphenyl amine	9.65	169	1171580	40.98964	ppb	100
68) n-Nitrosodiphenylamine	9.65	169	1171580	40.98964	ppb	100
69) 1,2-Diphenylhydrazine	9.69	77	807868	19.35349	ppb	91
70) 4-Bromophenyl phenyl ether	10.08	248	186863	19.51143	ppb	96
71) Hexachlorobenzene	10.15	284	178238	19.26474	ppb	97
72) Atrazine	10.28	200	98006	9.73397	ppb	99
73) Pentachlorophenol	10.40	266	102654	19.12589	ppb	97
74) Phenanthrene	10.64	178	1074304	19.55893	ppb	99
75) Anthracene	10.70	178	1119348	19.75947	ppb	99
76) Carbazol	10.90	167	1018229	19.71011	ppb	100
77) Di-n-butylphthalate	11.28	149	1205697	19.79509	ppb	100
78) Fluoranthene	12.03	202	1145554	19.59667	ppb	99
80) Benzidine	12.20	184	440397	21.51126	ppb	99
81) Pyrene	12.30	202	1200590	19.73851	ppb	99
83) Butyl benzylphthalate	13.03	149	531937	19.20708	ppb	97
84) 3,3'-Dichlorobenzidine	13.66	252	370530	20.11805	ppb	98
85) Benz (a) anthracene	13.69	228	1047564	20.28140	ppb	99
86) Bis (2-ethylhexyl) phthala	13.68	149	748463	19.54115	ppb	98
87) Chrysene	13.74	228	953306	18.93981	ppb	100
88) Di-n-octylphthalate	14.43	149	1239730	19.22840	ppb	# 93
90) Benzo (b) fluoranthene	15.01	252	1023485	19.63782	ppb	98
91) Benzo (k) fluoranthene	15.05	252	883898	19.50732	ppb	98
92) Benzo (a) pyrene	15.48	252	870382	18.66879	ppb	98
93) Indeno (1,2,3-cd) pyrene	17.47	276	920359	19.05502	ppb	99
94) Dibenz (a,h) anthracene	17.50	278	821867	18.74690	ppb	99
95) Benzo (g,h,i) perylene	18.05	276	780722	19.04939	ppb	96

(#) = qualifier out of range (m) = manual integration

Quantitation Report

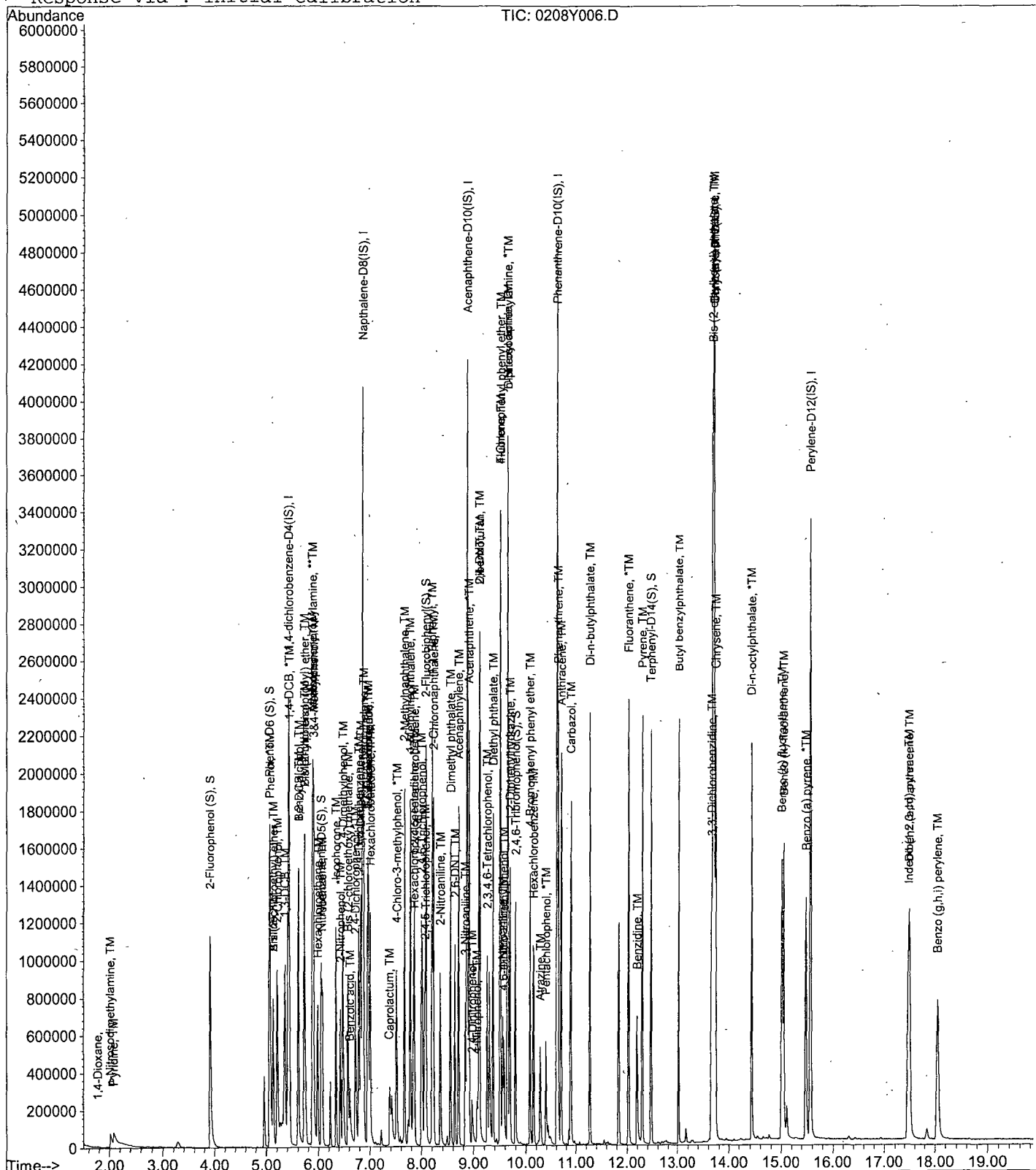
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Acq On : 8 Feb 19 16:36  
Sample : 20ug/mL 8270 02/05/19  
Misc :

Vial: 6  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Feb 11 12:28 2019

Quant Results File: Y0208NC.RES

Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Tue Feb 12 12:50:28 2019  
Response via : Initial Calibration



Data File : M:\YODA\DATA\Y190208\0208Y007.D  
 Acq On : 8 Feb 19 17:03  
 Sample : 40ug/mL 8270 02/05/19  
 Misc :

Vial: 7  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Quant Time: Feb 11 12:54 2019

Quant Results File: Y0208NC.RES

Quant Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Mon Feb 11 09:50:15 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.42	152	517645	40.00000	ppb	0.01
21) Napthalene-D8 (IS)	6.86	136	2226415	40.00000	ppb	0.00
41) Acenaphthene-D10 (IS)	8.88	164	1184339	40.00000	ppb	0.00
65) Phenanthrene-D10 (IS)	10.61	188	2225940	40.00000	ppb	0.00
79) Chrysene-D12 (IS)	13.71	240	1909580	40.00000	ppb	0.00
89) Perylene-D12 (IS)	15.57	264	1813150	40.00000	ppb	0.00

System Monitoring Compounds

5) 2-Fluorophenol (S)	3.89	112	1368735	83.17757	ppb	0.01
Spiked Amount 200.000			Recovery =	41.589%		
6) Phenol-D6 (S)	5.05	99	1828108	83.48657	ppb	0.01
Spiked Amount 200.000			Recovery =	41.744%		
22) Nitrobenzene-D5 (S)	6.05	82	837022	41.03322	ppb	0.00
Spiked Amount 100.000			Recovery =	41.033%		
46) 2-Fluorobiphenyl (S)	8.09	172	1570135	40.90997	ppb	0.00
Spiked Amount 100.000			Recovery =	40.910%		
64) 2,4,6-Tribromophenol (S)	9.80	330	323167	82.83943	ppb	0.00
Spiked Amount 200.000			Recovery =	41.420%		
82) Terphenyl-D14 (S)	12.47	244	1587362	41.01985	ppb	0.00
Spiked Amount 100.000			Recovery =	41.020%		

Target Compounds

					Qvalue
2) 1,4-Dioxane	1.75	58	7876	4.24959	99
3) n-Nitrosodimethylamine	1.99	42	141698	41.14425	ppb 92
4) Pyridine	2.01	79	424652m	60.40021	ppb 100
7) Phenol	5.06	94	1005835	43.36033	ppb 92
8) Aniline	5.13	93	831329m	40.65048	ppb 98
9) Bis (2-chloroethyl) ether	5.13	63	472484	41.80801	ppb 86
10) 2-Chlorophenol	5.20	128	688854	41.28239	ppb 97
11) 1,3-DCB	5.35	146	713645	40.60917	ppb 98
12) 1,4-DCB	5.44	146	728401	40.54662	ppb 98
13) Benzyl alcohol	5.61	108	354634	44.65574	ppb 97
14) 1,2-DCB	5.61	146	690865	40.96137	ppb 99
15) 2-Methylphenol	5.73	107	605393	41.54864	ppb 100
16) Bis (2-chloroisopropyl) et	5.73	45	690050	41.40755	ppb 98
17) Acetophenone	5.89	105	939091	41.56122	ppb 94
18) 3&4-Methylphenol	5.90	107	1478031	84.85952	ppb 100
19) n-Nitrosodi-n-propylamine	5.89	70	544202	41.42414	ppb 99
20) Hexachloroethane	5.98	117	276300	41.15207	ppb 97
23) Nitrobenzene	6.08	77	818514	41.89997	ppb 91
24) Isophorone	6.35	82	1416342	41.64774	ppb 99
25) 2-Nitrophenol	6.43	139	385648	42.13729	ppb 99
26) 2,4-Dimethylphenol	6.48	122	628130	41.82365	ppb 98
27) Benzoic acid	6.65	105	475994	41.88508	ppb 99
28) Bis (2-chloroethoxy) metha	6.58	93	834218	41.16567	ppb 100
29) 2,4-Dichlorophenol	6.71	162	570872	41.82773	ppb 99
30) 1,2,4-Trichlorobenzene	6.79	180	609850	41.56069	ppb 97
31) 3,4-Dimethylphenol	6.82	107	915860	41.63414	ppb 98
32) Napthalene	6.88	128	2033598	41.17108	ppb 100
33) 4-Chloroaniline	6.95	127	821430	43.65137	ppb 99
34) 2,6-Dichlorophenol	6.95	162	559948	41.88442	ppb 98
35) Hexachloropropene	6.97	213	381055	42.49204	ppb 99
36) Hexachlorobutadiene	7.01	225	321215	41.42893	ppb 98
37) Caprolactum	7.39	55	286363	40.56686	ppb 94

Data File : M:\YODA\DATA\Y190208\0208Y007.D  
 Acq On : 8 Feb 19 17:03  
 Sample : 40ug/mL 8270 02/05/19  
 Misc :

Vial: 7  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Quant Time: Feb 11 12:54 2019

Quant Results File: Y0208NC.RES

Quant Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Mon Feb 11 09:50:15 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
38) 4-Chloro-3-methylphenol	7.51	107	630638	41.94499	ppb	100
39) 2-Methylnaphthalene	7.67	142	1305874	40.98163	ppb	100
40) 1-Methylnaphthalene	7.78	142	1356025	41.16207	ppb	99
42) Hexachlorocyclopentadiene	7.84	237	253826	40.55601	ppb	99
43) 1,2,4,5-Tetrachlorobenzene	7.86	216	573614	41.49402	ppb	99
44) 2,4,6-Trichlorophenol	8.00	196	399909	42.16615	ppb	99
45) 2,4,5-Trichlorophenol	8.06	196	425113	42.32192	ppb	98
47) 1,1'-Biphenyl	8.21	154	1725546	41.40143	ppb	99
48) 2-Chloronaphthalene	8.23	162	1295150	41.35566	ppb	99
49) 2-Nitroaniline	8.36	65	455877	43.15174	ppb	98
50) Dimethyl phthalate	8.56	163	1505203	41.59703	ppb	100
51) 2,6-DNT	8.64	165	349685	42.12781	ppb	98
52) Acenaphthylene	8.72	152	2038021	41.44118	ppb	99
53) 3-Nitroaniline	8.85	138	406922	43.29971	ppb	96
54) Acenaphthene	8.91	154	1296546	41.03126	ppb	100
55) 2,4-Dinitrophenol	8.98	184	202124	51.57699	ppb	95
56) 4-Nitrophenol	9.06	65	233975	37.41706	ppb	99
57) Dibenzofuran	9.12	168	1806194	41.08008	ppb	99
58) 2,4-DNT	9.12	165	469761	42.55003	ppb	96
59) 2,3,4,6-Tetrachlorophenol	9.26	232	312764	42.46879	ppb	97
60) Diethyl phthalate	9.39	149	1419973	41.12551	ppb	99
61) 4-Chlorophenyl phenyl ethe	9.52	204	701130	41.03976	ppb	97
62) Fluorene	9.52	166	1488969	41.35733	ppb	99
63) 4-Nitroaniline	9.56	138	381635	43.34100	ppb	92
66) 4,6-Dinitro-2-methylphenol	9.59	198	300002	43.87360	ppb	95
67) Diphenyl amine	9.65	169	2347847	84.79899	ppb	100
68) n-Nitrosodiphenylamine	9.65	169	2347847	84.79899	ppb	100
69) 1,2-Diphenylhydrazine	9.70	77	1626712	40.89123	ppb	96
70) 4-Bromophenyl phenyl ether	10.08	248	375849	42.00364	ppb	97
71) Hexachlorobenzene	10.16	284	360520	41.83503	ppb	98
72) Atrazine	10.29	200	202122	21.34003	ppb	98
73) Pentachlorophenol	10.40	266	223398	44.42318	ppb	98
74) Phenanthrene	10.64	178	2155179	41.58184	ppb	100
75) Anthracene	10.70	178	2201297	41.29000	ppb	100
76) Carbazol	10.90	167	2044514	41.93340	ppb	99
77) Di-n-butylphthalate	11.28	149	2427236	42.22483	ppb	100
78) Fluoranthene	12.03	202	2307804	41.73426	ppb	99
80) Benzidine	12.20	184	861907	43.01353	ppb	99
81) Pyrene	12.30	202	2376769	41.79635	ppb	100
83) Butyl benzylphthalate	13.03	149	1090119	42.22212	ppb	98
84) 3,3'-Dichlorobenzidine	13.67	252	754848	43.44084	ppb	98
85) Benz (a) anthracene	13.69	228	2069442	41.98274	ppb	100
86) Bis (2-ethylhexyl) phthala	13.68	149	1525959	42.56769	ppb	99
87) Chrysene	13.74	228	1949844	41.34392	ppb	100
88) Di-n-octylphthalate	14.44	149	2583018	42.74758	ppb #	93
90) Benzo (b) fluoranthene	15.01	252	2003352	41.86791	ppb	99
91) Benzo (k) fluoranthene	15.05	252	1853942	42.79260	ppb	99
92) Benzo (a) pyrene	15.48	252	1802023	42.31063	ppb	98
93) Indeno (1,2,3-cd) pyrene	17.48	276	1885143	42.56971	ppb	100
94) Dibenz (a,h) anthracene	17.51	278	1689324	42.12925	ppb	99
95) Benzo (g,h,i) perylene	18.06	276	1601418	42.41513	ppb	98

(#) = qualifier out of range (m) = manual integration

Quantitation Report

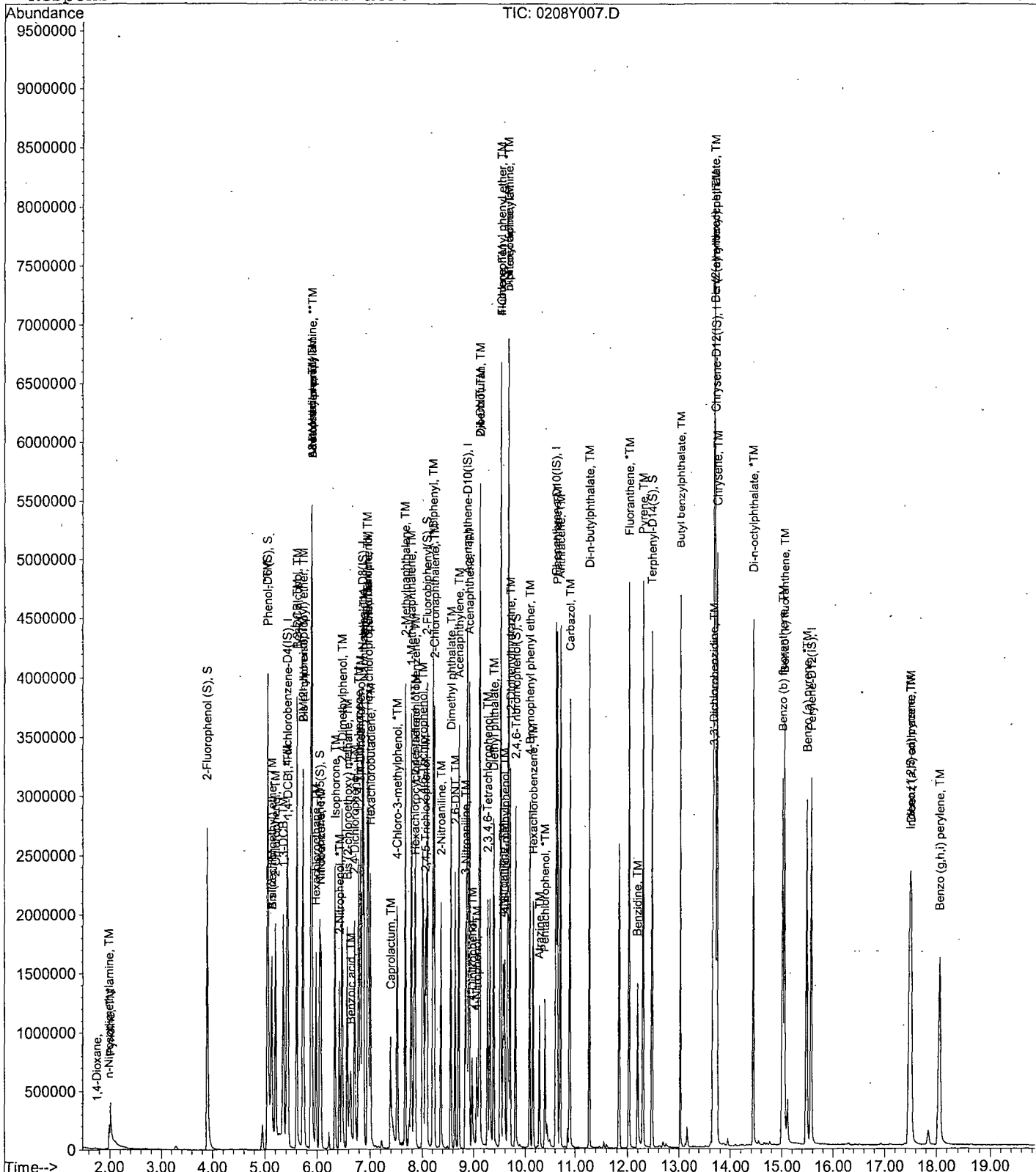
Data File : M:\YODA\DATA\Y190208\0208Y007.D  
Acq On : 8 Feb 19 17:03  
Sample : 40ug/mL 8270 02/05/19  
Misc :

Vial: 7  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Feb 11 12:54 2019

Quant Results File: Y0208NC.RES

Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Tue Feb 12 12:50:28 2019  
Response via : Initial Calibration





Quantitation Report (QT Reviewed)

Data File : M:\YODA\DATA\Y190208\0208Y008.D  
 Acq On : 8 Feb 19 17:31  
 Sample : 50ug/mL 8270 02/05/19  
 Misc :

Vial: 8  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Quant Time: Feb 11 12:56 2019

Quant Results File: Y0208NC.RES

Quant Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Mon Feb 11 09:56:25 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.41	152	517933	40.00000	ppb	0.00
21) Napthalene-D8 (IS)	6.86	136	2205307	40.00000	ppb	0.00
41) Acenaphthene-D10 (IS)	8.87	164	1187947	40.00000	ppb	0.00
65) Phenanthrene-D10 (IS)	10.61	188	2252965	40.00000	ppb	0.00
79) Chrysene-D12 (IS)	13.71	240	1945086	40.00000	ppb	0.00
89) Perylene-D12 (IS)	15.57	264	1903917	40.00000	ppb	0.00

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
5) 2-Fluorophenol (S)	3.88	112	1663909	101.05897	ppb	0.00
Spiked Amount 200.000			Recovery =	50.529%		
6) Phenol-D6 (S)	5.04	99	2190926	100.00022	ppb	0.00
Spiked Amount 200.000			Recovery =	50.000%		
22) Nitrobenzene-D5 (S)	6.05	82	1020218	50.49272	ppb	0.00
Spiked Amount 100.000			Recovery =	50.493%		
46) 2-Fluorobiphenyl (S)	8.09	172	1910800	49.63482	ppb	0.00
Spiked Amount 100.000			Recovery =	49.635%		
64) 2,4,6-Tribromophenol (S)	9.80	330	392342	100.26604	ppb	0.00
Spiked Amount 200.000			Recovery =	50.133%		
82) Terphenyl-D14 (S)	12.47	244	1962232	49.78145	ppb	0.00
Spiked Amount 100.000			Recovery =	49.781%		

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) 1,4-Dioxane	1.73	58	9312m	5.02273		1
3) n-Nitrosodimethylamine	1.98	42	165086	47.90866	ppb	100
4) Pyridine	1.99	79	465977m	67.07165	ppb	100
7) Phenol	5.06	94	1111361	47.88279	ppb	100
8) Aniline	5.12	93	911642m	44.55286	ppb	100
9) Bis (2-chloroethyl) ether	5.12	63	541305	47.87104	ppb	100
10) 2-Chlorophenol	5.20	128	805431	48.24190	ppb	100
11) 1,3-DCB	5.35	146	847042	48.17318	ppb	100
12) 1,4-DCB	5.44	146	859592	47.82280	ppb	100
13) Benzyl alcohol	5.61	108	418828	52.70976	ppb	100
14) 1,2-DCB	5.61	146	804843	47.69258	ppb	100
15) 2-Methylphenol	5.73	107	703743	48.27163	ppb	100
16) Bis (2-chloroisopropyl) et	5.72	45	800798	48.02644	ppb	100
17) Acetophenone	5.88	105	1088965	48.16737	ppb	100
18) 3&4-Methylphenol	5.89	107	1696130	97.32729	ppb	100
19) n-Nitrosodi-n-propylamine	5.88	70	625672	47.59908	ppb	100
20) Hexachloroethane	5.98	117	323880	48.21181	ppb	100
23) Nitrobenzene	6.07	77	943935	48.78280	ppb	100
24) Isophorone	6.35	82	1654427	49.11430	ppb	100
25) 2-Nitrophenol	6.43	139	451551	49.81032	ppb	100
26) 2,4-Dimethylphenol	6.48	122	730330	49.09402	ppb	100
27) Benzoic acid	6.65	105	568678	49.60701	ppb	100
28) Bis (2-chloroethoxy) metha	6.58	93	976651	48.65552	ppb	100
29) 2,4-Dichlorophenol	6.71	162	665323	49.21473	ppb	100
30) 1,2,4-Trichlorobenzene	6.79	180	702629	48.34180	ppb	100
31) 3,4-Dimethylphenol	6.82	107	1057063	48.51304	ppb	100
32) Napthalene	6.88	128	2369555	48.43184	ppb	100
33) 4-Chloroaniline	6.95	127	964992	51.77119	ppb	100
34) 2,6-Dichlorophenol	6.95	162	646405	48.81425	ppb	100
35) Hexachloropropene	6.97	213	449070	50.55581	ppb	100
36) Hexachlorobutadiene	7.01	225	370111	48.19222	ppb	100
37) Caprolactum	7.39	55	334971	47.90698	ppb	100

(#) = qualifier out of range (m) = manual integration

Data File : M:\YODA\DATA\Y190208\0208Y008.D  
 Acq On : 8 Feb 19 17:31  
 Sample : 50ug/mL 8270 02/05/19  
 Misc :

Vial: 8  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Quant Time: Feb 11 12:56 2019

Quant Results File: Y0208NC.RES

Quant Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Mon Feb 11 09:56:25 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
38) 4-Chloro-3-methylphenol	7.51	107	734714	49.33503	ppb	100
39) 2-Methylnaphthalene	7.67	142	1543641	48.90704	ppb	100
40) 1-Methylnaphthalene	7.79	142	1597057	48.94259	ppb	100
42) Hexachlorocyclopentadiene	7.84	237	310110	48.24516	ppb	100
43) 1,2,4,5-Tetrachlorobenzene	7.86	216	663920	47.88070	ppb	100
44) 2,4,6-Trichlorophenol	8.00	196	455916	47.92549	ppb	100
45) 2,4,5-Trichlorophenol	8.06	196	488838	48.51823	ppb	100
47) 1,1'-Biphenyl	8.21	154	2013416	48.16164	ppb	100
48) 2-Chloronaphthalene	8.23	162	1506588	47.96101	ppb	100
49) 2-Nitroaniline	8.36	65	523250	49.37861	ppb	100
50) Dimethyl phthalate	8.56	163	1748239	48.16671	ppb	100
51) 2,6-DNT	8.64	165	415990	49.96361	ppb	100
52) Acenaphthylene	8.72	152	2401867	48.69130	ppb	100
53) 3-Nitroaniline	8.85	138	473531	50.23440	ppb	100
54) Acenaphthene	8.91	154	1515782	47.82364	ppb	100
55) 2,4-Dinitrophenol	8.98	184	246168	50.10977	ppb	100
56) 4-Nitrophenol	9.06	65	278707	44.43519	ppb	100
57) Dibenzofuran	9.12	168	2128928	48.27329	ppb	100
58) 2,4-DNT	9.12	165	549328	49.60593	ppb	100
59) 2,3,4,6-Tetrachlorophenol	9.26	232	361100	48.88320	ppb	100
60) Diethyl phthalate	9.38	149	1634662	47.19958	ppb	100
61) 4-Chlorophenyl phenyl ethe	9.51	204	827538	48.29178	ppb	100
62) Fluorene	9.51	166	1741778	48.23237	ppb	100
63) 4-Nitroaniline	9.57	138	446767	50.58372	ppb	100
66) 4,6-Dinitro-2-methylphenol	9.59	198	348661	49.96477	ppb	100
67) Diphenyl amine	9.66	169	2703052	96.45712	ppb	100
68) n-Nitrosodiphenylamine	9.66	169	2703052	96.45712	ppb	100
69) 1,2-Diphenylhydrazine	9.70	77	1897144	47.11713	ppb	100
70) 4-Bromophenyl phenyl ether	10.08	248	439061	48.47942	ppb	100
71) Hexachlorobenzene	10.16	284	419888	48.13968	ppb	100
72) Atrazine	10.29	200	240980	25.13747	ppb	100
73) Pentachlorophenol	10.40	266	267791	52.61207	ppb	100
74) Phenanthrene	10.65	178	2533995	48.30423	ppb	100
75) Anthracene	10.70	178	2603901	48.25583	ppb	100
76) Carbazol	10.90	167	2384046	48.31074	ppb	100
77) Di-n-butylphthalate	11.28	149	2847790	48.94664	ppb	100
78) Fluoranthene	12.03	202	2705666	48.34227	ppb	100
80) Benzidine	12.20	184	1028525	50.39165	ppb	100
81) Pyrene	12.30	202	2829689	48.85276	ppb	100
83) Butyl benzylphthalate	13.03	149	1300430	49.44840	ppb	100
84) 3,3'-Dichlorobenzidine	13.66	252	888696	50.21009	ppb	100
85) Benz (a) anthracene	13.69	228	2437674	48.55033	ppb	100
86) Bis (2-ethylhexyl) phthala	13.68	149	1772577	48.54465	ppb	100
87) Chrysene	13.74	228	2318741	48.26841	ppb	100
88) Di-n-octylphthalate	14.44	149	3091814	50.23386	ppb	100
90) Benzo (b) fluoranthene	15.01	252	2358223	46.93476	ppb	100
91) Benzo (k) fluoranthene	15.05	252	2264920	49.78644	ppb	100
92) Benzo (a) pyrene	15.48	252	2178910	48.72077	ppb	100
93) Indeno (1,2,3-cd) pyrene	17.48	276	2272007	48.85981	ppb	100
94) Dibenz (a,h) anthracene	17.51	278	2041439	48.48338	ppb	100
95) Benzo (g,h,i) perylene	18.06	276	1918046	48.37944	ppb	100

Quantitation Report

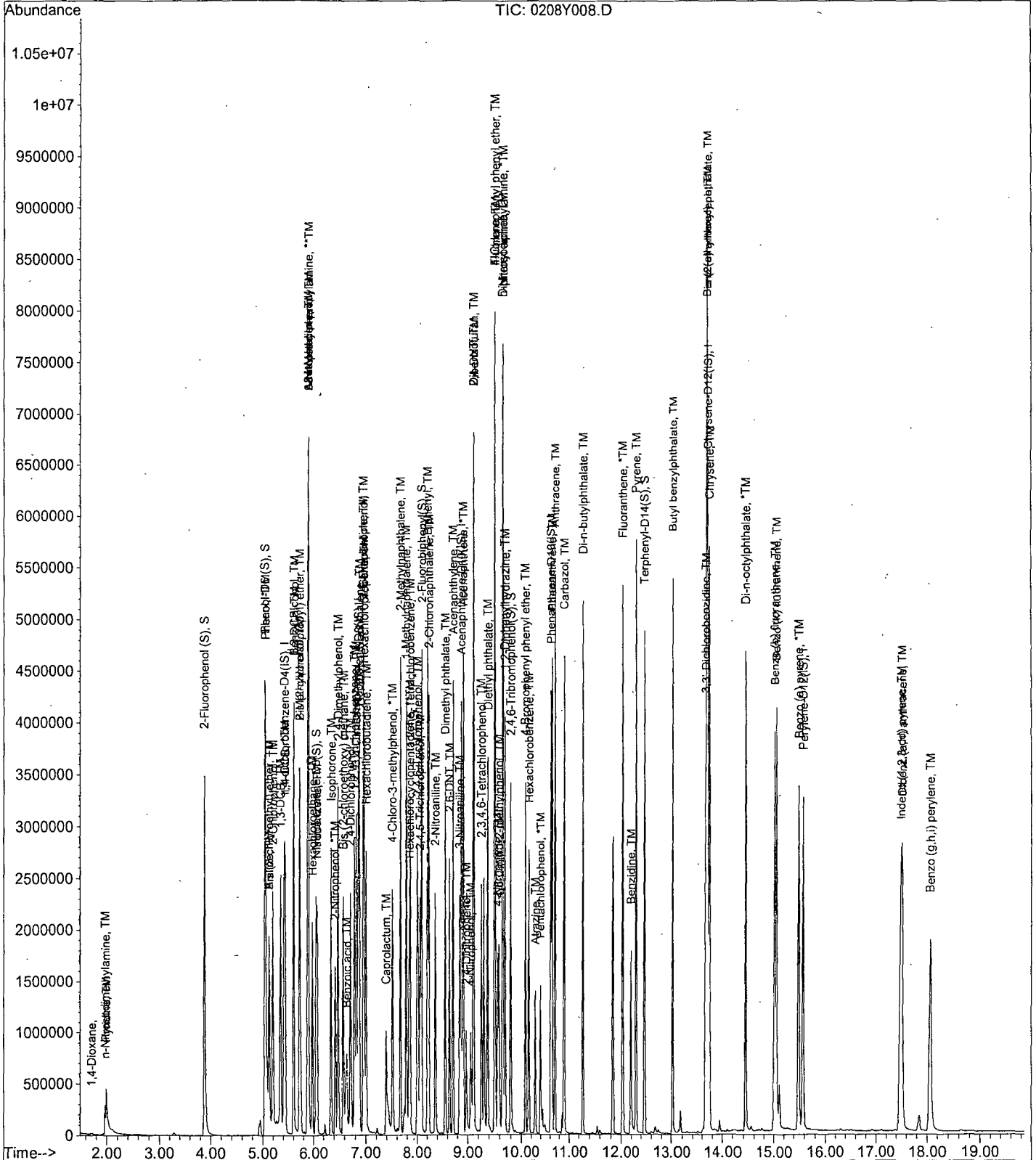
Data File : M:\YODA\DATA\Y190208\0208Y008.D  
 Acq On : 8 Feb 19 17:31  
 Sample : 50ug/mL 8270 02/05/19  
 Misc :

Vial: 8  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Quant Time: Feb 11 12:56 2019

Quant Results File: Y0208NC.RES

Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Tue Feb 12 12:50:28 2019  
 Response via : Initial Calibration



Data File : M:\YODA\DATA\Y190208\0208Y009.D  
 Acq On : 8 Feb 19 17:59  
 Sample : 60ug/mL 8270 02/05/19  
 Misc :

Vial: 9  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Quant Time: Feb 11 10:16 2019

Quant Results File: Y0208NC.RES

Quant Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Mon Feb 11 09:19:24 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.41	152	594032	40.00000	ppb	0.00
21) Napthalene-D8 (IS)	6.86	136	2572537	40.00000	ppb	0.00
41) Acenaphthene-D10 (IS)	8.88	164	1361452	40.00000	ppb	0.00
65) Phenanthrene-D10 (IS)	10.62	188	2571574	40.00000	ppb	0.00
79) Chrysene-D12 (IS)	13.71	240	2216873	40.00000	ppb	0.00
89) Perylene-D12 (IS)	15.58	264	2184866	40.00000	ppb	0.00

System Monitoring Compounds

5) 2-Fluorophenol (S)	3.87	112	2281781	125.41227	ppb	0.00
Spiked Amount 200.000			Recovery =	62.706%		
6) Phenol-D6 (S)	5.04	99	3003452	125.15531	ppb	0.00
Spiked Amount 200.000			Recovery =	62.578%		
22) Nitrobenzene-D5 (S)	6.05	82	1397740	61.84444	ppb	0.00
Spiked Amount 100.000			Recovery =	61.844%		
46) 2-Fluorobiphenyl (S)	8.09	172	2594723	59.79523	ppb	0.00
Spiked Amount 100.000			Recovery =	59.795%		
64) 2,4,6-Tribromophenol (S)	9.81	330	536161	121.05324	ppb	0.00
Spiked Amount 200.000			Recovery =	60.526%		
82) Terphenyl-D14 (S)	12.48	244	2692282	61.23281	ppb	0.00
Spiked Amount 100.000			Recovery =	61.233%		

Target Compounds

	R.T.	QIon	Response	Conc	Units	Qvalue
2) 1,4-Dioxane	1.71	58	12976	8.83939		# 1
3) n-Nitrosodimethylamine	1.96	42	220962	60.10184	ppb	94
4) Pyridine	1.98	79	601573m	96.77717	ppb	100
7) Phenol	5.06	94	1499934	60.15640	ppb	96
8) Aniline	5.12	93	1324426m	64.63356	ppb	98
9) Bis (2-chloroethyl) ether	5.12	63	718934	62.43543	ppb	99
10) 2-Chlorophenol	5.20	128	1090917	60.18453	ppb	98
11) 1,3-DCB	5.35	146	1134893	57.54742	ppb	99
12) 1,4-DCB	5.44	146	1146725	57.49225	ppb	99
13) Benzyl alcohol	5.61	108	579432	70.58996	ppb	99
14) 1,2-DCB	5.61	146	1084300	58.05369	ppb	99
15) 2-Methylphenol	5.73	107	948103	60.55337	ppb	99
16) Bis (2-chloroisopropyl) et	5.72	45	1081625	61.50115	ppb	98
17) Acetophenone	5.88	105	1451230	59.84307	ppb	97
18) 3&4-Methylphenol	5.89	107	2279647	121.57883	ppb	99
19) n-Nitrosodi-n-propylamine	5.88	70	836172	60.63453	ppb	99
20) Hexachloroethane	5.98	117	436619	59.50149	ppb	99
23) Nitrobenzene	6.08	77	1267077	59.51252	ppb	93
24) Isophorone	6.35	82	2210582	59.76452	ppb	97
25) 2-Nitrophenol	6.43	139	608155	58.87115	ppb	96
26) 2,4-Dimethylphenol	6.48	122	973346	58.81921	ppb	97
27) Benzoic acid	6.66	105	799164	75.86194	ppb	99
28) Bis (2-chloroethoxy) metha	6.58	93	1320102	58.92625	ppb	99
29) 2,4-Dichlorophenol	6.71	162	887997	58.10449	ppb	99
30) 1,2,4-Trichlorobenzene	6.79	180	945664	56.55847	ppb	98
31) 3,4-Dimethylphenol	6.82	107	1420664	60.32587	ppb	97
32) Naphthalene	6.89	128	3156690	56.95597	ppb	100
33) 4-Chloroaniline	6.95	127	1285228	62.73500	ppb	99
34) 2,6-Dichlorophenol	6.95	162	859352	57.21506	ppb	99
35) Hexachloropropene	6.97	213	607895	58.84908	ppb	99
36) Hexachlorobutadiene	7.01	225	501183	57.14053	ppb	99
37) Caprolactum	7.41	55	447886	61.59136	ppb	91

Data File : M:\YODA\DATA\Y190208\0208Y009.D  
 Acq On : 8 Feb 19 17:59  
 Sample : 60ug/mL 8270 02/05/19  
 Misc :

Vial: 9  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Quant Time: Feb 11 10:16 2019

Quant Results File: Y0208NC.RES

Quant Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Mon Feb 11 09:19:24 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
38) 4-Chloro-3-methylphenol	7.52	107	983372	61.73247	ppb	91
39) 2-Methylnaphthalene	7.67	142	2061865	57.82531	ppb	100
40) 1-Methylnaphthalene	7.79	142	2124620	57.80600	ppb	99
42) Hexachlorocyclopentadiene	7.84	237	441551	63.71540	ppb	100
43) 1,2,4,5-Tetrachlorobenzene	7.86	216	892470	57.08109	ppb	99
44) 2,4,6-Trichlorophenol	8.00	196	620030	58.96055	ppb	99
45) 2,4,5-Trichlorophenol	8.07	196	657816	59.86481	ppb	92
47) 1,1'-Biphenyl	8.21	154	2696138	58.17063	ppb	97
48) 2-Chloronaphthalene	8.24	162	2004827	57.82050	ppb	97
49) 2-Nitroaniline	8.36	65	698145	62.47479	ppb	95
50) Dimethyl phthalate	8.57	163	2316439	57.99760	ppb	99
51) 2,6-DNT	8.65	165	546867	59.42020	ppb	84
52) Acenaphthylene	8.72	152	3127761	57.57376	ppb	99
53) 3-Nitroaniline	8.85	138	626975	61.49000	ppb	95
54) Acenaphthene	8.92	154	2006872	57.07543	ppb	100
55) 2,4-Dinitrophenol	8.98	184	344909	66.33515	ppb	94
56) 4-Nitrophenol	9.06	65	395594	54.50004	ppb	99
57) Dibenzofuran	9.12	168	2768112	56.48269	ppb	98
58) 2,4-DNT	9.12	165	728472	59.63529	ppb	92
59) 2,3,4,6-Tetrachlorophenol	9.26	232	485789	59.72769	ppb	98
60) Diethyl phthalate	9.38	149	2188058	58.28145	ppb	98
61) 4-Chlorophenyl phenyl ethe	9.51	204	1077178	56.34401	ppb	96
62) Fluorene	9.52	166	2283882	57.48845	ppb	99
63) 4-Nitroaniline	9.57	138	592547	59.95257	ppb	91
66) 4,6-Dinitro-2-methylphenol	9.60	198	477224	64.32591	ppb	88
67) Diphenyl amine	9.66	169	3511113	117.54547	ppb	100
68) n-Nitrosodiphenylamine	9.66	169	3511113	117.54547	ppb	100
69) 1,2-Diphenylhydrazine	9.70	77	2440865	56.75115	ppb	96
70) 4-Bromophenyl phenyl ether	10.09	248	579728	56.65987	ppb	87
71) Hexachlorobenzene	10.16	284	554126	56.34287	ppb	92
72) Atrazine	10.28	200	320433	30.94472	ppb	98
73) Pentachlorophenol	10.40	266	350479	63.87639	ppb	99
74) Phenanthrene	10.65	178	3304040	56.77743	ppb	99
75) Anthracene	10.70	178	3416612	57.19257	ppb	99
76) Carbazol	10.90	167	3119658	57.61420	ppb	99
77) Di-n-butylphthalate	11.28	149	3718705	58.75213	ppb	99
78) Fluoranthene	12.03	202	3528971	57.10065	ppb	98
80) Benzidine	12.20	184	1347944	69.87189	ppb	100
81) Pyrene	12.30	202	3630220	57.72020	ppb	100
83) Butyl benzylphthalate	13.03	149	1708399	60.78607	ppb	93
84) 3,3'-Dichlorobenzidine	13.66	252	1157657	62.94389	ppb	98
85) Benz (a) anthracene	13.70	228	3165581	59.73244	ppb	100
86) Bis (2-ethylhexyl) phthala	13.68	149	2327533	59.81421	ppb	98
87) Chrysene	13.75	228	3058226	57.98565	ppb	100
88) Di-n-octylphthalate	14.44	149	4088261	62.22750	ppb	99
90) Benzo (b) fluoranthene	15.01	252	3401032	63.03608	ppb	99
91) Benzo (k) fluoranthene	15.06	252	2721833	55.25556	ppb	98
92) Benzo (a) pyrene	15.49	252	2892310	58.25973	ppb	97
93) Indeno (1,2,3-cd) pyrene	17.49	276	3023727	59.22634	ppb	100
94) Dibenz (a,h) anthracene	17.52	278	2725856	58.44808	ppb	99
95) Benzo (g,h,i) perylene	18.07	276	2566862	59.18658	ppb	99

Quantitation Report

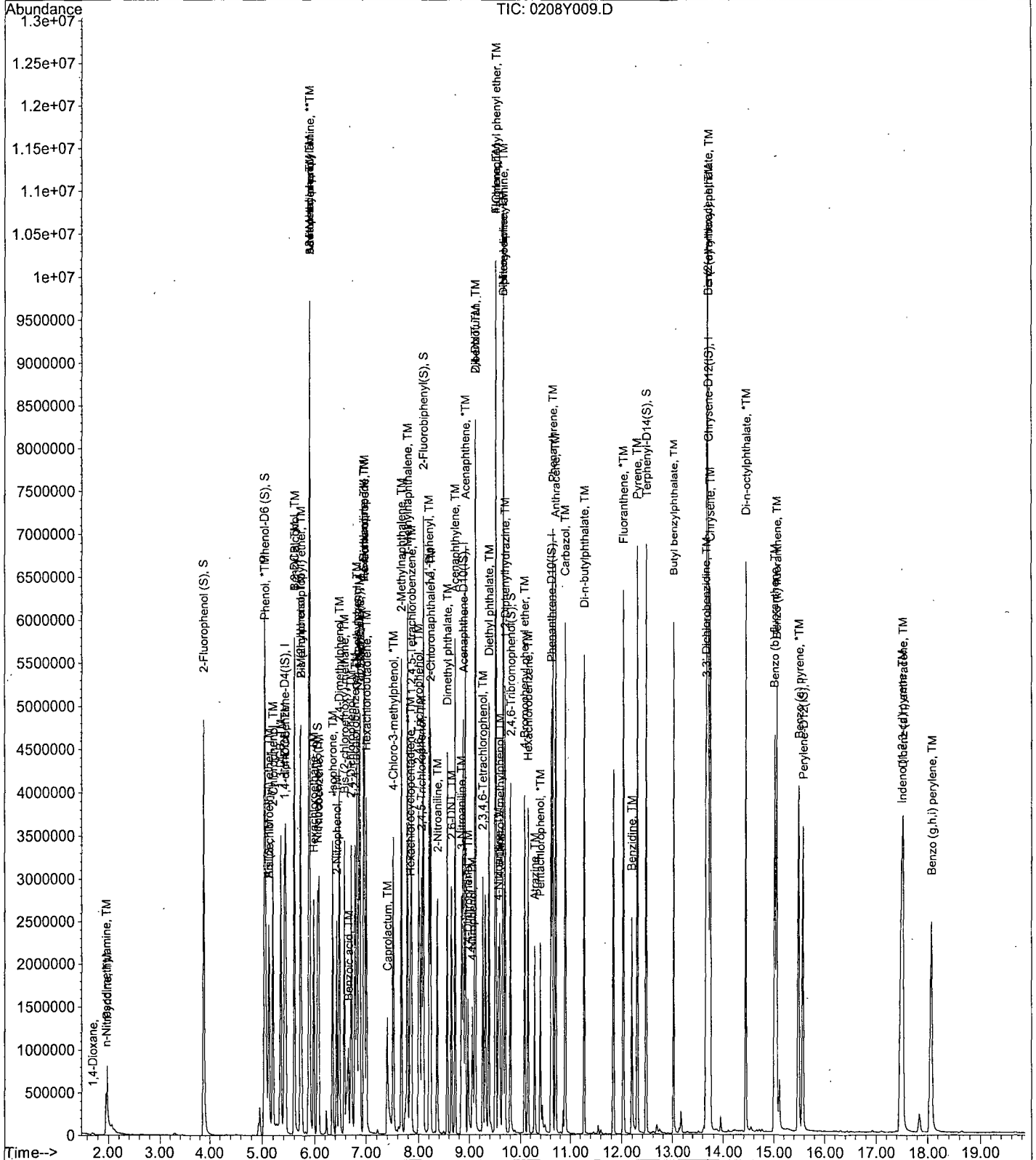
Data File : M:\YODA\DATA\Y190208\0208Y009.D  
Acq On : 8 Feb 19 17:59  
Sample : 60ug/mL 8270 02/05/19  
Misc :

Vial: 9  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Feb 11 10:16 2019

Quant Results File: Y0208NC.RES

Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Tue Feb 12 12:50:28 2019  
Response via : Initial Calibration



Data File : M:\YODA\DATA\Y190208\0208Y010.D  
 Acq On : 8 Feb 19 18:27  
 Sample : 80ug/mL 8270 02/05/19  
 Misc :

Vial: 10  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Quant Time: Feb 11 9:21 2019

Quant Results File: Y0208NC.RES

Quant Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Mon Feb 11 09:21:20 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.41	152	592492	40.00000	ppb	0.00
21) Napthalene-D8 (IS)	6.86	136	2568018	40.00000	ppb	0.00
41) Acenaphthene-D10 (IS)	8.88	164	1361223	40.00000	ppb	0.01
65) Phenanthrene-D10 (IS)	10.62	188	2587292	40.00000	ppb	0.01
79) Chrysene-D12 (IS)	13.71	240	2228029	40.00000	ppb	0.00
89) Perylene-D12 (IS)	15.58	264	2209773	40.00000	ppb	0.01

System Monitoring Compounds

5) 2-Fluorophenol (S)	3.85	112	3000157	164.76995	ppb	-0.03
Spiked Amount 200.000			Recovery =	82.385%		
6) Phenol-D6 (S)	5.03	99	3946783	164.21863	ppb	0.00
Spiked Amount 200.000			Recovery =	82.110%		
22) Nitrobenzene-D5 (S)	6.05	82	1865396	82.42497	ppb	0.00
Spiked Amount 100.000			Recovery =	82.425%		
46) 2-Fluorobiphenyl (S)	8.10	172	3400714	78.31722	ppb	0.00
Spiked Amount 100.000			Recovery =	78.317%		
64) 2,4,6-Tribromophenol (S)	9.81	330	714391	161.67055	ppb	0.01
Spiked Amount 200.000			Recovery =	80.836%		
82) Terphenyl-D14 (S)	12.48	244	3577770	80.62623	ppb	0.01
Spiked Amount 100.000			Recovery =	80.626%		

Target Compounds

	R.T.	QIon	Response	Conc	Units	Qvalue
2) 1,4-Dioxane	1.69	58	17396	11.98816		# 1
3) n-Nitrosodimethylamine	1.92	42	269583	73.35507	ppb	100
4) Pyridine	1.95	79	760821	120.65236	ppb	100
7) Phenol	5.05	94	1987300	79.63631	ppb	89
8) Aniline	5.12	93	1610403	77.33721	ppb	# 96
9) Bis (2-chloroethyl) ether	5.12	63	942753	81.27400	ppb	99
10) 2-Chlorophenol	5.19	128	1438681	79.31626	ppb	99
11) 1,3-DCB	5.35	146	1499829	76.29538	ppb	99
12) 1,4-DCB	5.43	146	1539148	77.38891	ppb	96
13) Benzyl alcohol	5.60	108	798662	96.22449	ppb	99
14) 1,2-DCB	5.61	146	1435743	77.07774	ppb	98
15) 2-Methylphenol	5.72	107	1250075	79.66395	ppb	99
16) Bis (2-chloroisopropyl) et	5.72	45	1423679	80.46652	ppb	94
17) Acetophenone	5.89	105	1922887	79.14211	ppb	98
18) 3&4-Methylphenol	5.90	107	2968948	158.00765	ppb	95
19) n-Nitrosodi-n-propylamine	5.89	70	1095999	79.00093	ppb	99
20) Hexachloroethane	5.98	117	578999	78.97587	ppb	98
23) Nitrobenzene	6.08	77	1690551	79.33475	ppb	93
24) Isophorone	6.35	82	2953397	79.71007	ppb	97
25) 2-Nitrophenol	6.43	139	815984	79.30338	ppb	99
26) 2,4-Dimethylphenol	6.48	122	1296291	78.47026	ppb	98
27) Benzoic acid	6.67	105	1114963	103.20675	ppb	99
28) Bis (2-chloroethoxy) metha	6.58	93	1737714	77.46850	ppb	99
29) 2,4-Dichlorophenol	6.71	162	1184496	77.77886	ppb	99
30) 1,2,4-Trichlorobenzene	6.80	180	1250176	75.05677	ppb	98
31) 3,4-Dimethylphenol	6.82	107	1892563	80.10469	ppb	98
32) Naphthalene	6.89	128	4173722	75.47524	ppb	99
33) 4-Chloroaniline	6.95	127	1655222	80.82826	ppb	99
34) 2,6-Dichlorophenol	6.95	162	1139572	76.21885	ppb	99
35) Hexachloropropene	6.97	213	797327	77.27069	ppb	99
36) Hexachlorobutadiene	7.01	225	670418	76.59782	ppb	98
37) Caprolactum	7.42	55	596150	81.53749	ppb	94

Quantitation Report (QT Reviewed)

Data File : M:\YODA\DATA\Y190208\0208Y010.D  
 Acq On : 8 Feb 19 18:27  
 Sample : 80ug/mL 8270 02/05/19  
 Misc :

Vial: 10  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Quant Time: Feb 11 9:21 2019

Quant Results File: Y0208NC.RES

Quant Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Mon Feb 11 09:21:20 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
38) 4-Chloro-3-methylphenol	7.52	107	1333684	83.50336	ppb	94
39) 2-Methylnaphthalene	7.67	142	2733263	76.69133	ppb	98
40) 1-Methylnaphthalene	7.79	142	2790656	75.98582	ppb	99
42) Hexachlorocyclopentadiene	7.84	237	624556	90.89072	ppb	99
43) 1,2,4,5-Tetrachlorobenzene	7.86	216	1169693	74.98587	ppb	100
44) 2,4,6-Trichlorophenol	8.00	196	829503	78.94323	ppb	99
45) 2,4,5-Trichlorophenol	8.07	196	878869	79.90972	ppb	92
47) 1,1'-Biphenyl	8.22	154	3523073	75.88113	ppb	98
48) 2-Chloronaphthalene	8.24	162	2655831	76.58188	ppb	97
49) 2-Nitroaniline	8.37	65	942673	83.90305	ppb	92
50) Dimethyl phthalate	8.57	163	3084912	77.31424	ppb	100
51) 2,6-DNT	8.65	165	738191	80.27660	ppb	88
52) Acenaphthylene	8.72	152	4181208	77.03750	ppb	99
53) 3-Nitroaniline	8.86	138	843589	82.54754	ppb	97
54) Acenaphthene	8.92	154	2629057	74.78628	ppb	100
55) 2,4-Dinitrophenol	8.98	184	494921	95.03232	ppb	91
56) 4-Nitrophenol	9.06	65	581657	82.16847	ppb	96
57) Dibenzofuran	9.13	168	3649705	74.54384	ppb	96
58) 2,4-DNT	9.13	165	972707	79.58195	ppb	89
59) 2,3,4,6-Tetrachlorophenol	9.27	232	636467	78.29331	ppb	94
60) Diethyl phthalate	9.39	149	2900032	77.12217	ppb	98
61) 4-Chlorophenyl phenyl ethe	9.52	204	1416835	74.20239	ppb	97
62) Fluorene	9.52	166	2983153	75.03959	ppb	100
63) 4-Nitroaniline	9.58	138	777606	78.59205	ppb	93
66) 4,6-Dinitro-2-methylphenol	9.61	198	647975	86.83046	ppb #	82
67) Diphenyl amine	9.66	169	4653586	154.84444	ppb	100
68) n-Nitrosodiphenylamine	9.66	169	4653586	154.84444	ppb	100
69) 1,2-Diphenylhydrazine	9.70	77	3827332	88.09137	ppb	96
70) 4-Bromophenyl phenyl ether	10.09	248	784551	76.35949	ppb	86
71) Hexachlorobenzene	10.16	284	751664	76.11593	ppb	90
72) Atrazine	10.29	200	423905	40.46099	ppb	98
73) Pentachlorophenol	10.40	266	491759	88.88985	ppb	98
74) Phenanthrene	10.65	178	4381776	74.85185	ppb	99
75) Anthracene	10.70	178	4575846	76.12640	ppb	99
76) Carbazol	10.90	167	4183562	76.67050	ppb	99
77) Di-n-butylphthalate	11.28	149	5036616	78.93965	ppb	99
78) Fluoranthene	12.04	202	4736089	76.21075	ppb	96
80) Benzidine	12.20	184	1757957	87.85490	ppb	99
81) Pyrene	12.30	202	4917370	77.65895	ppb	99
83) Butyl benzylphthalate	13.04	149	2344105	82.51075	ppb	84
84) 3,3'-Dichlorobenzidine	13.67	252	1547616	83.10496	ppb	97
85) Benz (a) anthracene	13.70	228	4253531	79.67751	ppb	99
86) Bis (2-ethylhexyl) phthala	13.68	149	3146827	79.93753	ppb	99
87) Chrysene	13.75	228	4155194	78.44517	ppb	99
88) Di-n-octylphthalate	14.44	149	5488661	82.50094	ppb	97
90) Benzo (b) fluoranthene	15.02	252	4477173	81.89421	ppb	100
91) Benzo (k) fluoranthene	15.06	252	3972635	80.08017	ppb	99
92) Benzo (a) pyrene	15.49	252	3984346	79.40742	ppb	99
93) Indeno (1,2,3-cd) pyrene	17.49	276	4207350	81.49137	ppb	99
94) Dibenz (a,h) anthracene	17.53	278	3766841	79.88066	ppb	100
95) Benzo (g,h,i) perylene	18.08	276	3569294	81.48773	ppb	98



Quantitation Report

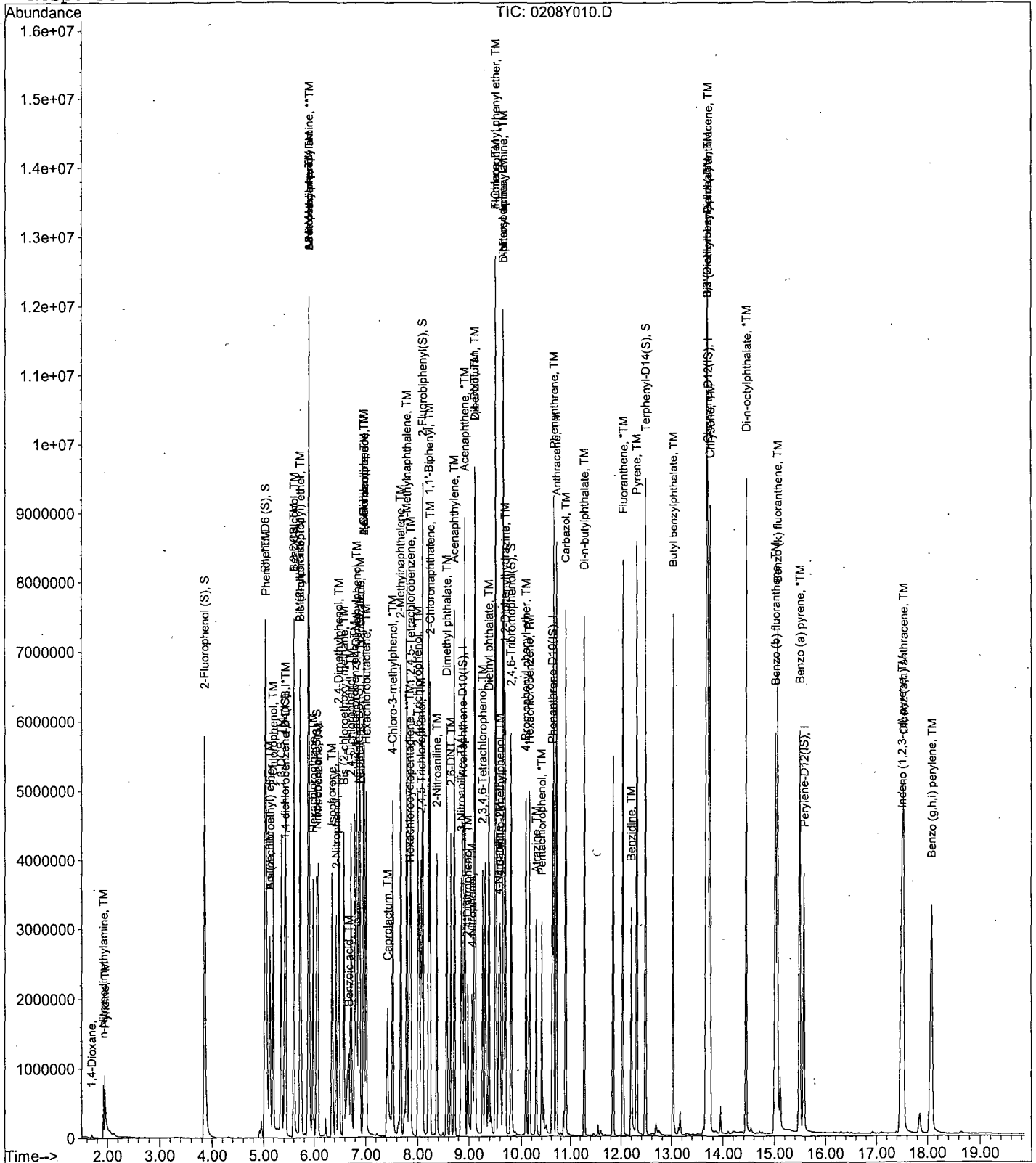
Data File : M:\YODA\DATA\Y190208\0208Y010.D  
 Acq On : 8 Feb 19 18:27  
 Sample : 80ug/mL 8270 02/05/19  
 Misc :

Vial: 10  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Quant Time: Feb 11 9:21 2019

Quant Results File: Y0208NC.RES

Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Tue Feb 12 12:50:28 2019  
 Response via : Initial Calibration



Data File : M:\YODA\DATA\Y190208\0208Y011.D  
 Acq On : 8 Feb 19 18:54  
 Sample : 100ug/mL 8270 02/05/19  
 Misc :

Vial: 11  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Quant Time: Feb 11 9:22 2019

Quant Results File: Y0208NC.RES

Quant Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Mon Feb 11 09:22:52 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.41	152	661313	40.00000	ppb	0.00
21) Napthalene-D8 (IS)	6.86	136	2808065	40.00000	ppb	0.00
41) Acenaphthene-D10 (IS)	8.88	164	1487718	40.00000	ppb	0.01
65) Phenanthrene-D10 (IS)	10.62	188	2834769	40.00000	ppb	0.01
79) Chrysene-D12 (IS)	13.72	240	2454392	40.00000	ppb	0.01
89) Perylene-D12 (IS)	15.58	264	2443623	40.00000	ppb	0.01

System Monitoring Compounds

5) 2-Fluorophenol (S)	3.84	112	4069720	199.30713	ppb	-0.04
Spiked Amount 200.000					Recovery = 99.653%	
6) Phenol-D6 (S)	5.03	99	5280639	195.49846	ppb	0.00
Spiked Amount 200.000					Recovery = 97.749%	
22) Nitrobenzene-D5 (S)	6.06	82	2538114	101.85926	ppb	0.01
Spiked Amount 100.000					Recovery = 101.859%	
46) 2-Fluorobiphenyl (S)	8.10	172	4565130	96.02935	ppb	0.00
Spiked Amount 100.000					Recovery = 96.029%	
64) 2,4,6-Tribromophenol (S)	9.81	330	1002377	207.97138	ppb	0.01
Spiked Amount 200.000					Recovery = 103.986%	
82) Terphenyl-D14 (S)	12.48	244	4888750	99.66442	ppb	0.01
Spiked Amount 100.000					Recovery = 99.664%	

Target Compounds

	R.T.	QIon	Response	Conc	Units	Qvalue
2) 1,4-Dioxane	1.68	58	22842	13.94355		90
3) n-Nitrosodimethylamine	1.91	42	384011	93.51453	ppb	100
4) Pyridine	1.93	79	1023239	135.03486	ppb	100
7) Phenol	5.05	94	2692977	96.02004	ppb	# 74
8) Aniline	5.13	93	2079753	88.36819	ppb	# 97
9) Bis (2-chloroethyl) ether	5.13	63	1308120	100.04234	ppb	97
10) 2-Chlorophenol	5.19	128	1958801	96.25820	ppb	96
11) 1,3-DCB	5.35	146	2074487	94.34714	ppb	99
12) 1,4-DCB	5.43	146	2108904	94.70244	ppb	97
13) Benzyl alcohol	5.60	108	1145470	121.17700	ppb	100
14) 1,2-DCB	5.60	146	1965689	94.13177	ppb	98
15) 2-Methylphenol	5.72	107	1720796	97.47836	ppb	100
16) Bis (2-chloroisopropyl) et	5.72	45	1939144	97.10965	ppb	95
17) Acetophenone	5.89	105	2580193	94.40036	ppb	97
18) 3&4-Methylphenol	5.90	107	3969926	187.94081	ppb	96
19) n-Nitrosodi-n-propylamine	5.90	70	1471685	93.95723	ppb	99
20) Hexachloroethane	5.98	117	808626	98.38846	ppb	98
23) Nitrobenzene	6.08	77	2303879	98.18378	ppb	95
24) Isophorone	6.36	82	4056815	99.50319	ppb	99
25) 2-Nitrophenol	6.43	139	1120924	99.40432	ppb	98
26) 2,4-Dimethylphenol	6.48	122	1775780	97.76900	ppb	98
27) Benzoic acid	6.69	105	1464720	120.25306	ppb	98
28) Bis (2-chloroethoxy) metha	6.58	93	2352985	95.53039	ppb	99
29) 2,4-Dichlorophenol	6.71	162	1600077	95.75536	ppb	98
30) 1,2,4-Trichlorobenzene	6.80	180	1704799	93.58607	ppb	99
31) 3,4-Dimethylphenol	6.82	107	2561529	98.30810	ppb	98
32) Napthalene	6.89	128	5638902	93.06609	ppb	100
33) 4-Chloroaniline	6.96	127	1912331	85.27068	ppb	94
34) 2,6-Dichlorophenol	6.96	162	1516605	92.51987	ppb	98
35) Hexachloropropene	6.97	213	1098913	97.27858	ppb	99
36) Hexachlorobutadiene	7.01	225	906445	94.39045	ppb	99
37) Caprolactum	7.43	55	812676	100.62907	ppb	96

(#) = qualifier out of range (m) = manual integration

Data File : M:\YODA\DATA\Y190208\0208Y011.D  
 Acq On : 8 Feb 19 18:54  
 Sample : 100ug/mL 8270 02/05/19  
 Misc :

Vial: 11  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Quant Time: Feb 11 9:22 2019

Quant Results File: Y0208NC.RES

Quant Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Mon Feb 11 09:22:52 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
38) 4-Chloro-3-methylphenol	7.52	107	1817334	103.22163	ppb	96
39) 2-Methylnaphthalene	7.68	142	3683395	94.21800	ppb	99
40) 1-Methylnaphthalene	7.79	142	3784007	93.99414	ppb	98
42) Hexachlorocyclopentadiene	7.85	237	865641	115.46208	ppb	99
43) 1,2,4,5-Tetrachlorobenzene	7.86	216	1595854	93.55777	ppb	99
44) 2,4,6-Trichlorophenol	8.01	196	1129252	98.07870	ppb	98
45) 2,4,5-Trichlorophenol	8.07	196	1191415	98.90308	ppb	94
47) 1,1'-Biphenyl	8.22	154	4756283	93.50195	ppb	99
48) 2-Chloronaphthalene	8.24	162	3592009	94.43919	ppb	98
49) 2-Nitroaniline	8.37	65	1292441	104.21307	ppb	97
50) Dimethyl phthalate	8.57	163	4220948	96.54469	ppb	100
51) 2,6-DNT	8.65	165	1015113	100.74530	ppb	99
52) Acenaphthylene	8.72	152	5639162	94.86348	ppb	98
53) 3-Nitroaniline	8.86	138	1084641	96.53433	ppb	98
54) Acenaphthene	8.92	154	3572004	92.92211	ppb	100
55) 2,4-Dinitrophenol	8.99	184	634698	110.35037	ppb	94
56) 4-Nitrophenol	9.07	65	804804	105.32287	ppb	97
57) Dibenzofuran	9.13	168	4877067	91.05213	ppb	96
58) 2,4-DNT	9.13	165	1303953	97.19162	ppb	98
59) 2,3,4,6-Tetrachlorophenol	9.27	232	877823	98.71026	ppb	93
60) Diethyl phthalate	9.40	149	4008840	97.13811	ppb	99
61) 4-Chlorophenyl phenyl ethe	9.52	204	1880775	90.02618	ppb	94
62) Fluorene	9.53	166	3967673	91.13742	ppb	99
63) 4-Nitroaniline	9.59	138	974511	89.62501	ppb	95
66) 4,6-Dinitro-2-methylphenol	9.62	198	902774	110.19321	ppb #	75
67) Diphenyl amine	9.67	169	6157631	186.23507	ppb	99
68) n-Nitrosodiphenylamine	9.67	169	6157631	186.23507	ppb	99
69) 1,2-Diphenylhydrazine	9.70	77	5171455	107.85995	ppb	94
70) 4-Bromophenyl phenyl ether	10.09	248	1055602	93.81830	ppb	91
71) Hexachlorobenzene	10.17	284	1040898	96.15563	ppb	93
72) Atrazine	10.29	200	581405	50.43654	ppb	97
73) Pentachlorophenol	10.40	266	649917	106.52016	ppb	99
74) Phenanthrene	10.65	178	5921393	92.26062	ppb	99
75) Anthracene	10.71	178	6146503	93.07867	ppb	99
76) Carbazol	10.91	167	5696993	94.94122	ppb	99
77) Di-n-butylphthalate	11.29	149	6782018	96.34266	ppb	99
78) Fluoranthene	12.04	202	6392844	93.63836	ppb	98
80) Benzidine	12.20	184	1809957	79.69126	ppb	99
81) Pyrene	12.31	202	6600770	94.08413	ppb	100
83) Butyl benzylphthalate	13.04	149	3151538	99.59106	ppb	89
84) 3,3'-Dichlorobenzidine	13.68	252	1831770	88.32188	ppb	99
85) Benz (a) anthracene	13.70	228	5776744	97.97125	ppb	100
86) Bis (2-ethylhexyl) phthala	13.69	149	4111546	93.93163	ppb #	94
87) Chrysene	13.75	228	5704338	97.16798	ppb	99
88) Di-n-octylphthalate	14.45	149	7390745	100.08388	ppb #	94
90) Benzo (b) fluoranthene	15.02	252	6613523	108.30309	ppb	99
91) Benzo (k) fluoranthene	15.07	252	4915121	89.76528	ppb	99
92) Benzo (a) pyrene	15.50	252	5476343	98.28963	ppb	98
93) Indeno (1,2,3-cd) pyrene	17.51	276	5721192	99.59226	ppb	98
94) Dibenz (a,h) anthracene	17.55	278	5155165	98.29324	ppb	100
95) Benzo (g,h,i) perylene	18.10	276	4834656	99.10060	ppb	98

(#) = qualifier out of range (m) = manual integration

Quantitation Report

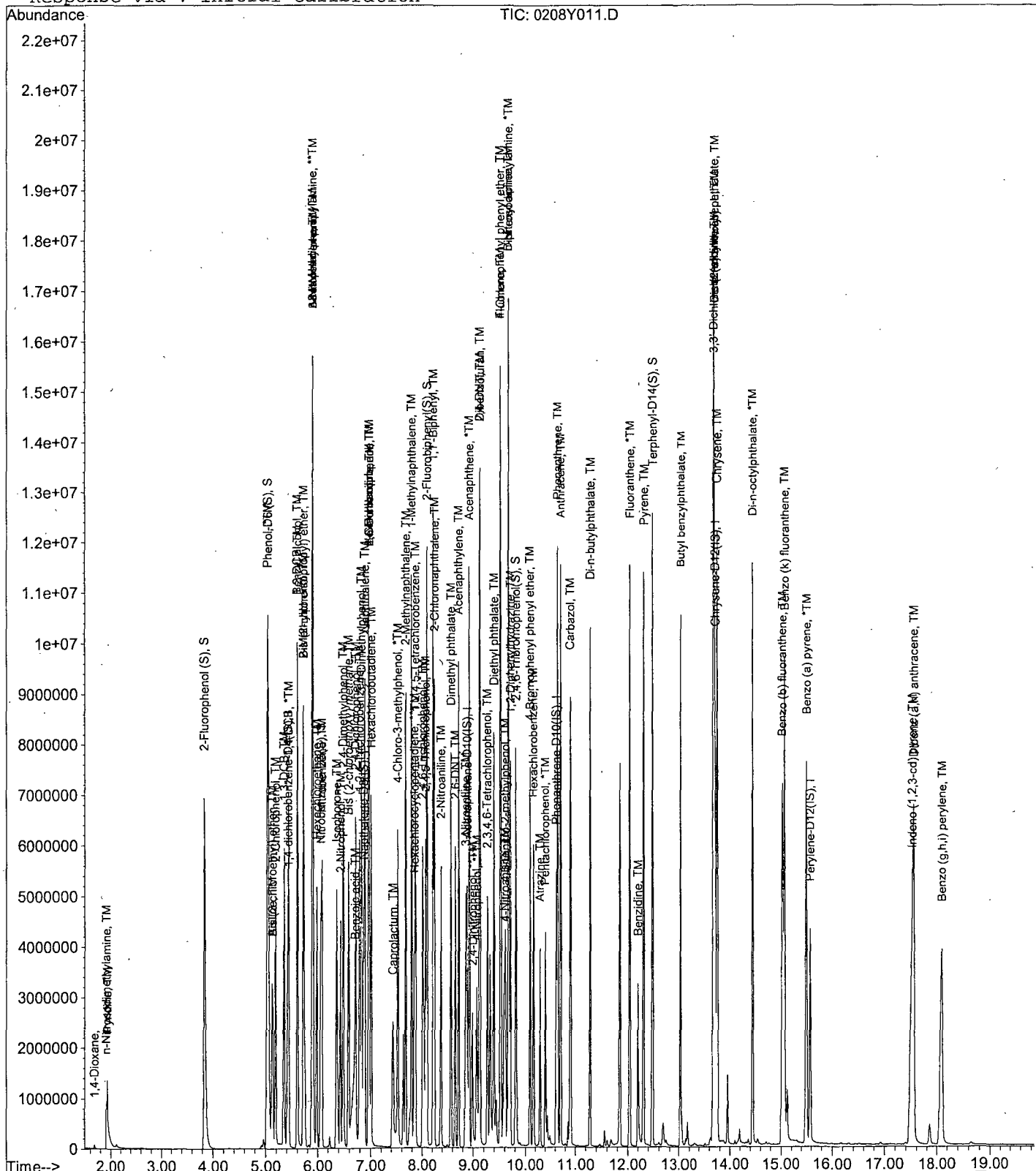
Data File : M:\YODA\DATA\Y190208\0208Y011.D  
Acq On : 8 Feb 19 18:54  
Sample : 100ug/mL 8270 02/05/19  
Misc :

Vial: 11  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Feb 11 9:22 2019

Quant Results File: Y0208NC.RES

Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Tue Feb 12 12:50:28 2019  
Response via : Initial Calibration



Semi-Volatile Analysis by GC-MS  
EPA 8270

Form 7

Second Source Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: \_\_\_\_\_

SDG No: \_\_\_\_\_  
Date Analyzed: 8 Feb 19 19:22  
Instrument: Yoda  
Initial Cal. Date: 02/08/19  
Data File: 0208Y012.D

		Compound	MEAN	CCRF	%D	%Drift
1	L	1,4-Dioxane	0.1372	0.1593	16	L 8.9
2	TM	n-Nitrosodimethylamine	0.2661	0.2783	4.6	TM
3	TML	Pyridine	0.8449	0.8233	2.6	TML 20
4	*TM	Phenol	1.793	2.064	15	*TM
5	TM	Aniline	1.420	1.613	14	TM
6	TM	Bis (2-chloroethyl) ether	0.8733	0.9463	8.4	TM
7	TM	2-Chlorophenol	1.289	1.400	8.5	TM
8	TM	1,3-DCB	1.358	1.469	8.2	TM
9	*TM	1,4-DCB	1.388	1.500	8.1	*TM
10	TM	Benzyl alcohol	0.6137	0.7161	17	TM
11	TM	1,2-DCB	1.303	1.408	8.1	TM
12	TM	2-Methylphenol	1.126	1.215	7.9	TM
13	TM	Bis (2-chloroisopropyl) ether	1.288	1.379	7.1	TM
14	TM	Acetophenone	1.746	1.865	6.8	TM
15	TM	3&4-Methylphenol	1.346	1.454	8.1	TM
16	**TM	n-Nitrosodi-n-propylamine	1.015	1.071	5.5	**TM
17	TM	Hexachloroethane	0.5188	0.5603	8.0	TM
18	TM	Nitrobenzene	0.3510	0.3744	6.7	TM
19	TM	Isophorone	0.6110	0.6602	8.1	TM
20	*TM	2-Nitrophenol	0.1644	0.1808	10.0	*TM
21	TM	2,4-Dimethylphenol	0.2698	0.2928	8.5	TM
22	TML	Benzoic acid	0.1702	0.2283	34	TML 8.9
23	TM	Bis (2-chloroethoxy) methane	0.3641	0.3865	6.2	TM
24	*TM	2,4-Dichlorophenol	0.2452	0.2629	7.2	*TM
25	TM	1,2,4-Trichlorobenzene	0.2636	0.2824	7.1	TM
26	TM	3,4-Dimethylphenol	0.3952	0.4044	2.3	TM
27	TM	Naphthalene	0.8874	0.9360	5.5	TM
28	TM	4-Chloroaniline	0.3381	0.3619	7.1	TM
29	TM	2,6-Dichlorophenol	0.2402	0.2552	6.2	TM
30	TM	Hexachloropropene	0.1611	0.1770	9.9	TM
31	*TM	Hexachlorobutadiene	0.1393	0.1469	5.5	*TM
32	TM	Caprolactum	0.1268	0.1294	2.0	TM
33	*TM	4-Chloro-3-methylphenol	0.2701	0.2903	7.5	*TM
34	TM	2-Methylnaphthalene	0.5725	0.5992	4.7	TM
35	TM	1-Methylnaphthalene	0.5919	0.6153	4.0	TM
36	**TML	Hexachlorocyclopentadiene	0.1835	0.2367	29	**TML 8.0
37	TM	1,2,4,5-Tetrachlorobenzene	0.4669	0.4757	1.9	TM
38	*TM	2,4,6-Trichlorophenol	0.3203	0.3486	8.8	*TM
39	TM	2,4,5-Trichlorophenol	0.3393	0.3648	7.5	TM
40	TM	1,1'-Biphenyl	1.408	1.470	4.4	TM

Average

8.7

Semi-Volatile Analysis by GC-MS  
EPA 8270

Form 7

Second Source Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: 0

SDG No: \_\_\_\_\_  
Date Analyzed: 8 Feb 19 19:22  
Instrument: Yoda  
Cal. Date: 02/08/19  
Data File: 0208Y012.D

		Compound	MEAN	CCRF	%D	%Drift
41	TM	2-Chloronaphthalene	1.058	1.127	6.5	TM
42	TM	2-Nitroaniline	0.3568	0.3784	6.0	TM
43	TM	Dimethyl phthalate	1.222	1.294	5.9	TM
44	TM	2,6-DNT	0.2803	0.3107	11	TM
45	TM	Acenaphthylene	1.661	1.761	6.0	TM
46	TM	3-Nitroaniline	0.3174	0.3361	5.9	TM
47	*TM	Acenaphthene	1.067	1.117	4.6	*TM
48	**TML	2,4-Dinitrophenol	0.1324	0.1930	46	**TML 15
49	**TM	4-Nitrophenol	0.2112	0.2035	3.7	**TM
50	TM	Dibenzofuran	1.485	1.516	2.1	TM
51	TM	2,4-DNT	0.3729	0.4166	12	TM
52	TM	2,3,4,6-Tetrachlorophenol	0.2487	0.2829	14	TM
53	TM	Diethyl phthalate	1.166	1.211	3.9	TM
54	TM	4-Chlorophenyl phenyl ether	0.5770	0.6030	4.5	TM
55	TM	Fluorene	1.216	1.274	4.7	TM
56	TM	4-Nitroaniline	0.2974	0.3228	8.5	TM
57	TML	4,6-Dinitro-2-methylphenol	0.1092	0.1406	29	TML 13
58	TM	Diphenyl amine	0.4975	0.5220	4.9	TM
59	*TM	n-Nitrosodiphenylamine	0.4975	0.5220	4.9	*TM
60	TM	1,2-Diphenylhydrazine	0.7149	0.7545	5.5	TM
61	TM	4-Bromophenyl phenyl ether	0.1608	0.1729	7.5	TM
62	TM	Hexachlorobenzene	0.1549	0.1645	6.2	TM
63	TM	Atrazine	0.1702	0.1687	0.87	TM
64	*TM	Pentachlorophenol	0.0904	0.1062	18	*TM
65	TM	Phenanthrene	0.9314	0.9959	6.9	TM
66	TM	Anthracene	0.9580	0.9956	3.9	TM
67	TM	Carbazol	0.8761	0.9502	8.5	TM
68	TM	Di-n-butylphthalate	1.033	1.112	7.6	TM
69	*TM	Fluoranthene	0.9937	1.057	6.3	*TM
70	TM	Benzidine	0.4197	0.4032	3.9	TM
71	TM	Pyrene	1.191	1.241	4.2	TM
72	TM	Butyl benzylphthalate	0.5408	0.5816	7.5	TM
73	TM	3,3'-Dichlorobenzidine	0.3640	0.4055	11	TM
74	TM	Benz (a) anthracene	1.033	1.081	4.7	TM
75	TM	Bis (2-ethylhexyl) phthalate	0.7509	0.7840	4.4	TM
76	TM	Chrysene	0.9879	0.9937	0.59	TM
77	*TM	Di-n-octylphthalate	1.266	1.379	8.9	*TM
78	TM	Benzo (b) fluoranthene	1.056	1.085	2.8	TM
79	TM	Benzo (k) fluoranthene	0.9558	1.045	9.3	TM
80	*TM	Benzo (a) pyrene	0.9396	0.9883	5.2	*TM

Average

7.9

Semi-Volatile Analysis by GC-MS  
EPA 8270

Form 7

Second Source Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: 0

SDG No: \_\_\_\_\_  
Date Analyzed: 8 Feb 19 19:22  
Instrument: Yoda  
Cal. Date: 02/08/19  
Data File: 0208Y012.D

		Compound	MEAN	CCRF	%D	%Drift
81	TM	Indeno (1,2,3-cd) pyrene	0.9769	1.064	8.9	TM
82	TM	Dibenz (a,h) anthracene	0.8846	0.9296	5.1	TM
83	TM	Benzo (g,h,i) perylene	0.8329	0.8497	2.0	TM
84						
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118						
119						
120		Average			5.3	

Data File : M:\YODA\DATA\Y190208\0208Y012.D  
 Acq On : 8 Feb 19 19:22  
 Sample : SS 8270 02/05/19  
 Misc :

Vial: 12  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Quant Time: Feb 11 13:17 2019

Quant Results File: Y0208NC.RES

Quant Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Mon Feb 11 12:24:00 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.42	152	491478	40.00000	ppb	0.01
21) Napthalene-D8 (IS)	6.86	136	2131144	40.00000	ppb	0.00
41) Acenaphthene-D10 (IS)	8.88	164	1134807	40.00000	ppb	0.00
65) Phenanthrene-D10 (IS)	10.61	188	2128813	40.00000	ppb	0.00
79) Chrysene-D12 (IS)	13.71	240	1862787	40.00000	ppb	0.00
89) Perylene-D12 (IS)	15.57	264	1784635	40.00000	ppb	0.00

System Monitoring Compounds

5) 2-Fluorophenol (S)	3.98	112	268	0.01715	ppb	0.10
Spiked Amount 200.000			Recovery =	0.009%		
6) Phenol-D6 (S)	5.06	99	2188	0.10524	ppb	0.02
Spiked Amount 200.000			Recovery =	0.053%		
22) Nitrobenzene-D5 (S)	5.98	82	81179	4.15753	ppb	-0.07
Spiked Amount 100.000			Recovery =	4.158%		
46) 2-Fluorobiphenyl (S)	8.09	172	3315	0.09014	ppb	0.00
Spiked Amount 100.000			Recovery =	0.090%		
64) 2,4,6-Tribromophenol (S)	9.81	330	703	0.18807	ppb	0.01
Spiked Amount 200.000			Recovery =	0.094%		
82) Terphenyl-D14 (S)	12.47	244	9564	0.25336	ppb	0.00
Spiked Amount 100.000			Recovery =	0.253%		

Target Compounds

	R.T.	QIon	Response	Conc	Units	Qvalue
2) 1,4-Dioxane	1.73	58	9789m	5.44614		91
3) n-Nitrosodimethylamine	2.00	42	170970	52.28694	ppb	100
4) Pyridine	2.02	79	505787	59.92347	ppb	100
7) Phenol	5.07	94	1267785	57.56247	ppb	97
8) Aniline	5.13	93	990689m	56.78147	ppb	99
9) Bis (2-chloroethyl) ether	5.13	63	581327	54.17773	ppb	97
10) 2-Chlorophenol	5.21	128	859845	54.27324	ppb	97
11) 1,3-DCB	5.35	146	902709	54.10253	ppb	99
12) 1,4-DCB	5.44	146	921547	54.02933	ppb	98
13) Benzyl alcohol	5.61	108	439951	58.34843	ppb	94
14) 1,2-DCB	5.61	146	865196	54.02860	ppb	99
15) 2-Methylphenol	5.73	107	746416	53.95458	ppb	99
16) Bis (2-chloroisopropyl) et	5.73	45	847387	53.55608	ppb	97
17) Acetophenone	5.89	105	1145842	53.41131	ppb	90
18) 3&4-Methylphenol	5.90	107	1786962	108.05884	ppb	99
19) n-Nitrosodi-n-propylamine	5.89	70	658247	52.77281	ppb	99
20) Hexachloroethane	5.98	117	344237	54.00032	ppb	96
23) Nitrobenzene	6.07	77	997265	53.33244	ppb	100
24) Isophorone	6.35	82	1758848	54.03124	ppb	99
25) 2-Nitrophenol	6.43	139	481685	54.98344	ppb	97
26) 2,4-Dimethylphenol	6.48	122	779884	54.24950	ppb	99
27) Benzoic acid	6.65	105	608191	54.42764	ppb	99
28) Bis (2-chloroethoxy) metha	6.58	93	1029675	53.08223	ppb	99
29) 2,4-Dichlorophenol	6.71	162	700346	53.60823	ppb	99
30) 1,2,4-Trichlorobenzene	6.80	180	752283	53.55923	ppb	98
31) 3,4-Dimethylphenol	6.82	107	1077346	51.16454	ppb	100
32) Napthalene	6.88	128	2493398	52.73659	ppb	100
33) 4-Chloroaniline	6.95	127	964210	53.52939	ppb	99
34) 2,6-Dichlorophenol	6.95	162	679825	53.12455	ppb	99
35) Hexachloropropene	6.97	213	471532	54.93188	ppb	100
36) Hexachlorobutadiene	7.01	225	391411	52.73929	ppb	99
37) Caprolactum	7.39	55	344607	51.00020	ppb	99



Data File : M:\YODA\DATA\Y190208\0208Y012.D  
 Acq On : 8 Feb 19 19:22  
 Sample : SS 8270 02/05/19  
 Misc :

Vial: 12  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Quant Time: Feb 11 13:17 2019

Quant Results File: Y0208NC.RES

Quant Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Mon Feb 11 12:24:00 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
38) 4-Chloro-3-methylphenol	7.52	107	773398	53.73984	ppb	89
39) 2-Methylnaphthalene	7.67	142	1596128	52.32979	ppb	99
40) 1-Methylnaphthalene	7.79	142	1639236	51.98336	ppb	99
42) Hexachlorocyclopentadiene	7.85	237	335758	53.97567	ppb	99
43) 1,2,4,5-Tetrachlorobenzene	7.86	216	674764	50.94150	ppb	100
44) 2,4,6-Trichlorophenol	8.00	196	494494	54.41490	ppb	98
45) 2,4,5-Trichlorophenol	8.06	196	517480	53.76611	ppb	98
47) 1,1'-Biphenyl	8.21	154	2084795	52.20429	ppb	100
48) 2-Chloronaphthalene	8.24	162	1597970	53.25219	ppb	99
49) 2-Nitroaniline	8.37	65	536706	53.02017	ppb	99
50) Dimethyl phthalate	8.56	163	1836099	52.95626	ppb	100
51) 2,6-DNT	8.64	165	440783	55.42054	ppb	99
52) Acenaphthylene	8.72	152	2498071	53.01299	ppb	99
53) 3-Nitroaniline	8.85	138	476815	52.95144	ppb	100
54) Acenaphthene	8.92	154	1583929	52.31385	ppb	100
55) 2,4-Dinitrophenol	8.98	184	273803	57.26229	ppb	98
56) 4-Nitrophenol	9.06	65	288619	48.17028	ppb	98
57) Dibenzofuran	9.12	168	2150119	51.03680	ppb	99
58) 2,4-DNT	9.12	165	590900	55.85872	ppb	97
59) 2,3,4,6-Tetrachlorophenol	9.27	232	401282	56.86655	ppb	99
60) Diethyl phthalate	9.39	149	1717919	51.92636	ppb	98
61) 4-Chlorophenyl phenyl ethe	9.52	204	855306	52.24946	ppb	99
62) Fluorene	9.52	166	1806614	52.37045	ppb	100
63) 4-Nitroaniline	9.57	138	457843	54.26519	ppb	97
66) 4,6-Dinitro-2-methylphenol	9.59	198	374090	56.35757	ppb	97
67) Diphenyl amine	9.66	169	2778153	104.91872	ppb	99
68) n-Nitrosodiphenylamine	9.66	169	2778153	104.91872	ppb	99
69) 1,2-Diphenylhydrazine	9.70	77	2007718	52.77134	ppb	99
70) 4-Bromophenyl phenyl ether	10.08	248	460116	53.76712	ppb	99
71) Hexachlorobenzene	10.16	284	437769	53.11678	ppb	100
72) Atrazine	10.29	200	224483	24.78226	ppb	98
73) Pentachlorophenol	10.40	266	282621	58.76392	ppb	99
74) Phenanthrene	10.64	178	2650035	53.46234	ppb	100
75) Anthracene	10.70	178	2649262	51.95976	ppb	99
76) Carbazol	10.90	167	2528513	54.22645	ppb	100
77) Di-n-butylphthalate	11.28	149	2958076	53.80730	ppb	99
78) Fluoranthene	12.03	202	2811956	53.17142	ppb	100
80) Benzidine	12.20	184	938847	48.03017	ppb	99
81) Pyrene	12.30	202	2890513	52.10758	ppb	100
83) Butyl benzylphthalate	13.03	149	1354212	53.76845	ppb	98
84) 3,3'-Dichlorobenzidine	13.67	252	944184	55.70190	ppb	99
85) Benz (a) anthracene	13.69	228	2518151	52.36896	ppb	100
86) Bis (2-ethylhexyl) phthala	13.68	149	1825467	52.20185	ppb	99
87) Chrysene	13.74	228	2313916	50.29606	ppb	100
88) Di-n-octylphthalate	14.44	149	3210078	54.45959	ppb	# 92
90) Benzo (b) fluoranthene	15.01	252	2420835	51.40123	ppb	100
91) Benzo (k) fluoranthene	15.05	252	2331004	54.66380	ppb	100
92) Benzo (a) pyrene	15.49	252	2204695	52.59228	ppb	100
93) Indeno (1,2,3-cd) pyrene	17.48	276	2372666	54.43488	ppb	98
94) Dibenz (a,h) anthracene	17.51	278	2073819	52.54434	ppb	100
95) Benzo (g,h,i) perylene	18.07	276	1895514	51.00672	ppb	99

Quantitation Report

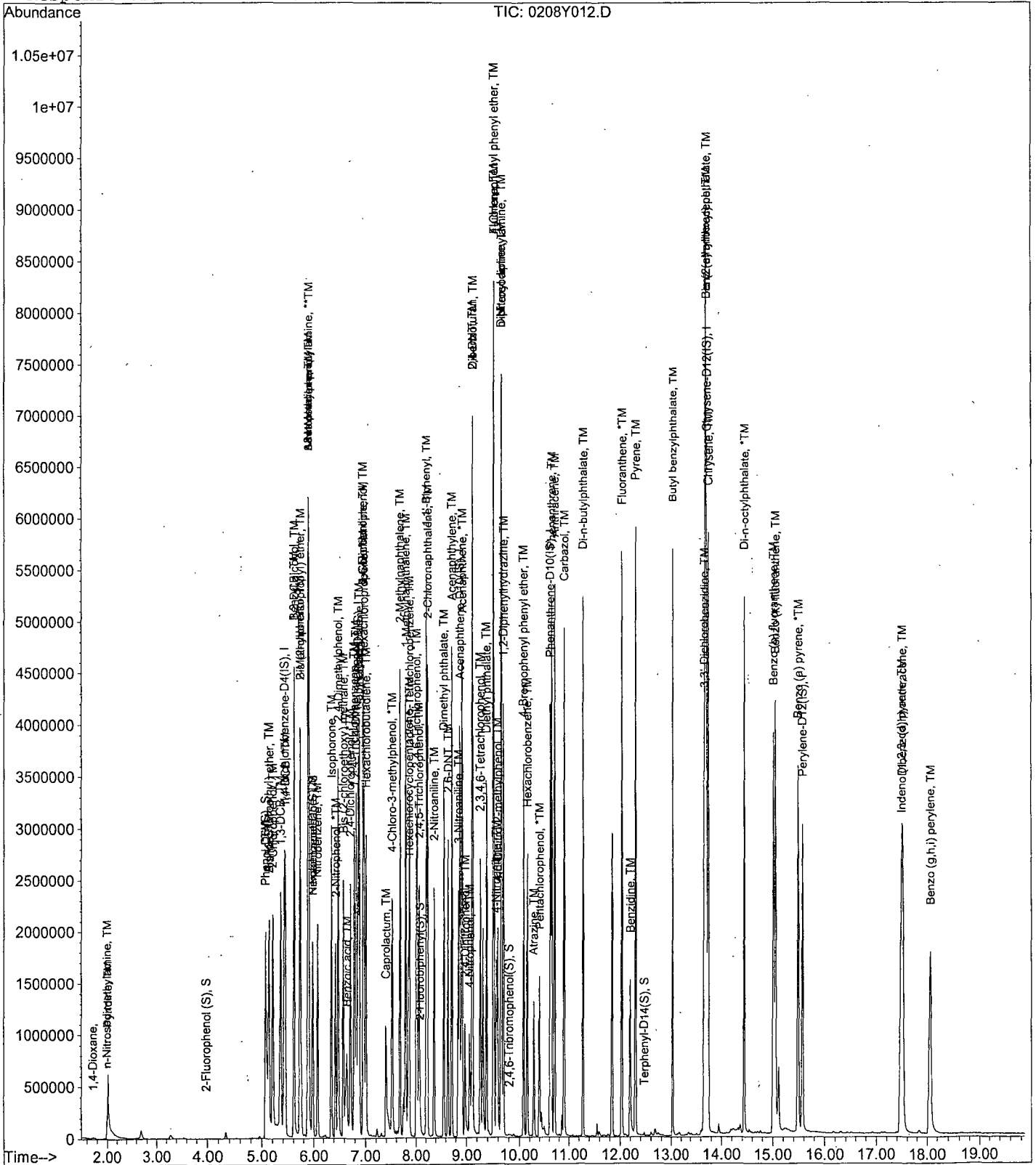
Data File : M:\YODA\DATA\Y190208\0208Y012.D  
Acq On : 8 Feb 19 19:22  
Sample : SS 8270 02/05/19  
Misc :

Vial: 12  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Feb 11 13:17 2019

Quant Results File: Y0208NC.RES

Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Tue Feb 12 12:50:28 2019  
Response via : Initial Calibration



Semi-Volatile Analysis by GC-MS  
EPA 8270

Form 7

Continuing Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: \_\_\_\_\_

SDG No: \_\_\_\_\_  
Date Analyzed: 02/15/19  
Instrument: Yoda  
Initial Cal. Date: 02/08/19  
Data File: 0208Y097.D

		Compound	MEAN	CCRF	%D	%Drift	
1	I	1,4-dichlorobenzene-D4(IS)	ISTD			I	
2	L	1,4-Dioxane	0.1372	0.1581	15	L	8.1
3	TM	n-Nitrosodimethylamine	0.2661	0.2605	2.1	TM	
4	TML	Pyridine	0.8449	0.7255	14	TML	1.0
5	S	2-Fluorophenol (S)	1.272	1.306	2.7	S	
6	S	Phenol-D6 (S)	1.692	1.745	3.1	S	
7	*TM	Phenol	1.793	1.751	2.3	*TM	
8	TM	Aniline	1.420	1.404	1.1	TM	
9	TM	Bis (2-chloroethyl) ether	0.8733	0.8374	4.1	TM	
10	TM	2-Chlorophenol	1.289	1.240	3.8	TM	
11	TM	1,3-DCB	1.358	1.312	3.4	TM	
12	*TM	1,4-DCB	1.388	1.329	4.2	*TM	
13	TM	Benzyl alcohol	0.6137	0.6846	12	TM	
14	TM	1,2-DCB	1.303	1.253	3.8	TM	
15	TM	2-Methylphenol	1.126	1.075	4.5	TM	
16	TM	Bis (2-chloroisopropyl) ether	1.288	1.279	0.64	TM	
17	TM	Acetophenone	1.746	1.675	4.1	TM	
18	TM	3&4-Methylphenol	1.346	1.310	2.6	TM	
19	**TM	n-Nitrosodi-n-propylamine	1.015	0.9751	3.9	**TM	
20	TM	Hexachloroethane	0.5188	0.5009	3.4	TM	
21	I	Napthalene-D8(IS)	ISTD			I	
22	S	Nitrobenzene-D5(S)	0.3665	0.3707	1.1	S	
23	TM	Nitrobenzene	0.3510	0.3384	3.6	TM	
24	TM	Isophorone	0.6110	0.5930	2.9	TM	
25	*TM	2-Nitrophenol	0.1644	0.1613	1.9	*TM	
26	TM	2,4-Dimethylphenol	0.2698	0.2640	2.2	TM	
27	TML	Benzoic acid	0.1702	0.1912	12	TML	7.4
28	TM	Bis (2-chloroethoxy) methane	0.3641	0.3492	4.1	TM	
29	*TM	2,4-Dichlorophenol	0.2452	0.2351	4.1	*TM	
30	TM	1,2,4-Trichlorobenzene	0.2636	0.2514	4.6	TM	
31	TM	3,4-Dimethylphenol	0.3952	0.3778	4.4	TM	
32	TM	Napthalene	0.8874	0.8484	4.4	TM	
33	TM	4-Chloroaniline	0.3381	0.3401	0.60	TM	
34	TM	2,6-Dichlorophenol	0.2402	0.2262	5.8	TM	
35	TM	Hexachloropropene	0.1611	0.1524	5.4	TM	
36	*TM	Hexachlorobutadiene	0.1393	0.1313	5.8	*TM	
37	TM	Caprolactum	0.1268	0.1236	2.6	TM	
38	*TM	4-Chloro-3-methylphenol	0.2701	0.2634	2.5	*TM	
39	TM	2-Methylnapthalene	0.5725	0.5475	4.4	TM	
40	TM	1-Methylnapthalene	0.5919	0.5693	3.8	TM	

Average

4.4

Semi-Volatile Analysis by GC-MS  
EPA 8270

Form 7

Continuing Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: 0

SDG No: \_\_\_\_\_  
Date Analyzed: 02/15/19  
Instrument: Yoda  
Cal. Date: 02/08/19  
Data File: 0208Y097.D

		Compound	MEAN	CCRF	%D	%Drift	
41	I	Acenaphthene-D10(IS)	ISTD			I	
42	**TML	Hexachlorocyclopentadiene	0.1835	0.1868	1.8	**TML	13
43	TM	1,2,4,5-Tetrachlorobenzene	0.4669	0.4431	5.1	TM	
44	*TM	2,4,6-Trichlorophenol	0.3203	0.3056	4.6	*TM	
45	TM	2,4,5-Trichlorophenol	0.3393	0.3234	4.7	TM	
46	S	2-Fluorobiphenyl(S)	1.296	1.292	0.30	S	
47	TM	1,1'-Biphenyl	1.408	1.345	4.4	TM	
48	TM	2-Chloronaphthalene	1.058	0.9954	5.9	TM	
49	TM	2-Nitroaniline	0.3568	0.3495	2.0	TM	
50	TM	Dimethyl phthalate	1.222	1.172	4.1	TM	
51	TM	2,6-DNT	0.2803	0.2687	4.2	TM	
52	TM	Acenaphthylene	1.661	1.599	3.7	TM	
53	TM	3-Nitroaniline	0.3174	0.3148	0.82	TM	
54	*TM	Acenaphthene	1.067	1.016	4.8	*TM	
55	**TML	2,4-Dinitrophenol	0.1324	0.1220	7.8	**TML	24 *NT
56	**TM	4-Nitrophenol	0.2112	0.2465	17	**TM	
57	TM	Dibenzofuran	1.485	1.412	4.9	TM	
58	TM	2,4-DNT	0.3729	0.3668	1.6	TM	
59	TM	2,3,4,6-Tetrachlorophenol	0.2487	0.2392	3.8	TM	
60	TM	Diethyl phthalate	1.166	1.102	5.5	TM	
61	TM	4-Chlorophenyl phenyl ether	0.5770	0.5430	5.9	TM	
62	TM	Fluorene	1.216	1.157	4.9	TM	
63	TM	4-Nitroaniline	0.2974	0.2933	1.4	TM	
64	S	2,4,6-Tribromophenol(S)	0.1318	0.1334	1.3	S	
65	I	Phenanthrene-D10(IS)	ISTD			I	
66	TML	4,6-Dinitro-2-methylphenol	0.1092	0.1148	5.2	TML	6.9
67	TM	Diphenyl amine	0.4975	0.4792	3.7	TM	
68	*TM	n-Nitrosodiphenylamine	0.4975	0.4792	3.7	*TM	
69	TM	1,2-Diphenylhydrazine	0.7149	0.6762	5.4	TM	
70	TM	4-Bromophenyl phenyl ether	0.1608	0.1553	3.4	TM	
71	TM	Hexachlorobenzene	0.1549	0.1495	3.5	TM	
72	TM	Atrazine	0.1702	0.1694	0.50	TM	
73	*TM	Pentachlorophenol	0.0904	0.0938	3.8	*TM	
74	TM	Phenanthrene	0.9314	0.8922	4.2	TM	
75	TM	Anthracene	0.9580	0.9202	4.0	TM	
76	TM	Carbazol	0.8761	0.8540	2.5	TM	
77	TM	Di-n-butylphthalate	1.033	1.013	2.0	TM	
78	*TM	Fluoranthene	0.9937	0.9532	4.1	*TM	
79	I	Chrysene-D12(IS)	ISTD			I	
80	TM	Benzidine	0.4197	0.3894	7.2	TM	

Average

4.2

Semi-Volatile Analysis by GC-MS  
EPA 8270

Form 7

Continuing Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: 0

SDG No: \_\_\_\_\_  
Date Analyzed: 02/15/19  
Instrument: Yoda  
Cal. Date: 02/08/19  
Data File: 0208Y097.D

		Compound	MEAN	CCRF	%D	%Drift
81	TM	Pyrene	1.191	1.129	5.2	TM
82	S	Terphenyl-D14(S)	0.8106	0.8157	0.63	S
83	TM	Butyl benzylphthalate	0.5408	0.5315	1.7	TM
84	TM	3,3'-Dichlorobenzidine	0.3640	0.3637	0.09	TM
85	TM	Benz (a) anthracene	1.033	1.001	3.0	TM
86	TM	Bis (2-ethylhexyl) phthalate	0.7509	0.7454	0.73	TM
87	TM	Chrysene	0.9879	0.9229	6.6	TM
88	*TM	Di-n-octylphthalate	1.266	1.264	0.16	*TM
89	I	Perylene-D12(IS)	ISTD			I
90	TM	Benzo (b) fluoranthene	1.056	1.004	4.9	TM
91	TM	Benzo (k) fluoranthene	0.9558	0.9117	4.6	TM
92	*TM	Benzo (a) pyrene	0.9396	0.8915	5.1	*TM
93	TM	Indeno (1,2,3-cd) pyrene	0.9769	0.9520	2.6	TM
94	TM	Dibenz (a,h) anthracene	0.8846	0.8522	3.7	TM
95	TM	Benzo (g,h,i) perylene	0.8329	0.8013	3.8	TM
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120						

Average

3.1

Data File : M:\YODA\DATA\Y190208\0208Y097.D  
 Acq On : 15 Feb 19 7:03  
 Sample : 50ug/mL 8270 02/05/19  
 Misc :

Vial: 97  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Quant Time: Feb 15 8:24 2019

Quant Results File: Y0208NC.RES

Quant Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Wed Feb 13 11:51:39 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.42	152	580977	40.00000	ppb	0.00
21) Napthalene-D8 (IS)	6.86	136	2494949	40.00000	ppb	0.00
41) Acenaphthene-D10 (IS)	8.87	164	1319731	40.00000	ppb	0.00
65) Phenanthrene-D10 (IS)	10.61	188	2474086	40.00000	ppb	0.00
79) Chrysene-D12 (IS)	13.71	240	2139162	40.00000	ppb	0.00
89) Perylene-D12 (IS)	15.57	264	2085691	40.00000	ppb	0.00

System Monitoring Compounds

5) 2-Fluorophenol (S)	3.89	112	1897521	102.74165	ppb	0.00
Spiked Amount 200.000			Recovery =	51.371%		
6) Phenol-D6 (S)	5.04	99	2534060	103.11095	ppb	0.00
Spiked Amount 200.000			Recovery =	51.555%		
22) Nitrobenzene-D5 (S)	6.05	82	1156055	50.57334	ppb	0.00
Spiked Amount 100.000			Recovery =	50.573%		
46) 2-Fluorobiphenyl (S)	8.09	172	2131962	49.84967	ppb	0.00
Spiked Amount 100.000			Recovery =	49.850%		
64) 2,4,6-Tribromophenol (S)	9.80	330	440163	101.25448	ppb	0.00
Spiked Amount 200.000			Recovery =	50.627%		
82) Terphenyl-D14 (S)	12.47	244	2181192	50.31601	ppb	0.00
Spiked Amount 100.000			Recovery =	50.316%		

Target Compounds

						Qvalue
2) 1,4-Dioxane	1.73	58	11484	5.40629		77
3) n-Nitrosodimethylamine	1.99	42	189201	48.94878	ppb	97
4) Pyridine	2.00	79	526857	50.51618	ppb	99
7) Phenol	5.06	94	1271764	48.84785	ppb	95
8) Aniline	5.13	93	1019381	49.42549	ppb	# 98
9) Bis (2-chloroethyl) ether	5.13	63	608150	47.94642	ppb	96
10) 2-Chlorophenol	5.20	128	900364	48.07605	ppb	96
11) 1,3-DCB	5.35	146	952977	48.31672	ppb	99
12) 1,4-DCB	5.44	146	965385	47.88040	ppb	99
13) Benzyl alcohol	5.61	108	497142	55.77640	ppb	98
14) 1,2-DCB	5.61	146	910313	48.08892	ppb	100
15) 2-Methylphenol	5.73	107	780638	47.73558	ppb	99
16) Bis (2-chloroisopropyl) et	5.72	45	929165	49.67810	ppb	97
17) Acetophenone	5.88	105	1216247	47.95959	ppb	100
18) 3&4-Methylphenol	5.89	107	1903219	97.35963	ppb	98
19) n-Nitrosodi-n-propylamine	5.88	70	708116	48.02539	ppb	100
20) Hexachloroethane	5.98	117	363799	48.27757	ppb	98
23) Nitrobenzene	6.08	77	1055466	48.21434	ppb	91
24) Isophorone	6.35	82	1849397	48.52862	ppb	99
25) 2-Nitrophenol	6.43	139	502940	49.03838	ppb	98
26) 2,4-Dimethylphenol	6.48	122	823344	48.92132	ppb	99
27) Benzoic acid	6.65	105	596271	46.29974	ppb	98
28) Bis (2-chloroethoxy) metha	6.58	93	1089118	47.95954	ppb	99
29) 2,4-Dichlorophenol	6.71	162	733355	47.94952	ppb	99
30) 1,2,4-Trichlorobenzene	6.79	180	784003	47.67842	ppb	98
31) 3,4-Dimethylphenol	6.82	107	1178344	47.80101	ppb	100
32) Napthalene	6.88	128	2645814	47.80033	ppb	100
33) 4-Chloroaniline	6.95	127	1060720	50.30053	ppb	98
34) 2,6-Dichlorophenol	6.95	162	705587	47.09772	ppb	99
35) Hexachloropropene	6.97	213	475337	47.30053	ppb	98
36) Hexachlorobutadiene	7.01	225	409423	47.12209	ppb	100
37) Caprolactum	7.39	55	385426	48.72367	ppb	97

Data File : M:\YODA\DATA\Y190208\0208Y097.D  
 Acq On : 15 Feb 19 7:03  
 Sample : 50ug/mL 8270 02/05/19  
 Misc :

Vial: 97  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Quant Time: Feb 15 8:24 2019

Quant Results File: Y0208NC.RES

Quant Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Wed Feb 13 11:51:39 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
38) 4-Chloro-3-methylphenol	7.51	107	821501	48.75875	ppb	97
39) 2-Methylnaphthalene	7.67	142	1707345	47.81385	ppb	100
40) 1-Methylnaphthalene	7.78	142	1775484	48.09398	ppb	99
42) Hexachlorocyclopentadiene	7.84	237	308076	43.70217	ppb	97
43) 1,2,4,5-Tetrachlorobenzene	7.86	216	730998	47.45397	ppb	99
44) 2,4,6-Trichlorophenol	8.00	196	504206	47.70912	ppb	98
45) 2,4,5-Trichlorophenol	8.06	196	533553	47.66825	ppb	99
47) 1,1'-Biphenyl	8.21	154	2219196	47.78318	ppb	99
48) 2-Chloronaphthalene	8.23	162	1642018	47.05257	ppb	99
49) 2-Nitroaniline	8.36	65	576622	48.98154	ppb	100
50) Dimethyl phthalate	8.56	163	1933137	47.94248	ppb	100
51) 2,6-DNT	8.64	165	443227	47.91911	ppb	99
52) Acenaphthylene	8.72	152	2637916	48.13656	ppb	99
53) 3-Nitroaniline	8.85	138	519318	49.59043	ppb	100
54) Acenaphthene	8.92	154	1675858	47.59428	ppb	99
55) 2,4-Dinitrophenol	8.98	184	201330	38.22099	ppb	94
56) 4-Nitrophenol	9.06	65	406671	58.36252	ppb	97
57) Dibenzofuran	9.12	168	2329550	47.54771	ppb	99
58) 2,4-DNT	9.12	165	605101	49.18599	ppb	97
59) 2,3,4,6-Tetrachlorophenol	9.26	232	394633	48.08805	ppb	100
60) Diethyl phthalate	9.38	149	1817898	47.24886	ppb	98
61) 4-Chlorophenyl phenyl ethe	9.51	204	895805	47.05550	ppb	97
62) Fluorene	9.51	166	1908146	47.56298	ppb	99
63) 4-Nitroaniline	9.57	138	483845	49.31143	ppb	98
66) 4,6-Dinitro-2-methylphenol	9.60	198	355146	46.54738	ppb	# 77
67) Diphenyl amine	9.66	169	2964014	96.31630	ppb	99
68) n-Nitrosodiphenylamine	9.66	169	2964014	96.31630	ppb	99
69) 1,2-Diphenylhydrazine	9.70	77	2091098	47.29253	ppb	98
70) 4-Bromophenyl phenyl ether	10.08	248	480128	48.27577	ppb	97
71) Hexachlorobenzene	10.15	284	462266	48.26156	ppb	97
72) Atrazine	10.28	200	261879	24.87602	ppb	98
73) Pentachlorophenol	10.40	266	290116	51.90399	ppb	99
74) Phenanthrene	10.64	178	2759340	47.89876	ppb	100
75) Anthracene	10.70	178	2845726	48.02397	ppb	100
76) Carbazol	10.90	167	2641222	48.73866	ppb	99
77) Di-n-butylphthalate	11.28	149	3131308	49.00951	ppb	99
78) Fluoranthene	12.03	202	2947818	47.96154	ppb	99
80) Benzidine	12.20	184	1041311	46.38946	ppb	99
81) Pyrene	12.30	202	3019344	47.39779	ppb	100
83) Butyl benzylphthalate	13.03	149	1421179	49.13706	ppb	96
84) 3,3'-Dichlorobenzidine	13.66	252	972401	49.95492	ppb	99
85) Benz (a) anthracene	13.69	228	2676798	48.47606	ppb	100
86) Bis (2-ethylhexyl) phthala	13.68	149	1993277	49.63626	ppb	98
87) Chrysene	13.74	228	2467890	46.71235	ppb	100
88) Di-n-octylphthalate	14.43	149	3379180	49.92173	ppb	# 94
90) Benzo (b) fluoranthene	15.01	252	2616628	47.53897	ppb	99
91) Benzo (k) fluoranthene	15.05	252	2376777	47.69191	ppb	100
92) Benzo (a) pyrene	15.48	252	2324181	47.43980	ppb	99
93) Indeno (1,2,3-cd) pyrene	17.47	276	2481962	48.72314	ppb	99
94) Dibenz (a,h) anthracene	17.51	278	2221656	48.16498	ppb	99
95) Benzo (g,h,i) perylene	18.06	276	2089015	48.09959	ppb	98

Quantitation Report

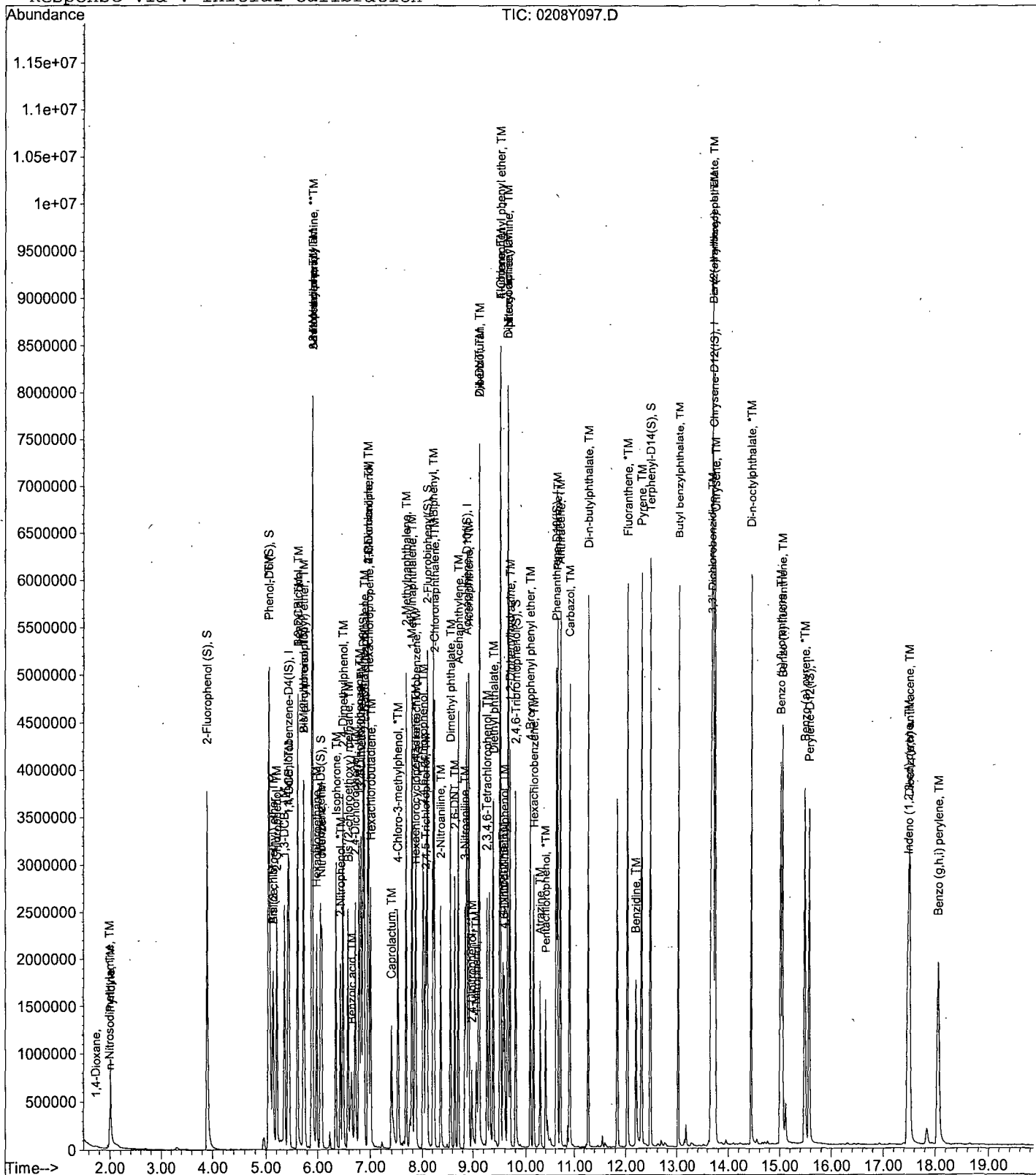
Data File : M:\YODA\DATA\Y190208\0208Y097.D  
Acq On : 15 Feb 19 7:03  
Sample : 50ug/mL 8270 02/05/19  
Misc :

Vial: 97  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Feb 15 8:24-2019

Quant Results File: Y0208NC.RES

Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Wed Feb 13 11:51:39 2019  
Response via : Initial Calibration





Semi-Volatile Analysis by GC-MS  
EPA 8270

Form 7

Ending Continuing Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: \_\_\_\_\_

SDG No: \_\_\_\_\_  
Date Analyzed: 02/15/19  
Instrument: Yoda  
Initial Cal. Date: 02/08/19  
Data File: 0208Y124.D

		Compound	MEAN	CCRF	%D	%Drift	
1	I	1,4-dichlorobenzene-D4(IS)	ISTD			I	
2	L	1,4-Dioxane	0.1372	0.1762	28	L	20
3	S	2-Fluorophenol (S)	1.272	1.302	2.4	S	
4	S	Phenol-D6 (S)	1.692	1.731	2.3	S	
5	*TM	Phenol	1.793	1.740	2.9	*TM	
6	TM	Aniline	1.420	1.414	0.40	TM	
7	TM	Bis (2-chloroethyl) ether	0.8733	0.8354	4.3	TM	
8	TM	2-Chlorophenol	1.289	1.239	3.9	TM	
9	TM	1,3-DCB	1.358	1.289	5.1	TM	
10	*TM	1,4-DCB	1.388	1.311	5.5	*TM	
11	TM	Benzyl alcohol	0.6137	0.7155	17	TM	
12	TM	1,2-DCB	1.303	1.232	5.5	TM	
13	TM	2-Methylphenol	1.126	1.091	3.1	TM	
14	TM	Bis (2-chloroisopropyl) ether	1.288	1.223	5.0	TM	
15	TM	Acetophenone	1.746	1.664	4.7	TM	
16	TM	3&4-Methylphenol	1.346	1.301	3.3	TM	
17	**TM	n-Nitrosodi-n-propylamine	1.015	0.9490	6.5	**TM	
18	TM	Hexachloroethane	0.5188	0.4983	4.0	TM	
19	I	Napthalene-D8(IS)	ISTD			I	
20	S	Nitrobenzene-D5(S)	0.3665	0.3702	1.0	S	
21	TM	Nitrobenzene	0.3510	0.3346	4.7	TM	
22	TM	Isophorone	0.6110	0.5867	4.0	TM	
23	*TM	2-Nitrophenol	0.1644	0.1643	0.09	*TM	
24	TM	2,4-Dimethylphenol	0.2698	0.2593	3.9	TM	
25	TML	Benzoic acid	0.1702	0.2180	28	TML	4.3
26	TM	Bis (2-chloroethoxy) methane	0.3641	0.3451	5.2	TM	
27	*TM	2,4-Dichlorophenol	0.2452	0.2349	4.2	*TM	
28	TM	1,2,4-Trichlorobenzene	0.2636	0.2495	5.4	TM	
29	TM	3,4-Dimethylphenol	0.3952	0.3807	3.7	TM	
30	TM	Naphthalene	0.8874	0.8490	4.3	TM	
31	TM	4-Chloroaniline	0.3381	0.3344	1.1	TM	
32	TM	2,6-Dichlorophenol	0.2402	0.2282	5.0	TM	
33	TM	Hexachloropropene	0.1611	0.1554	3.5	TM	
34	*TM	Hexachlorobutadiene	0.1393	0.1312	5.8	*TM	
35	TM	Caprolactum	0.1268	0.1199	5.4	TM	
36	*TM	4-Chloro-3-methylphenol	0.2701	0.2631	2.6	*TM	
37	TM	2-Methylnaphthalene	0.5725	0.5458	4.7	TM	
38	TM	1-Methylnaphthalene	0.5919	0.5664	4.3	TM	
39	I	Acenaphthene-D10(IS)	ISTD			I	
40	**TML	Hexachlorocyclopentadiene	0.1835	0.1765	3.9	**TML	17

Average

5.5

Semi-Volatile Analysis by GC-MS  
EPA 8270

Form 7

Ending Continuing Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: 0

SDG No: \_\_\_\_\_  
Date Analyzed: 02/15/19  
Instrument: Yoda  
Cal. Date: 02/08/19  
Data File: 0208Y124.D

		Compound	MEAN	CCRF	%D	%Drift
41	TM	1,2,4,5-Tetrachlorobenzene	0.4669	0.4460	4.5	TM
42	*TM	2,4,6-Trichlorophenol	0.3203	0.3124	2.5	*TM
43	TM	2,4,5-Trichlorophenol	0.3393	0.3268	3.7	TM
44	S	2-Fluorobiphenyl(S)	1.296	1.305	0.66	S
45	TM	1,1'-Biphenyl	1.408	1.331	5.5	TM
46	TM	2-Chloronaphthalene	1.058	1.001	5.3	TM
47	TM	2-Nitroaniline	0.3568	0.3490	2.2	TM
48	TM	Dimethyl phthalate	1.222	1.162	4.9	TM
49	TM	2,6-DNT	0.2803	0.2762	1.5	TM
50	TM	Acenaphthylene	1.661	1.597	3.9	TM
51	TM	3-Nitroaniline	0.3174	0.3157	0.54	TM
52	*TM	Acenaphthene	1.067	1.013	5.1	*TM
53	**TML	2,4-Dinitrophenol	0.1324	0.1507	14	**TML 8.2
54	**TM	4-Nitrophenol	0.2112	0.1790	15	**TM
55	TM	Dibenzofuran	1.485	1.428	3.8	TM
56	TM	2,4-DNT	0.3729	0.3645	2.2	TM
57	TM	2,3,4,6-Tetrachlorophenol	0.2487	0.2469	0.74	TM
58	TM	Diethyl phthalate	1.166	1.103	5.4	TM
59	TM	4-Chlorophenyl phenyl ether	0.5770	0.5519	4.4	TM
60	TM	Fluorene	1.216	1.154	5.1	TM
61	TM	4-Nitroaniline	0.2974	0.2980	0.19	TM
62	S	2,4,6-Tribromophenol(S)	0.1318	0.1369	3.9	S
63	I	Phenanthrene-D10(IS)	ISTD			I
64	TML	4,6-Dinitro-2-methylphenol	0.1092	0.1206	10	TML 2.5
65	TM	Diphenyl amine	0.4975	0.4827	3.0	TM
66	*TM	n-Nitrosodiphenylamine	0.4975	0.4827	3.0	*TM
67	TM	1,2-Diphenylhydrazine	0.7149	0.6727	5.9	TM
68	TM	4-Bromophenyl phenyl ether	0.1608	0.1573	2.2	TM
69	TM	Hexachlorobenzene	0.1549	0.1491	3.7	TM
70	TM	Atrazine	0.1702	0.1696	0.37	TM
71	*TM	Pentachlorophenol	0.0904	0.0952	5.4	*TM
72	TM	Phenanthrene	0.9314	0.8815	5.4	TM
73	TM	Anthracene	0.9580	0.9160	4.4	TM
74	TM	Carbazol	0.8761	0.8443	3.6	TM
75	TM	Di-n-butylphthalate	1.033	1.019	1.3	TM
76	*TM	Fluoranthene	0.9937	0.9515	4.2	*TM
77	I	Chrysene-D12(IS)	ISTD			I
78	TM	Benzidine	0.4197	0.3944	6.0	TM
79	TM	Pyrene	1.191	1.117	6.2	TM
80	S	Terphenyl-D14(S)	0.8106	0.7977	1.6	S

Average

4.2

Semi-Volatile Analysis by GC-MS  
EPA 8270

Form 7

Ending Continuing Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: 0

SDG No: \_\_\_\_\_  
Date Analyzed: 02/15/19  
Instrument: Yoda  
Cal. Date: 02/08/19  
Data File: 0208Y124.D

		Compound	MEAN	CCRF	%D	%Drift
81	TM	Butyl benzylphthalate	0.5408	0.5308	1.9	TM
82	TM	3,3'-Dichlorobenzidine	0.3640	0.3599	1.1	TM
83	TM	Benz (a) anthracene	1.033	0.9738	5.7	TM
84	TM	Bis (2-ethylhexyl) phthalate	0.7509	0.7295	2.9	TM
85	TM	Chrysene	0.9879	0.9177	7.1	TM
86	*TM	Di-n-octylphthalate	1.266	1.253	0.99	*TM
87	I	Perylene-D12(ISTD)	ISTD			I
88	TM	Benzo (b) fluoranthene	1.056	0.9972	5.5	TM
89	TM	Benzo (k) fluoranthene	0.9558	0.9302	2.7	TM
90	*TM	Benzo (a) pyrene	0.9396	0.8984	4.4	*TM
91	TM	Indeno (1,2,3-cd) pyrene	0.9769	0.9427	3.5	TM
92	TM	Dibenz (a,h) anthracene	0.8846	0.8523	3.7	TM
93	TM	Benzo (g,h,i) perylene	0.8329	0.8003	3.9	TM
94						
95						
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118						
119						
120						

Average

3.6

Data File : M:\YODA\DATA\Y190208\0208Y124.D  
 Acq On : 15 Feb 19 19:41  
 Sample : 50ug/mL 8270 02/05/19  
 Misc :

Vial: 24  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Quant Time: Feb 18 7:59 2019

Quant Results File: Y0208NC.RES

Quant Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Wed Feb 13 11:51:39 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.42	152	555138	40.00000	ppb	0.00
21) Napthalene-D8 (IS)	6.86	136	2378828	40.00000	ppb	0.00
41) Acenaphthene-D10 (IS)	8.87	164	1253522	40.00000	ppb	0.00
65) Phenanthrene-D10 (IS)	10.61	188	2356462	40.00000	ppb	0.00
79) Chrysene-D12 (IS)	13.71	240	2069076	40.00000	ppb	0.00
89) Perylene-D12 (IS)	15.57	264	1981071	40.00000	ppb	0.00

System Monitoring Compounds

5) 2-Fluorophenol (S)	3.90	112	1807076	102.39867	ppb	0.02
Spiked Amount 200.000			Recovery =	51.200%		
6) Phenol-D6 (S)	5.05	99	2402216	102.29583	ppb	0.00
Spiked Amount 200.000			Recovery =	51.148%		
22) Nitrobenzene-D5 (S)	6.05	82	1100834	50.50840	ppb	0.00
Spiked Amount 100.000			Recovery =	50.508%		
46) 2-Fluorobiphenyl (S)	8.09	172	2044442	50.32816	ppb	0.00
Spiked Amount 100.000			Recovery =	50.328%		
64) 2,4,6-Tribromophenol (S)	9.80	330	428882	103.87044	ppb	0.00
Spiked Amount 200.000			Recovery =	51.935%		
82) Terphenyl-D14 (S)	12.47	244	2063193	49.20615	ppb	0.00
Spiked Amount 100.000			Recovery =	49.206%		

Target Compounds

	R.T.	QIon	Response	Conc	Units	Qvalue
2) 1,4-Dioxane	1.73	58	12230	6.00467		90
7) Phenol	5.06	94	1207279	48.52936	ppb	94
8) Aniline	5.13	93	981377	49.79759	ppb #	93
9) Bis (2-chloroethyl) ether	5.13	63	579717	47.83210	ppb	97
10) 2-Chlorophenol	5.21	128	860111	48.06436	ppb	96
11) 1,3-DCB	5.35	146	894410	47.45802	ppb	98
12) 1,4-DCB	5.44	146	909844	47.22611	ppb	98
13) Benzyl alcohol	5.61	108	496519	58.29937	ppb	98
14) 1,2-DCB	5.61	146	855011	47.26983	ppb	99
15) 2-Methylphenol	5.73	107	757015	48.44567	ppb	98
16) Bis (2-chloroisopropyl) et	5.73	45	848806	47.49398	ppb	97
17) Acetophenone	5.88	105	1154992	47.66401	ppb	96
18) 3&4-Methylphenol	5.89	107	1805666	96.66862	ppb	100
19) n-Nitrosodi-n-propylamine	5.88	70	658517	46.74029	ppb	98
20) Hexachloroethane	5.98	117	345776	48.02161	ppb	99
23) Nitrobenzene	6.08	77	995049	47.67329	ppb	92
24) Isophorone	6.35	82	1744497	48.01054	ppb	99
25) 2-Nitrophenol	6.43	139	488498	49.95527	ppb	98
26) 2,4-Dimethylphenol	6.48	122	770899	48.04111	ppb	97
27) Benzoic acid	6.65	105	648235	52.17092	ppb	99
28) Bis (2-chloroethoxy) metha	6.58	93	1026248	47.39702	ppb	99
29) 2,4-Dichlorophenol	6.71	162	698588	47.90598	ppb	100
30) 1,2,4-Trichlorobenzene	6.78	180	741857	47.31763	ppb	98
31) 3,4-Dimethylphenol	6.82	107	1132138	48.16848	ppb	98
32) Naphthalene	6.88	128	2524405	47.83318	ppb	100
33) 4-Chloroaniline	6.95	127	994437	49.45927	ppb	100
34) 2,6-Dichlorophenol	6.95	162	678538	47.50312	ppb	99
35) Hexachloropropene	6.97	213	462146	48.23277	ppb	98
36) Hexachlorobutadiene	7.01	225	390162	47.09729	ppb	97
37) Caprolactum	7.39	55	356566	47.27565	ppb	97
38) 4-Chloro-3-methylphenol	7.51	107	782237	48.69467	ppb	99
39) 2-Methylnaphthalene	7.67	142	1622878	47.66690	ppb	100

(#) = qualifier out of range (m) = manual integration

Data File : M:\YODA\DATA\Y190208\0208Y124.D  
 Acq On : 15 Feb 19 19:41  
 Sample : 50ug/mL 8270 02/05/19  
 Misc :

Vial: 24  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Quant Time: Feb 18 7:59 2019

Quant Results File: Y0208NC.RES

Quant Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Wed Feb 13 11:51:39 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
40) 1-Methylnaphthalene	7.79	142	1684199	47.84824	ppb	100
42) Hexachlorocyclopentadiene	7.84	237	276485	41.58409	ppb	100
43) 1,2,4,5-Tetrachlorobenzene	7.86	216	698819	47.76113	ppb	99
44) 2,4,6-Trichlorophenol	8.00	196	489458	48.75984	ppb	98
45) 2,4,5-Trichlorophenol	8.06	196	512136	48.17152	ppb	98
47) 1,1'-Biphenyl	8.21	154	2085252	47.27063	ppb	99
48) 2-Chloronaphthalene	8.23	162	1568901	47.33196	ppb	100
49) 2-Nitroaniline	8.36	65	546911	48.91154	ppb	98
50) Dimethyl phthalate	8.56	163	1820441	47.53220	ppb	100
51) 2,6-DNT	8.64	165	432801	49.26338	ppb	99
52) Acenaphthylene	8.72	152	2502282	48.07329	ppb	100
53) 3-Nitroaniline	8.85	138	494656	49.73031	ppb	98
54) Acenaphthene	8.92	154	1587142	47.45553	ppb	99
55) 2,4-Dinitrophenol	8.98	184	236067	45.89757	ppb	95
56) 4-Nitrophenol	9.06	65	280447	42.37357	ppb	96
57) Dibenzofuran	9.11	168	2237997	48.09174	ppb	99
58) 2,4-DNT	9.11	165	571193	48.88210	ppb	99
59) 2,3,4,6-Tetrachlorophenol	9.26	232	386852	49.62975	ppb	98
60) Diethyl phthalate	9.38	149	1727863	47.28077	ppb	99
61) 4-Chlorophenyl phenyl ethe	9.51	204	864734	47.82257	ppb	98
62) Fluorene	9.51	166	1808299	47.45491	ppb	98
63) 4-Nitroaniline	9.57	138	466894	50.09715	ppb	99
66) 4,6-Dinitro-2-methylphenol	9.60	198	355220	48.74124	ppb #	78
67) Diphenyl amine	9.66	169	2843593	97.01554	ppb	100
68) n-Nitrosodiphenylamine	9.66	169	2843593	97.01554	ppb	100
69) 1,2-Diphenylhydrazine	9.70	77	1981431	47.04911	ppb	97
70) 4-Bromophenyl phenyl ether	10.08	248	463435	48.92326	ppb	97
71) Hexachlorobenzene	10.15	284	439266	48.14945	ppb	97
72) Atrazine	10.28	200	249734	24.90647	ppb	99
73) Pentachlorophenol	10.40	266	280445	52.67822	ppb	99
74) Phenanthrene	10.64	178	2596558	47.32291	ppb	100
75) Anthracene	10.70	178	2698075	47.80500	ppb	100
76) Carbazol	10.90	167	2486972	48.18301	ppb	100
77) Di-n-butylphthalate	11.28	149	3001844	49.32840	ppb	100
78) Fluoranthene	12.03	202	2802673	47.87615	ppb	100
80) Benzidine	12.20	184	1020051	46.98162	ppb	98
81) Pyrene	12.30	202	2888356	46.87740	ppb	100
83) Butyl benzylphthalate	13.03	149	1372850	49.07391	ppb	95
84) 3,3'-Dichlorobenzidine	13.66	252	930872	49.44132	ppb	99
85) Benz (a) anthracene	13.69	228	2518503	47.15431	ppb	100
86) Bis (2-ethylhexyl) phthala	13.68	149	1886621	48.57170	ppb	98
87) Chrysene	13.74	228	2373410	46.44574	ppb	100
88) Di-n-octylphthalate	14.43	149	3241314	49.50700	ppb	95
90) Benzo (b) fluoranthene	15.01	252	2469380	47.23301	ppb	99
91) Benzo (k) fluoranthene	15.05	252	2303556	48.66368	ppb	99
92) Benzo (a) pyrene	15.48	252	2224859	47.81073	ppb	98
93) Indeno (1,2,3-cd) pyrene	17.48	276	2334347	48.24535	ppb	100
94) Dibenz (a,h) anthracene	17.51	278	2110513	48.17176	ppb	99
95) Benzo (g,h,i) perylene	18.05	276	1981867	48.04235	ppb	99

(#) = qualifier out of range (m) = manual integration

Quantitation Report

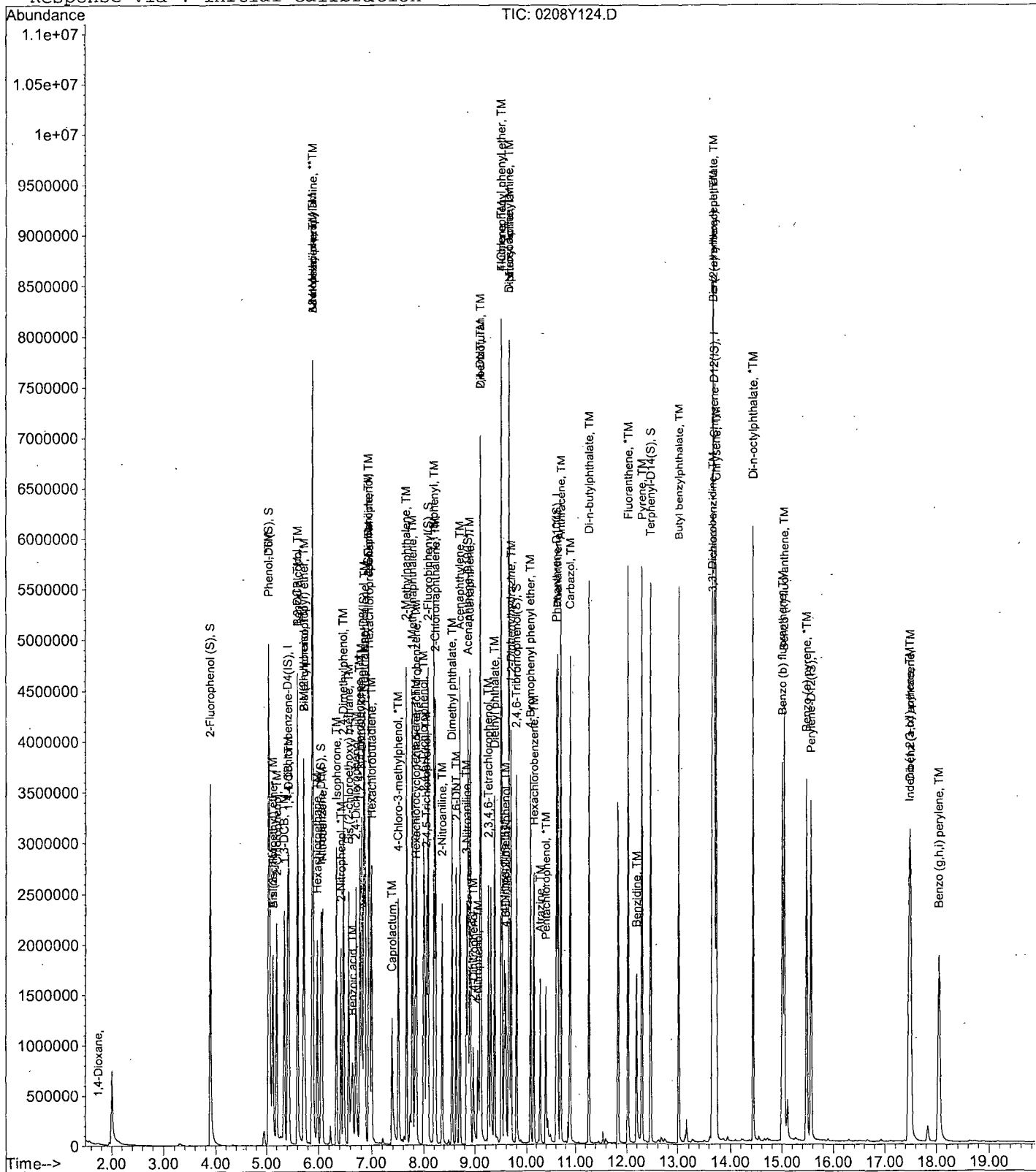
Data File : M:\YODA\DATA\Y190208\0208Y124.D  
Acq On : 15 Feb 19 19:41  
Sample : 50ug/mL 8270 02/05/19  
Misc :

Vial: 24  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Feb 18 7:59 2019

Quant Results File: Y0208NC.RES

Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Wed Feb 13 11:51:39 2019  
Response via : Initial Calibration



**ORGANICS**  
**Raw Data**

Data File : M:\YODA\DATA\Y190208\0208Y102.D Vial: 2  
 Acq On : 15 Feb 19 9:31 Operator: MA  
 Sample : AZ86200W20 1/800 Inst : Yoda  
 Misc : Multiplr: 1.25

Quant Time: Feb 15 10:03 2019 Quant Results File: Y0208NC.RES

Quant Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Wed Feb 13 11:51:39 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.41	152	446101	40.0000	ppb	0.00
21) Napthalene-D8 (IS)	6.85	136	1869366	40.0000	ppb	0.00
41) Acenaphthene-D10 (IS)	8.87	164	969725	40.0000	ppb	0.00
65) Phenanthrene-D10 (IS)	10.61	188	1839196	40.0000	ppb	0.00
79) Chrysene-D12 (IS)	13.70	240	1637242	40.0000	ppb	0.00
89) Perylene-D12 (IS)	15.56	264	1598079	40.0000	ppb	0.00

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
5) 2-Fluorophenol (S)	3.85	112	2511505	221.3756	ppb	-0.03
Spiked Amount 250.000			Recovery =	88.550%		
6) Phenol-D6 (S)	5.02	99	3416477	226.3092	ppb	-0.02
Spiked Amount 250.000			Recovery =	90.524%		
22) Nitrobenzene-D5 (S)	6.04	82	1567073	114.3694	ppb	0.00
Spiked Amount 125.000			Recovery =	91.495%		
46) 2-Fluorobiphenyl (S)	8.09	172	2860819	113.7942	ppb	0.00
Spiked Amount 125.000			Recovery =	91.035%		
64) 2,4,6-Tribromophenol (S)	9.80	330	664361	259.9870	ppb	0.00
Spiked Amount 250.000			Recovery =	103.995%		
82) Terphenyl-D14 (S)	12.47	244	2933666	110.5258	ppb	0.00
Spiked Amount 125.000			Recovery =	88.421%		

Target Compounds Qvalue



Quantitation Report

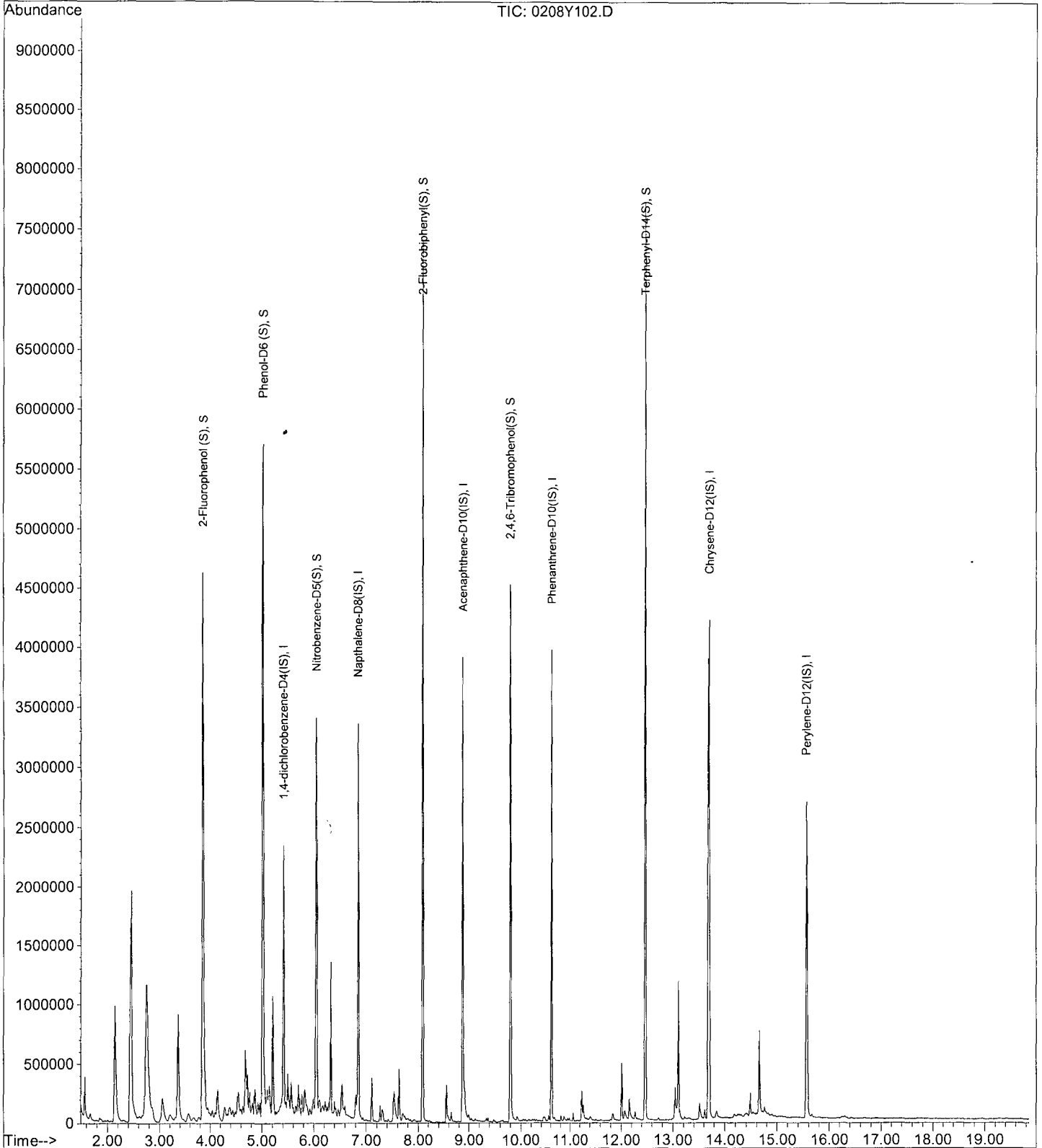
Data File : M:\YODA\DATA\Y190208\0208Y102.D  
Acq On : 15 Feb 19 9:31  
Sample : AZ86200W20 1/800  
Misc :

Vial: 2  
Operator: MA  
Inst : Yoda  
Multiplr: 1.25

Quant Time: Feb 15 10:03 2019

Quant Results File: Y0208NC.RES

Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Wed Feb 13 11:51:39 2019  
Response via : Initial Calibration



LSC Area Percent Report

Data File : M:\YODA\DATA\Y190208\0208Y102.D  
 Acq On : 15 Feb 19 9:31  
 Sample : AZ86200W20 1/800  
 Misc :  
 MS Integration Params: LSCINT.P

Vial: 2  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.25000

Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Smoothing : ON  
 Sampling : 1  
 Start Thrs: 0.002  
 Stop Thrs : 0  
 Filtering: 5  
 Min Area: 3 % of largest Peak  
 Max Peaks: 100  
 Peak Location: TOP

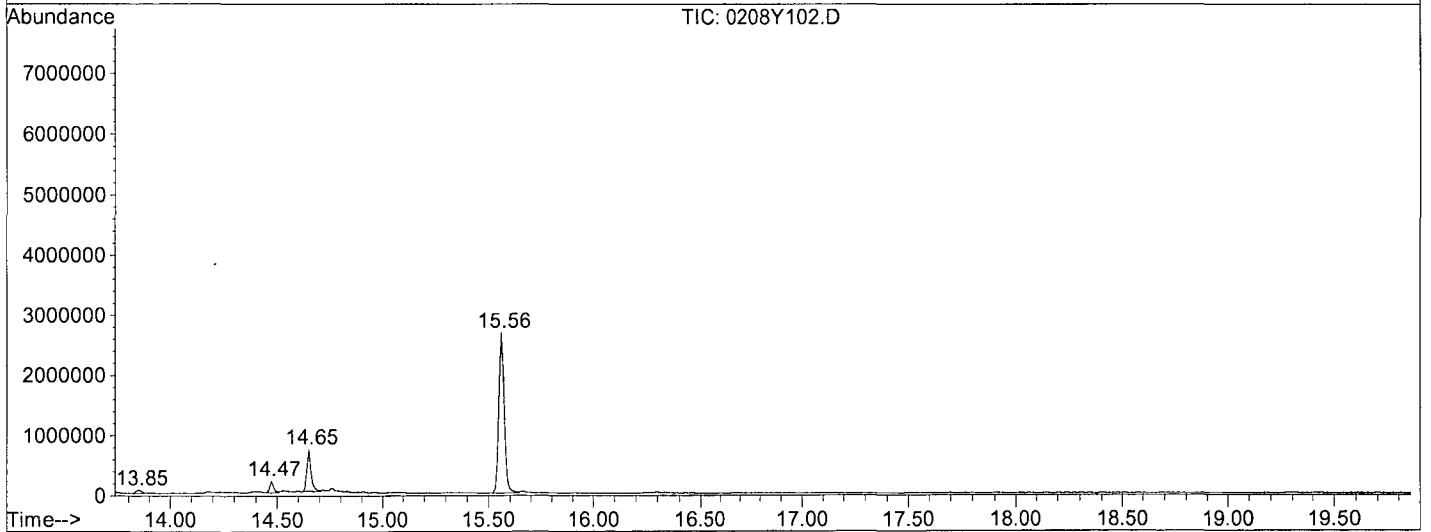
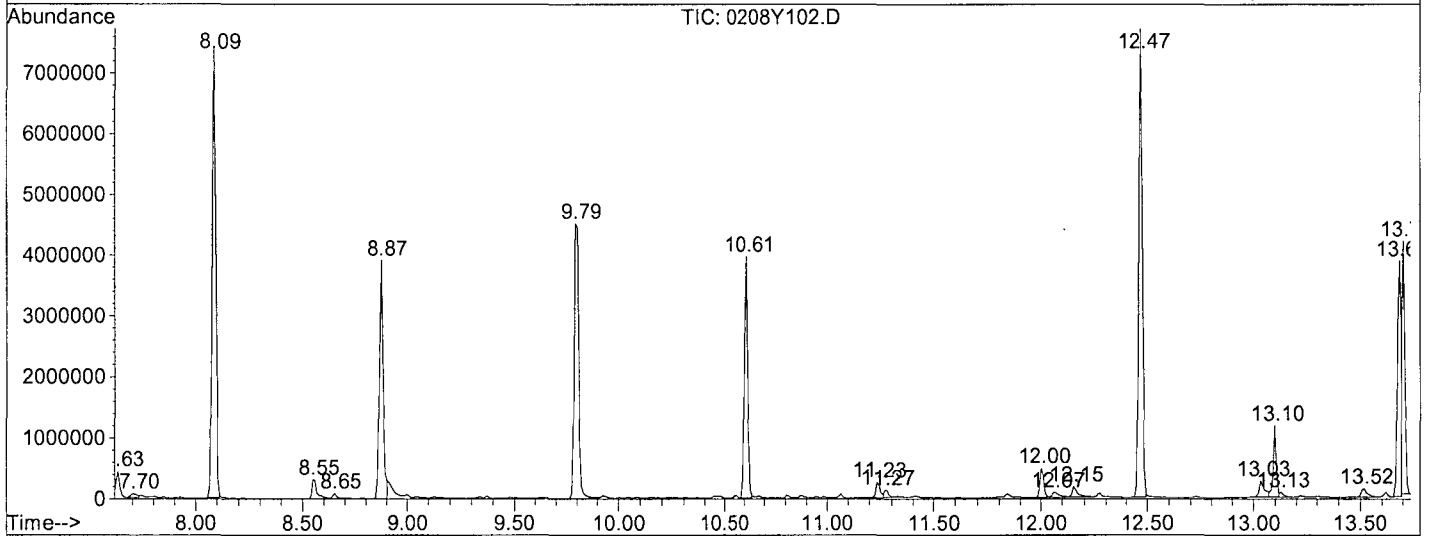
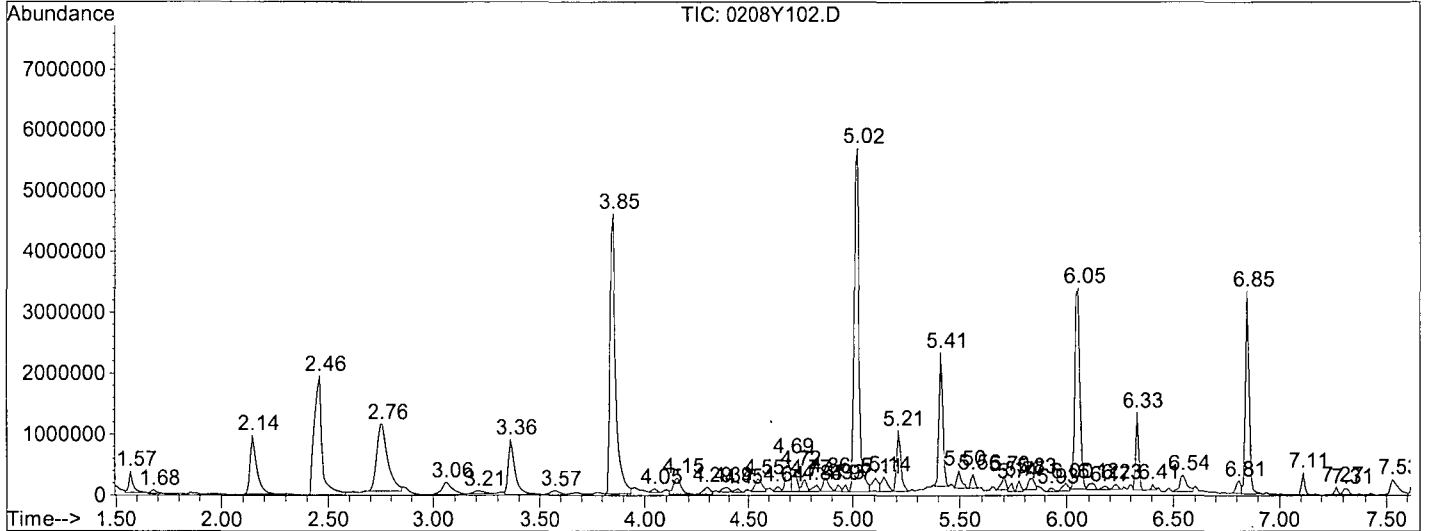
If leading or trailing edge < 100 prefer < Baseline drop else tangent >  
 Peak separation: 5

Signal : TIC

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	raw area	corr. area	corr. % max.	% of total
1	1.569	6	9	18	rVB	351735	1258621	464485	5.15%	0.420%
2	1.680	18	21	30	rVB2	61801	847875	137733	1.53%	0.125%
3	2.144	66	71	85	rBV	969258	3103698	2130274	23.63%	1.927%
4	2.460	99	105	118	rBV	1953975	6055679	5013687	55.60%	4.536%
5	2.757	129	137	147	rBV	1099677	5283390	4106341	45.54%	3.715%
6	3.063	163	170	180	rBV	199292	1605391	698464	7.75%	0.632%
7	3.212	180	186	193	rVV5	52503	877520	189650	2.10%	0.172%
8	3.360	199	202	219	rVB	899514	3720703	1941912	21.54%	1.757%
9	3.574	219	225	231	rBV3	67075	843010	224727	2.49%	0.203%
10	3.852	251	255	264	rBV	4597146	9513404	8652474	95.96%	7.828%
11	4.047	273	276	279	rVB	58040	500579	94909	1.05%	0.086%
12	4.149	283	287	296	rVB	265973	1578300	665290	7.38%	0.602%
13	4.289	296	302	305	rBV	119549	775227	302844	3.36%	0.274%
14	4.391	308	313	316	rVV3	78112	727172	201839	2.24%	0.183%
15	4.446	316	319	322	rVB2	57452	506333	93989	1.04%	0.085%
16	4.549	326	330	334	rVV2	203786	1123792	519284	5.76%	0.470%
17	4.641	338	340	342	rVV2	84690	435580	126906	1.41%	0.115%
18	4.688	342	345	347	rVV	549048	1237079	851362	9.44%	0.770%
19	4.725	347	349	351	rVV	343798	1046166	482557	5.35%	0.437%
20	4.771	351	354	356	rVV2	196118	741807	315002	3.49%	0.285%
21	4.827	356	360	362	rVV3	106118	646402	200603	2.22%	0.181%
22	4.864	362	364	369	rVV2	223116	1065320	433172	4.80%	0.392%
23	4.929	369	371	373	rVV	111705	442030	141685	1.57%	0.128%
24	4.966	373	375	377	rVB	119502	466655	130869	1.45%	0.118%
25	5.022	377	381	387	rBV	5646857	10062048	9016854	100.00%	8.158%
26	5.106	387	390	392	rVV	214061	926179	441090	4.89%	0.399%
27	5.143	392	394	398	rVV	246106	1105386	438109	4.86%	0.396%
28	5.208	398	401	406	rVB	997588	1948700	1371321	15.21%	1.241%
29	5.412	420	423	427	rVV	2184269	3661110	2818246	31.26%	2.550%
30	5.495	430	432	437	rVB	291486	1222697	396891	4.40%	0.359%
31	5.560	437	439	442	rVB2	226183	896471	277087	3.07%	0.251%
32	5.700	450	454	456	rBV3	225690	795928	319210	3.54%	0.289%
33	5.737	456	458	460	rVB	142897	511690	151245	1.68%	0.137%
34	5.774	460	462	464	rBV	175263	598543	216745	2.40%	0.196%
35	5.830	464	468	471	rBV2	190732	921493	408851	4.53%	0.370%
36	5.932	476	479	482	rBV2	55285	496987	96529	1.07%	0.087%
37	5.997	482	486	488	rBV2	129689	692620	254985	2.83%	0.231%
38	6.052	488	492	496	rVV2	3303495	6024641	5343561	59.26%	4.835%
39	6.117	496	499	502	rVB4	103723	786738	206903	2.29%	0.187%
40	6.173	502	505	508	rBV3	53142	582952	105959	1.18%	0.096%
41	6.229	508	511	514	rVB2	87338	608987	131102	1.45%	0.119%
42	6.331	520	522	525	rVB	1269078	2134546	1282355	14.22%	1.160%
43	6.405	528	530	532	rBV	96625	401615	99753	1.11%	0.090%
44	6.544	540	545	550	rBV2	271181	336965	336965	7.06%	0.576%
45	6.814	570	574	575	rBV2	192526	630575	319559	3.54%	0.289%

LSC Report - Integrated Chromatogram

File : M:\YODA\DATA\Y190208\0208Y102.D  
Operator : MA  
Acquired : 15 Feb 19 9:31 using AcqMethod SVOC416  
Instrument : Yoda  
Sample Name: AZ86200W20 1/800  
Misc Info :  
Vial Number: 2  
Quant File :Y0208NC.RES (RTE Integrator)



Library Search Compound Report

Data File : M:\YODA\DATA\Y190208\0208Y102.D Vial: 2  
 Acq On : 15 Feb 19 9:31 Operator: MA  
 Sample : AZ86200W20 1/800 Inst : Yoda  
 Misc : Multiplr: 1.25

Quant Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Library : M:\DATABASE\WILEY138.L

\*\*\*\*\*  
 Peak Number 1 Ethane, isothiocyanato- Concentration Rank 18

R.T.	EstConc	Area	Relative to ISTD	R.T.
5.14	7.77 ppb	438109	1,4-dichlorobenzene-D4 (IS)	5.41

Hit#	of	5	Tentative ID	MW	MolForm	CAS#	Qual
1			Ethane, isothiocyanato-	87	C3H5NS	000542-85-8	53
2			1,3-Dioxolane, 2-ethyl-4-methyl-	116	C6H12O2	004359-46-0	53
3			2-Octenoic acid, methyl ester	156	C9H16O2	002396-85-2	47
4			1,4-Dioxane, dimethyl-	116	C6H12O2	025136-55-4	42
5			3-Pentanol, 3-ethyl-	116	C7H16O	000597-49-9	38

Tentatively Identified Compound (LSC) summary

Operator ID: MA Date Acquired: 15 Feb 19 9:31  
Data File: M:\YODA\DATA\Y190208\0208Y102.D  
Name: AZ86200W20 1/800  
Misc:  
Method: M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
Title: EPA 8270C  
Library Searched: M:\DATABASE\WILEY138.L

TIC Top Hit name	RT	EstConc	Units	Area	IntStd	ISRT	ISArea	ISConc
Ethane, isothiocyana	5.14	7.8	ppb	438109	ISTD01	5.41	2818250	40.0
0208Y102.D Y0208NC.M								

Tue Feb 19 15:38:06 2019

Data File : M:\YODA\DATA\Y190208\0208Y099.D Vial: 99  
 Acq On : 15 Feb 19 8:08 Operator: MA  
 Sample : 190212A BLK 1/800 Inst : Yoda  
 Misc : Multiplr: 1.25

Quant Time: Feb 15 8:55 2019 Quant Results File: Y0208NC.RES

Quant Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Wed Feb 13 11:51:39 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.41	152	316179	40.0000	ppb	0.00
21) Napthalene-D8 (IS)	6.85	136	1448160	40.0000	ppb	0.00
41) Acenaphthene-D10 (IS)	8.87	164	834682	40.0000	ppb	0.00
65) Phenanthrene-D10 (IS)	10.61	188	1589935	40.0000	ppb	0.00
79) Chrysene-D12 (IS)	13.70	240	1405655	40.0000	ppb	0.00
89) Perylene-D12 (IS)	15.56	264	1339729	40.0000	ppb	0.00

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
5) 2-Fluorophenol (S)	3.84	112	2502917	311.2736	ppb	-0.04
Spiked Amount 250.000						
						Recovery = 124.510%
6) Phenol-D6 (S)	5.01	99	3248991	303.6493	ppb	-0.03
Spiked Amount 250.000						
						Recovery = 121.460%
22) Nitrobenzene-D5 (S)	6.04	82	1559809	146.9500	ppb	0.00
Spiked Amount 125.000						
						Recovery = 117.560%
46) 2-Fluorobiphenyl (S)	8.09	172	2830116	130.7861	ppb	0.00
Spiked Amount 125.000						
						Recovery = 104.629%
64) 2,4,6-Tribromophenol (S)	9.80	330	645721	293.5756	ppb	0.00
Spiked Amount 250.000						
						Recovery = 117.430%
82) Terphenyl-D14 (S)	12.47	244	3033202	133.1032	ppb	0.00
Spiked Amount 125.000						
						Recovery = 106.482%

Target Compounds Qvalue

Quantitation Report

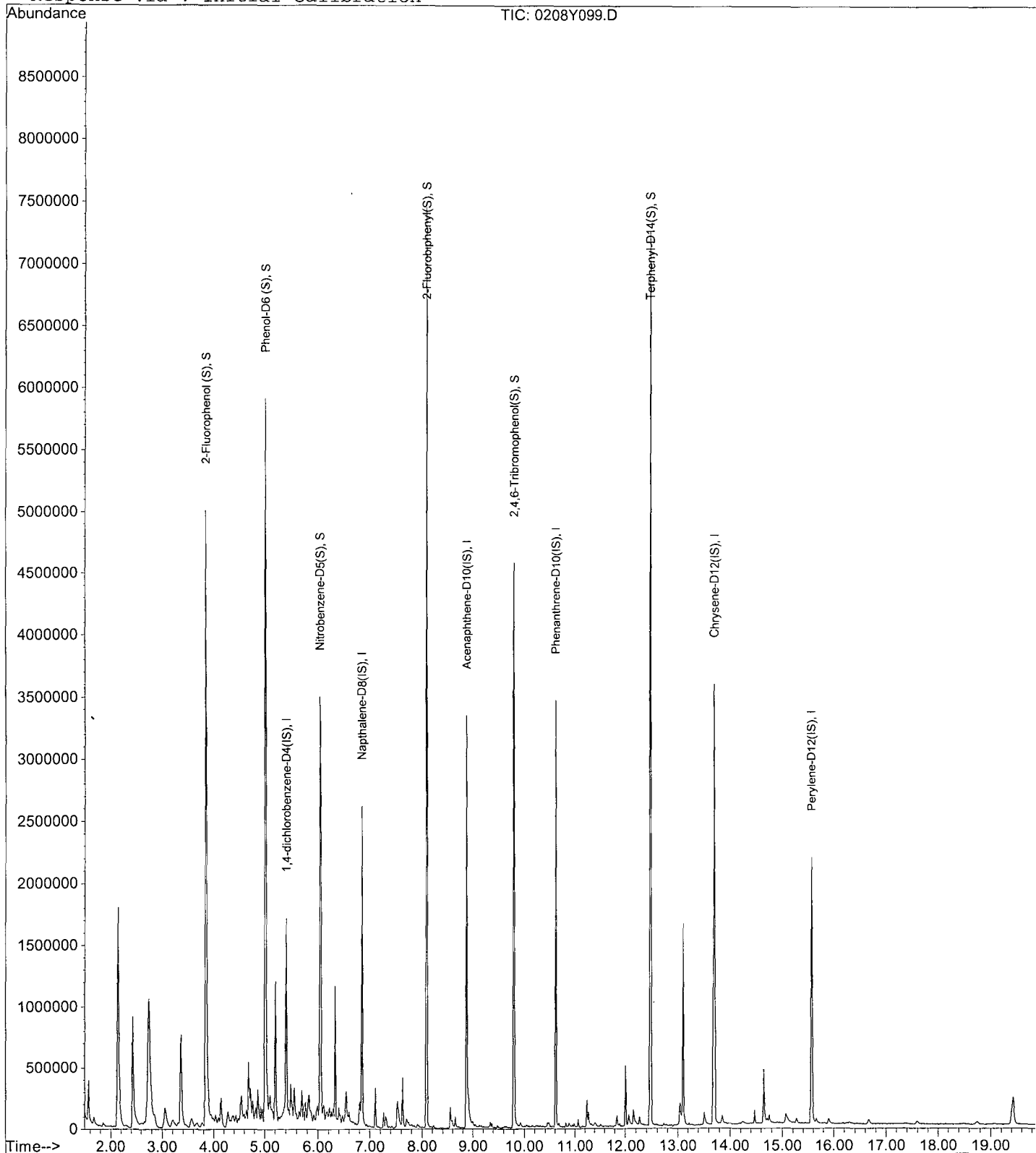
Data File : M:\YODA\DATA\Y190208\0208Y099.D  
Acq On : 15 Feb 19 8:08  
Sample : 190212A BLK 1/800  
Misc :

Vial: 99  
Operator: MA  
Inst : Yoda  
Multiplr: 1.25

Quant Time: Feb 15 8:55 2019

Quant Results File: Y0208NC.RES

Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Wed Feb 13 11:51:39 2019  
Response via : Initial Calibration



LSC Area Percent Report

Data File : M:\YODA\DATA\Y190208\0208Y099.D  
 Acq On : 15 Feb 19 8:08  
 Sample : 190212A BLK 1/800  
 Misc :  
 MS Integration Params: LSCINT.P

Vial: 99  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.25000

Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Smoothing : OFF  
 Sampling : 1  
 Start Thrs: 0.2  
 Stop Thrs : 0

Filtering: 5  
 Min Area: 1 % of largest Peak  
 Max Peaks: 100  
 Peak Location: TOP

If leading or trailing edge < 100 prefer < Baseline drop else tangent >  
 Peak separation: 5

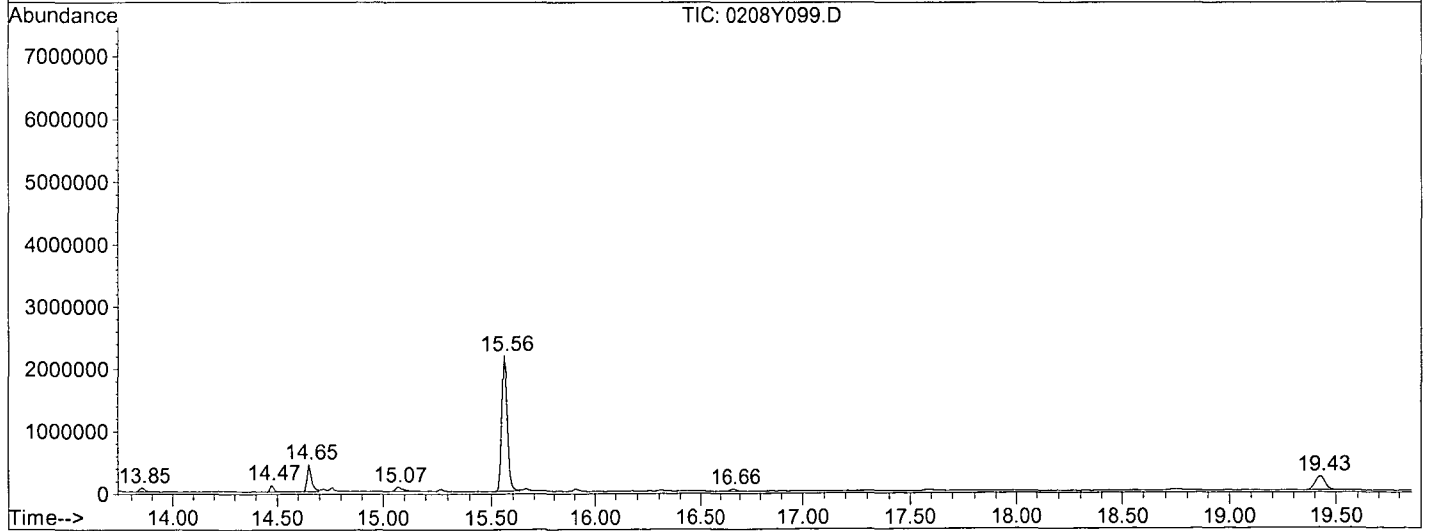
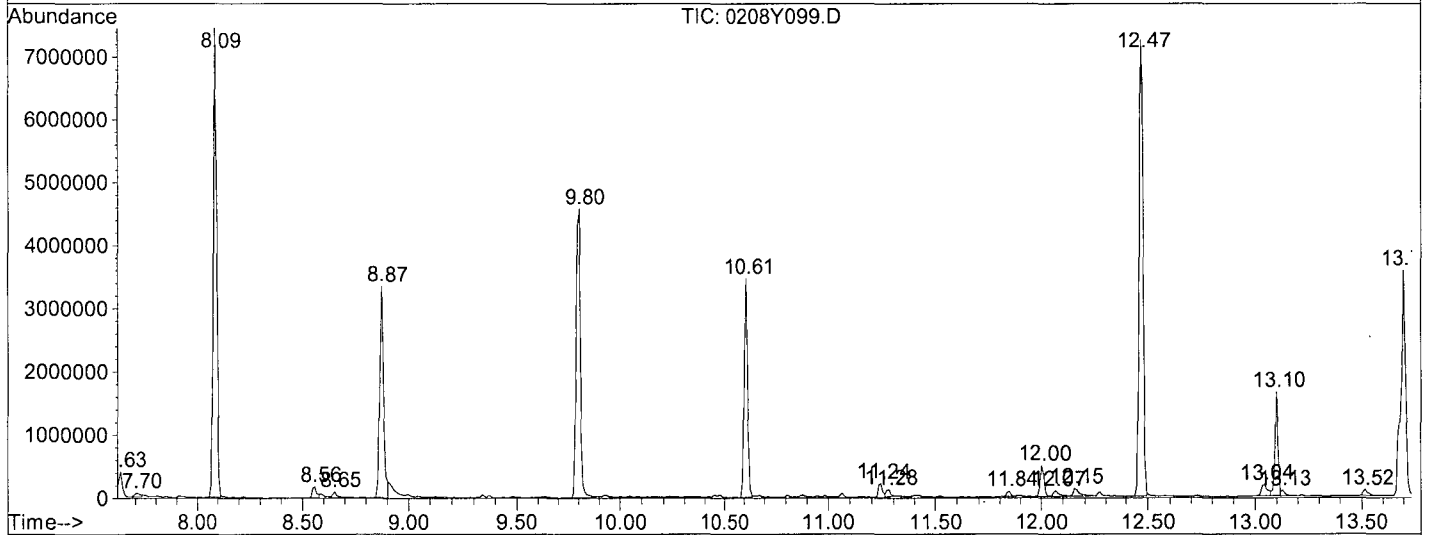
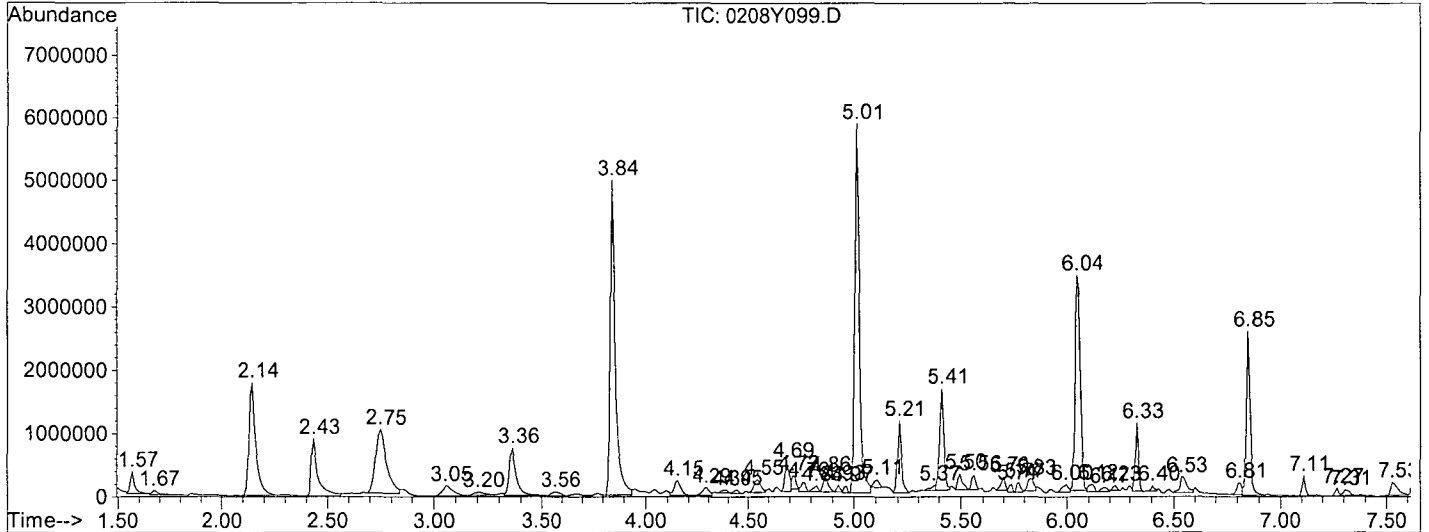
Signal : TIC

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	raw area	corr. area	corr. % max.	% of total
1	1.568	6	9	18	rVB	349235	1298667	511783	5.54%	0.510%
2	1.670	18	20	30	rVB2	70179	867074	157053	1.70%	0.157%
3	2.144	66	71	85	rBV	1783020	4935293	3989019	43.21%	3.975%
4	2.432	99	102	116	rBV	903804	3004799	2039004	22.09%	2.032%
5	2.747	129	136	146	rBV	1008145	4714338	3685214	39.92%	3.672%
6	3.054	163	169	179	rBV2	159754	1315046	572222	6.20%	0.570%
7	3.202	179	185	193	rVV6	51613	881315	197867	2.14%	0.197%
8	3.360	198	202	218	rVB	752955	2842590	1695203	18.36%	1.689%
9	3.564	218	224	230	rBV4	68909	790069	225732	2.45%	0.225%
10	3.843	251	254	264	rBV	4982277	10195126	8529997	92.41%	8.500%
11	4.149	283	287	296	rVB	237844	1345405	544427	5.90%	0.543%
12	4.288	296	302	305	rBV	127860	774078	333425	3.61%	0.332%
13	4.390	308	313	315	rVB4	46629	550394	110919	1.20%	0.111%
14	4.446	315	319	321	rVB2	59078	475134	105536	1.14%	0.105%
15	4.548	325	330	334	rBV2	202506	1063201	485688	5.26%	0.484%
16	4.687	342	345	347	rBV	461951	1106061	705277	7.64%	0.703%
17	4.715	347	348	351	rVV2	213782	820338	279737	3.03%	0.279%
18	4.762	351	353	356	rVB2	150939	669402	229968	2.49%	0.229%
19	4.827	356	360	362	rBV3	92957	588486	152666	1.65%	0.152%
20	4.864	362	364	369	rVB2	244244	1083778	404800	4.39%	0.403%
21	4.929	369	371	373	rBV	108145	428204	120485	1.31%	0.120%
22	4.966	373	375	377	rVB	102194	461502	117481	1.27%	0.117%
23	5.012	377	380	387	rBV	5848814	10077498	8607065	93.24%	8.577%
24	5.105	387	390	393	rVB2	122271	784419	201862	2.19%	0.201%
25	5.207	398	401	406	rVB	1139912	2102594	1479866	16.03%	1.475%
26	5.374	414	419	420	rBV5	80975	620658	165180	1.79%	0.165%
27	5.412	420	423	427	rVV2	1607528	3158455	2238057	24.25%	2.230%
28	5.495	430	432	436	rVB2	257226	1100003	388369	4.21%	0.387%
29	5.560	436	439	441	rBV	227850	725361	318110	3.45%	0.317%
30	5.699	450	454	456	rVB2	218119	784181	308554	3.34%	0.307%
31	5.736	456	458	460	rVB2	123655	502765	136013	1.47%	0.136%
32	5.774	460	462	464	rBV	151225	607274	203881	2.21%	0.203%
33	5.829	464	468	471	rBV2	191695	910830	422942	4.58%	0.421%
34	5.996	481	486	488	rBV3	121214	690448	249584	2.70%	0.249%
35	6.043	488	491	496	rVV2	3398168	6100197	5386150	58.35%	5.367%
36	6.117	496	499	501	rVB3	119875	682375	220359	2.39%	0.220%
37	6.173	501	505	508	rBV3	63403	613050	147765	1.60%	0.147%
38	6.228	508	511	513	rBV3	73284	486812	105984	1.15%	0.106%
39	6.331	520	522	525	rVB	1080931	1905311	1085091	11.76%	1.081%
40	6.405	528	530	532	rBV	90183	393150	101616	1.10%	0.101%
41	6.535	540	544	550	rBV2	249723	1264338	594025	6.44%	0.592%
42	6.813	568	574	575	rBV2	187006	694199	322012	3.49%	0.321%
43	6.850	575	578	586	rVB	2592258	4050254	3070838	33.27%	3.060%
44	7.110	603	606	611	rBV	317825	148086	148086	3.77%	0.347%
45	7.268	620	623	625	rBV	119489	371034	133176	1.44%	0.133%



LSC Report - Integrated Chromatogram

File : M:\YODA\DATA\Y190208\0208Y099.D  
 Operator : MA  
 Acquired : 15 Feb 19 8:08 using AcqMethod SVOC416  
 Instrument : Yoda  
 Sample Name: 190212A BLK 1/800  
 Misc Info :  
 Vial Number: 99  
 Quant File :Y0208NC.RES (RTE Integrator)



## Library Search Compound Report

Data File : M:\YODA\DATA\Y190208\0208Y099.D Vial: 99  
 Acq On : 15 Feb 19 8:08 Operator: MA  
 Sample : 190212A BLK 1/800 Inst : Yoda  
 Misc : Multiplr: 1.25

Quant Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Library : M:\DATABASE\WILEY138.L

\*\*\*\*\*  
 Peak Number 1 3-Penten-2-ol Concentration Rank 11

R.T.	EstConc	Area	Relative to ISTD	R.T.
1.57	11.43 ppb	511783	1,4-dichlorobenzene-D4 (IS)	5.41

Hit# of	5	Tentative ID	MW	MolForm	CAS#	Qual
1		3-Penten-2-ol	86	C5H10O	001569-50-2	74
2		3-Buten-2-ol, 2-methyl-	86	C5H10O	000115-18-4	64
3		3-Buten-2-ol, 2-methyl-	86	C5H10O	000115-18-4	64
4		Furan, tetrahydro-2-(methoxymethyl)	116	C6H12O2	019354-27-9	53
5		3-Penten-2-ol	86	C5H10O	001569-50-2	50

\*\*\*\*\*  
 Peak Number 2 Benzene, methyl- Concentration Rank 1

R.T.	EstConc	Area	Relative to ISTD	R.T.
2.14	89.12 ppb	3989020	1,4-dichlorobenzene-D4 (IS)	5.41

Hit# of	5	Tentative ID	MW	MolForm	CAS#	Qual
1		Benzene, methyl-	92	C7H8	000108-88-3	95
2		Benzene, methyl-	92	C7H8	000108-88-3	91
3		1,3,5-Cycloheptatriene	92	C7H8	000544-25-2	91
4		1,3,5-Cycloheptatriene	92	C7H8	000544-25-2	91
5		Benzene, methyl-	92	C7H8	000108-88-3	91

\*\*\*\*\*  
 Peak Number 3 Acetic acid, ethyl ester Concentration Rank 3

R.T.	EstConc	Area	Relative to ISTD	R.T.
2.43	45.55 ppb	2039000	1,4-dichlorobenzene-D4 (IS)	5.41

Hit# of	5	Tentative ID	MW	MolForm	CAS#	Qual
1		Acetic acid, ethyl ester	88	C4H8O2	000141-78-6	38
2		Acetic acid, pentyl ester	130	C7H14O2	000628-63-7	33
3		Acetic acid, ethyl ester	88	C4H8O2	000141-78-6	32
4		Propanoic acid, 2-methyl-	88	C4H8O2	000079-31-2	32
5		1-Butanol, 3-methyl-, acetate	130	C7H14O2	000123-92-2	25

Library Search Compound Report

```

Data File : M:\YODA\DATA\Y190208\0208Y099.D           Vial: 99
Acq On    : 15 Feb 19   8:08                         Operator: MA
Sample    : 190212A BLK 1/800                       Inst  : Yoda
Misc      :                                           Multiplr: 1.25
    
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Quant Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)
Title        : EPA 8270C
Library      : M:\DATABASE\WILEY138.L
    
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\*\*\*\*\*  
 Peak Number 4 Ethene, tetrachloro- Concentration Rank 2

R.T.	EstConc	Area	Relative to ISTD	R.T.
2.75	82.33 ppb	3685210	1,4-dichlorobenzene-D4 (IS)	5.41

Hit# of	5	Tentative ID	MW	MolForm	CAS#	Qual
1		Ethene, tetrachloro-	164	C2Cl4	000127-18-4	97
2		Ethene, tetrachloro-	164	C2Cl4	000127-18-4	97
3		Ethene, tetrachloro-	164	C2Cl4	000127-18-4	95
4		Ethene, tetrachloro-	164	C2Cl4	000127-18-4	94
5		Ethene, tetrachloro-	164	C2Cl4	000127-18-4	94

\*\*\*\*\*  
 Peak Number 5 Butanoic acid, 3,3-dimethyl- Concentration Rank 9

R.T.	EstConc	Area	Relative to ISTD	R.T.
3.05	12.78 ppb	572222	1,4-dichlorobenzene-D4 (IS)	5.41

Hit# of	5	Tentative ID	MW	MolForm	CAS#	Qual
1		Butanoic acid, 3,3-dimethyl-	116	C6H12O2	001070-83-3	47
2		Propane, 2,2'-[methylenebis(oxy)]bi	160	C9H20O2	002568-93-6	37
3		Butanamide	87	C4H9NO	000541-35-5	32
4		Butanamide	87	C4H9NO	000541-35-5	32
5		Propane, 2,2'-oxybis[2-methyl-	130	C8H18O	006163-66-2	32

\*\*\*\*\*  
 Peak Number 6 2-Pentanone, 4-hydroxy-4-methyl Concentration Rank 4

R.T.	EstConc	Area	Relative to ISTD	R.T.
3.36	37.87 ppb	1695200	1,4-dichlorobenzene-D4 (IS)	5.41

Hit# of	5	Tentative ID	MW	MolForm	CAS#	Qual
1		2-Pentanone, 4-hydroxy-4-methyl-	116	C6H12O2	000123-42-2	53
2		2-Pentanone, 4-hydroxy-4-methyl-	116	C6H12O2	000123-42-2	50
3		2-Pentanone, 4-hydroxy-4-methyl-	116	C6H12O2	000123-42-2	50
4		2-Pentanone, 4-hydroxy-4-methyl-	116	C6H12O2	000123-42-2	40
5		2-Pentanone, 4-hydroxy-4-methyl-	116	C6H12O2	000123-42-2	39

## Library Search Compound Report

Data File : M:\YODA\DATA\Y190208\0208Y099.D Vial: 99  
Acq On : 15 Feb 19 8:08 Operator: MA  
Sample : 190212A BLK 1/800 Inst : Yoda  
Misc : Multiplr: 1.25

Quant Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
Title : EPA 8270C  
Library : M:\DATABASE\WILEY138.L

\*\*\*\*\*  
Peak Number 7 Nonane Concentration Rank 10

R.T.	EstConc	Area	Relative to ISTD	R.T.
4.15	12.16 ppb	544427	1,4-dichlorobenzene-D4 (IS)	5.41

Hit# of	5	Tentative ID	MW	MolForm	CAS#	Qual
1	Nonane		128	C9H20	000111-84-2	93
2	Nonane		128	C9H20	000111-84-2	87
3	Nonane		128	C9H20	000111-84-2	83
4	Decane, 2,3,6-trimethyl-		184	C13H28	062238-12-4	64
5	Tricosane		324	C23H48	000638-67-5	64

\*\*\*\*\*  
Peak Number 8 Cyclohexane, propyl- Concentration Rank 12

R.T.	EstConc	Area	Relative to ISTD	R.T.
4.55	10.85 ppb	485688	1,4-dichlorobenzene-D4 (IS)	5.41

Hit# of	5	Tentative ID	MW	MolForm	CAS#	Qual
1	Cyclohexane, propyl-		126	C9H18	001678-92-8	60
2	Cyclohexane, propyl-		126	C9H18	001678-92-8	55
3	Cyclohexane, propyl-		126	C9H18	001678-92-8	53
4	Cyclohexane, (2-methylpropyl)-		140	C10H20	001678-98-4	50
5	Ethanone, 1-cyclohexyl-		126	C8H14O	000823-76-7	46

\*\*\*\*\*  
Peak Number 9 Decane, 3,3,4-trimethyl- Concentration Rank 7

R.T.	EstConc	Area	Relative to ISTD	R.T.
4.69	15.76 ppb	705277	1,4-dichlorobenzene-D4 (IS)	5.41

Hit# of	5	Tentative ID	MW	MolForm	CAS#	Qual
1	Decane, 3,3,4-trimethyl-		184	C13H28	049622-18-6	64
2	Butanoic acid, 3-methylbutyl ester		158	C9H18O2	000106-27-4	56
3	2-Ethylhexyl ester of isobutanoic a		200	C12H24O2	000000-00-0	40
4	1-Butanol, 3-methyl-, carbonate (2:		202	C11H22O3	002050-95-5	40
5	Butane, 2-bromo-2-methyl-		150	C5H11Br	000507-36-8	38

## Library Search Compound Report

Data File : M:\YODA\DATA\Y190208\0208Y099.D Vial: 99  
 Acq On : 15 Feb 19 8:08 Operator: MA  
 Sample : 190212A BLK 1/800 Inst : Yoda  
 Misc : Multiplr: 1.25

Quant Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Library : M:\DATABASE\WILEY138.L

\*\*\*\*\*  
 Peak Number 10 Cyclohexane, 1,2,3-trimethyl-, Concentration Rank 16

R.T.	EstConc	Area	Relative to ISTD	R.T.
4.86	9.04 ppb	404800	1,4-dichlorobenzene-D4 (IS)	5.41

Hit#	of	5	Tentative ID	MW	MolForm	CAS#	Qual
1			Cyclohexane, 1,2,3-trimethyl-, (1.a	126	C9H18	001678-81-5	50
2			Cyclohexane, 1,2,3-trimethyl-, (1.a	126	C9H18	007667-55-2	50
3			1,1,2,3-TETRAMETHYLCYCLOHEXANE B	140	C10H20	071186-28-2	49
4			3-Hexene, 2-methyl-, (E)-	98	C7H14	000692-24-0	43
5			2-OCTENE, 2,7-DIMETHYL-	140	C10H20	000000-00-0	43

\*\*\*\*\*  
 Peak Number 11 Decane Concentration Rank 5

R.T.	EstConc	Area	Relative to ISTD	R.T.
5.21	33.06 ppb	1479870	1,4-dichlorobenzene-D4 (IS)	5.41

Hit#	of	5	Tentative ID	MW	MolForm	CAS#	Qual
1			Decane	142	C10H22	000124-18-5	95
2			Decane	142	C10H22	000124-18-5	95
3			Decane	142	C10H22	000124-18-5	94
4			Decane	142	C10H22	000124-18-5	91
5			Hexadecane	226	C16H34	000544-76-3	90

\*\*\*\*\*  
 Peak Number 12 Butanedioic acid, dimethyl est Concentration Rank 17

R.T.	EstConc	Area	Relative to ISTD	R.T.
5.50	8.68 ppb	388369	1,4-dichlorobenzene-D4 (IS)	5.41

Hit#	of	5	Tentative ID	MW	MolForm	CAS#	Qual
1			Butanedioic acid, dimethyl ester	146	C6H10O4	000106-65-0	83
2			Butanedioic acid, dimethyl ester	146	C6H10O4	000106-65-0	78
3			Butanedioic acid, dimethyl ester	146	C6H10O4	000106-65-0	64
4			Butanedioic acid, dimethyl ester	146	C6H10O4	000106-65-0	50
5			Butanedioic acid, dimethyl ester	146	C6H10O4	000106-65-0	45

## Library Search Compound Report

Data File : M:\YODA\DATA\Y190208\0208Y099.D Vial: 99  
 Acq On : 15 Feb 19 8:08 Operator: MA  
 Sample : 190212A BLK 1/800 Inst : Yoda  
 Misc : Multiplr: 1.25

Quant Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Library : M:\DATABASE\WILEY138.L

\*\*\*\*\*  
 Peak Number 13 Naphthalene, decahydro-, trans Concentration Rank 14

R.T.	EstConc	Area	Relative to ISTD	R.T.
5.83	9.45 ppb	422942	1,4-dichlorobenzene-D4 (IS)	5.41

Hit#	of	5	Tentative ID	MW	MolForm	CAS#	Qual
1			Naphthalene, decahydro-, trans-	138	C10H18	000493-02-7	35
2			Undecane, 2-methyl-	170	C12H26	007045-71-8	27
3			1-Octanol, 2,2-dimethyl-	158	C10H22O	002370-14-1	27
4			Octane, 5-ethyl-2-methyl-	156	C11H24	062016-18-6	27
5			Undecane, 5,7-dimethyl-	184	C13H28	017312-83-3	22

\*\*\*\*\*  
 Peak Number 14 Pentanedioic acid, dimethyl es Concentration Rank 6

R.T.	EstConc	Area	Relative to ISTD	R.T.
6.33	17.67 ppb	1085090	Napthalene-D8 (IS)	6.85

Hit#	of	5	Tentative ID	MW	MolForm	CAS#	Qual
1			Pentanedioic acid, dimethyl ester	160	C7H12O4	001119-40-0	91
2			Pentanedioic acid, dimethyl ester	160	C7H12O4	001119-40-0	91
3			Pentanedioic acid, dimethyl ester	160	C7H12O4	001119-40-0	83
4			Pentanedioic acid, dimethyl ester	160	C7H12O4	001119-40-0	78
5			Pentanedioic acid, dimethyl ester	160	C7H12O4	001119-40-0	64

\*\*\*\*\*  
 Peak Number 15 2-Propanone, 1-hydroxy- Concentration Rank 13

R.T.	EstConc	Area	Relative to ISTD	R.T.
6.53	9.67 ppb	594025	Napthalene-D8 (IS)	6.85

Hit#	of	5	Tentative ID	MW	MolForm	CAS#	Qual
1			2-Propanone, 1-hydroxy-	74	C3H6O2	000116-09-6	9
2			Urea, trimethyl-	102	C4H10N2O	000632-14-4	9
3			Acetaldehyde	44	C2H4O	000075-07-0	9
4			Acetic acid, [(aminocarbonyl)amino]	132	C3H4N2O4	000585-05-7	9
5			Ethanol, 2,2'-iminobis-	105	C4H11NO2	000111-42-2	9

## Library Search Compound Report

Data File : M:\YODA\DATA\Y190208\0208Y099.D Vial: 99  
Acq On : 15 Feb 19 8:08 Operator: MA  
Sample : 190212A BLK 1/800 Inst : Yoda  
Misc : Multiplr: 1.25

Quant Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
Title : EPA 8270C  
Library : M:\DATABASE\WILEY138.L

\*\*\*\*\*  
Peak Number 16 Butanal, 3-hydroxy- Concentration Rank 18

R.T.	EstConc	Area	Relative to ISTD	R.T.	
7.53	8.25 ppb	506456	Napthalene-D8 (IS)	6.85	
Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Butanal, 3-hydroxy-	88	C4H8O2	000107-89-1	42
2	1-BUTOXY-1-ETHOXYETHANE	146	C8H18O2	000000-00-0	40
3	2-Octanol	130	C8H18O	000123-96-6	27
4	2-Hexanol, 3-methyl-	116	C7H16O	002313-65-7	23
5	2-Hexanol, 3-methyl-	116	C7H16O	002313-65-7	17

\*\*\*\*\*  
Peak Number 17 [1,2,4]Triazolo[1,5-a]pyrimidi Concentration Rank 20

R.T.	EstConc	Area	Relative to ISTD	R.T.	
7.63	7.99 ppb	491017	Napthalene-D8 (IS)	6.85	
Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	[1,2,4]Triazolo[1,5-a]pyrimidin-7-o	150	C6H6N4O	002503-56-2	43
2	2-Methoxy-3-methyl-1,4-benzoquinone	152	C8H8O3	002207-57-0	38
3	1-(1-Cyclohexen-1-yl)-pyrroldine	151	C10H17N	000000-00-0	38
4	6H-Purin-6-one, 1,7-dihydro-1-methy	150	C6H6N4O	001125-39-9	35
5	Biphenylene	152	C12H8	000259-79-0	32

\*\*\*\*\*  
Peak Number 18 Hexanedioic acid, dioctyl este Concentration Rank 8

R.T.	EstConc	Area	Relative to ISTD	R.T.	
13.10	14.98 ppb	1604570	Chrysene-D12 (IS)	13.70	
Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Hexanedioic acid, dioctyl ester	370	C22H42O4	000123-79-5	91
2	Hexanedioic acid, dioctyl ester	370	C22H42O4	000123-79-5	80
3	Hexanedioic acid, dioctyl ester	370	C22H42O4	000123-79-5	62
4	DI-(2-ETHYLHEXYL) ESTER OF ADIPIC A	370	C22H42O4	000000-00-0	56
5	DI-(2-ETHYLHEXYL) ESTER OF ADIPIC A	370	C22H42O4	000000-00-0	47

Library Search Compound Report

Data File : M:\YODA\DATA\Y190208\0208Y099.D Vial: 99  
 Acq On : 15 Feb 19 8:08 Operator: MA  
 Sample : 190212A BLK 1/800 Inst : Yoda  
 Misc : Multiplr: 1.25

Quant Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Library : M:\DATABASE\WILEY138.L

\*\*\*\*\*  
 Peak Number 19 9-Octadecenamide, (Z)- Concentration Rank 19

R.T.	EstConc	Area	Relative to ISTD	R.T.
14.65	8.12 ppb	635392	Perylene-D12 (IS)	15.56

Hit#	of	5	Tentative ID	MW	MolForm	CAS#	Qual
1			9-Octadecenamide, (Z)-	281	C18H35NO	000301-02-0	64
2			Erucamide	337	C22H43NO	000000-00-0	53
3			5-DIHYDRO-2-AMINO-1-METHYL SULFYL G	191	C7H13NO3S	000000-00-0	47
4			1,1,2-TRIMETHYL-1-SILACYCLOBUTANE	114	C6H14Si	030681-90-4	43
5			1,1,2-TRIMETHYL-1-SILACYCLOBUTANE	114	C6H14Si	030681-90-4	43

\*\*\*\*\*  
 Peak Number 20 (+)-cis-2,3-Dimethoxy-8-oxo-9, Concentration Rank 15

R.T.	EstConc	Area	Relative to ISTD	R.T.
19.43	9.45 ppb	739022	Perylene-D12 (IS)	15.56

Hit#	of	5	Tentative ID	MW	MolForm	CAS#	Qual
1			(+)-cis-2,3-Dimethoxy-8-oxo-9,10-(m	369	C21H23NO5	079082-09-0	64
2			BICYCLO[2.2.1]HEPTA-2,5-DIEN-2,3-DI	208	C11H12O4	000947-57-9	14
3			Naphthalene, 1,2,3,4-tetrahydro-	132	C10H12	000119-64-2	12
4			1,2-Benzenedicarboxylic acid, dieth	222	C12H14O4	000084-66-2	11
5			Naphthalene, 1,2,3,4-tetrahydro-2-p	208	C16H16	029422-13-7	11



## Tentatively Identified Compound (LSC) summary

Operator ID: MA Date Acquired: 15 Feb 19 8:08  
Data File: M:\YODA\DATA\Y190208\0208Y099.D  
Name: 190212A BLK 1/800  
Misc:  
Method: M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
Title: EPA 8270C  
Library Searched: M:\DATABASE\WILEY138.L

TIC Top Hit name	RT	EstConc	Units	Area	IntStd	ISRT	ISArea	ISConc
3-Penten-2-ol	1.57	11.4	ppb	511783	ISTD01	5.41	2238060	40.0
Benzene, methyl-	2.14	89.1	ppb	3989020	ISTD01	5.41	2238060	40.0
Acetic acid, ethyl e	2.43	45.6	ppb	2039000	ISTD01	5.41	2238060	40.0
Ethene, tetrachloro-	2.75	82.3	ppb	3685210	ISTD01	5.41	2238060	40.0
Butanoic acid, 3,3-d	3.05	12.8	ppb	572222	ISTD01	5.41	2238060	40.0
2-Pentanone, 4-hydro	3.36	37.9	ppb	1695200	ISTD01	5.41	2238060	40.0
Nonane	4.15	12.2	ppb	544427	ISTD01	5.41	2238060	40.0
Cyclohexane, propyl-	4.55	10.9	ppb	485688	ISTD01	5.41	2238060	40.0
Decane, 3,3,4-trimet	4.69	15.8	ppb	705277	ISTD01	5.41	2238060	40.0
Cyclohexane, 1,2,3-t	4.86	9.0	ppb	404800	ISTD01	5.41	2238060	40.0
Decane	5.21	33.1	ppb	1479870	ISTD01	5.41	2238060	40.0
Butanedioic acid, di	5.50	8.7	ppb	388369	ISTD01	5.41	2238060	40.0
Naphthalene, decahyd	5.83	9.4	ppb	422942	ISTD01	5.41	2238060	40.0
Pentanedioic acid, d	6.33	17.7	ppb	1085090	ISTD02	6.85	3070840	40.0
2-Propanone, 1-hydro	6.53	9.7	ppb	594025	ISTD02	6.85	3070840	40.0
Butanal, 3-hydroxy-	7.53	8.2	ppb	506456	ISTD02	6.85	3070840	40.0
[1,2,4]Triazolo[1,5-	7.63	8.0	ppb	491017	ISTD02	6.85	3070840	40.0
Hexanedioic acid, di	13.10	15.0	ppb	1604570	ISTD05	13.70	5355930	40.0
9-Octadecenamide, (Z	14.65	8.1	ppb	635392	ISTD06	15.56	3912060	40.0
(+)-cis-2,3-Dimethox	19.43	9.4	ppb	739022	ISTD06	15.56	3912060	40.0

0208Y099.D Y0208NC.M

Tue Feb 19 15:14:46 2019

Data File : M:\YODA\DATA\Y190208\0208Y100.D  
 Acq On : 15 Feb 19 8:36  
 Sample : 190212A LCS-1 1/800  
 Misc :

Vial: 100  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.25

Quant Time: Feb 15 8:54 2019

Quant Results File: Y0208NC.RES

Quant Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Wed Feb 13 11:51:39 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.41	152	344279	40.0000	ppb	0.00
21) Napthalene-D8 (IS)	6.85	136	1465339	40.0000	ppb	0.00
41) Acenaphthene-D10 (IS)	8.87	164	820439	40.0000	ppb	0.00
65) Phenanthrene-D10 (IS)	10.61	188	1558528	40.0000	ppb	0.00
79) Chrysene-D12 (IS)	13.70	240	1385865	40.0000	ppb	0.00
89) Perylene-D12 (IS)	15.57	264	1331980	40.0000	ppb	0.00

System Monitoring Compounds

5) 2-Fluorophenol (S)	3.85	112	2424935	276.9609	ppb	-0.03
Spiked Amount	250.000		Recovery	= 110.784%		
6) Phenol-D6 (S)	5.02	99	3255733	279.4442	ppb	-0.02
Spiked Amount	250.000		Recovery	= 111.778%		
22) Nitrobenzene-D5 (S)	6.05	82	1470072	136.8722	ppb	0.00
Spiked Amount	125.000		Recovery	= 109.498%		
46) 2-Fluorobiphenyl (S)	8.09	172	2681485	126.0687	ppb	0.00
Spiked Amount	125.000		Recovery	= 100.855%		
64) 2,4,6-Tribromophenol (S)	9.80	330	616819	285.3038	ppb	0.00
Spiked Amount	250.000		Recovery	= 114.122%		
82) Terphenyl-D14 (S)	12.47	244	2869405	127.7135	ppb	0.00
Spiked Amount	125.000		Recovery	= 102.171%		

Target Compounds

	R.T.	QIon	Response	Conc	Units	Qvalue
2) 1,4-Dioxane	1.71	58	9761	9.5945		94
3) n-Nitrosodimethylamine	1.94	42	161405	88.0834	ppb	81
4) Pyridine	1.95	79	336188	69.8440	ppb	94
7) Phenol	5.04	94	1080362	87.5320	ppb	# 71
8) Aniline	5.12	93	785357	80.3230	ppb	# 98
9) Bis (2-chloroethyl) ether	5.12	63	500992	83.3172	ppb	96
10) 2-Chlorophenol	5.18	128	759358	85.5295	ppb	98
11) 1,3-DCB	5.35	146	665417	71.1651	ppb	99
12) 1,4-DCB	5.43	146	688233	72.0031	ppb	97
13) Benzyl alcohol	5.59	108	475703	112.5808	ppb	100
14) 1,2-DCB	5.61	146	667163	74.3438	ppb	97
15) 2-Methylphenol	5.71	107	671746	86.6475	ppb	97
16) Bis (2-chloroisopropyl) et	5.72	45	778786	87.8312	ppb	83
17) Acetophenone	5.88	105	1045901	86.9967	ppb	92
18) 3&4-Methylphenol	5.89	107	1631143	176.0113	ppb	100
19) n-Nitrosodi-n-propylamine	5.88	70	592666	84.7881	ppb	99
20) Hexachloroethane	5.98	117	213417	59.7408	ppb	96
23) Nitrobenzene	6.07	77	909520	88.4256	ppb	96
24) Isophorone	6.34	82	1558415	87.0331	ppb	99
25) 2-Nitrophenol	6.42	139	433525	89.9638	ppb	90
26) 2,4-Dimethylphenol	6.47	122	667069	84.3570	ppb	98
27) Benzoic acid	6.62	105	429406	69.7121	ppb	98
28) Bis (2-chloroethoxy) metha	6.57	93	924138	86.6105	ppb	99
29) 2,4-Dichlorophenol	6.70	162	629636	87.6180	ppb	98
30) 1,2,4-Trichlorobenzene	6.79	180	573869	74.2763	ppb	98
31) 3,4-Dimethylphenol	6.81	107	1023757	88.3884	ppb	99
32) Naphthalene	6.88	128	2201058	84.6324	ppb	99
33) 4-Chloroaniline	6.94	127	404780	40.8530	ppb	97
34) 2,6-Dichlorophenol	6.95	162	617116	87.6697	ppb	98
35) Hexachloropropene	6.97	213	265854	56.3042	ppb	99
36) Hexachlorobutadiene	7.00	225	255372	62.5546	ppb	97
37) Caprolactum	7.37	55	318253	85.6259	ppb	97

(#) = qualifier out of range (m) = manual integration

Data File : M:\YODA\DATA\Y190208\0208Y100.D  
 Acq On : 15 Feb 19 8:36  
 Sample : 190212A LCS-1 1/800  
 Misc :

Vial: 100  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.25

Quant Time: Feb 15 8:54 2019

Quant Results File: Y0208NC.RES

Quant Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Wed Feb 13 11:51:39 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
38) 4-Chloro-3-methylphenol	7.51	107	721526	91.1444	ppb	94
39) 2-Methylnaphthalene	7.67	142	1398942	83.3807	ppb	99
40) 1-Methylnaphthalene	7.78	142	1441930	83.1288	ppb	98
42) Hexachlorocyclopentadiene	7.83	237	84763	27.8628	ppb	99
43) 1,2,4,5-Tetrachlorobenzene	7.86	216	581210	75.8645	ppb	98
44) 2,4,6-Trichlorophenol	8.00	196	436149	82.9808	ppb	98
45) 2,4,5-Trichlorophenol	8.06	196	456142	81.9409	ppb	95
47) 1,1'-Biphenyl	8.21	154	1844824	79.8700	ppb	98
48) 2-Chloronaphthalene	8.23	162	1361880	78.4682	ppb	98
49) 2-Nitroaniline	8.36	65	495844	84.6906	ppb	96
50) Dimethyl phthalate	8.56	163	1752495	87.3904	ppb	100
51) 2,6-DNT	8.64	165	395587	85.9951	ppb	91
52) Acenaphthylene	8.72	152	2222911	81.5615	ppb	100
53) 3-Nitroaniline	8.85	138	367041	70.4739	ppb	95
54) Acenaphthene	8.91	154	1409958	80.5143	ppb	100
55) 2,4-Dinitrophenol	8.98	184	217129	77.8480	ppb	95
56) 4-Nitrophenol	9.06	65	365615	105.5028	ppb	95
57) Dibenzofuran	9.12	168	2001739	82.1512	ppb	97
58) 2,4-DNT	9.12	165	523303	85.5295	ppb	91
59) 2,3,4,6-Tetrachlorophenol	9.26	232	343020	84.0451	ppb	96
60) Diethyl phthalate	9.38	149	1599616	83.5962	ppb	99
61) 4-Chlorophenyl phenyl ethe	9.51	204	773568	81.7042	ppb	90
62) Fluorene	9.52	166	1641208	82.2565	ppb	99
63) 4-Nitroaniline	9.56	138	398381	81.6374	ppb	91
66) 4,6-Dinitro-2-methylphenol	9.59	198	330452	84.2799	ppb	92
67) Diphenyl amine	9.65	169	2493716	160.7965	ppb	100
68) n-Nitrosodiphenylamine	9.65	169	2493716	160.7965	ppb	100
69) 1,2-Diphenylhydrazine	9.69	77	1797414	80.6634	ppb	93
70) 4-Bromophenyl phenyl ether	10.08	248	416865	83.1721	ppb	92
71) Hexachlorobenzene	10.16	284	395019	81.8347	ppb	93
72) Atrazine	10.28	200	223380	42.1051	ppb	99
73) Pentachlorophenol	10.40	266	246492	87.5069	ppb	98
74) Phenanthrene	10.64	178	2403531	82.7902	ppb	100
75) Anthracene	10.70	178	2481854	83.1096	ppb	100
76) Carbazol	10.90	167	2278320	83.4245	ppb	99
77) Di-n-butylphthalate	11.28	149	2799436	86.9431	ppb	100
78) Fluoranthene	12.03	202	2593009	83.7157	ppb	98
80) Benzidine	12.20	184	295168	25.3712	ppb	98
81) Pyrene	12.30	202	2666100	80.7523	ppb	100
83) Butyl benzylphthalate	13.03	149	1336582	89.1638	ppb	93
84) 3,3'-Dichlorobenzidine	13.66	252	491029	48.6713	ppb	98
85) Benz (a) anthracene	13.69	228	2239072	78.2371	ppb	99
86) Bis (2-ethylhexyl) phthala	13.68	149	1812070	87.0641	ppb	# 97
87) Chrysene	13.74	228	2221679	81.1372	ppb	99
88) Di-n-octylphthalate	14.44	149	3149690	89.7798	ppb	# 95
90) Benzo (b) fluoranthene	15.01	252	2334130	83.0032	ppb	99
91) Benzo (k) fluoranthene	15.05	252	2051734	80.5823	ppb	99
92) Benzo (a) pyrene	15.48	252	2041648	81.5673	ppb	98
93) Indeno (1,2,3-cd) pyrene	17.48	276	2189897	84.1446	ppb	99
94) Dibenz (a,h) anthracene	17.50	278	1970336	83.6098	ppb	98
95) Benzo (g,h,i) perylene	18.06	276	1841678	82.9996	ppb	97

(#) = qualifier out of range (m) = manual integration  
 0208Y100.D Y0208NC.M Tue Feb 19 12:44:21 2019

Quantitation Report

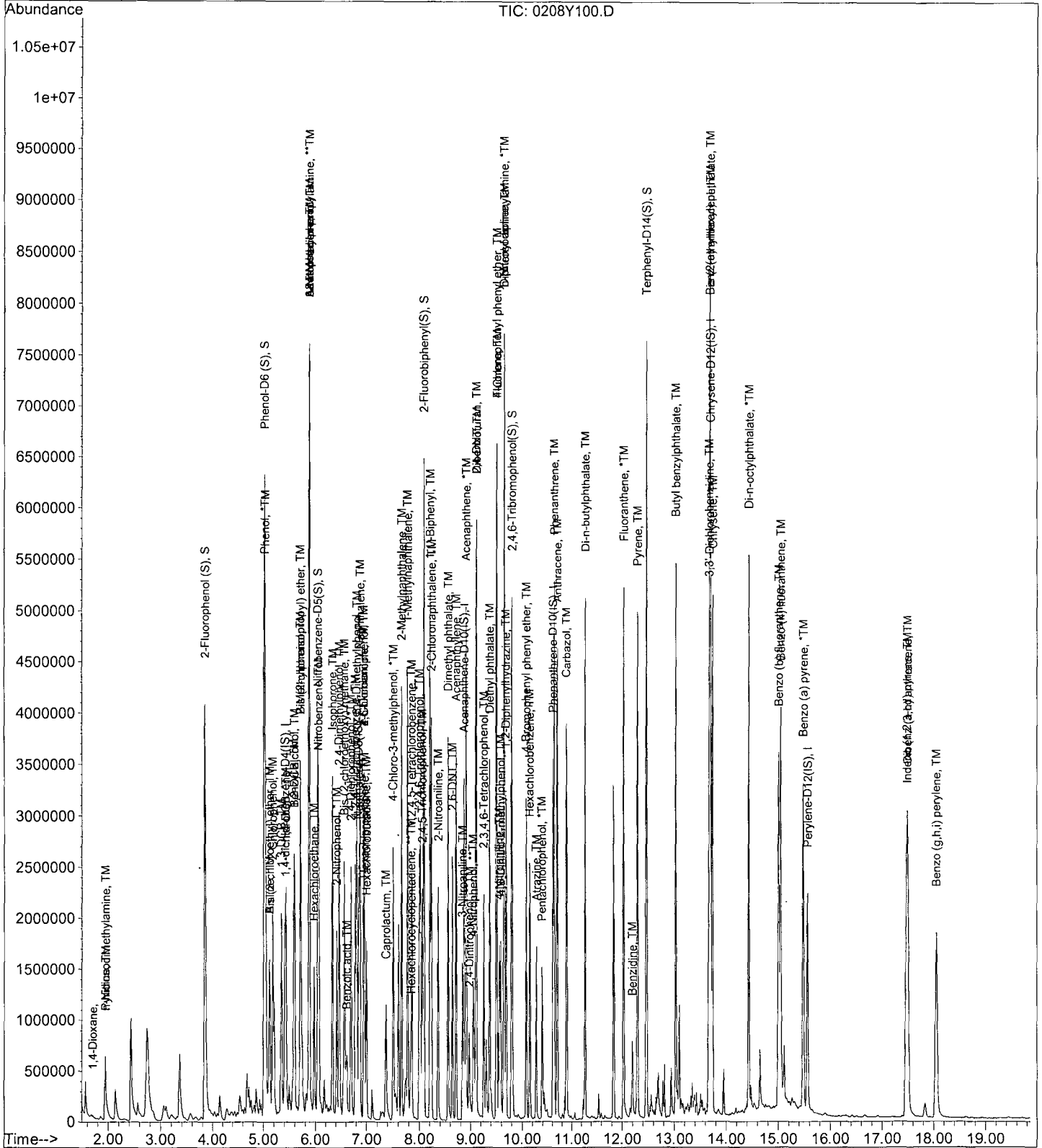
Data File : M:\YODA\DATA\Y190208\0208Y100.D  
Acq On : 15 Feb 19 8:36  
Sample : 190212A LCS-1 1/800  
Misc :

Vial: 100  
Operator: MA  
Inst : Yoda  
Multiplr: 1.25

Quant Time: Feb 15 8:54 2019

Quant Results File: Y0208NC.RES

Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Wed Feb 13 11:51:39 2019  
Response via : Initial Calibration



Data File : M:\YODA\DATA\Y190208\0208Y101.D  
 Acq On : 15 Feb 19 9:03  
 Sample : 190212A LCSD-1 1/800  
 Misc :

Vial: 1  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.25

Quant Time: Feb 15 10:02 2019

Quant Results File: Y0208NC.RES

Quant Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Wed Feb 13 11:51:39 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.41	152	413561	40.0000	ppb	0.00
21) Napthalene-D8 (IS)	6.85	136	1743005	40.0000	ppb	0.00
41) Acenaphthene-D10 (IS)	8.88	164	924196	40.0000	ppb	0.00
65) Phenanthrene-D10 (IS)	10.61	188	1749603	40.0000	ppb	0.00
79) Chrysene-D12 (IS)	13.70	240	1528810	40.0000	ppb	0.00
89) Perylene-D12 (IS)	15.57	264	1511119	40.0000	ppb	0.00

System Monitoring Compounds

5) 2-Fluorophenol (S)	3.85	112	2386523	226.9107	ppb	-0.03
Spiked Amount	250.000		Recovery	= 90.764%		
6) Phenol-D6 (S)	5.02	99	3203123	228.8711	ppb	-0.02
Spiked Amount	250.000		Recovery	= 91.548%		
22) Nitrobenzene-D5 (S)	6.05	82	1430977	112.0079	ppb	0.00
Spiked Amount	125.000		Recovery	= 89.606%		
46) 2-Fluorobiphenyl (S)	8.09	172	2590242	108.1072	ppb	0.00
Spiked Amount	125.000		Recovery	= 86.486%		
64) 2,4,6-Tribromophenol (S)	9.80	330	609137	250.1192	ppb	0.00
Spiked Amount	250.000		Recovery	= 100.048%		
82) Terphenyl-D14 (S)	12.47	244	2782701	112.2740	ppb	0.00
Spiked Amount	125.000		Recovery	= 89.819%		

Target Compounds

						Qvalue
2) 1,4-Dioxane	1.71	58	9916	8.1490		95
3) n-Nitrosodimethylamine	1.94	42	157725	71.6553	ppb	80
4) Pyridine	1.95	79	293997	44.2992	ppb	93
7) Phenol	5.03	94	1065321	71.8536	ppb	84
8) Aniline	5.13	93	764544	65.0948	ppb	# 98
9) Bis (2-chloroethyl) ether	5.13	63	494895	68.5154	ppb	95
10) 2-Chlorophenol	5.18	128	743768	69.7393	ppb	99
11) 1,3-DCB	5.35	146	671680	59.8008	ppb	99
12) 1,4-DCB	5.43	146	698641	60.8472	ppb	97
13) Benzyl alcohol	5.59	108	464468	91.5072	ppb	100
14) 1,2-DCB	5.60	146	669209	62.0791	ppb	98
15) 2-Methylphenol	5.71	107	653159	70.1360	ppb	96
16) Bis (2-chloroisopropyl) et	5.72	45	755359	70.9177	ppb	# 82
17) Acetophenone	5.88	105	1012882	70.1361	ppb	90
18) 3&4-Methylphenol	5.89	107	1608125	144.4572	ppb	98
19) n-Nitrosodi-n-propylamine	5.88	70	580320	69.1136	ppb	99
20) Hexachloroethane	5.98	117	227040	52.9073	ppb	95
23) Nitrobenzene	6.07	77	887012	72.4994	ppb	96
24) Isophorone	6.34	82	1522190	71.4677	ppb	98
25) 2-Nitrophenol	6.42	139	425832	74.2902	ppb	92
26) 2,4-Dimethylphenol	6.47	122	672447	71.4904	ppb	99
27) Benzoic acid	6.63	105	573176	77.5527	ppb	99
28) Bis (2-chloroethoxy) metha	6.57	93	907743	71.5214	ppb	99
29) 2,4-Dichlorophenol	6.70	162	610909	71.4693	ppb	98
30) 1,2,4-Trichlorobenzene	6.79	180	574412	62.5030	ppb	99
31) 3,4-Dimethylphenol	6.81	107	1012013	73.4555	ppb	99
32) Napthalene	6.88	128	2152597	69.5837	ppb	99
33) 4-Chloroaniline	6.94	127	379402	32.1917	ppb	97
34) 2,6-Dichlorophenol	6.95	162	606280	72.4095	ppb	98
35) Hexachloropropene	6.97	213	275140	48.9882	ppb	97
36) Hexachlorobutadiene	7.00	225	258634	53.2612	ppb	98
37) Caprolactum	7.37	55	314966	71.2419	ppb	95

(#) = qualifier out of range (m) = manual integration  
 0208Y101.D Y0208NC.M Tue Feb 19 12:44:24 2019

Data File : M:\YODA\DATA\Y190208\0208Y101.D  
 Acq On : 15 Feb 19 9:03  
 Sample : 190212A LCSD-1 1/800  
 Misc :

Vial: 1  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.25

Quant Time: Feb 15 10:02 2019

Quant Results File: Y0208NC.RES

Quant Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Wed Feb 13 11:51:39 2019  
 Response via : Initial Calibration  
 DataAcq Meth : SVOC416

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
38) 4-Chloro-3-methylphenol	7.51	107	706759	75.0566	ppb	94
39) 2-Methylnaphthalene	7.67	142	1366671	68.4809	ppb	100
40) 1-Methylnaphthalene	7.78	142	1419246	68.7867	ppb	99
42) Hexachlorocyclopentadiene	7.84	237	88926	26.4036	ppb	100
43) 1,2,4,5-Tetrachlorobenzene	7.86	216	578228	67.0019	ppb	98
44) 2,4,6-Trichlorophenol	8.00	196	423492	71.5270	ppb	100
45) 2,4,5-Trichlorophenol	8.06	196	444146	70.8286	ppb	92
47) 1,1'-Biphenyl	8.21	154	1813320	69.6924	ppb	98
48) 2-Chloronaphthalene	8.24	162	1335682	68.3187	ppb	98
49) 2-Nitroaniline	8.37	65	482206	73.1148	ppb	91
50) Dimethyl phthalate	8.56	163	1719822	76.1330	ppb	99
51) 2,6-DNT	8.64	165	380123	73.3564	ppb	89
52) Acenaphthylene	8.72	152	2143692	69.8245	ppb	100
53) 3-Nitroaniline	8.84	138	350997	59.8273	ppb	92
54) Acenaphthene	8.91	154	1389968	70.4618	ppb	100
55) 2,4-Dinitrophenol	8.98	184	221885	71.2579	ppb	94
56) 4-Nitrophenol	9.06	65	363590	93.1395	ppb	96
57) Dibenzofuran	9.12	168	1935154	70.5025	ppb	96
58) 2,4-DNT	9.12	165	513345	74.4825	ppb	87
59) 2,3,4,6-Tetrachlorophenol	9.27	232	335980	73.0783	ppb	95
60) Diethyl phthalate	9.38	149	1566653	72.6818	ppb	98
61) 4-Chlorophenyl phenyl ethe	9.51	204	749929	70.3151	ppb	91
62) Fluorene	9.52	166	1599343	71.1591	ppb	100
63) 4-Nitroaniline	9.56	138	383350	69.7378	ppb	94
66) 4,6-Dinitro-2-methylphenol	9.59	198	327322	74.7745	ppb	91
67) Diphenyl amine	9.66	169	2380751	136.7473	ppb	99
68) n-Nitrosodiphenylamine	9.66	169	2380751	136.7473	ppb	99
69) 1,2-Diphenylhydrazine	9.69	77	1733833	69.3124	ppb	94
70) 4-Bromophenyl phenyl ether	10.08	248	399170	70.9440	ppb	90
71) Hexachlorobenzene	10.15	284	383553	70.7816	ppb	# 84
72) Atrazine	10.28	200	218034	36.6092	ppb	98
73) Pentachlorophenol	10.39	266	244509	77.3231	ppb	99
74) Phenanthrene	10.64	178	2288870	70.2305	ppb	100
75) Anthracene	10.70	178	2383889	71.1109	ppb	100
76) Carbazol	10.89	167	2258110	73.6545	ppb	99
77) Di-n-butylphthalate	11.28	149	2726026	75.4171	ppb	99
78) Fluoranthene	12.03	202	2508917	72.1546	ppb	97
80) Benzidine	12.20	184	133365	10.3916	ppb	97
81) Pyrene	12.30	202	2582206	70.8984	ppb	100
83) Butyl benzylphthalate	13.03	149	1283381	77.6097	ppb	92
84) 3,3'-Dichlorobenzidine	13.66	252	493743	44.3643	ppb	98
85) Benz (a) anthracene	13.69	228	2200622	69.7039	ppb	100
86) Bis (2-ethylhexyl) phthala	13.68	149	1954443	85.1245	ppb	# 96
87) Chrysene	13.74	228	2170045	71.8414	ppb	100
88) Di-n-octylphthalate	14.44	149	3006424	77.6835	ppb	97
90) Benzo (b) fluoranthene	15.01	252	2319218	72.6960	ppb	98
91) Benzo (k) fluoranthene	15.05	252	1920798	66.4966	ppb	99
92) Benzo (a) pyrene	15.49	252	1990818	70.1077	ppb	98
93) Indeno (1,2,3-cd) pyrene	17.47	276	2091790	70.8467	ppb	99
94) Dibenz (a,h) anthracene	17.50	278	1893841	70.8369	ppb	99
95) Benzo (g,h,i) perylene	18.06	276	1775475	70.5303	ppb	98

(#) = qualifier out of range (m) = manual integration

Quantitation Report

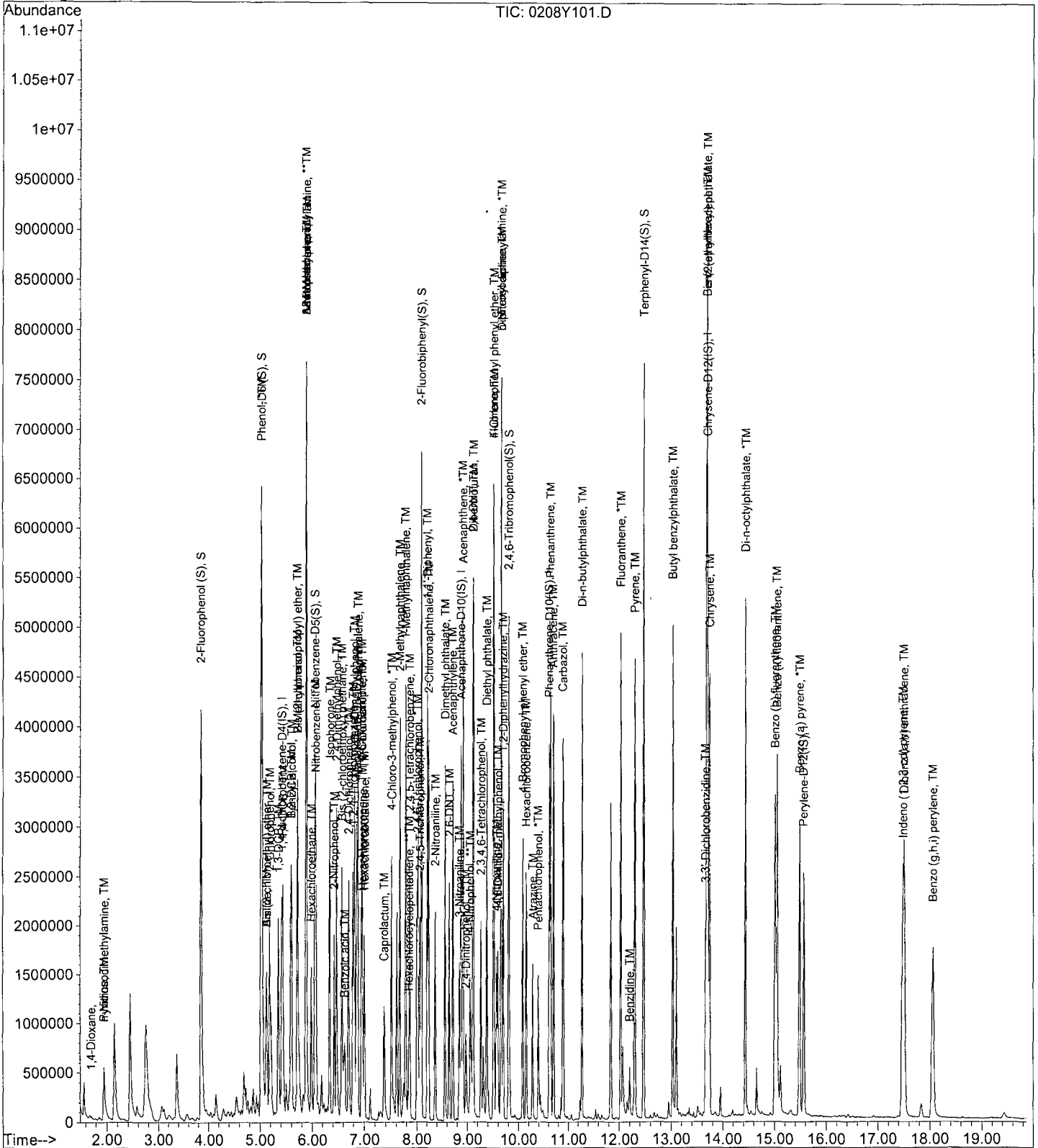
Data File : M:\YODA\DATA\Y190208\0208Y101.D  
Acq On : 15 Feb 19 9:03  
Sample : 190212A LCS-D-1 1/800  
Misc :

Vial: 1  
Operator: MA  
Inst : Yoda  
Multiplr: 1.25

Quant Time: Feb 15 10:02 2019

Quant Results File: Y0208NC.RES

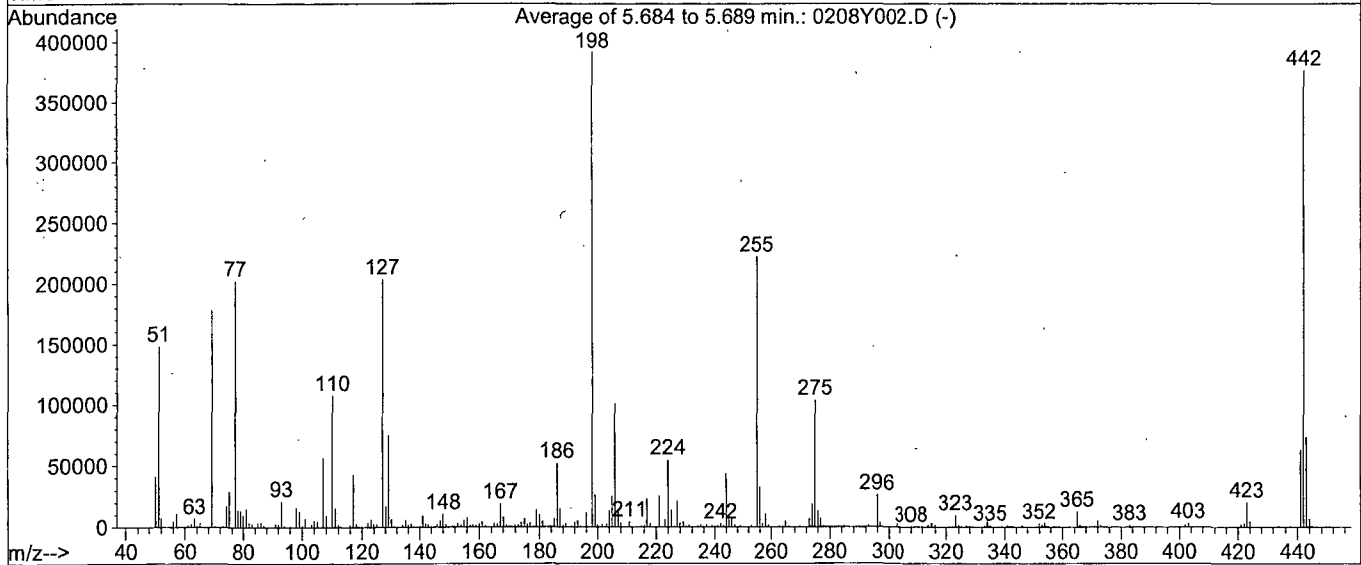
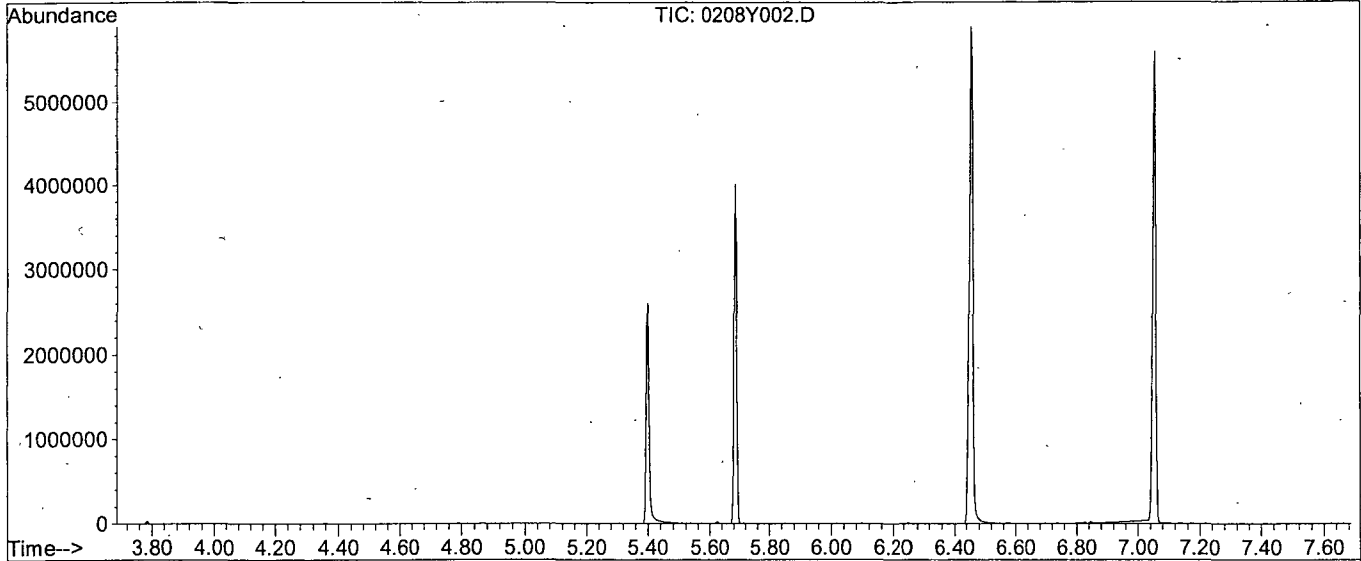
Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Wed Feb 13 11:51:39 2019  
Response via : Initial Calibration



Data File : M:\YODA\DATA\Y190208\0208Y002.D  
 Acq On : 8 Feb 19 14:57  
 Sample : SV Tune 11/10/18  
 Misc :

Vial: 2  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
 Title : EPA 8270C



AutoFind: Scans 840, 841, 842; Background Corrected with Scan 832

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	37.9	148469	PASS
68	69	0.00	2	0.0	0	PASS
70	69	0.00	2	0.6	998	PASS
127	198	10	80	52.0	203755	PASS
197	198	0.00	2	0.0	0	PASS
198	198	100	100	100.0	391787	PASS
199	198	5	9	6.7	26376	PASS
275	198	10	60	26.5	103645	PASS
365	198	1	100	3.3	12845	PASS
441	442	0.01	24	16.8	63099	PASS
442	198	50	150	96.1	376448	PASS
443	442	15	24	19.5	73552	PASS



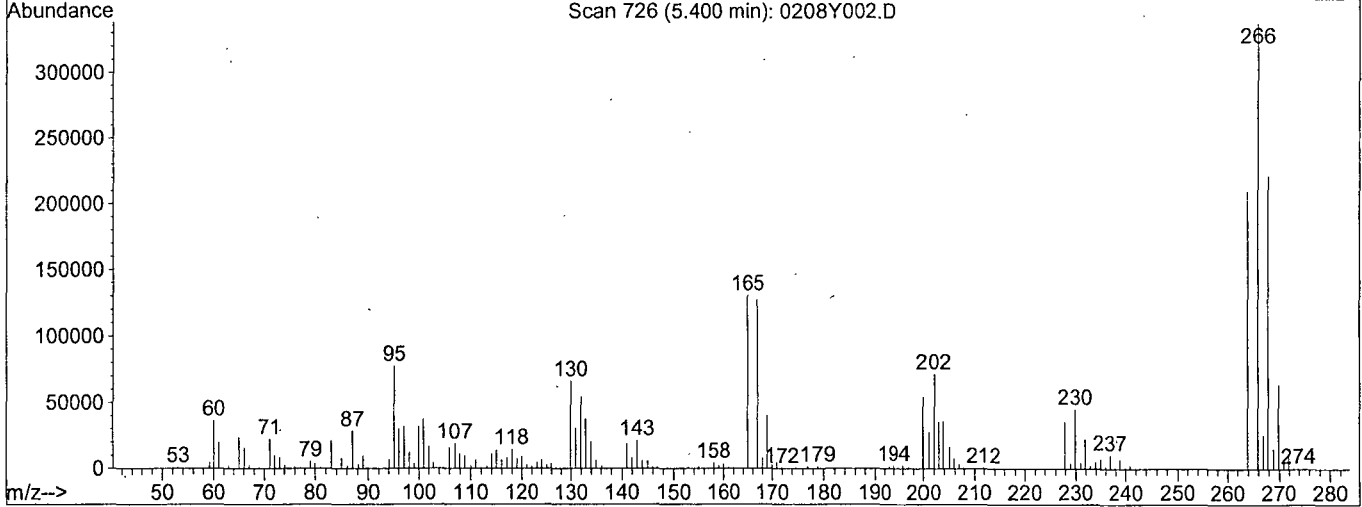
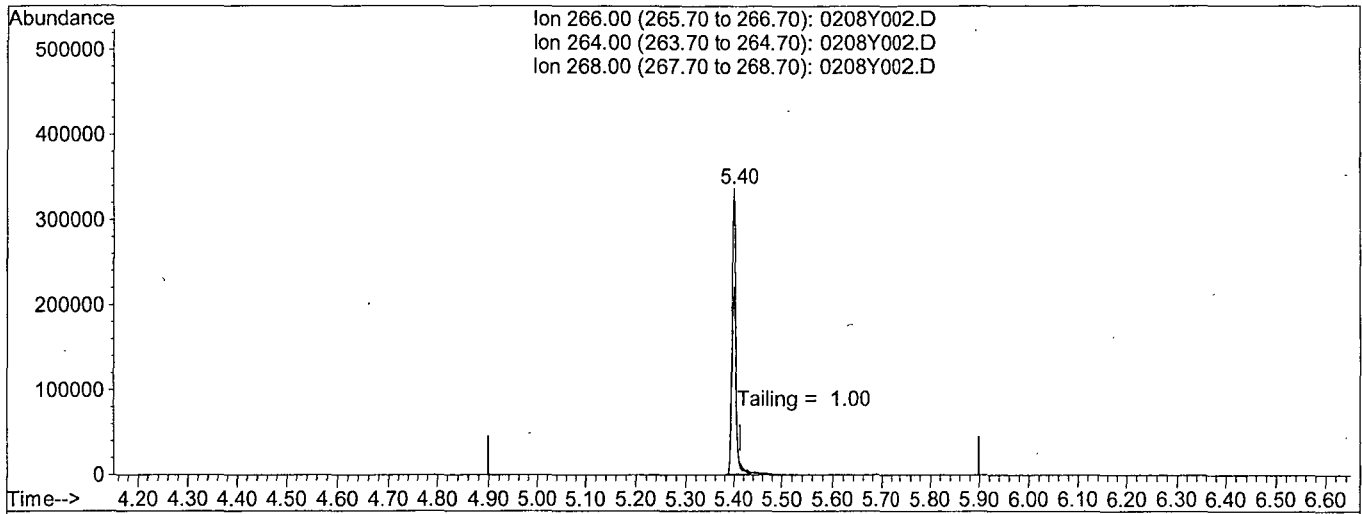
Data File Name: 0208Y002.D  
Data File Path: M:\YODA\DATA\Y190208\  
Operator: MA  
Date Acquired: 8 Feb 19 14:57  
Method File: DFTPP2.M  
Sample Name: SV Tune 11/10/18  
Vial Number: 2  
Instrument Name: Yoda

#	Name	Ret Time	Target Response
1)	DDT	7.05	37996400
2)	DDD	6.85	87776
3)	DDE	6.95	0
Breakdown			0.23

Quantitation Report

Data File : M:\YODA\DATA\Y190208\0208Y002.D Vial: 2  
 Acq On : 8 Feb 19 14:57 Operator: MA  
 Sample : SV Tune 11/10/18 Inst : Yoda  
 Misc : Multiplr: 1.00  
 Quant Time: Feb 13 8:08 2019 Quant Results File: temp.res

Method : M:\YODA\DATA\Y190208\DFTPP2.M (Chemstation Integrator)  
 Title :  
 Last Update : Fri Feb 08 17:16:53 2019  
 Response via : Single Level Calibration



TIC: 0208Y002.D

(5) Pentachlorophenol

5.40min 0.0000

response 2028100

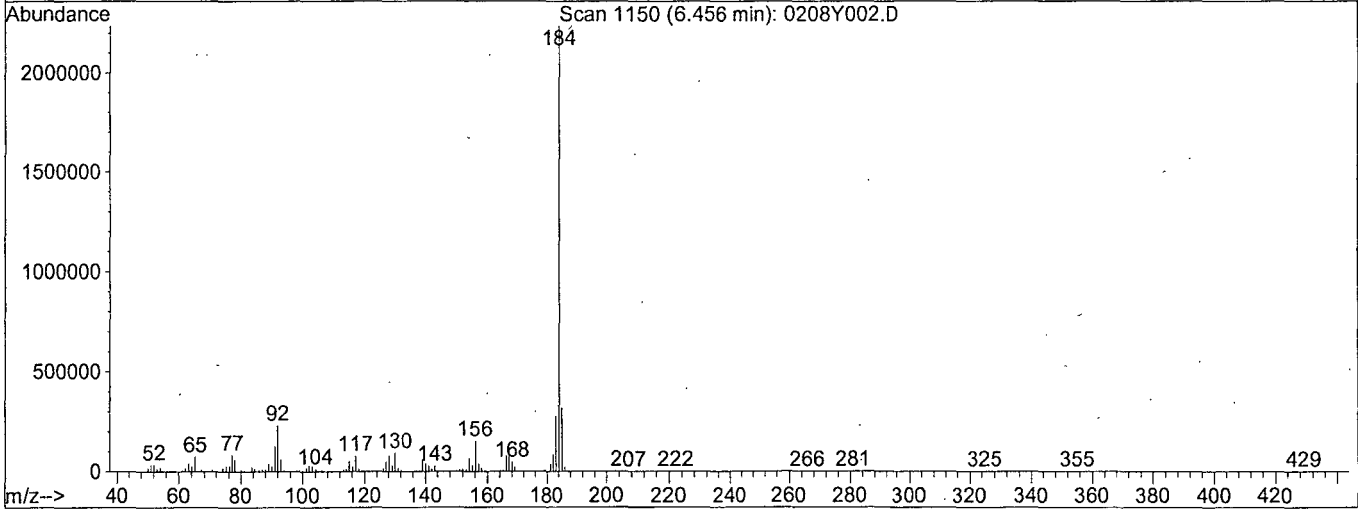
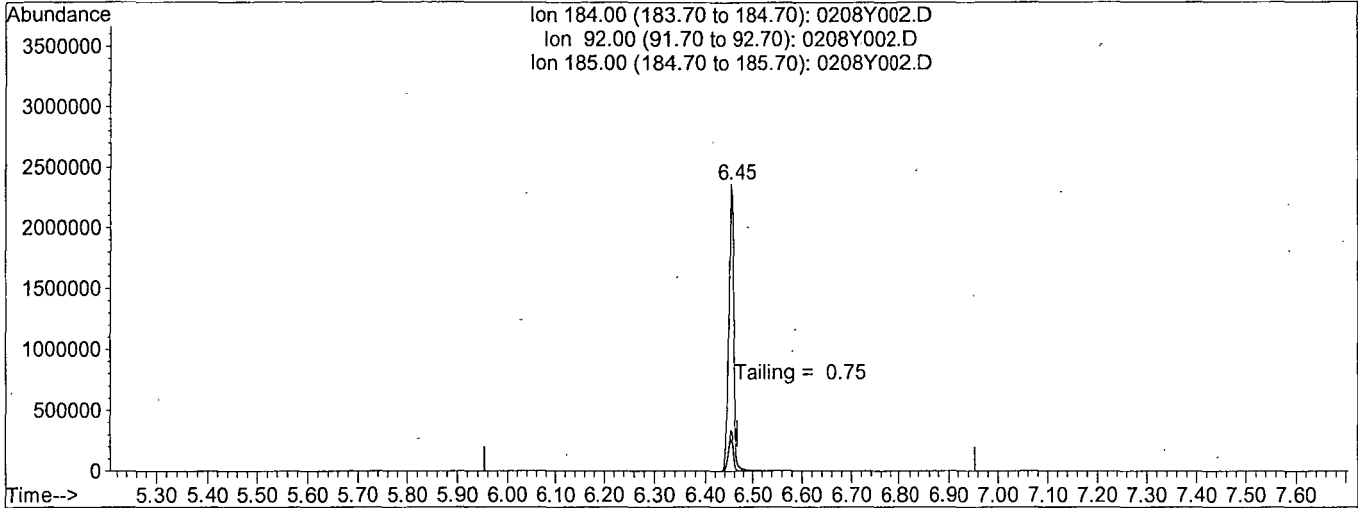
Ion	Exp%	Act%
266.00	100	100
264.00	62.10	65.21
268.00	65.60	66.64
0.00	0.00	0.00

Quantitation Report

Data File : M:\YODA\DATA\Y190208\0208Y002.D  
 Acq On : 8 Feb 19 14:57  
 Sample : SV Tune 11/10/18  
 Misc :  
 Quant Time: Feb 13 8:08 2019

Vial: 2  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00  
 Quant Results File: temp.res

Method : M:\YODA\DATA\Y190208\DFTPP2.M (Chemstation Integrator)  
 Title :  
 Last Update : Fri Feb 08 17:16:53 2019  
 Response via : Single Level Calibration



TIC: 0208Y002.D

(6) Benzidine

6.46min 0.0000

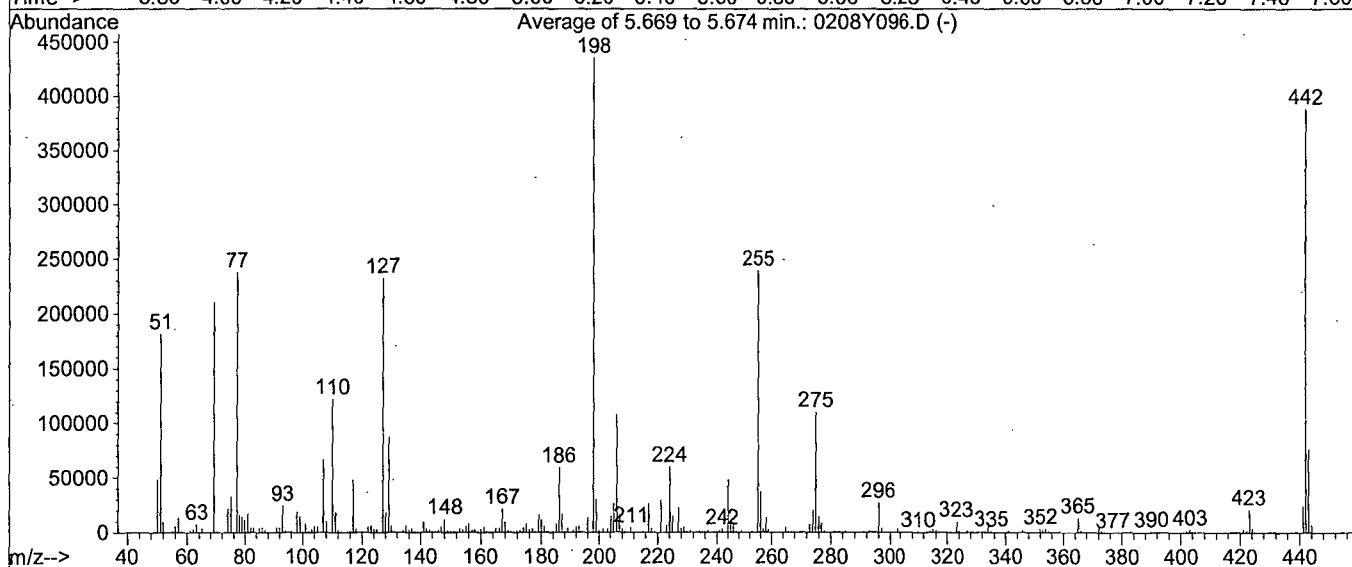
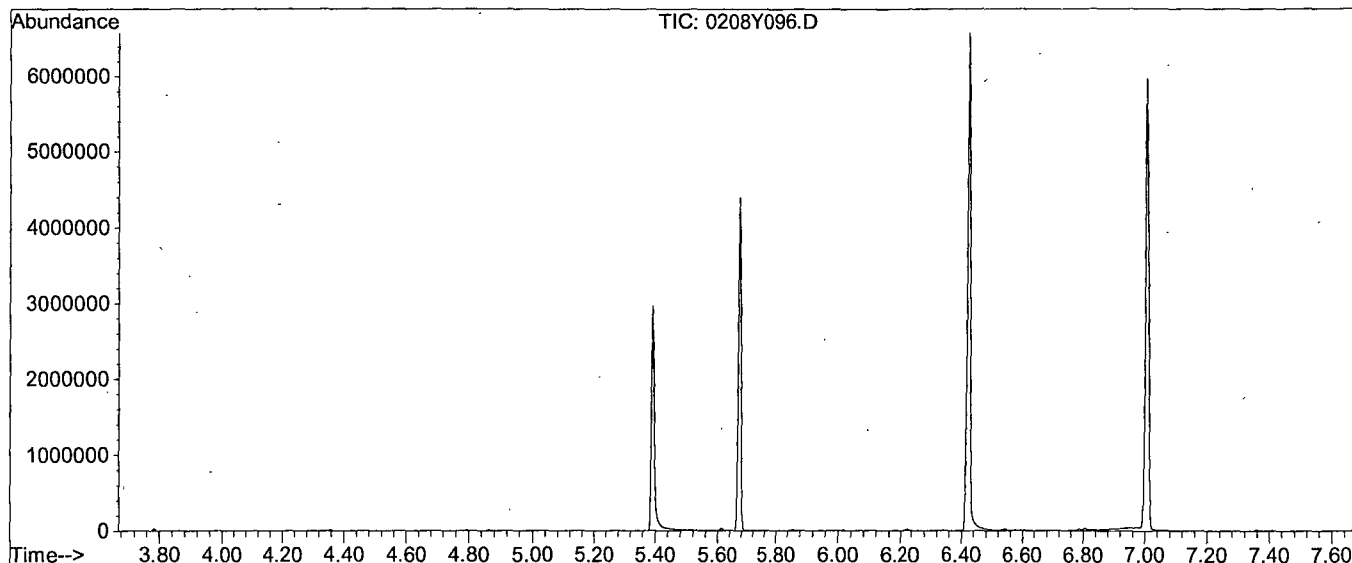
response 17340000

Ion	Exp%	Act%
184.00	100	100
92.00	11.10	11.14
185.00	14.30	14.28
0.00	0.00	0.00

Data File : M:\YODA\DATA\Y190208\0208Y096.D  
 Acq On : 15 Feb 19 6:48  
 Sample : SV TUNE 11/10/18  
 Misc :

Vial: 96  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Method : M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
 Title : EPA 8270C



AutoFind: Scans 834, 835, 836; Background Corrected with Scan 826

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	41.7	181440	PASS
68	69	0.00	2	0.0	0	PASS
70	69	0.00	2	0.4	749	PASS
127	198	10	80	53.3	232192	PASS
197	198	0.00	2	0.0	0	PASS
198	198	100	100	100.0	435584	PASS
199	198	5	9	6.9	29933	PASS
275	198	10	60	25.2	109955	PASS
365	198	1	100	3.1	13333	PASS
441	442	0.01	24	6.2	24165	PASS
442	198	50	150	89.1	388267	PASS
443	442	15	24	19.7	76443	PASS

M:\YODA\DATA\Y190208\0208Y096.D

Data File Name: 0208Y096.D  
Data File Path: M:\YODA\DATA\Y190208\  
Operator: MA  
Date Acquired: 15 Feb 2019 06:48  
Method File: DFTPP2.M  
Sample Name: SV TUNE 11/10/18  
Vial Number: 96  
Instrument Name: Yoda

#	Name	Ret Time	Target Response
1)	DDT	7.05	43482200
2)	DDD	6.85	210834
3)	DDE	6.95	45278

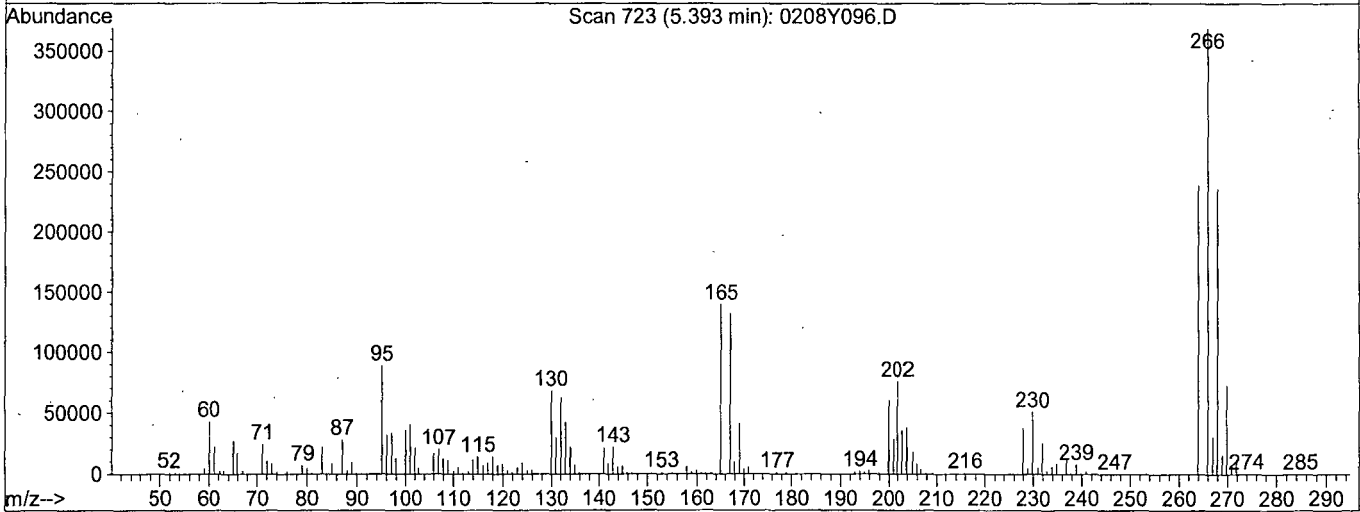
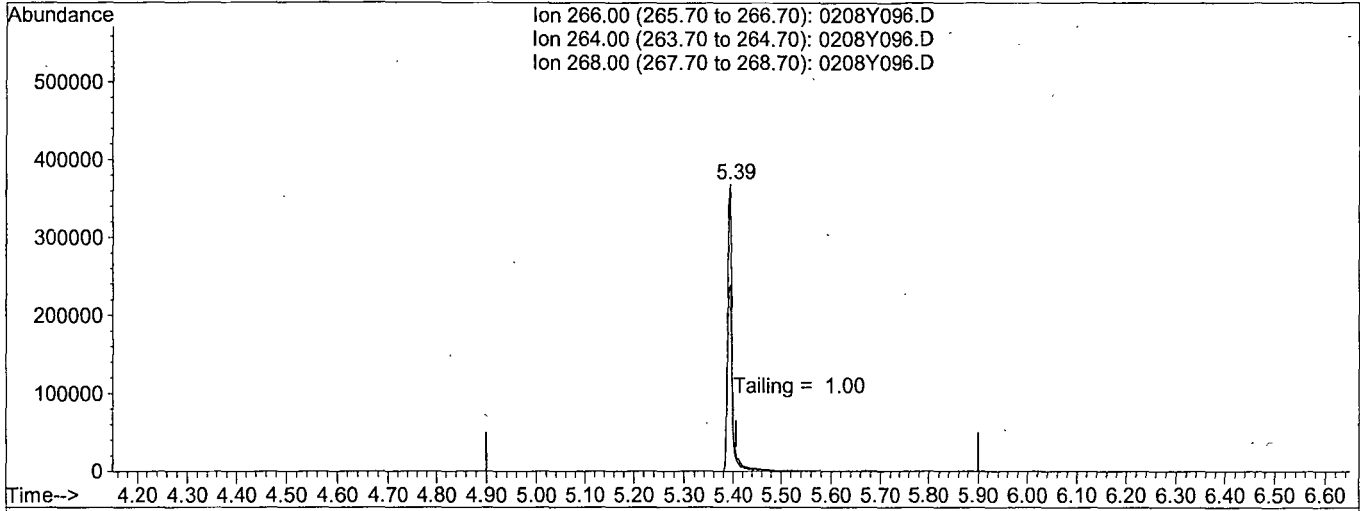
Breakdown 0.59

Quantitation Report

Data File : M:\YODA\DATA\Y190208\0208Y096.D  
 Acq On : 15 Feb 19 6:48  
 Sample : SV TUNE 11/10/18  
 Misc :  
 Quant Time: Feb 15 7:42 2019

Vial: 96  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00  
 Quant Results File: temp.res

Method : M:\YODA\DATA\Y190208\DFTPP2.M (Chemstation Integrator)  
 Title :  
 Last Update : Fri Feb 08 17:16:53 2019  
 Response via : Single Level Calibration



TIC: 0208Y096.D

(5) Pentachlorophenol

5.39min 0.0000

response 2484204

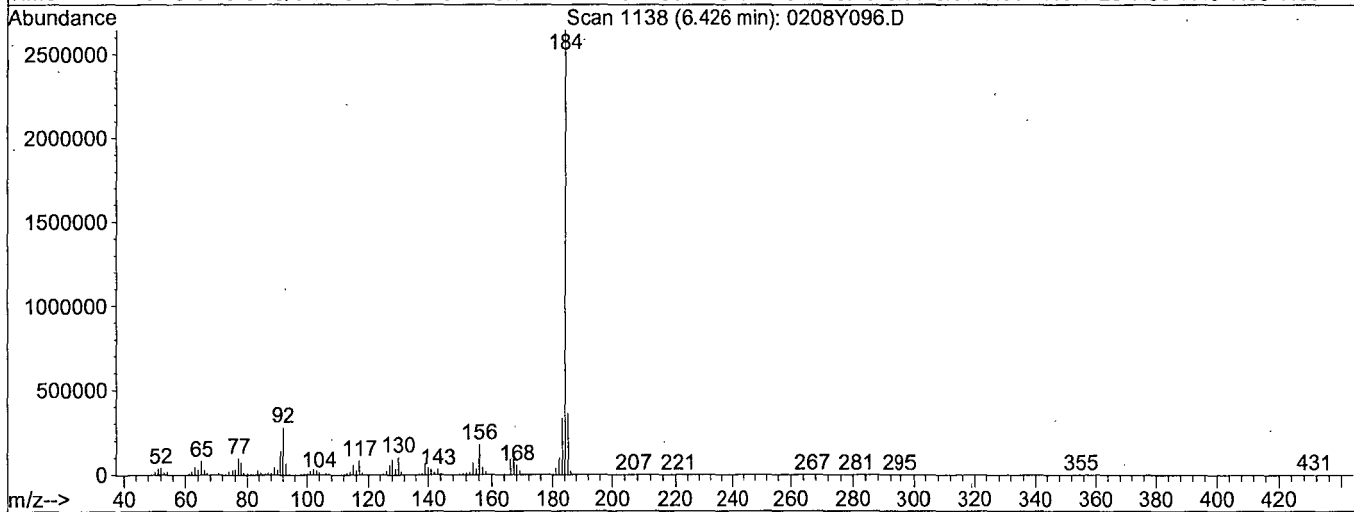
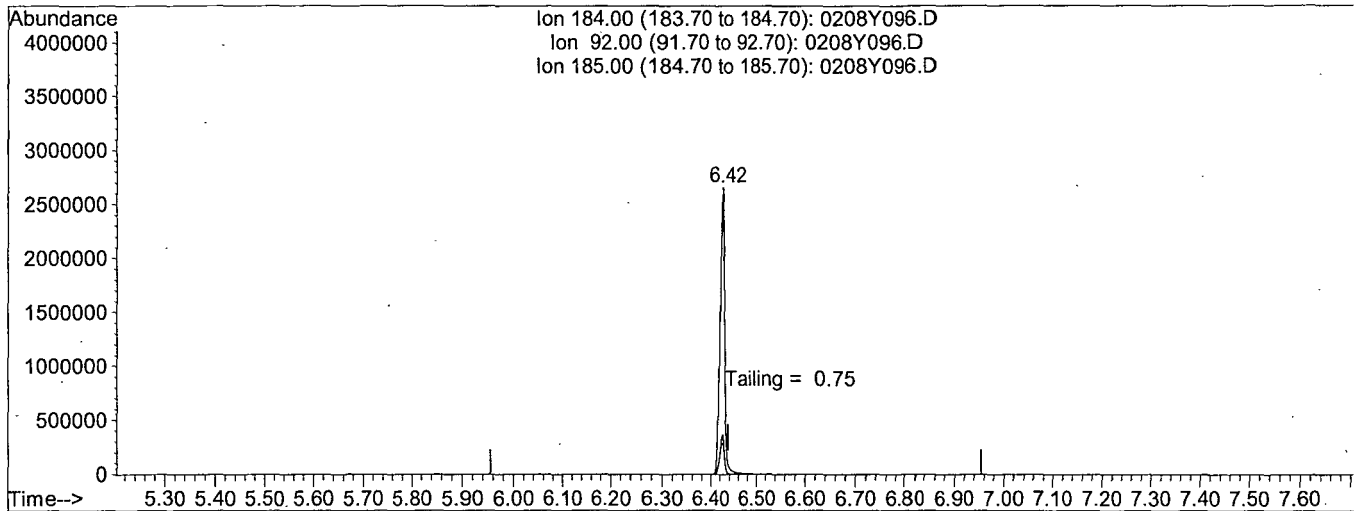
Ion	Exp%	Act%
266.00	100	100
264.00	62.10	62.59
268.00	65.60	62.96
0.00	0.00	0.00

Quantitation Report

Data File : M:\YODA\DATA\Y190208\0208Y096.D  
 Acq On : 15 Feb 19 6:48  
 Sample : SV TUNE 11/10/18  
 Misc :  
 Quant Time: Feb 15 7:42 2019

Vial: 96  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00  
 Quant Results File: temp.res

Method : M:\YODA\DATA\Y190208\DFTPP2.M (Chemstation Integrator)  
 Title :  
 Last Update : Fri Feb 08 17:16:53 2019  
 Response via : Single Level Calibration



TIC: 0208Y096.D

(6) Benzidine

6.43min 0.0000

response 19794942

Ion	Exp%	Act%
184.00	100	100
92.00	11.10	11.10
185.00	14.30	13.98
0.00	0.00	0.00

Name of Final Standard  
Prep Date  
Exp Date

8270 Full Scan Standard Curve  
01/23/19  
09/17/19

Prep'd By (Initials)

GA

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
8270 Stock	APPL	8270 Stock	200 ug/mL	01/30/19	10/20/19	4 uL	200uL	MC 56258 192uL	4 ug/mL
8270 Surrogate	APPL	8270 Surrogate	200/400 ug/mL	10/17/18	09/27/19	4 uL	*	*	*
SV Internal Standard	APPL	SV Internal Standard	2000 ug/mL	01/16/19	01/16/20	4 uL	*	*	*
8270 Stock	APPL	8270 Stock	200 ug/mL	01/30/19	10/20/19	5 uL	200uL	MC 56258 190uL	5 ug/mL
8270 Surrogate	APPL	8270 Surrogate	200/400 ug/mL	10/17/18	09/27/19	5 uL	*	*	*
SV Internal Standard	APPL	SV Internal Standard	2000 ug/mL	01/16/19	01/16/20	4 uL	*	*	*
8270 Stock	APPL	8270 Stock	200 ug/mL	01/30/19	10/20/19	5 uL	100uL	MC 56258 90uL	10 ug/mL
8270 Surrogate	APPL	8270 Surrogate	200/400 ug/mL	10/17/18	09/27/19	5 uL	*	*	*
SV Internal Standard	APPL	SV Internal Standard	2000 ug/mL	01/16/19	01/16/20	2 uL	*	*	*
8270 Stock	APPL	8270 Stock	200 ug/mL	01/30/19	10/20/19	10 uL	100uL	MC 56258 80 uL	20 ug/mL
8270 Surrogate	APPL	8270 Surrogate	200/400 ug/mL	10/17/18	09/27/19	10 uL	*	*	*
SV Internal Standard	APPL	SV Internal Standard	2000 ug/mL	01/16/19	01/16/20	2 uL	*	*	*
8270 Stock	APPL	8270 Stock	200 ug/mL	01/30/19	10/20/19	20 uL	100uL	MC 56258 60 uL	40 ug/mL
8270 Surrogate	APPL	8270 Surrogate	200/400 ug/mL	10/17/18	09/27/19	20 uL	*	*	*
SV Internal Standard	APPL	SV Internal Standard	2000 ug/mL	01/16/19	01/16/20	2 uL	*	*	*
8270 Stock	APPL	8270 Stock	200 ug/mL	01/30/19	10/20/19	50 uL	200 uL	MC 56258 100 uL	50 ug/mL
8270 Surrogate	APPL	8270 Surrogate	200/400 ug/mL	10/17/18	09/27/19	50 uL	*	*	*
SV Internal Standard	APPL	SV Internal Standard	2000 ug/mL	01/16/19	01/16/20	4 uL	*	*	*
8270 Stock	APPL	8270 Stock	200 ug/mL	01/30/19	10/20/19	30 uL	100uL	MC 56258 40 uL	60 ug/mL
8270 Surrogate	APPL	8270 Surrogate	200/400 ug/mL	10/17/18	09/27/19	30 uL	*	*	*
SV Internal Standard	APPL	SV Internal Standard	2000 ug/mL	01/16/19	01/16/20	2 uL	*	*	*
8270 Stock	APPL	8270 Stock	200 ug/mL	01/30/19	10/20/19	40 uL	100uL	MC 56258 20 uL	80 ug/mL
8270 Surrogate	APPL	8270 Surrogate	200/400 ug/mL	10/17/18	09/27/19	40 uL	*	*	*
SV Internal Standard	APPL	SV Internal Standard	2000 ug/mL	01/16/19	01/16/20	2 uL	*	*	*
8270 Stock	APPL	8270 Stock	200 ug/mL	01/30/19	10/20/19	50 uL	100uL	na	100 ug/mL
8270 Surrogate	APPL	8270 Surrogate	200/400 ug/mL	10/17/18	09/27/19	50 uL	*	*	*
SV Internal Standard	APPL	SV Internal Standard	2000 ug/mL	01/16/19	01/16/20	2 uL	*	*	*



Name of Final Standard 8270 Full Scan Second Source  
 Prep Date 11/15/18  
 Exp Date 04/19/19

Prep'd By (Initials) GA

Initial Standard Information					Final Standard Information				
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
8270 SS Stock	o2si	8270 SS Stock	200 ug/mL	04/19/18	04/19/19	50 uL	200uL	MC 56258 150uL	50 ug/mL
SV Internal Standard	APPL	SV Internal Standard	2000 ug/mL	01/16/19	01/16/20	4 uL	*	*	*

Name of Final

Standard

8270 Full Scan Spike

Prep'd By (Initials)

GA

Prep Date 01/30/19

Exp Date 10/20/19

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
10001	Absolute	10001	2000	051018-39825 051018-39826	01/30/20	1.0 mL	20 mL	NA	2000 ug/mL
10002	Absolute	10002	2000	051018-39830 051018-39831	01/30/20	1.0 mL	*	*	2000 ug/mL
10004	Absolute	10004	2000	031618-39834 031618-39835	01/30/20	1.0 mL	*	*	2000 ug/mL
10005	Absolute	10005	2000	032018-39611 032018-40010	01/30/20	1.0 mL	*	*	2000 ug/mL
10006	Absolute	10006	2000	071318-39840 071318-39841	01/30/20	1.0 mL	*	*	2000 ug/mL
10007	Absolute	10007	2000	080116-39616 080116-40015	01/30/20	1.0 mL	*	*	2000 ug/mL
10018	Absolute	10018	2000	062718-39845 062718-39846	01/30/20	1.0 mL	*	*	2000 ug/mL
70023	Absolute	70023	1000	091217-39850 091217-39851	01/30/20	1.0 mL	*	*	1000 ug/mL
82705	Absolute	82705	2000	081418-39620 081418-39621	01/30/20	1.0 mL	*	*	2000 ug/mL
94552	Absolute	94552	various	102017-40025 102017-40225	10/20/19	1.0 mL	*	*	various

Name of Final Standard 8270 Surrogate 200/400 ppm  
 Prep Date 10/17/18  
 Exp Date 09/27/19

Prep'd By (Initials) GA

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc. (range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent Lot# (or APPL Prep Date)	Final Standard Conc. (range)
8270 Acid Surrogate Mix	Restek	33029	10,000 ug/mL	A0136352-39395	10/17/19	200 uL	5 mL	MC 56258	400 ug/mL
8270 B/N Surrogate Mix	Restek	31086	5000 ug/mL	A0135243-39166	09/27/19	200 uL			200 ug/mL

Name of Final Standard 8270 Internal Standard (Ampule)

Prep'd By (Initials)

OA

Prep Date 01/16/19  
 Exp Date 01/16/20

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL. prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
Semivolatile Internal Standard	Restek	31206	2mg/mL	A0138585-39544	01/16/20	1 mL	1 mL	NA	2mg/mL

Name of

Final

Standard

**8270 SS STOCK**

Prep'd By (Initials)

**OA**Prep Date **04/19/18**Exp Date **04/19/19**

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
	Absolute	10001	2000	G34-081717-38180	04/19/19	1.0 mL	10 mL	NA	2000 ug/mL
	Absolute	10002	2000	G34-020217-38183	04/19/19	1.0 mL	*	*	2000 ug/mL
	Absolute	10004	2000	010815-38624	04/19/19	1.0 mL	*	*	2000 ug/mL
	Absolute	10005	2000	041317-37803	04/19/19	1.0 mL	*	*	2000 ug/mL
	Absolute	10006	2000	011718-38826	04/19/19	1.0 mL	*	*	2000 ug/mL
	Absolute	10007	2000	020515-38628	04/19/19	1.0 mL	*	*	2000 ug/mL
	Absolute	10018	2000	G34-030216-38198	04/19/19	1.0 mL	*	*	2000 ug/mL
	Absolute	70023	1000	013118-38829	04/19/19	1.0 mL	*	*	1000 ug/mL
	Absolute	82705	2000	090617-38831	04/19/19	1.0 mL	*	*	2000 ug/mL
	Absolute	94552	various	013118-38824	04/19/19	1.0 mL	*	*	various

Name of  
 Final **8270 Surrogate 100/200**  
 Standard **ppm**

Prep'd By (Initials) **GA**

Prep Date **11/06/18**

Exp Date **09/27/19**

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Allquot from Stock	Final Volume	Final Solvent+ Lot# (or APPL Prep Date)	Final Standard Conc (range)
8270 Acid Surrogate Mix	Restek	33029	10,000 ug/mL	A0136352 - 39395	10/17/19	5.0 mL	250 mL	Acetone #030817A	200 ug/mL
8270 B/N Surrogate Mix	Restek	31086	5000 ug/mL	A0135243 - 39166 & A0140132 - 39545	09/27/19 11/06/19	5.0 mL	250 mL	*	100 ug/mL

Name of Final Standard 8270 Full Scan Spike  
 Prep Date 01/30/19  
 Exp Date 10/20/19

Prep'd By (Initials)

GA

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc.(range)
10001	Absolute	10001	2000	051018-39825 051018-39826	01/30/20	1.0 mL	20 mL	NA	2000 ug/mL
10002	Absolute	10002	2000	051018-39830 051018-39831	01/30/20	1.0 mL	*	*	2000 ug/mL
10004	Absolute	10004	2000	031618-39834 031618-39835	01/30/20	1.0 mL	*	*	2000 ug/mL
10005	Absolute	10005	2000	032018-39611 032018-40010	01/30/20	1.0 mL	*	*	2000 ug/mL
10006	Absolute	10006	2000	071318-39840 071318-39841	01/30/20	1.0 mL	*	*	2000 ug/mL
10007	Absolute	10007	2000	080116-39616 080116-40015	01/30/20	1.0 mL	*	*	2000 ug/mL
10018	Absolute	10018	2000	062718-39845 062718-39846	01/30/20	1.0 mL	*	*	2000 ug/mL
70023	Absolute	70023	1000	091217-39850 091217-39851	01/30/20	1.0 mL	*	*	1000 ug/mL
82705	Absolute	82705	2000	081418-39620 081418-39621	01/30/20	1.0 mL	*	*	2000 ug/mL
94552	Absolute	94552	various	102017-40025 102017-40225	10/20/19	1.0 mL	*	*	various

# Organic Extraction Worksheet

<b>Method</b>	Continuous Liquid/Liquid SVOC 3520C	<b>Extraction Set</b>	190212A	<b>Extraction Method</b>	LIQ003	<b>Units</b>	mL
Spiked ID 1	8270T Spike 1-30-19 EXP 10-20-19	Surrogate ID 1	8270 Surrogate 12-6-18 EXP 10-17-19				
Spiked ID 2	Sim Spike 1-30-19 EXP 1-30-20	Surrogate ID 2	SIM Surrogate 1-24-19 EXP 6-7-19				
Spiked ID 3	DMTHX SPK 200ug/ML 1-23-19 exp 7-23-19	Surrogate ID 3					
Spiked ID 4	HEXACHLOROPHENE Amplue 10,000ug/mL 2-12-19 exp 2-12-20	Surrogate ID 4					
Spiked ID 5		Surrogate ID 5					
Spiked ID 6		Sufficient Vol for Matrix QC:		NO			
Spiked ID 7		Ext. Start Time:		02/12/19 14:00, 02/13/19 11:30			
Spiked ID 8		Ext. End Time:		02/13/19 8:00, 02/14/19 07:00, 02/19/19 11:10			
		GC Requires Extract By:		02/15/19 0:00			
pH1	2	02/12/19 1:15:00 PM	Water Bath Temp Criteria		78 °C		
pH2	14	2/13/19 11:10:00 AM					
pH3							

Spiked By: DL

Date 02/12/19

Witnessed By: YL

Date 02/12/19

Sample	Sample Container	Spike Amount	Spike ID	Surrogate Amount	Surrogate ID	Extract Amount	Final Volume	pH	Extract Date/Time	Comments
1	190212A Bk			1,0.050	1,2	800	1	2/1	02/12/19 13:07	
					equip	E-HP51 E-WB6				
2	190212A LCS-1	0.250	1	1	1	800	1	2/1	02/12/19 13:07	
					equip	E-HP50 E-WB6				
3	190212A LCS-2	0.0250	2	0.050	2	800	1	2/1	02/12/19 13:07	
					equip	E-HP49 E-WB6				
4	190212A LCS-3	0.250,0.045	3,4	1	1	800	1	2/1	02/12/19 13:07	
					equip	E-HP48 E-WB6				
5	190212A LCSD-1	0.250	1	1	1	800	1	2/1	02/12/19 13:07	
					equip	E-HP47 E-WB6				
6	190212A LCSD-2	0.0250	2	0.050	2	800	1	2/1	02/12/19 13:07	
					equip	E-HP25 E-WB6				
7	190212A LCSD-3	0.250,0.045	3,4	1	1	800	1	2/1	02/12/19 13:07	
					equip	E-HP26 E-WB6				
8	AZ86189 AZ86189W31			1,0.050	1,2	800	1	2/1	02/12/19 13:07	88059
					equip	E-HP27 E-WB6				
9	AZ86200 AZ86200W20			1,0.050	1,2	800	1	2/1	02/12/19 13:07	88062
					equip	E-HP28 E-WB6				
10	AZ86276 AZ86276W12			1,0.050	1,2	800	1	2/1	02/12/19 13:07	88071
					equip	E-HP29 E-WB6				
11	AZ86277 AZ86277W14			1,0.050	1,2	800	1	2/1	02/12/19 13:07	88071
					equip	E-HP30 E-WB6				

*KL 2/14/19*

Solvent and Lot#	
PH Strips	hc 849161
Dichloromethane (DCM)	18g19401
1+1 H2SO4	11-28-18
10N NaOH	1-8-19
Filter Paper	400147
Acidified Na2SO4	11-27-18
B. Na2SO4	17h095210

Extraction COC Transfer	
Extraction lab employee Initials	KY
GC analyst's initials	OA
Date	02/15/19
Time	7:17
Refrigerator	GC-C

Technician's Initials	
Scanned By	DL
Sample Preparation	DL
Extraction	DL
Concentration	DL
Modified	02/14/19 4:52:01 PM

Reviewed By: *KL* Page 276 of 639 Date *2/14/19*  
 Ext\_ID 61781



## Injection Log

Directory: M:\YODA\DATA\Y190208\

Vial	FileName	Multiplier	SampleName	Misc Info	Injected
2	0208Y002.D	1	SV Tune 11/10/18		8 Feb 19 14:57
3	0208Y003.D	1	4ug/mL 8270 02/05/19		8 Feb 19 15:12
4	0208Y004.D	1	5ug/mL 8270 02/05/19		8 Feb 19 15:40
5	0208Y005.D	1	10ug/mL 8270 02/05/19		8 Feb 19 16:08
6	0208Y006.D	1	20ug/mL 8270 02/05/19		8 Feb 19 16:36
7	0208Y007.D	1	40ug/mL 8270 02/05/19		8 Feb 19 17:03
8	0208Y008.D	1	50ug/mL 8270 02/05/19		8 Feb 19 17:31
9	0208Y009.D	1	60ug/mL 8270 02/05/19		8 Feb 19 17:59
10	0208Y010.D	1	80ug/mL 8270 02/05/19		8 Feb 19 18:27
11	0208Y011.D	1	100ug/mL 8270 02/05/19		8 Feb 19 18:54
12	0208Y012.D	1	SS 8270 02/05/19		8 Feb 19 19:22
96	0208Y096.D	1	SV TUNE 11/10/18		15 Feb 19 6:48
97	0208Y097.D	1	50ug/mL 8270 02/05/19		15 Feb 19 7:03
99	0208Y099.D	1.25	190212A BLK 1/800		15 Feb 19 8:08
100	0208Y100.D	1.25	190212A LCS-1 1/800		15 Feb 19 8:36
1	0208Y101.D	1.25	190212A LCSD-1 1/800		15 Feb 19 9:03
2	0208Y102.D	1.25	AZ86200W20 1/800		15 Feb 19 9:31
24	0208Y124.D	1	50ug/mL 8270 02/05/19		15 Feb 19 19:41

**ORGANICS**  
**Calibration Data**

Form 6  
Initial Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: \_\_\_\_\_

SDG No: \_\_\_\_\_  
Initial Cal. Date: 11/28/18  
Instrument: Yoda

Initials: \_\_\_\_\_

1128Y004.D 1128Y005.D 1128Y006.D 1128Y007.D 1128Y012.D 1128Y008.D 1128Y009.D 1128Y010.D

	Compound	1	2	3	4	5	6	7	8			Avg	%RSD	Type	r <sup>2</sup>	Q	MRF
1	I 1,4-dichlorobenzene-D4(IS)																
2	TM 2-(2-Methoxyethoxy)ethanol	0.2305	0.2453	0.2498	0.2070	0.2284	0.2415	0.2719	0.2475			0.24	7.9	TM			
3	I Napthalene-D8(IS)																
4	I Acenaphthene-D10(IS)																
5	I Phenanthrene-D10(IS)																
6	I Chrysene-D12(IS)																
7	I Perylene-D12(IS)																
8																	
9																	
10																	
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35																	

Data File : M:\YODA\DATA\Y181128M\1128Y004.D Vial: 4  
 Acq On : 28 Nov 18 8:08 Operator: MA  
 Sample : 50ug/ml MEE 08/01/18 Inst : Yoda  
 Misc : soil Multiplr: 1.00

Quant Time: Nov 28 11:30 2018

Quant Results File: YMEE1128.RES

Quant Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Wed Nov 28 11:29:49 2018  
 Response via : Initial Calibration  
 DataAcq Meth : GED

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.29	152	846679	40.00000	ppb	0.00
3) Napthalene-D8 (IS)	6.72	136	3808187	40.00000	ppb	0.00
4) Acenaphthene-D10 (IS)	8.74	164	1917814	40.00000	ppb	0.00
5) Phenanthrene-D10 (IS)	10.49	188	3593004	40.00000	ppb	0.00
6) Chrysene-D12 (IS)	13.58	240	3055748	40.00000	ppb	0.00
7) Perylene-D12 (IS)	15.40	264	3109829	40.00000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) 2-(2-Methoxyethoxy) ethanol	4.46	45	243946	76.98478	ppb	99

Quantitation Report

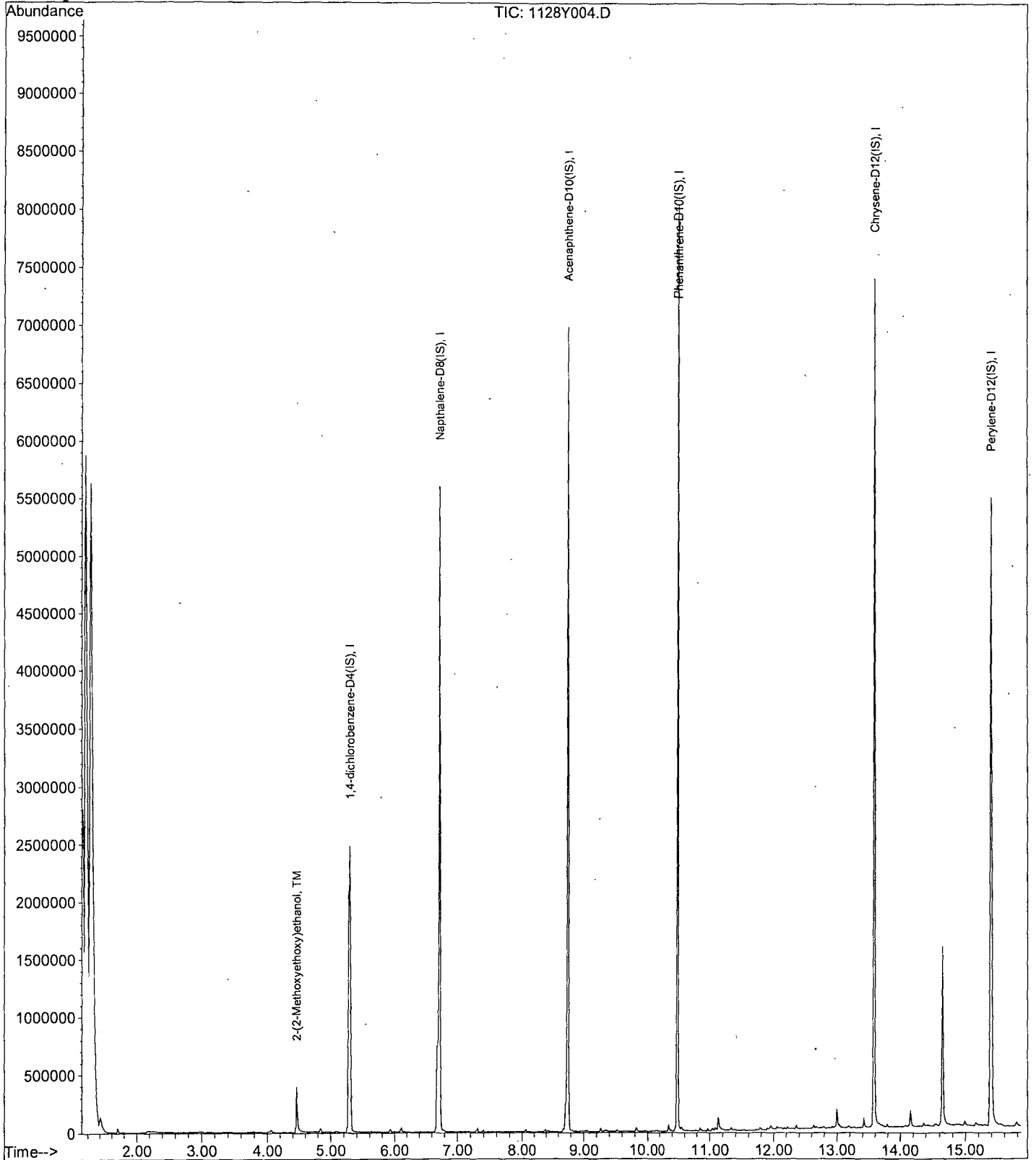
Data File : M:\YODA\DATA\Y181128M\1128Y004.D  
Acq On : 28 Nov 18 8:08  
Sample : 50ug/ml MEE 08/01/18  
Misc : soil

Vial: 4  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Nov 28 11:30 2018

Quant Results File: YMEE1128.RES

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Wed Nov 28 11:42:34 2018  
Response via : Initial Calibration



Data File : M:\YODA\DATA\Y181128M\1128Y005.D Vial: 5  
 Acq On : 28 Nov 18 8:32 Operator: MA  
 Sample : 100ug/ml MEE 08/01/18 Inst : Yoda  
 Misc : soil Multiplr: 1.00

Quant Time: Nov 28 11:30 2018 Quant Results File: YMEE1128.RES

Quant Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Wed Nov 28 11:29:49 2018  
 Response via : Initial Calibration  
 DataAcq Meth : GED

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.31	152	833525	40.00000	ppb	0.00
3) Napthalene-D8 (IS)	6.73	136	3655933	40.00000	ppb	0.00
4) Acenaphthene-D10 (IS)	8.75	164	1870603	40.00000	ppb	0.00
5) Phenanthrene-D10 (IS)	10.49	188	3472767	40.00000	ppb	0.00
6) Chrysene-D12 (IS)	13.58	240	2784977	40.00000	ppb	0.00
7) Perylene-D12 (IS)	15.40	264	2713194	40.00000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) 2-(2-Methoxyethoxy) ethanol	4.47	45	511054	121.26713	ppb	99

Quantitation Report

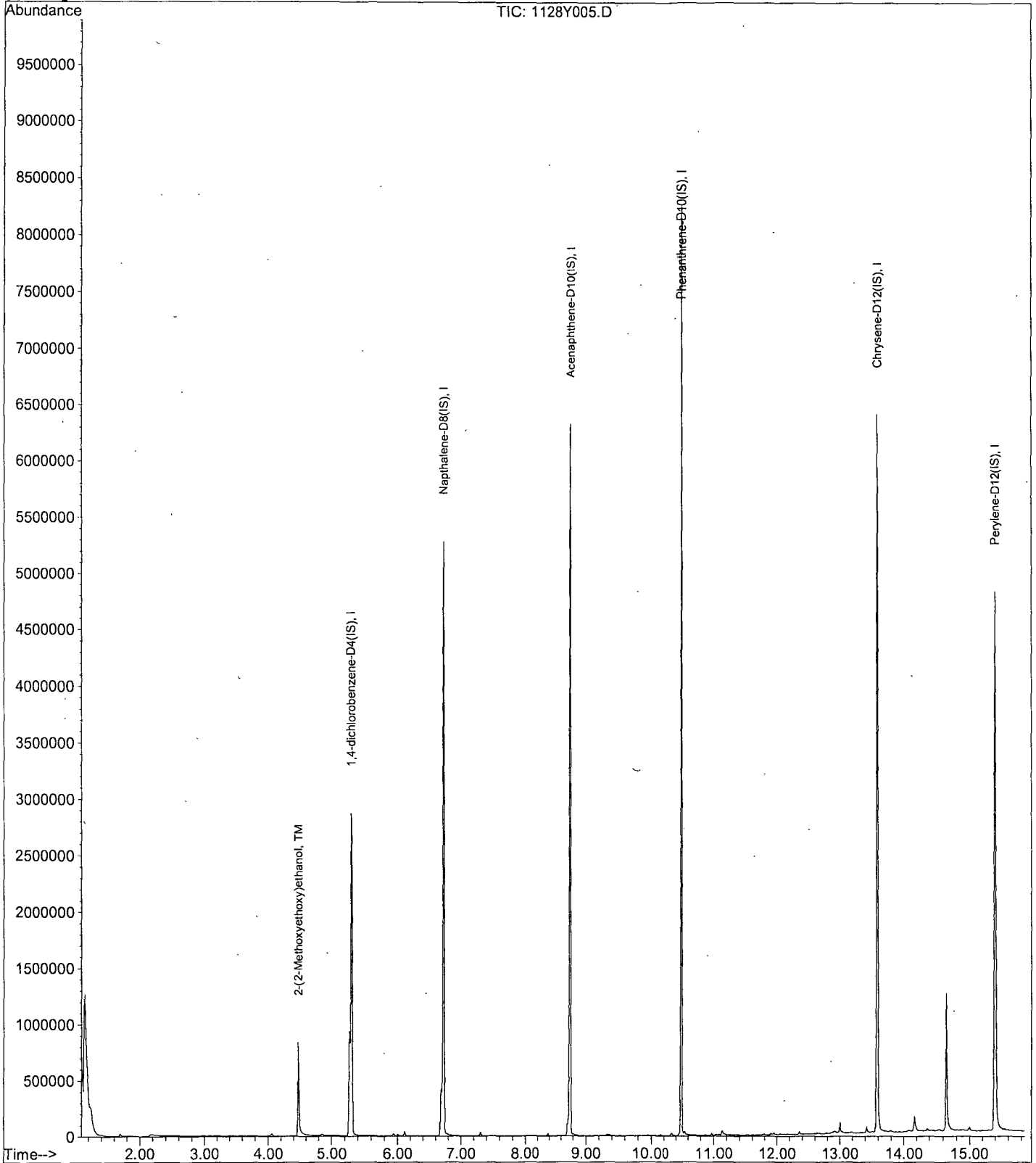
Data File : M:\YODA\DATA\Y181128M\1128Y005.D  
Acq On : 28 Nov 18 8:32  
Sample : 100ug/ml MEE 08/01/18  
Misc : soil

Vial: 5  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Nov 28 11:30 2018

Quant Results File: YMEE1128.RES

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Wed Nov 28 11:42:34 2018  
Response via : Initial Calibration



Data File : M:\YODA\DATA\Y181128M\1128Y006.D Vial: 6  
 Acq On : 28 Nov 18 8:55 Operator: MA  
 Sample : 200ug/ml MEE 08/01/18 Inst : Yoda  
 Misc : soil Multiplr: 1.00

Quant Time: Nov 28 11:30 2018 Quant Results File: YMEE1128.RES

Quant Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Wed Nov 28 11:29:49 2018  
 Response via : Initial Calibration  
 DataAcq Meth : GED

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.30	152	906220	40.00000	ppb	0.00
3) Napthalene-D8 (IS)	6.72	136	4175598	40.00000	ppb	0.00
4) Acenaphthene-D10 (IS)	8.75	164	2128971	40.00000	ppb	0.00
5) Phenanthrene-D10 (IS)	10.49	188	3974569	40.00000	ppb	0.00
6) Chrysene-D12 (IS)	13.58	240	3488549	40.00000	ppb	0.00
7) Perylene-D12 (IS)	15.40	264	3293123	40.00000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) 2-(2-Methoxyethoxy) ethanol	4.48	45	1131710	207.88279	ppb	99



Quantitation Report

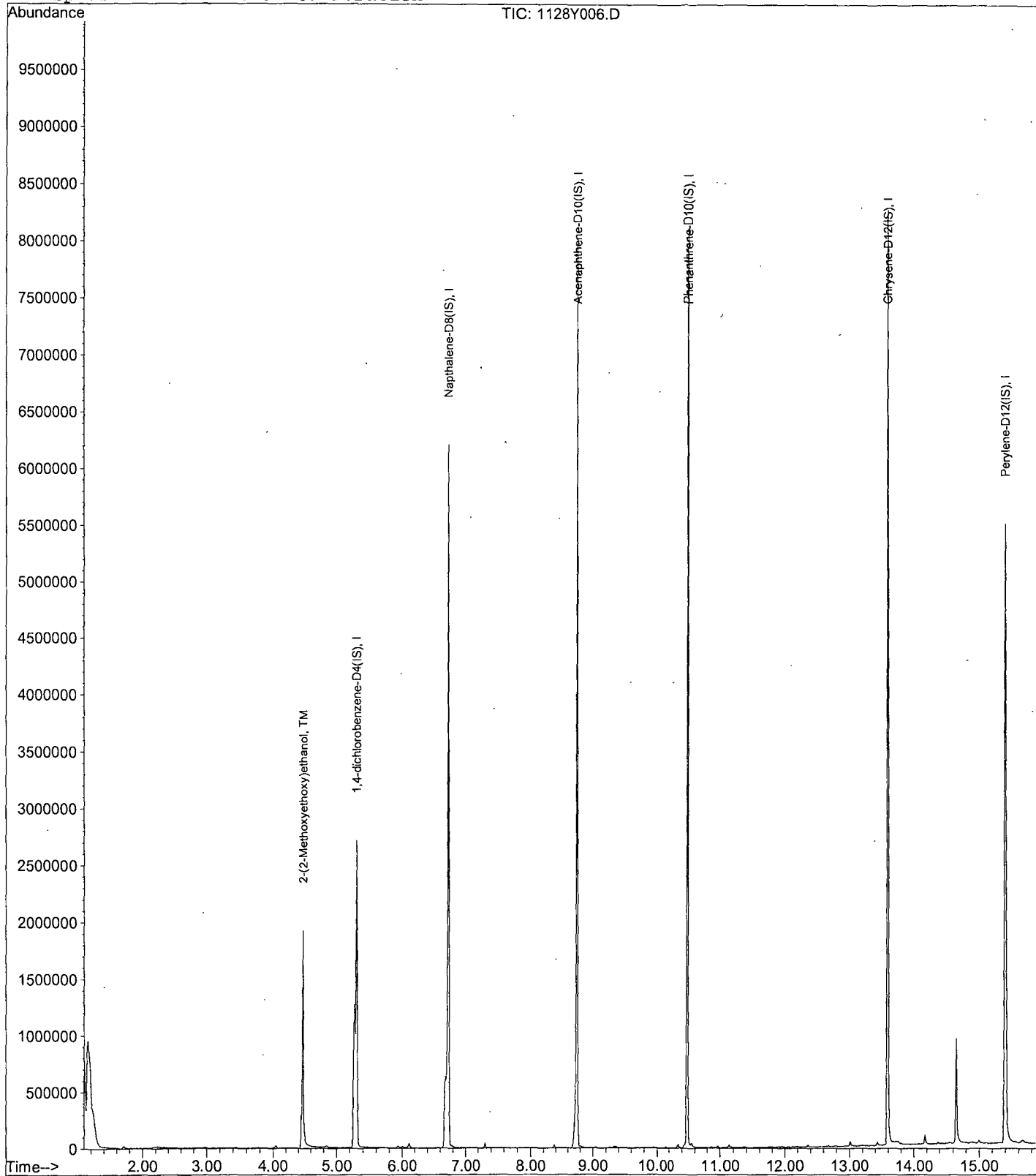
Data File : M:\YODA\DATA\Y181128M\1128Y006.D  
Acq On : 28 Nov 18 8:55  
Sample : 200ug/ml MEE 08/01/18  
Misc : soil

Vial: 6  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Nov 28 11:30 2018

Quant Results File: YMEE1128.RES

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Wed Nov 28 11:42:34 2018  
Response via : Initial Calibration



Data File : M:\YODA\DATA\Y181128M\1128Y007.D Vial: 7  
 Acq On : 28 Nov 18 9:19 Operator: MA  
 Sample : 400ug/ml MEE 08/01/18 Inst : Yoda  
 Misc : soil Multiplr: 1.00

Quant Time: Nov 28 11:31 2018 Quant Results File: YMEE1128.RES

Quant Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Wed Nov 28 11:29:49 2018  
 Response via : Initial Calibration  
 DataAcq Meth : GED

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.30	152	948008	40.00000	ppb	0.00
3) Napthalene-D8 (IS)	6.72	136	4475913	40.00000	ppb	0.00
4) Acenaphthene-D10 (IS)	8.74	164	2298421	40.00000	ppb	0.00
5) Phenanthrene-D10 (IS)	10.49	188	4282330	40.00000	ppb	0.00
6) Chrysene-D12 (IS)	13.59	240	3776629	40.00000	ppb	0.00
7) Perylene-D12 (IS)	15.40	264	3748965	40.00000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) 2-(2-Methoxyethoxy) ethanol	4.48	45	1962520	319.79035	ppb	100

Quantitation Report

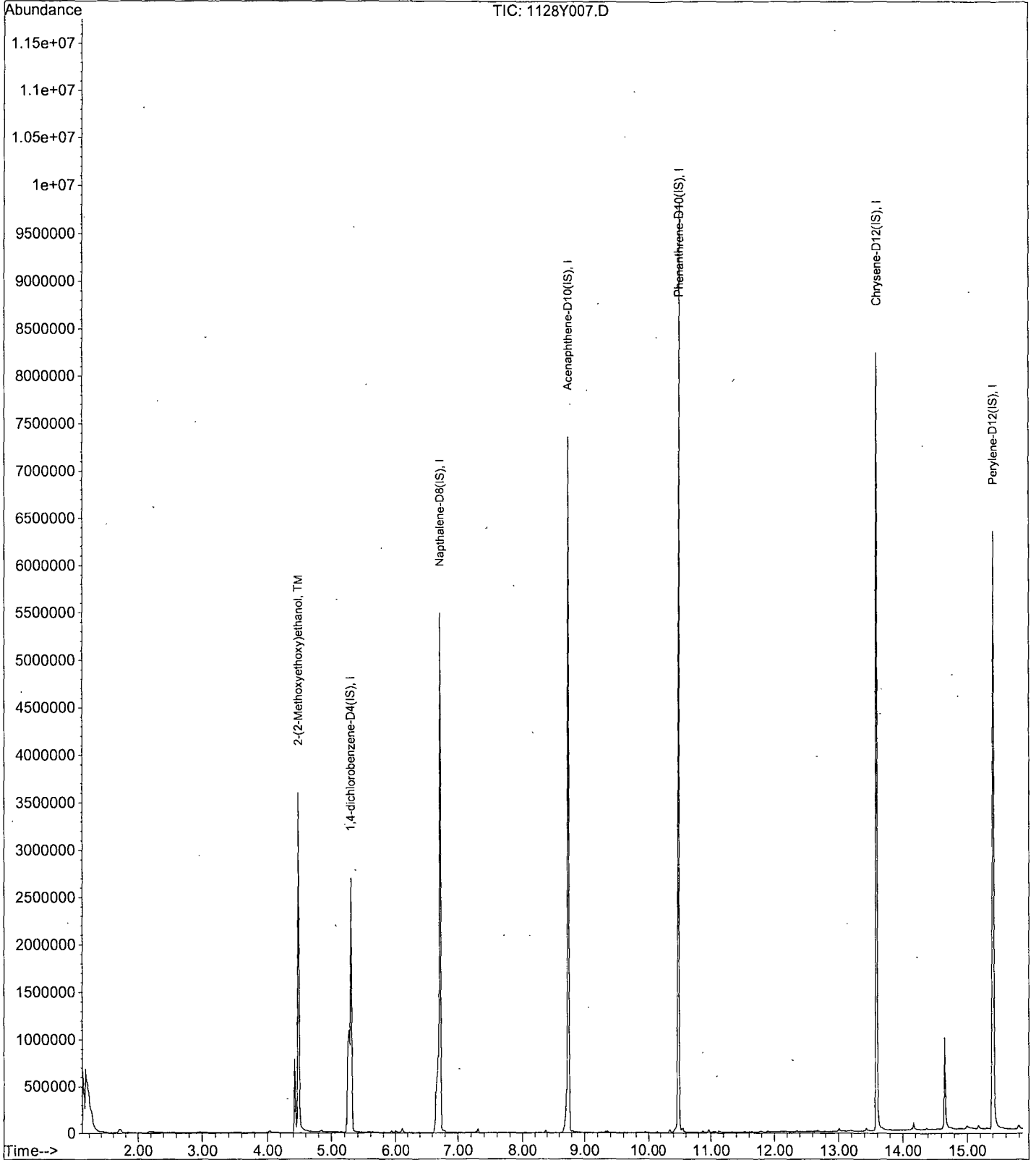
Data File : M:\YODA\DATA\Y181128M\1128Y007.D  
Acq On : 28 Nov 18 9:19  
Sample : 400ug/ml MEE 08/01/18  
Misc : soil

Vial: 7  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Nov 28 11:31 2018

Quant Results File: YMEE1128.RES

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Wed Nov 28 11:42:34 2018  
Response via : Initial Calibration



Data File : M:\YODA\DATA\Y181128M\1128Y012.D Vial: 12  
 Acq On : 28 Nov 18 11:17 Operator: MA  
 Sample : 500ug/ml MEE 08/01/18 Inst : Yoda  
 Misc : soil Multiplr: 1.00

Quant Time: Nov 28 11:25 2018 Quant Results File: YMEE1128.RES

Quant Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Wed Nov 28 09:56:17 2018  
 Response via : Initial Calibration  
 DataAcq Meth : GED

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.30	152	830482	40.00000	ppb	0.00
3) Napthalene-D8 (IS)	6.72	136	3639618	40.00000	ppb	0.00
4) Acenaphthene-D10 (IS)	8.74	164	1806558	40.00000	ppb	0.00
5) Phenanthrene-D10 (IS)	10.49	188	3340149	40.00000	ppb	0.00
6) Chrysene-D12 (IS)	13.59	240	2995047	40.00000	ppb	0.00
7) Perylene-D12 (IS)	15.40	264	2844171	40.00000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) 2-(2-Methoxyethoxy) ethanol	4.49	45	2370937	400.21340	ppb	100

Quantitation Report

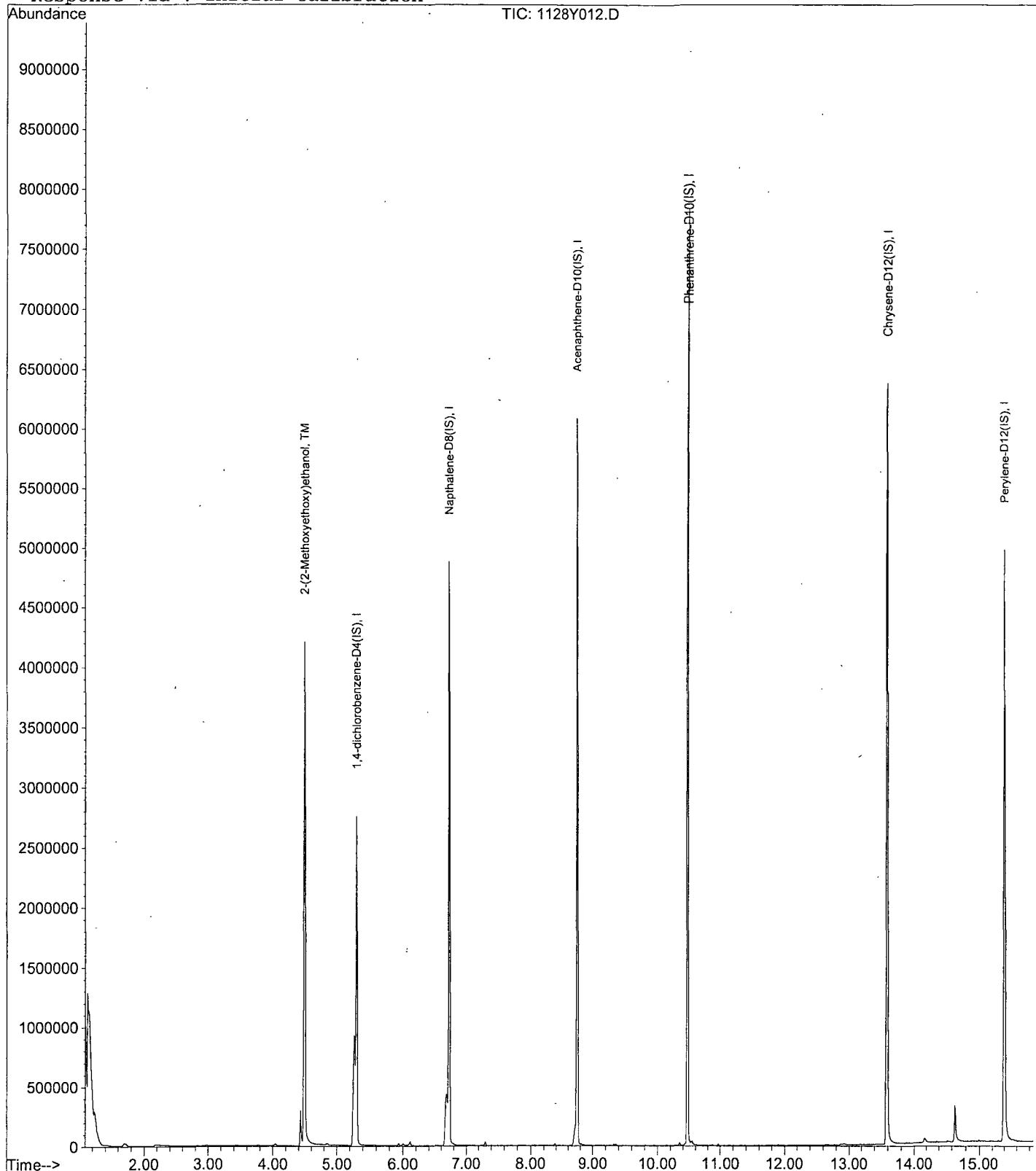
Data File : M:\YODA\DATA\Y181128M\1128Y012.D  
Acq On : 28 Nov 18 11:17  
Sample : 500ug/ml MEE 08/01/18  
Misc : soil

Vial: 12  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Nov 28 11:25 2018

Quant Results File: YMEE1128.RES

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Wed Nov 28 11:42:34 2018  
Response via : Initial Calibration



Data File : M:\YODA\DATA\Y181128M\1128Y008.D Vial: 8  
 Acq On : 28 Nov 18 9:43 Operator: MA  
 Sample : 600ug/ml MEE 08/01/18 Inst : Yoda  
 Misc : soil Multiplr: 1.00

Quant Time: Nov 28 11:40 2018 Quant Results File: YMEE1128.RES

Quant Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Wed Nov 28 11:40:16 2018  
 Response via : Initial Calibration  
 DataAcq Meth : GED

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.31	152	856651m	40.00000	ppb	0.00
3) Napthalene-D8 (IS)	6.73	136	3531920	40.00000	ppb	0.00
4) Acenaphthene-D10 (IS)	8.75	164	2073085	40.00000	ppb	0.00
5) Phenanthrene-D10 (IS)	10.49	188	3859845	40.00000	ppb	0.00
6) Chrysene-D12 (IS)	13.59	240	3489580	40.00000	ppb	0.00
7) Perylene-D12 (IS)	15.40	264	3140389	40.00000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) 2-(2-Methoxyethoxy)ethanol	4.50	45	3103564	483.70926	ppb	100

Quantitation Report

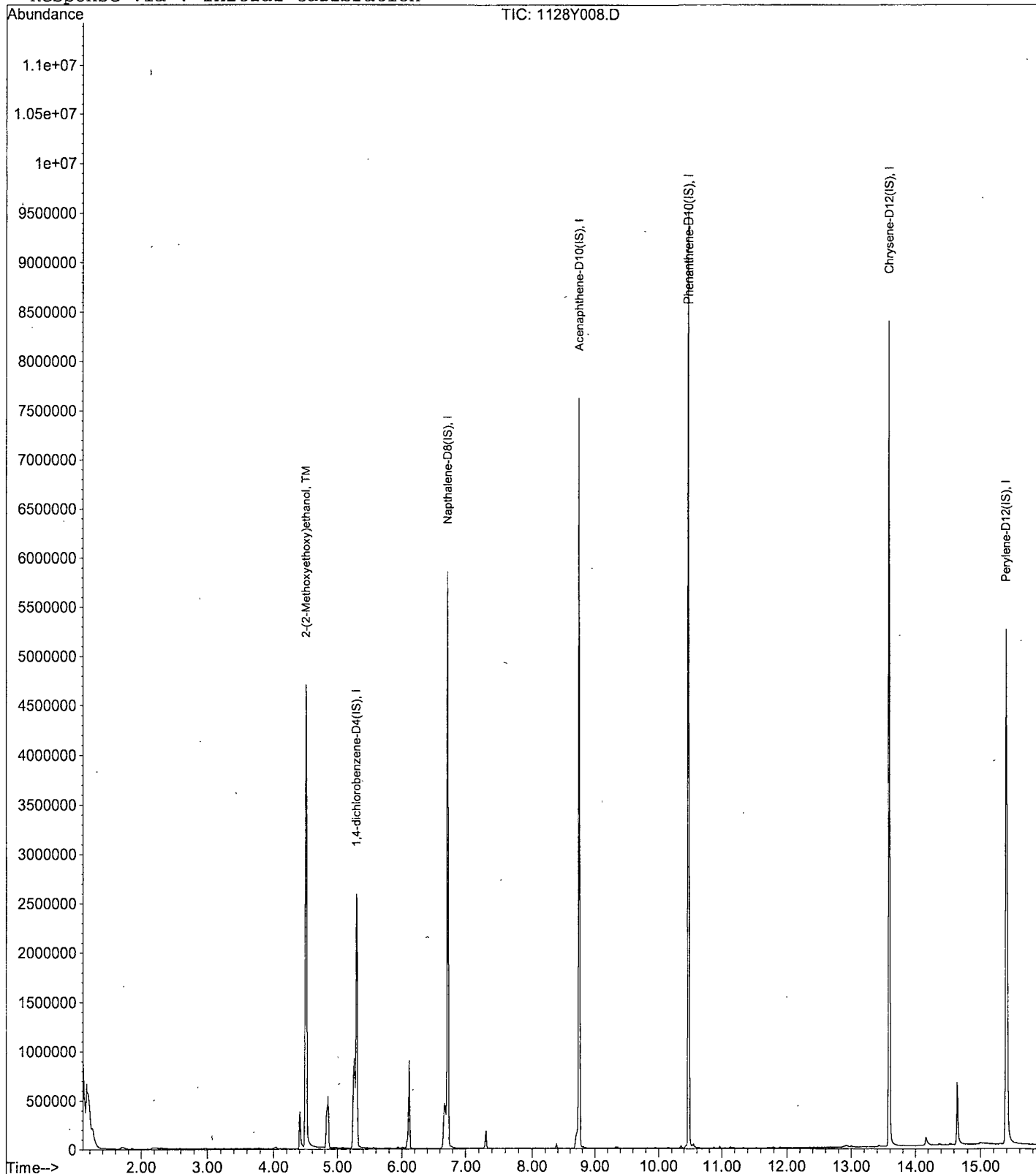
Data File : M:\YODA\DATA\Y181128M\1128Y008.D  
Acq On : 28 Nov 18 9:43  
Sample : 600ug/ml MEE 08/01/18  
Misc : soil

Vial: 8  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Nov 28 11:40 2018

Quant Results File: YMEE1128.RES

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Wed Nov 28 11:42:34 2018  
Response via : Initial Calibration

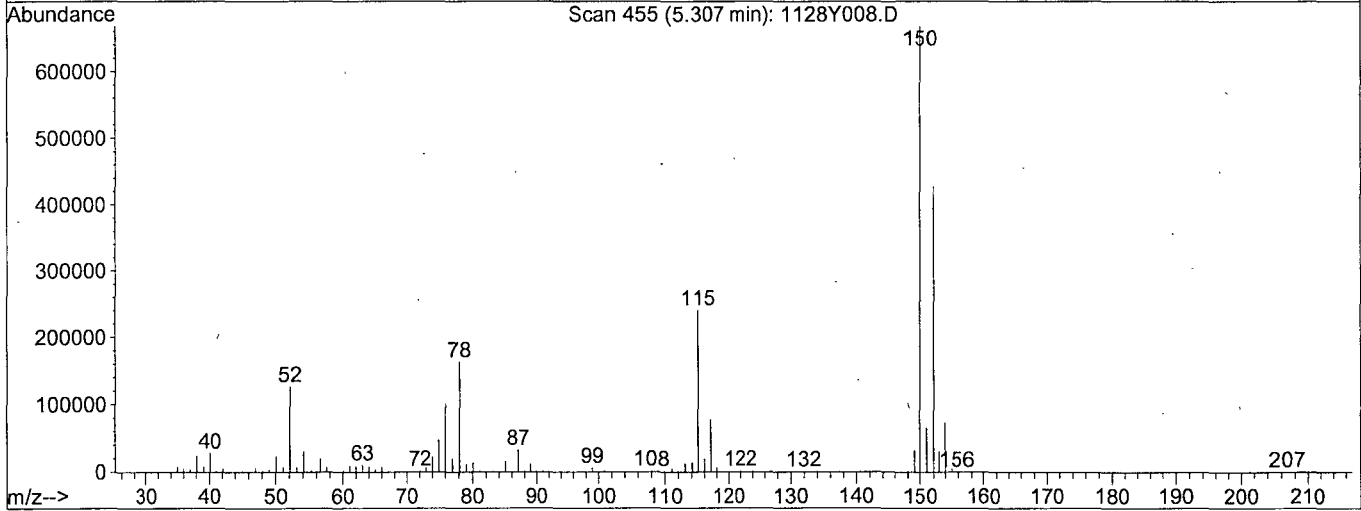
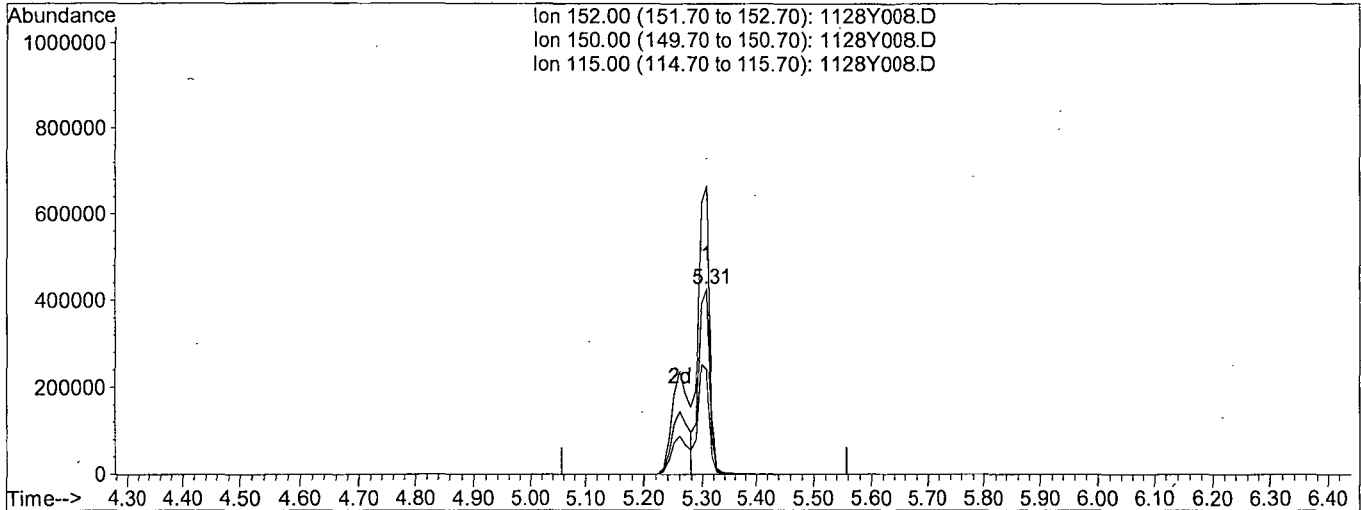


Quantitation Report

Data File : M:\YODA\DATA\Y181128M\1128Y008.D  
 Acq On : 28 Nov 18 9:43  
 Sample : 600ug/ml MEE 08/01/18  
 Misc : soil  
 Quant Time: Nov 28 11:40 2018

Vial: 8  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00  
 Quant Results File: temp.res

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Wed Nov 28 11:40:16 2018  
 Response via : Multiple Level Calibration



TIC: 1128Y008.D

(1) 1,4-dichlorobenzene-D4(IS) (I)

5.31min 40.0000ppb

response 580797

Ion	Exp%	Act%
152.00	100	100
150.00	156.20	156.26
115.00	56.30	56.24
0.00	0.00	0.00

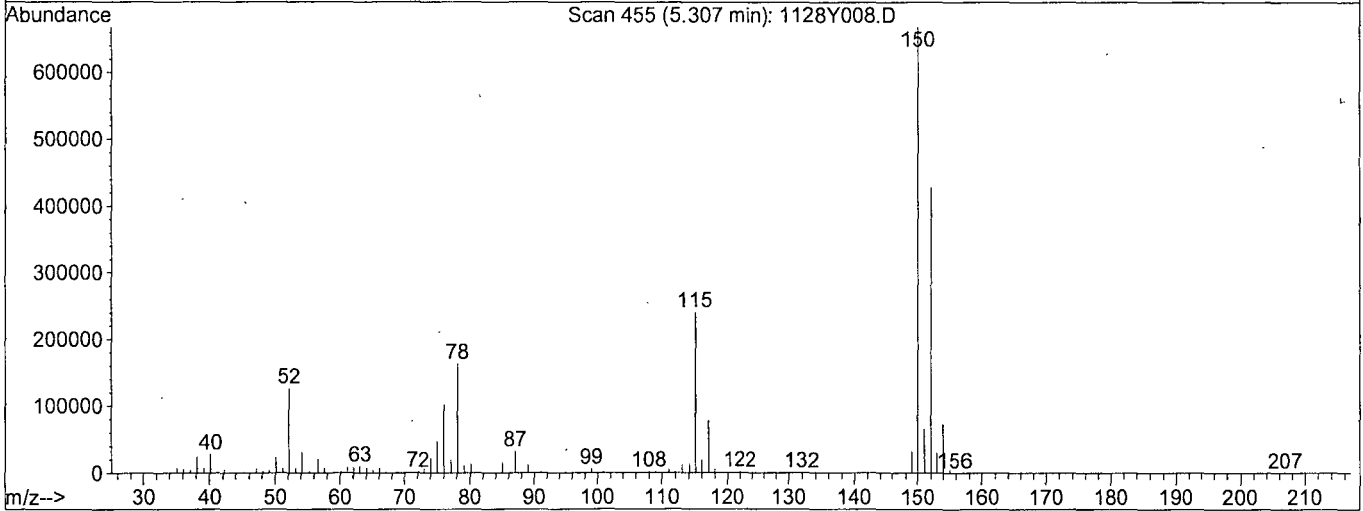
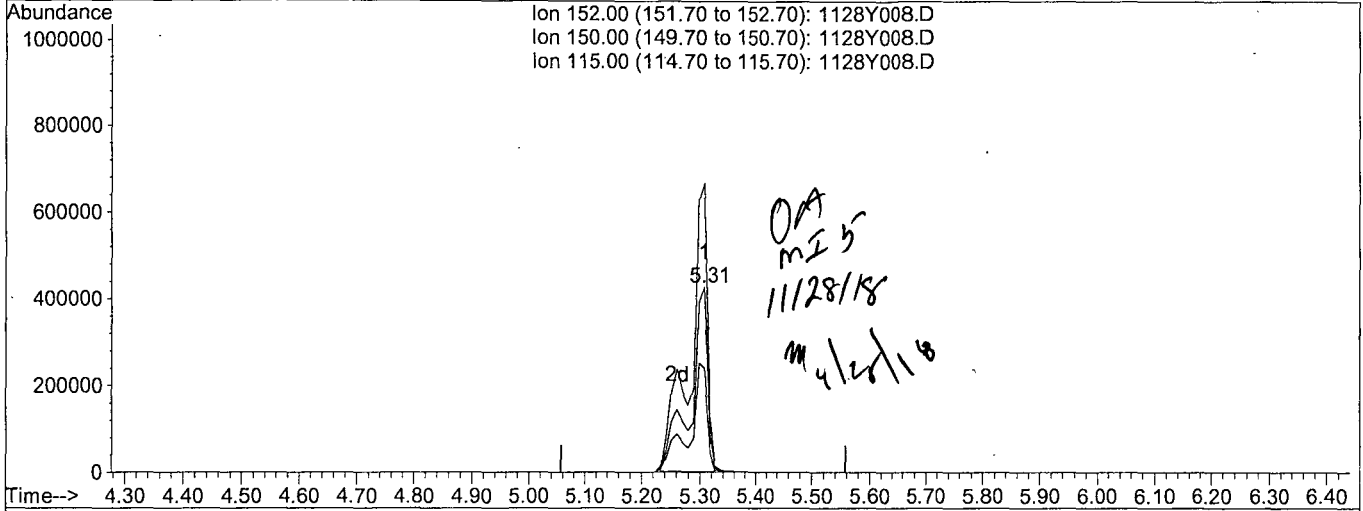


Quantitation Report

Data File : M:\YODA\DATA\Y181128M\1128Y008.D  
 Acq On : 28 Nov 18 9:43  
 Sample : 600ug/ml MEE 08/01/18  
 Misc : soil  
 Quant Time: Nov 28 11:40 2018

Vial: 8  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00  
 Quant Results File: temp.res

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Wed Nov 28 11:40:16 2018  
 Response via : Multiple Level Calibration



TIC: 1128Y008.D

(1) 1,4-dichlorobenzene-D4(IS) (I)

5.31min 40.0000ppb m

response 856651

Ion	Exp%	Act%
152.00	100	100
150.00	156.20	156.25
115.00	56.30	56.26
0.00	0.00	0.00

Data File : M:\YODA\DATA\Y181128M\1128Y009.D Vial: 9  
 Acq On : 28 Nov 18 10:06 Operator: MA  
 Sample : 800ug/ml MEE 08/01/18 Inst : Yoda  
 Misc : soil Multiplr: 1.00

Quant Time: Nov 28 11:40 2018 Quant Results File: YMEE1128.RES

Quant Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Wed Nov 28 11:29:49 2018  
 Response via : Initial Calibration  
 DataAcq Meth : GED

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.30	152	785528m	40.00000	ppb	0.00
3) Napthalene-D8 (IS)	6.72	136	3646286	40.00000	ppb	0.00
4) Acenaphthene-D10 (IS)	8.74	164	2099263	40.00000	ppb	0.00
5) Phenanthrene-D10 (IS)	10.49	188	3938984	40.00000	ppb	0.00
6) Chrysene-D12 (IS)	13.59	240	3411642	40.00000	ppb	0.00
7) Perylene-D12 (IS)	15.40	264	2743638	40.00000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) 2-(2-Methoxyethoxy)ethanol	4.52	45	4272210	778.75542	ppb	98

Quantitation Report

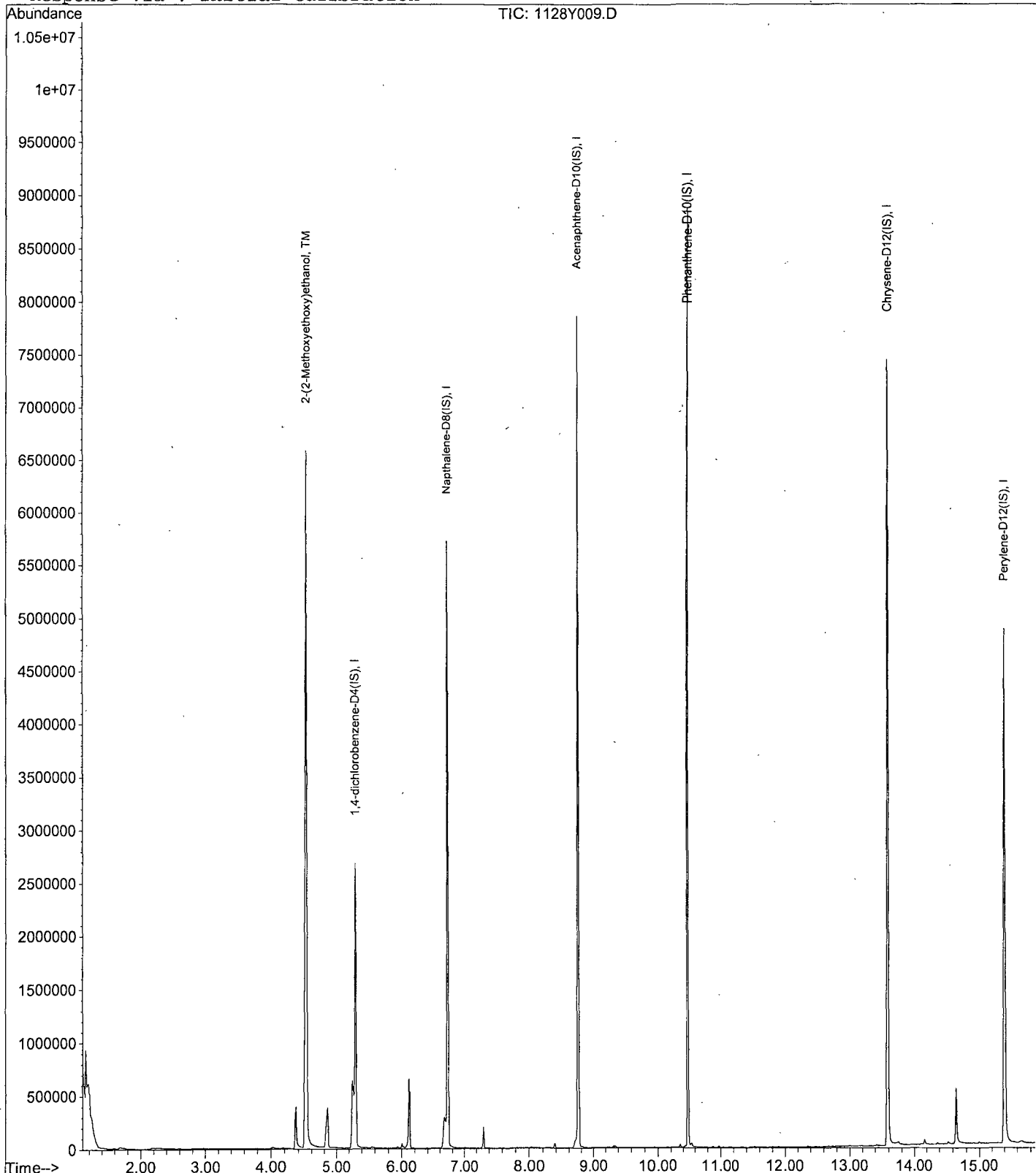
Data File : M:\YODA\DATA\Y181128M\1128Y009.D  
Acq On : 28 Nov 18 10:06  
Sample : 800ug/ml MEE 08/01/18  
Misc : soil

Vial: 9  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Nov 28 11:40 2018

Quant Results File: YMEE1128.RES

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Wed Nov 28 11:42:34 2018  
Response via : Initial Calibration

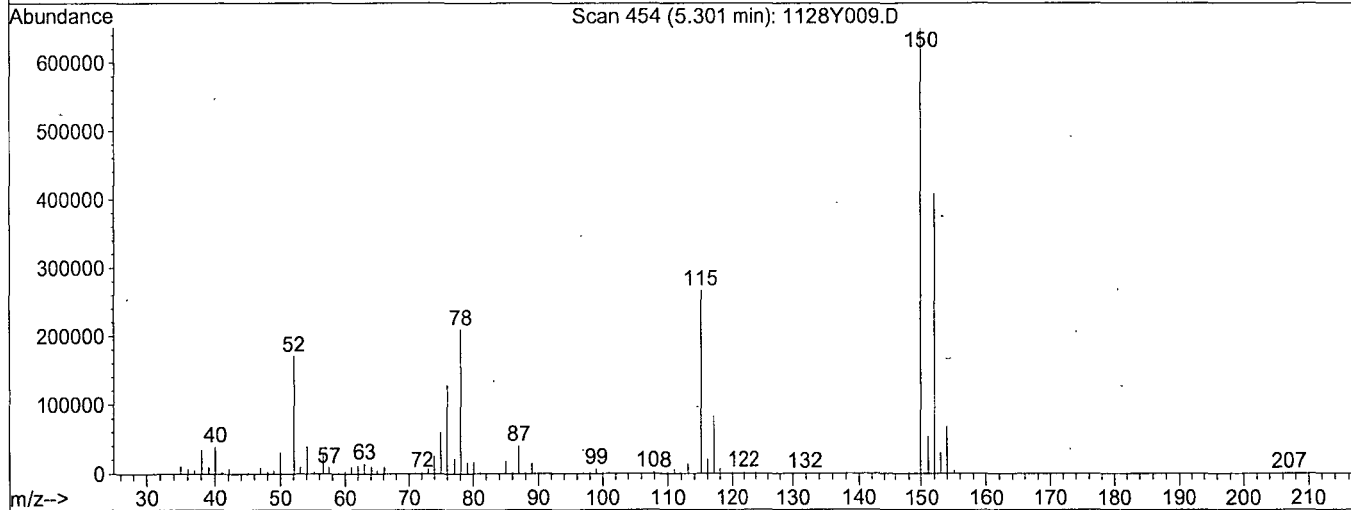
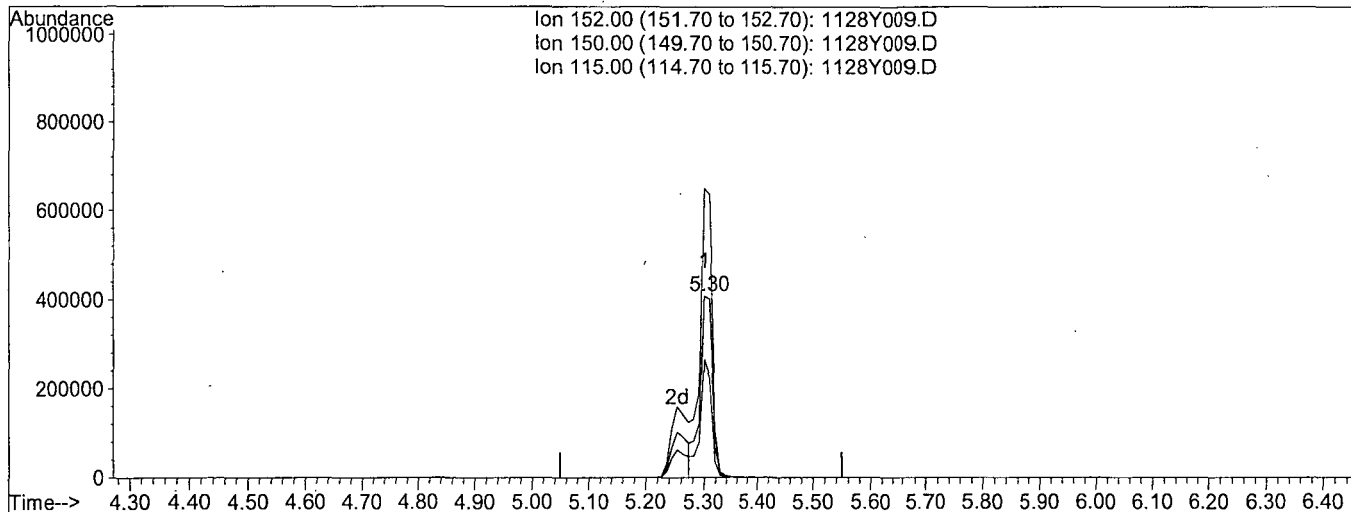


Quantitation Report

Data File : M:\YODA\DATA\Y181128M\1128Y009.D  
 Acq On : 28 Nov 18 10:06  
 Sample : 800ug/ml MEE 08/01/18  
 Misc : soil  
 Quant Time: Nov 28 11:31 2018

Vial: 9  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00  
 Quant Results File: temp.res

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Wed Nov 28 11:40:16 2018  
 Response via : Multiple Level Calibration



TIC: 1128Y009.D

(1) 1,4-dichlorobenzene-D4(1S) (I)

5.30min 40.0000ppb

response 614492

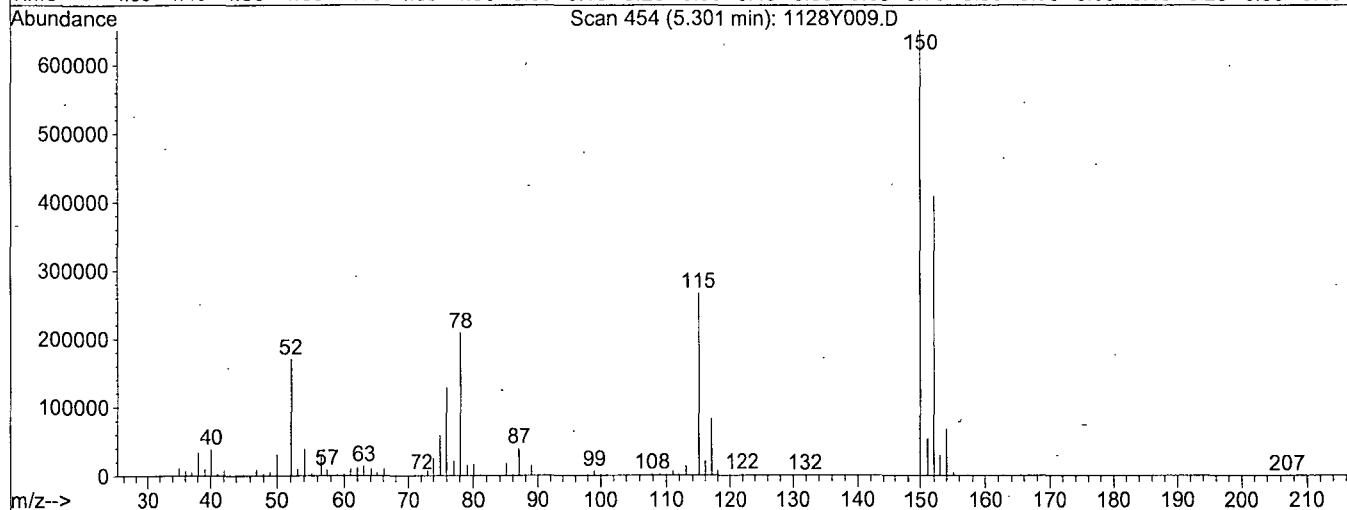
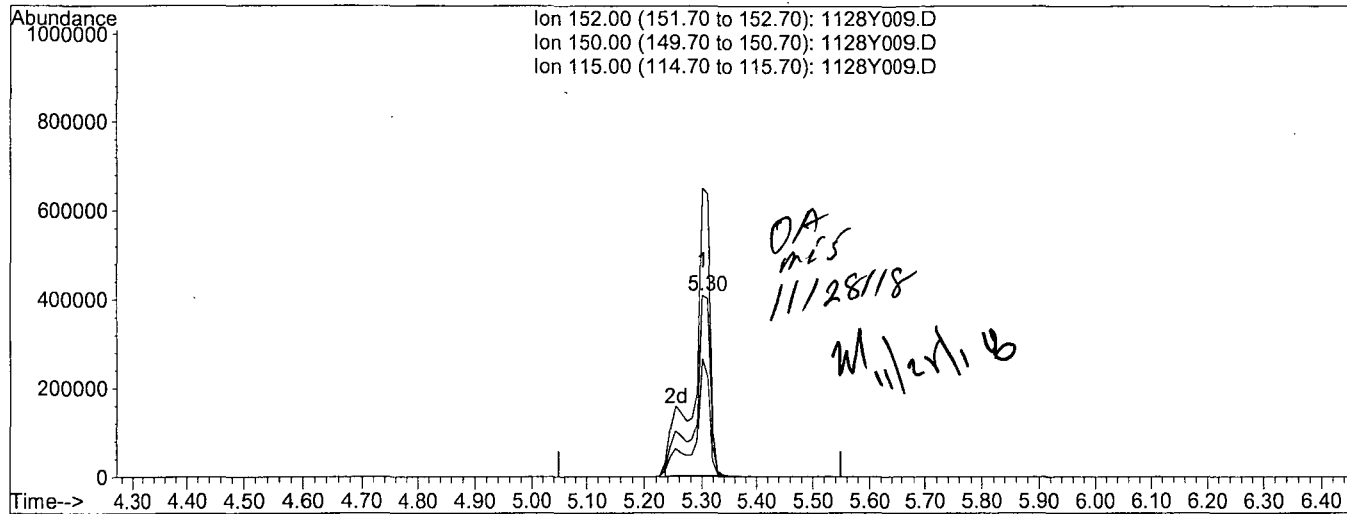
Ion	Exp%	Act%
152.00	100	100
150.00	160.10	159.30
115.00	63.20	65.14
0.00	0.00	0.00

Quantitation Report

Data File : M:\YODA\DATA\Y181128M\1128Y009.D  
 Acq On : 28 Nov 18 10:06  
 Sample : 800ug/ml MEE 08/01/18  
 Misc : soil  
 Quant Time: Nov 28 11:40 2018

Vial: 9  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00  
 Quant Results File: temp.res

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Wed Nov 28 11:40:16 2018  
 Response via : Multiple Level Calibration



TIC: 1128Y009.D

(1) 1,4-dichlorobenzene-D4(1S) (I)

5.30min 40.0000ppb m

response 785528

Ion	Exp%	Act%
152.00	100	100
150.00	160.10	159.35
115.00	63.20	65.18
0.00	0.00	0.00

Data File : M:\YODA\DATA\Y181128M\1128Y010.D Vial: 10  
 Acq On : 28 Nov 18 10:30 Operator: MA  
 Sample : 1000ug/ml MEE 08/01/18 Inst : Yoda  
 Misc : soil Multiplr: 1.00

Quant Time: Nov 28 11:41 2018 Quant Results File: YMEE1128.RES

Quant Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Wed Nov 28 11:29:49 2018  
 Response via : Initial Calibration  
 DataAcq Meth : GED

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.30	152	817975m	40.00000	ppb	0.00
3) Napthalene-D8 (IS)	6.72	136	3554268	40.00000	ppb	0.00
4) Acenaphthene-D10 (IS)	8.74	164	2016499	40.00000	ppb	0.00
5) Phenanthrene-D10 (IS)	10.49	188	3774107	40.00000	ppb	0.00
6) Chrysene-D12 (IS)	13.59	240	3353765	40.00000	ppb	0.00
7) Perylene-D12 (IS)	15.40	264	3559145	40.00000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) 2-(2-Methoxyethoxy) ethanol	4.53	45	5060771	787.46043	ppb	98

Quantitation Report

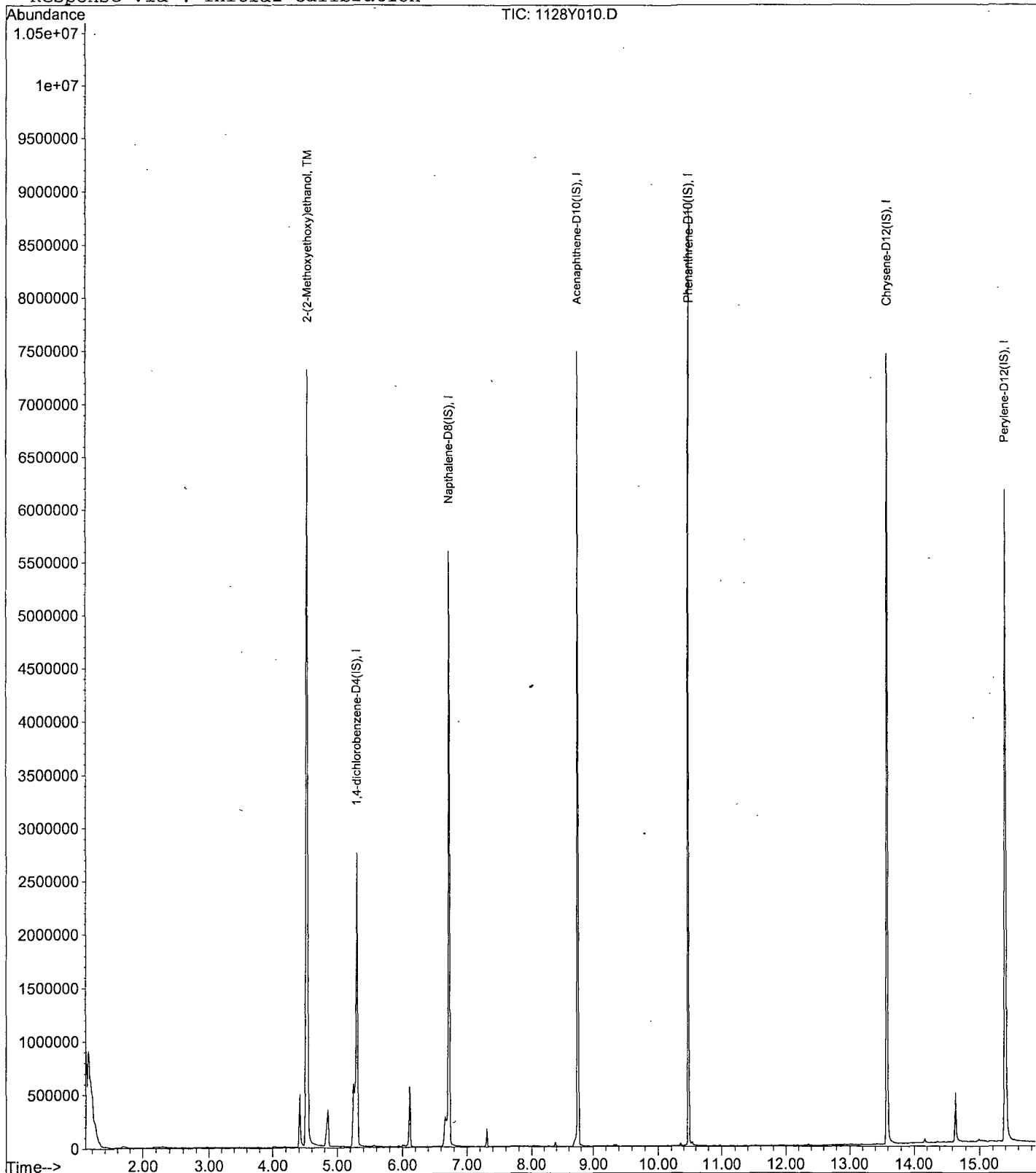
Data File : M:\YODA\DATA\Y181128M\1128Y010.D  
Acq On : 28 Nov 18 10:30  
Sample : 1000ug/ml MEE 08/01/18  
Misc : soil

Vial: 10  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Nov 28 11:41 2018

Quant Results File: YMEE1128.RES

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Wed Nov 28 11:42:34 2018  
Response via : Initial Calibration

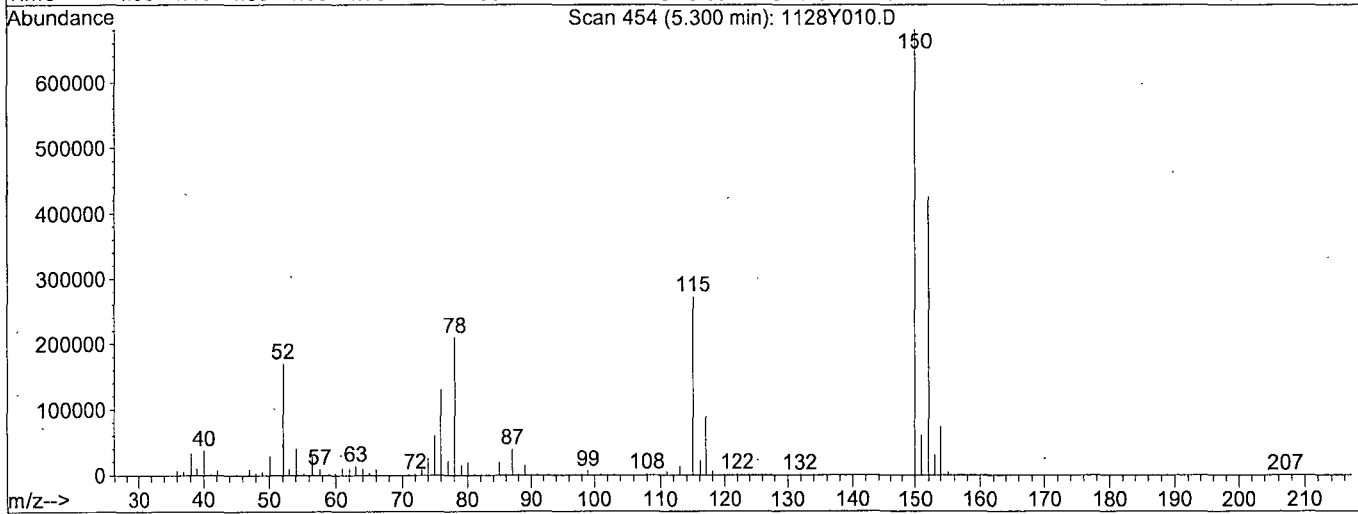
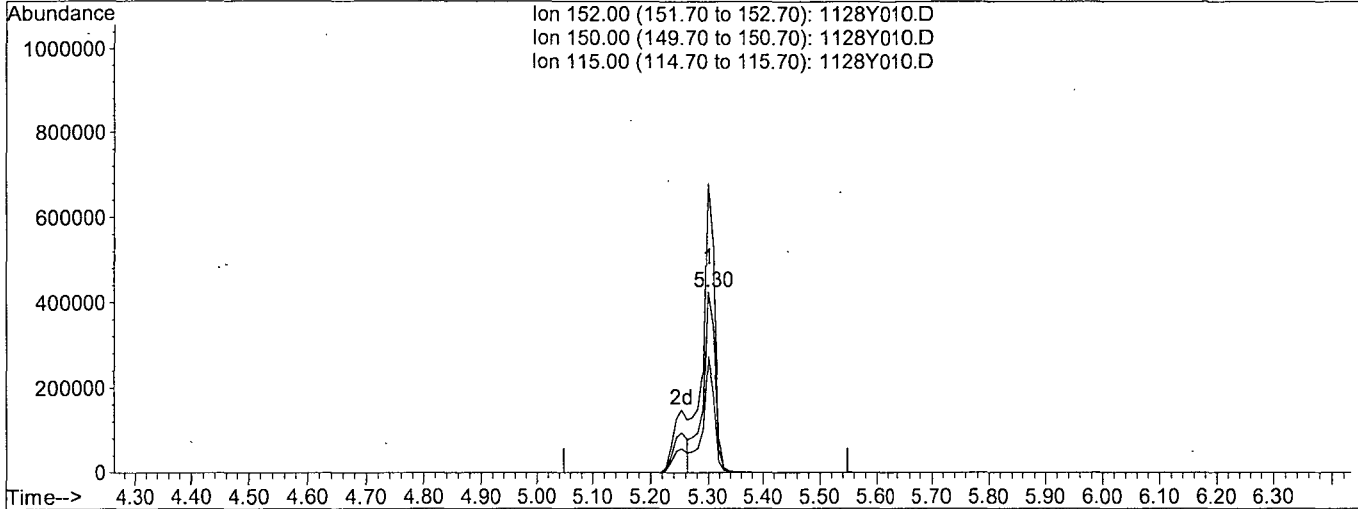


Quantitation Report

Data File : M:\YODA\DATA\Y181128M\1128Y010.D  
 Acq On : 28 Nov 18 10:30  
 Sample : 1000ug/ml MEE 08/01/18  
 Misc : soil  
 Quant Time: Nov 28 11:32 2018

Vial: 10  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00  
 Quant Results File: temp.res

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Wed Nov 28 11:40:16 2018  
 Response via : Multiple Level Calibration



TIC: 1128Y010.D

(1) 1,4-dichlorobenzene-D4(IS) (I)

5.30min 40.0000ppb

response 652352

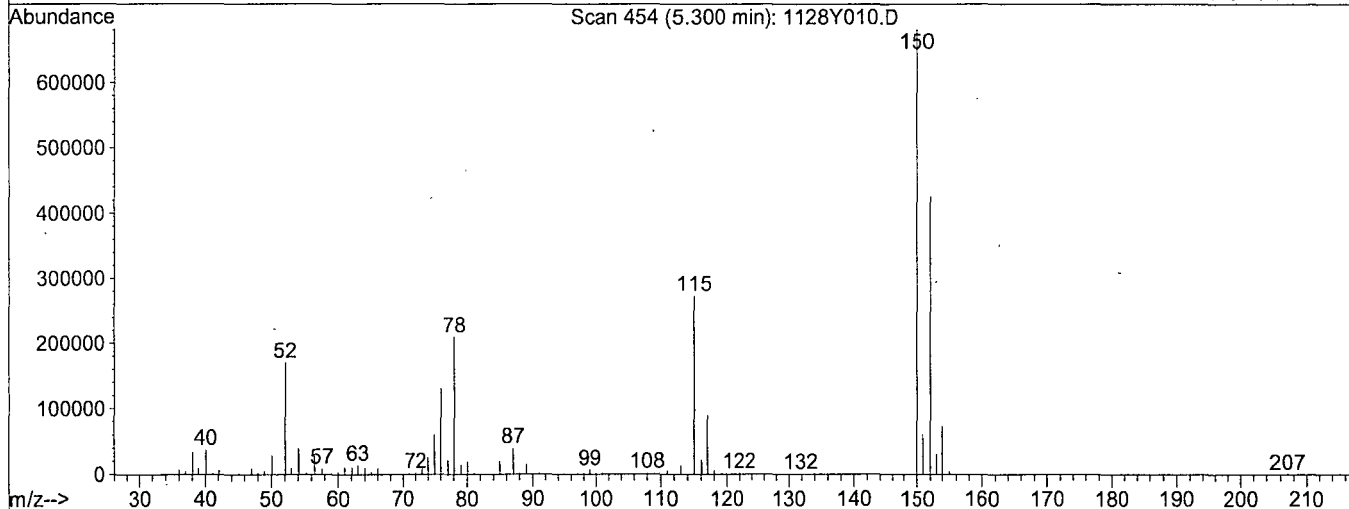
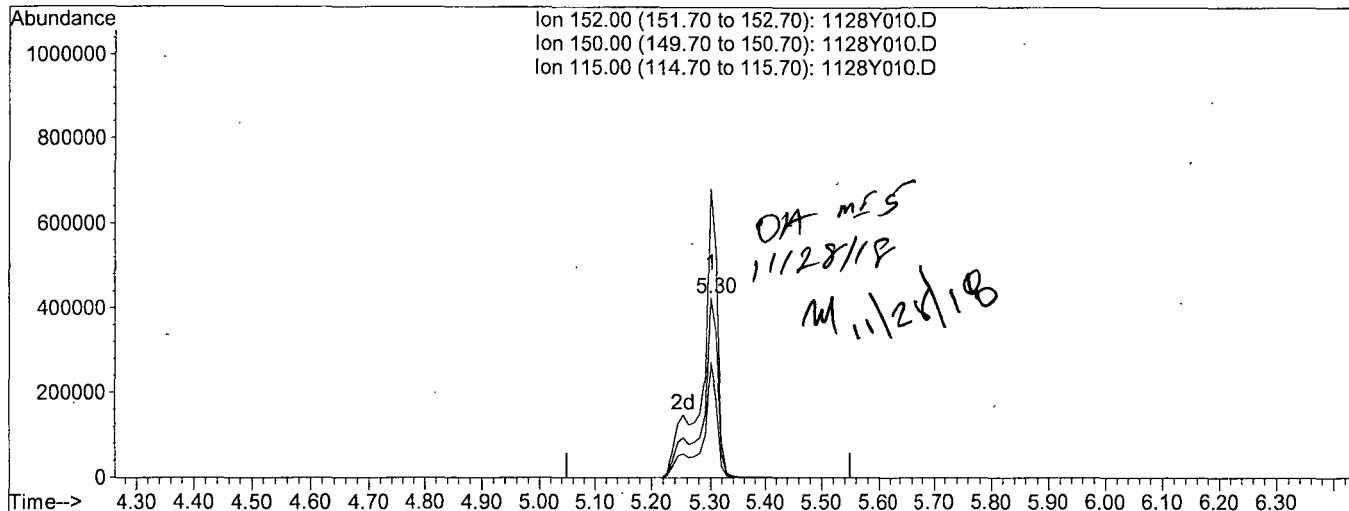
Ion	Exp%	Act%
152.00	100	100
150.00	160.10	160.08
115.00	63.20	64.08
0.00	0.00	0.00



Quantitation Report

Data File : M:\YODA\DATA\Y181128M\1128Y010.D Vial: 10  
 Acq On : 28 Nov 18 10:30 Operator: MA  
 Sample : 1000ug/ml MEE 08/01/18 Inst : Yoda  
 Misc : soil Multiplr: 1.00  
 Quant Time: Nov 28 11:41 2018 Quant Results File: temp.res

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Wed Nov 28 11:40:16 2018  
 Response via : Multiple Level Calibration



TIC: 1128Y010.D

(1) 1,4-dichlorobenzene-D4(1S) (I)

5.30min 40.0000ppb m

response 817975

Ion	Exp%	Act%
152.00	100	100
150.00	160.10	160.10
115.00	63.20	64.11
0.00	0.00	0.00

2MEE  
EPA 8270

Form 7

Second Source Calibration

Lab Name: APPL, Inc.

SDG No: \_\_\_\_\_

Case No: \_\_\_\_\_

Date Analyzed: 11/28/18

Matrix: \_\_\_\_\_

Instrument: Yoda

Initial Cal. Date: 11/28/18

Data File: 1128Y014.D

		Compound	MEAN	CCRF	%D	%Drift
1	TM	2-(2-Methoxyethoxy)ethanol	0.2402	0.2671	11	TM
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
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27						
28						
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30						
31						
32						
33						
34						
35						
36						
37						
38						
39						
40						

Average

11.0

Data File : M:\YODA\DATA\Y181128M\1128Y014.D Vial: 14  
 Acq On : 28 Nov 18 12:26 Operator: MA  
 Sample : SS ug/ml MEE 08/01/18 Inst : Yoda  
 Misc : soil Multiplr: 1.00

Quant Time: Nov 28 12:58 2018 Quant Results File: YMEE1128.RES

Quant Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Wed Nov 28 11:42:34 2018  
 Response via : Initial Calibration  
 DataAcq Meth : GED

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.30	152	835108m	40.00000	ppb	0.00
3) Napthalene-D8 (IS)	6.72	136	3156594	40.00000	ppb	0.00
4) Acenaphthene-D10 (IS)	8.75	164	1957153	40.00000	ppb	0.00
5) Phenanthrene-D10 (IS)	10.49	188	3684850	40.00000	ppb	0.00
6) Chrysene-D12 (IS)	13.58	240	3336185	40.00000	ppb	0.00
7) Perylene-D12 (IS)	15.40	264	3221218	40.00000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) 2-(2-Methoxyethoxy)ethanol	4.49	45	2787828	555.84367	ppb	100

Quantitation Report

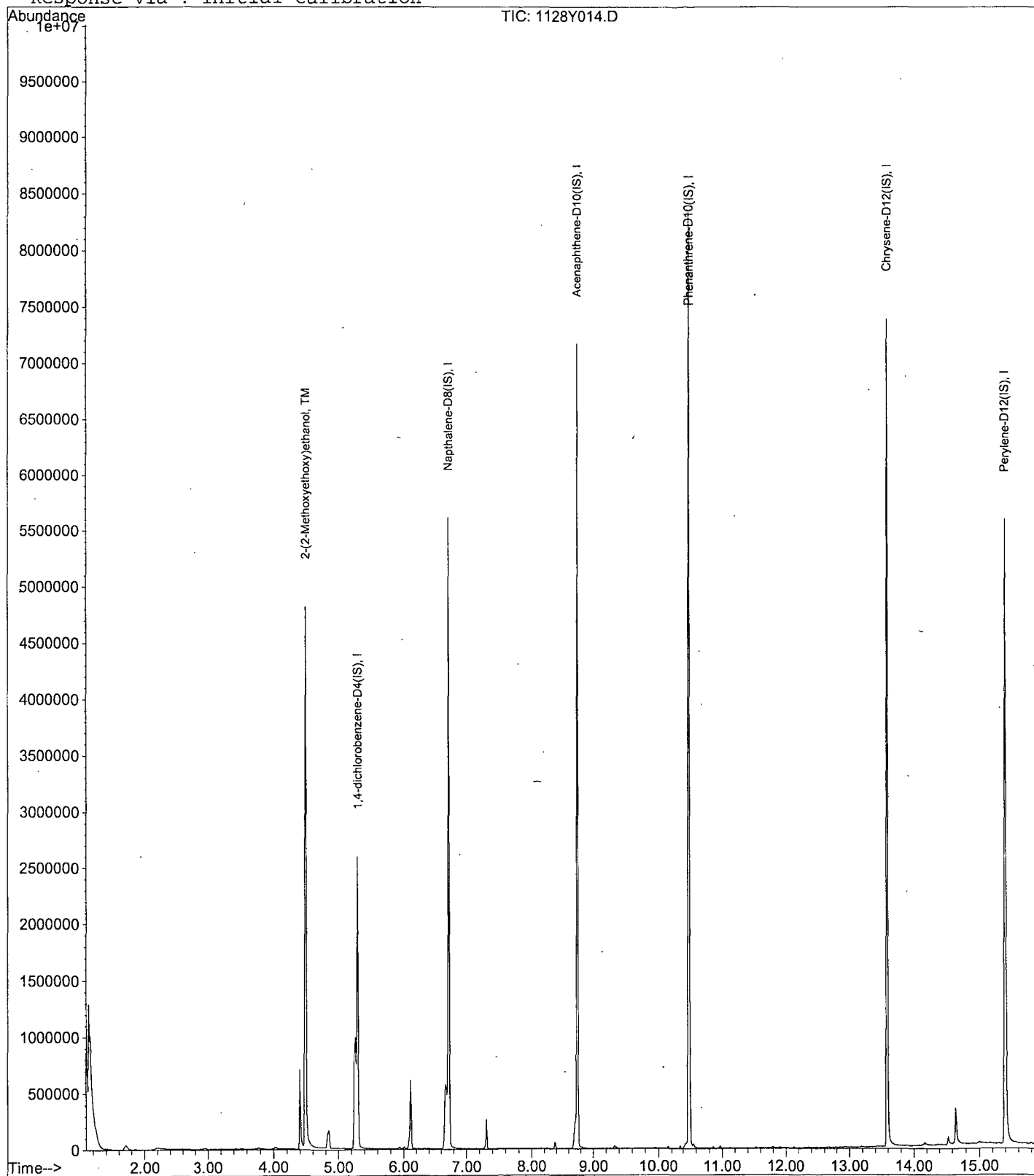
Data File : M:\YODA\DATA\Y181128M\1128Y014.D  
Acq On : 28 Nov 18 12:26  
Sample : SS ug/ml MEE 08/01/18  
Misc : soil

Vial: 14  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Nov 28 12:58 2018

Quant Results File: YMEE1128.RES

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Wed Nov 28 11:42:34 2018  
Response via : Initial Calibration

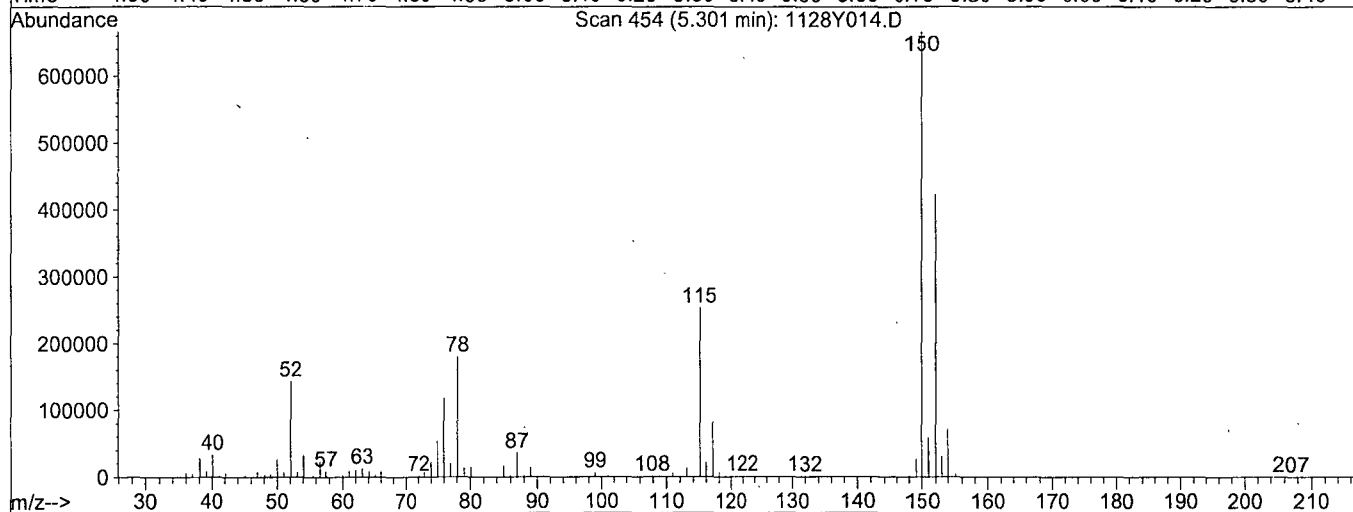
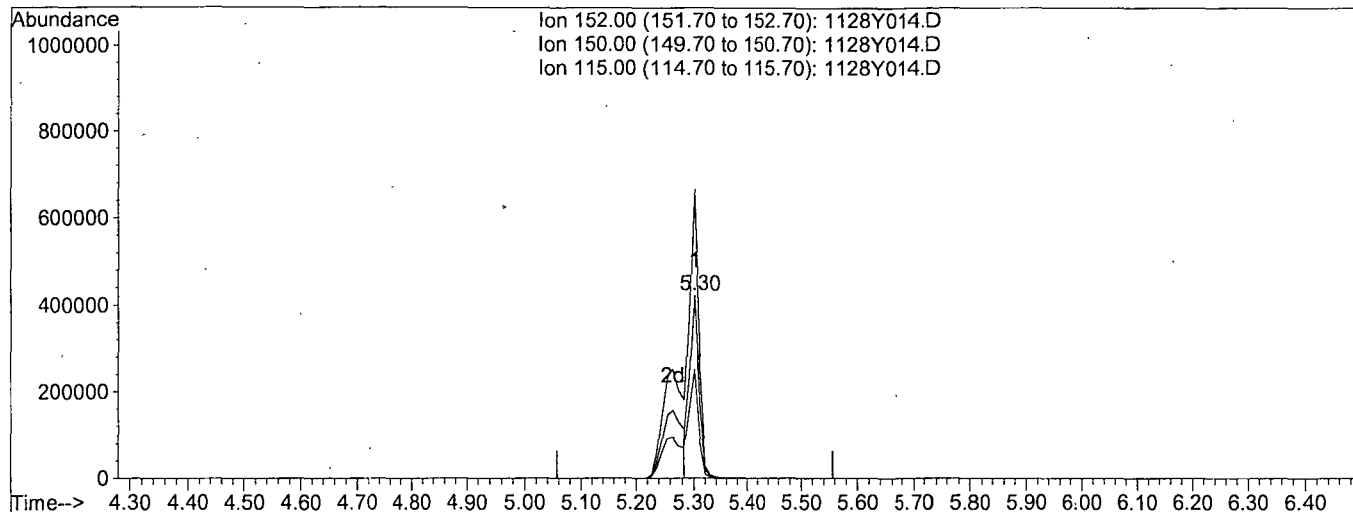


Quantitation Report

Data File : M:\YODA\DATA\Y181128M\1128Y014.D  
 Acq On : 28 Nov 18 12:26  
 Sample : SS ug/ml MEE 08/01/18  
 Misc : soil  
 Quant Time: Nov 28 12:58 2018

Vial: 14  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00  
 Quant Results File: temp.res

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Wed Nov 28 11:42:34 2018  
 Response via : Multiple Level Calibration



TIC: 1128Y014.D

(1) 1,4-dichlorobenzene-D4(S) (I)

5.30min 40.0000ppb

response 473674

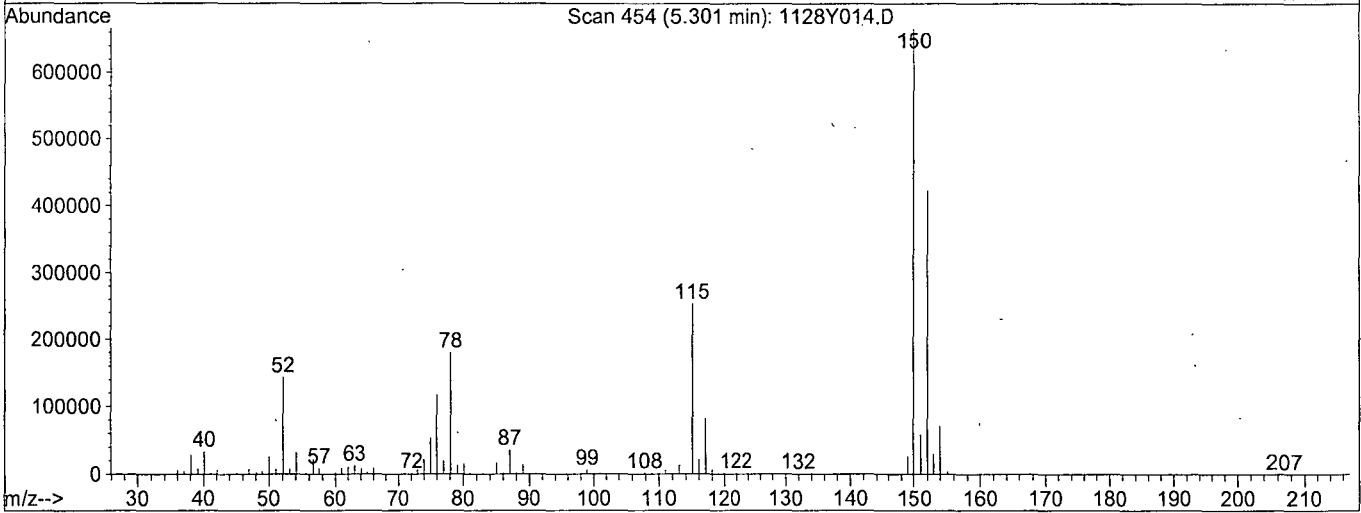
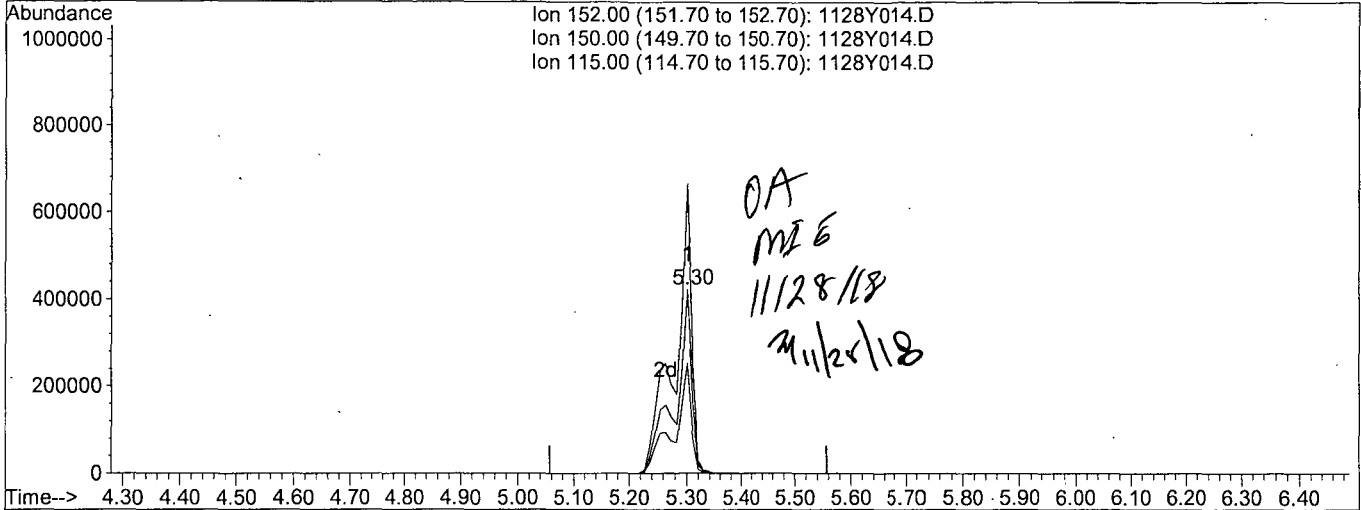
Ion	Exp%	Act%
152.00	100	100
150.00	156.20	157.54
115.00	56.30	59.84
0.00	0.00	0.00

Quantitation Report

Data File : M:\YODA\DATA\Y181128M\1128Y014.D  
 Acq On : 28 Nov 18 12:26  
 Sample : SS ug/ml MEE 08/01/18  
 Misc : soil  
 Quant Time: Nov 28 12:58 2018

Vial: 14  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00  
 Quant Results File: temp.res

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Wed Nov 28 11:42:34 2018  
 Response via : Multiple Level Calibration



TIC: 1128Y014.D

(1) 1,4-dichlorobenzene-D4(IS) (I)

5.30min 40.0000ppb m

response 835108

Ion	Exp%	Act%
152.00	100	100
150.00	156.20	157.52
115.00	56.30	59.85
0.00	0.00	0.00

2MEE  
EPA 8270

Form 7

Continuing Calibration

Lab Name: APPL, Inc.

SDG No: \_\_\_\_\_

Case No: \_\_\_\_\_

Date Analyzed: 02/14/19

Matrix: \_\_\_\_\_

Instrument: Yoda

Initial Cal. Date: 11/28/18

Data File: 1128Y117.D

	Compound	MEAN	CCRF	%D	%Drift
1	I 1,4-dichlorobenzene-D4(IS)	ISTD			I
2	TM 2-(2-Methoxyethoxy)ethanol	0.2402	0.2182	9.2	TM
3	I Napthalene-D8(IS)	ISTD			I
4	I Acenaphthene-D10(IS)	ISTD			I
5	I Phenanthrene-D10(IS)	ISTD			I
6	I Chrysene-D12(IS)	ISTD			I
7	I Perylene-D12(IS)	ISTD			I
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
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36					
37					
38					
39					
40					

Average

9.2

Data File : M:\YODA\DATA\Y181128M\1128Y117.D Vial: 17  
 Acq On : 14 Feb 19 10:52 Operator: MA  
 Sample : 500ug/ml MEE 12/19/18 Inst : Yoda  
 Misc : soil Multiplr: 1.00

Quant Time: Feb 14 13:22 2019 Quant Results File: YMEE1128.RES

Quant Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Thu Feb 14 13:22:16 2019  
 Response via : Initial Calibration  
 DataAcq Meth : GED

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.19	152	504571	40.00000	ppb	0.00
3) Napthalene-D8 (IS)	6.61	136	2014391	40.00000	ppb	0.00
4) Acenaphthene-D10 (IS)	8.62	164	1043684	40.00000	ppb	0.00
5) Phenanthrene-D10 (IS)	10.36	188	1918733	40.00000	ppb	0.00
6) Chrysene-D12 (IS)	13.45	240	1638140	40.00000	ppb	0.00
7) Perylene-D12 (IS)	15.19	264	1424101	40.00000	ppb	-0.20

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) 2-(2-Methoxyethoxy) ethanol	4.39	45	1376509m	454.24076	ppb	100



Quantitation Report

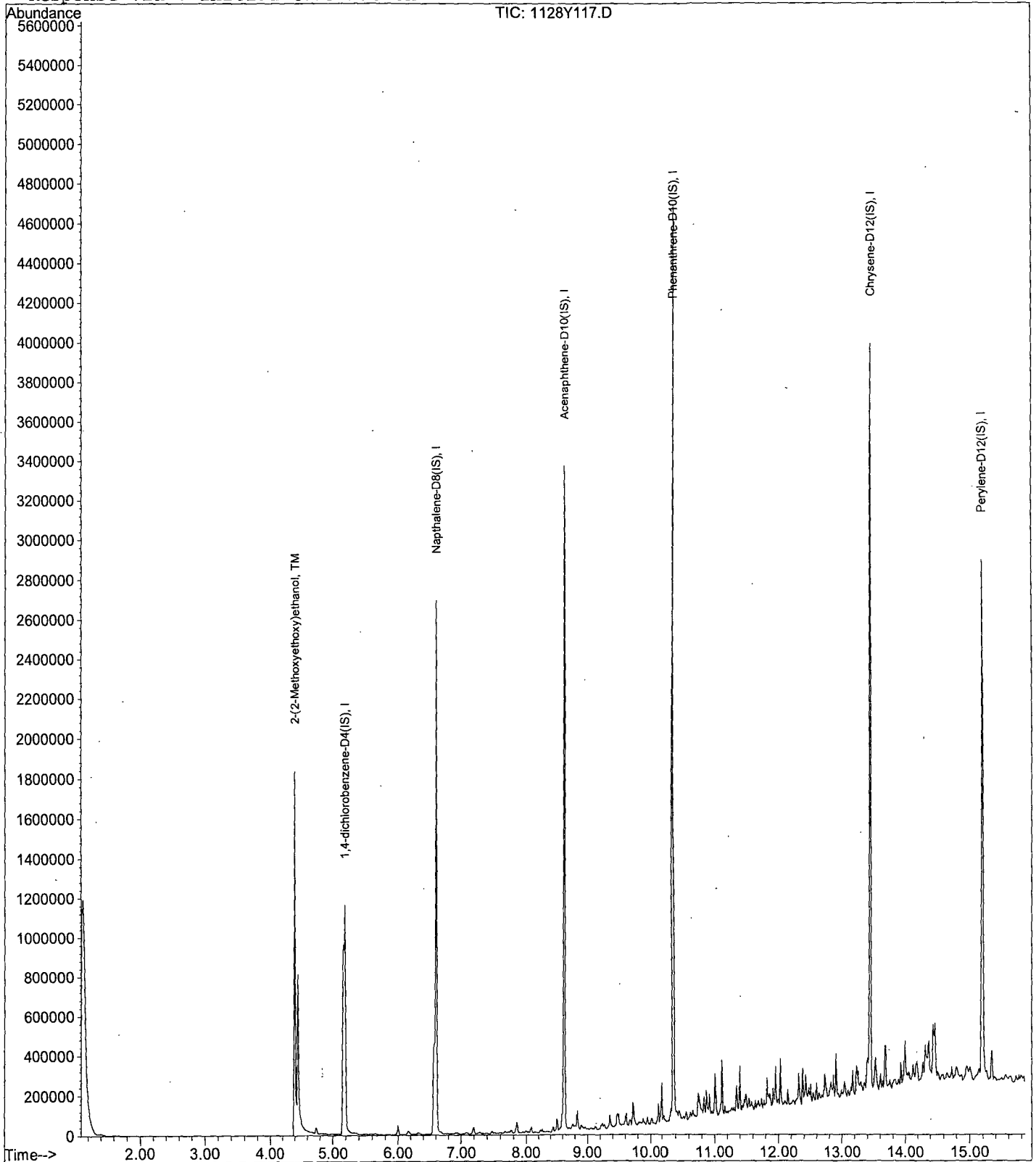
Data File : M:\YODA\DATA\Y181128M\1128Y117.D  
Acq On : 14 Feb 19 10:52  
Sample : 500ug/ml MEE 12/19/18  
Misc : soil

Vial: 17  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Feb 14 13:22 2019

Quant Results File: YMEE1128.RES

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Thu Feb 14 13:22:16 2019  
Response via : Initial Calibration

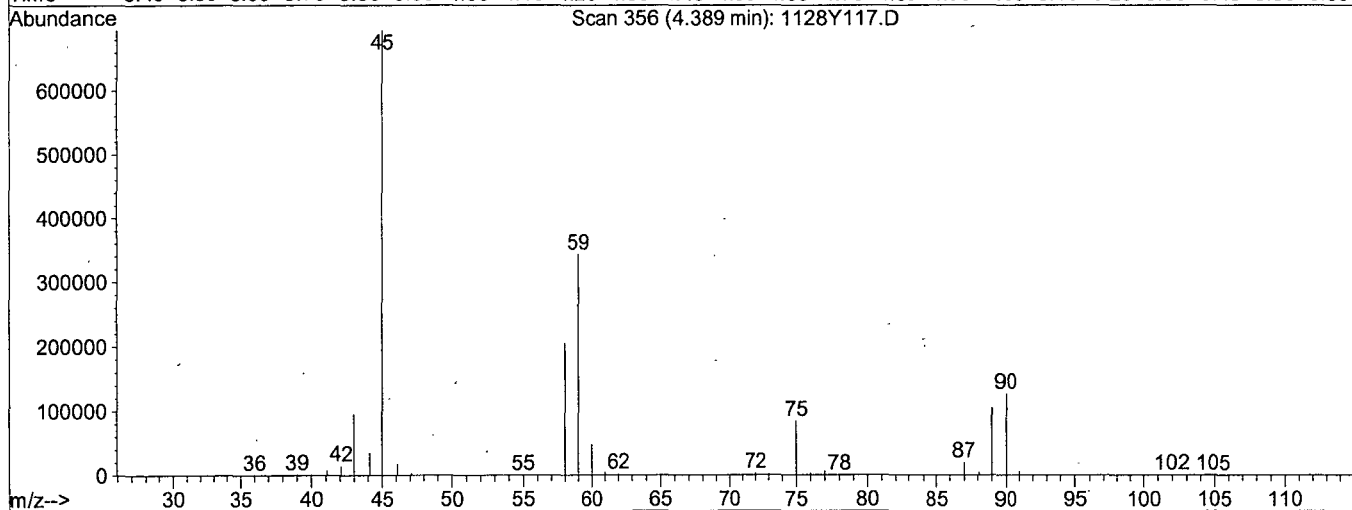
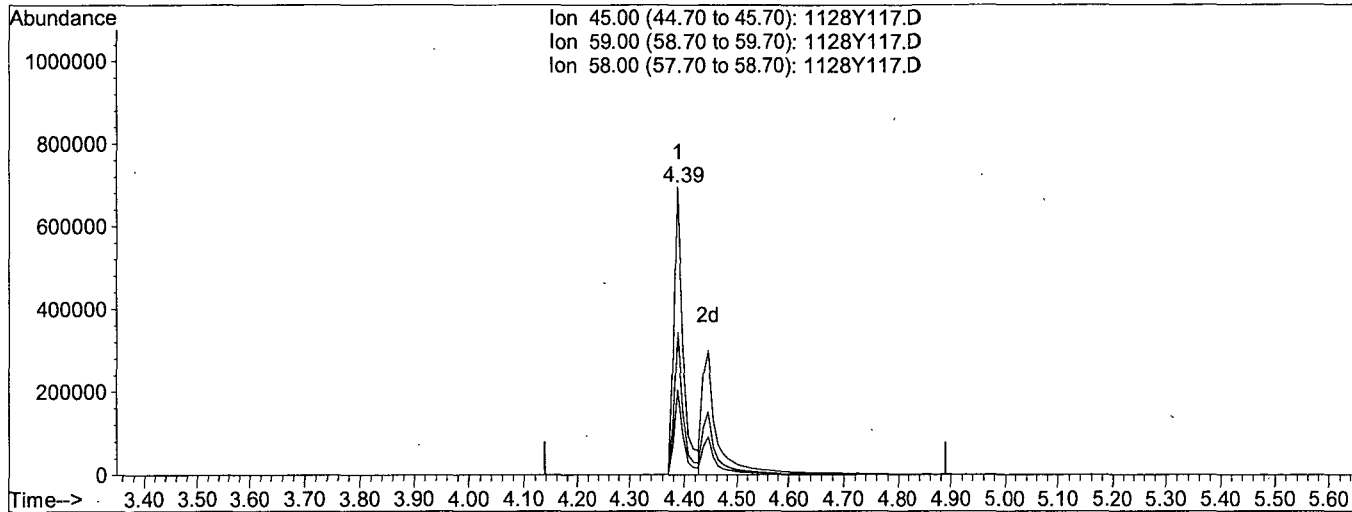


Quantitation Report

Data File : M:\YODA\DATA\Y181128M\1128Y117.D  
 Acq On : 14 Feb 19 10:52  
 Sample : 500ug/ml MEE 12/19/18  
 Misc : soil  
 Quant Time: Feb 14 13:22 2019

Vial: 17  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00  
 Quant Results File: temp.res

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Thu Feb 14 13:22:16 2019  
 Response via : Multiple Level Calibration



TIC: 1128Y117.D

(2) 2-(2-Methoxyethoxy)ethanol (TM)

4.39min 271.8527ppb

response 823809

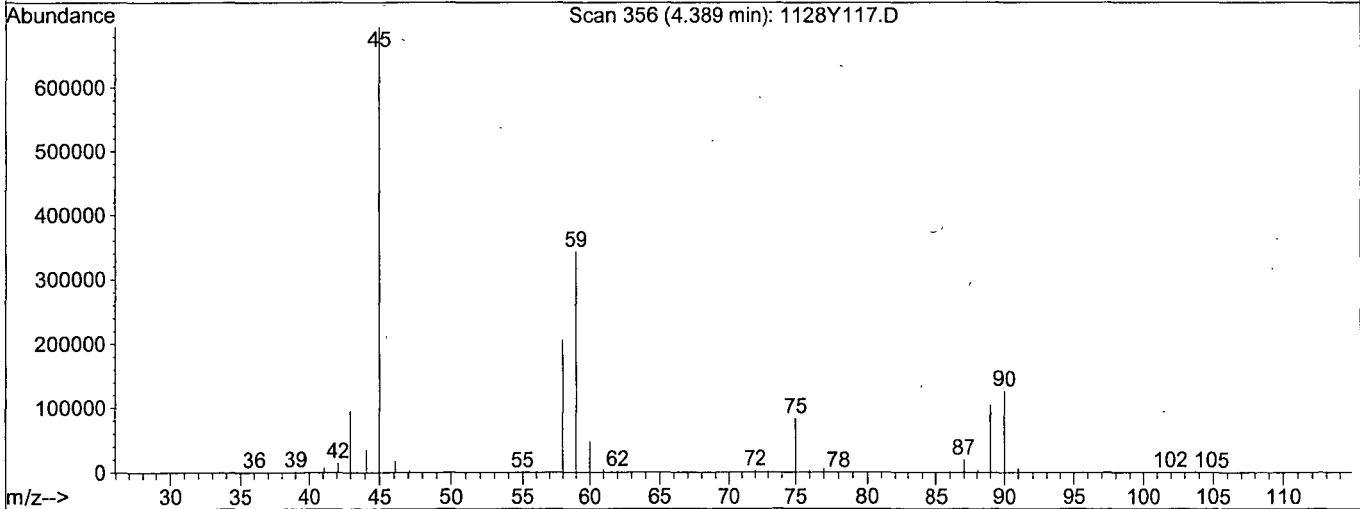
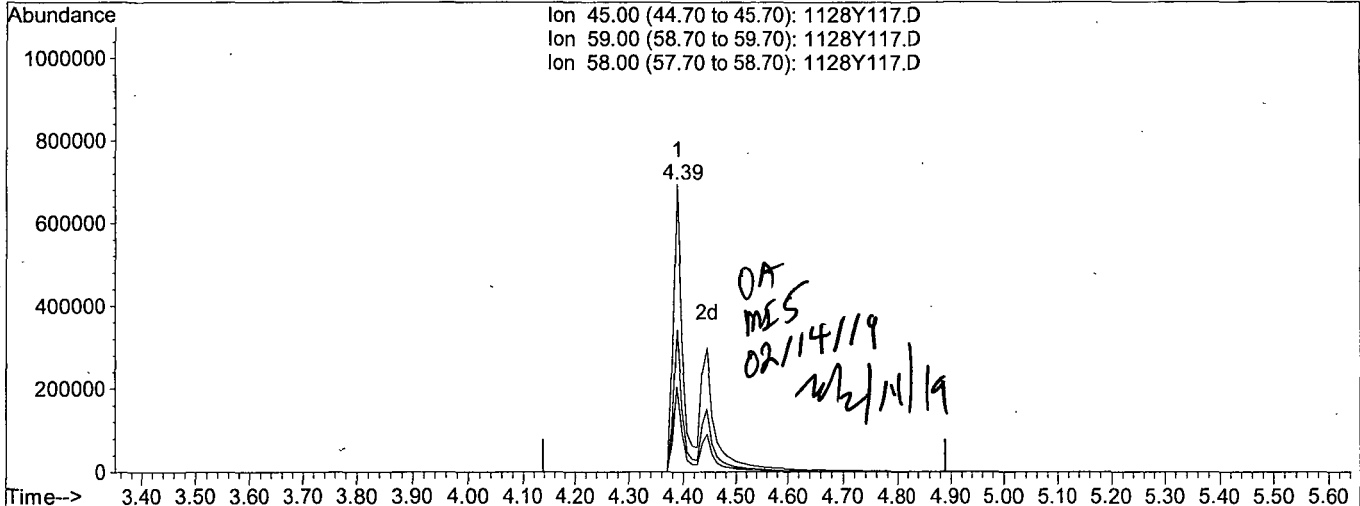
Ion	Exp%	Act%
45.00	100	100
59.00	49.40	49.35
58.00	29.50	29.54
0.00	0.00	0.00

Quantitation Report

Data File : M:\YODA\DATA\Y181128M\1128Y117.D  
 Acq On : 14 Feb 19 10:52  
 Sample : 500ug/ml MEE 12/19/18  
 Misc : soil  
 Quant Time: Feb 14 13:22 2019

Vial: 17  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00  
 Quant Results File: temp.res

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Thu Feb 14 13:22:16 2019  
 Response via : Multiple Level Calibration.



TIC: 1128Y117.D

(2) 2-(2-Methoxyethoxy)ethanol (TM)

4.39min 454.2408ppb m .

response 1376509

Ion	Exp%	Act%
45.00	100	100
59.00	49.40	49.35
58.00	29.50	29.54
0.00	0.00	0.00

2MEE  
EPA 8270

Form 7

Continuing Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: \_\_\_\_\_

SDG No: \_\_\_\_\_  
Date Analyzed: 02/14/19  
Instrument: Yoda  
Initial Cal. Date: 11/28/18  
Data File: 1128Y126.D

		Compound	MEAN	CCRF	%D	%Drift
1	I	1,4-dichlorobenzene-D4(IS)	ISTD			I
2	TM	2-(2-Methoxyethoxy)ethanol	0.2402	0.2105	12	TM
3	I	Napthalene-D8(IS)	ISTD			I
4	I	Acenaphthene-D10(IS)	ISTD			I
5	I	Phenanthrene-D10(IS)	ISTD			I
6	I	Chrysene-D12(IS)	ISTD			I
7	I	Perylene-D12(IS)	ISTD			I
8						
9						
10						
11						
12						
13						
14						
15						
16						
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37						
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39						
40						

Average

12.0

Data File : M:\YODA\DATA\Y181128M\1128Y126.D Vial: 26  
 Acq On : 14 Feb 19 17:48 Operator: MA  
 Sample : 500ug/ml MEE 12/19/18 Inst : Yoda  
 Misc : soil Multiplr: 1.00

Quant Time: Feb 15 6:17 2019 Quant Results File: YMEE1128.RES

Quant Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Fri Feb 15 06:17:35 2019  
 Response via : Initial Calibration  
 DataAcq Meth : GED

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.19	152	456011	40.00000	ppb	0.00
3) Napthalene-D8 (IS)	6.61	136	1859372	40.00000	ppb	0.00
4) Acenaphthene-D10 (IS)	8.62	164	970630	40.00000	ppb	0.00
5) Phenanthrene-D10 (IS)	10.36	188	1851316	40.00000	ppb	0.00
6) Chrysene-D12 (IS)	13.44	240	1622521	40.00000	ppb	0.00
7) Perylene-D12 (IS)	15.20	264	1425577	40.00000	ppb	-0.20

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) 2-(2-Methoxyethoxy)ethanol	4.40	45	1200093	438.19651	ppb	100

Quantitation Report

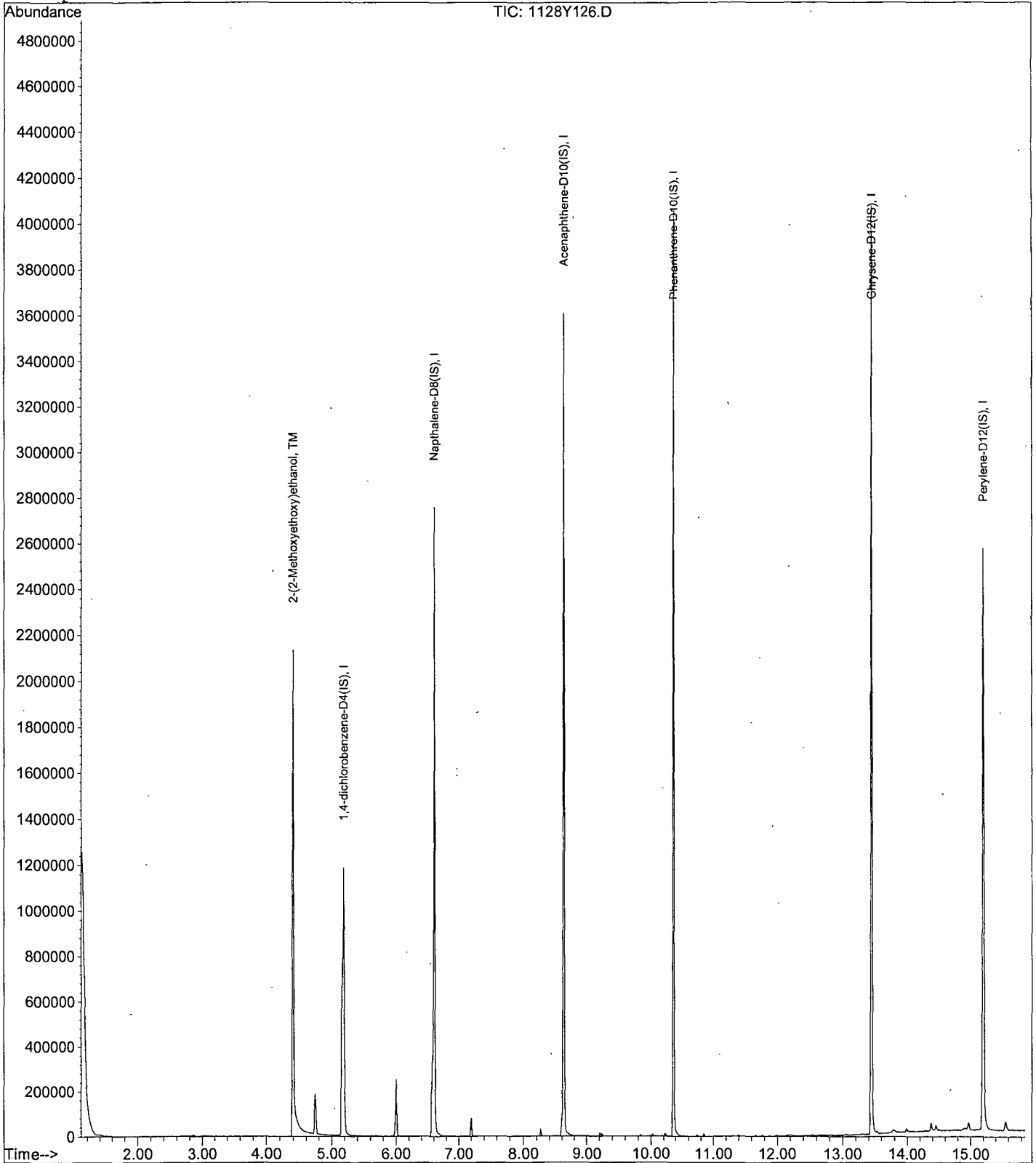
Data File : M:\YODA\DATA\Y181128M\1128Y126.D  
Acq On : 14 Feb 19 17:48  
Sample : 500ug/ml MEE 12/19/18  
Misc : soil

Vial: 26  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Feb 15 6:17 2019

Quant Results File: YMEE1128.RES

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Fri Feb 15 06:17:35 2019  
Response via : Initial Calibration



**ORGANICS**  
**Raw Data**

Data File : M:\YODA\DATA\Y181128M\1128Y123.D Vial: 23  
 Acq On : 14 Feb 19 16:37 Operator: MA  
 Sample : AZ86200W18 2/500 Inst : Yoda  
 Misc : soil Multiplr: 1.00

Quant Time: Feb 14 17:21 2019 Quant Results File: YMEE1128.RES

Quant Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Thu Feb 14 13:22:16 2019  
 Response via : Initial Calibration  
 DataAcq Meth : GED

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.20	152	1006793	40.0000	ppb	0.01
3) Napthalene-D8 (IS)	6.61	136	4173649	40.0000	ppb	0.00
4) Acenaphthene-D10 (IS)	8.62	164	2190023	40.0000	ppb	0.00
5) Phenanthrene-D10 (IS)	10.36	188	4155470	40.0000	ppb	0.00
6) Chrysene-D12 (IS)	13.45	240	3718899	40.0000	ppb	0.00
7) Perylene-D12 (IS)	15.21	264	3428861	40.0000	ppb	-0.19

System Monitoring Compounds

Target Compounds Qvalue



Quantitation Report

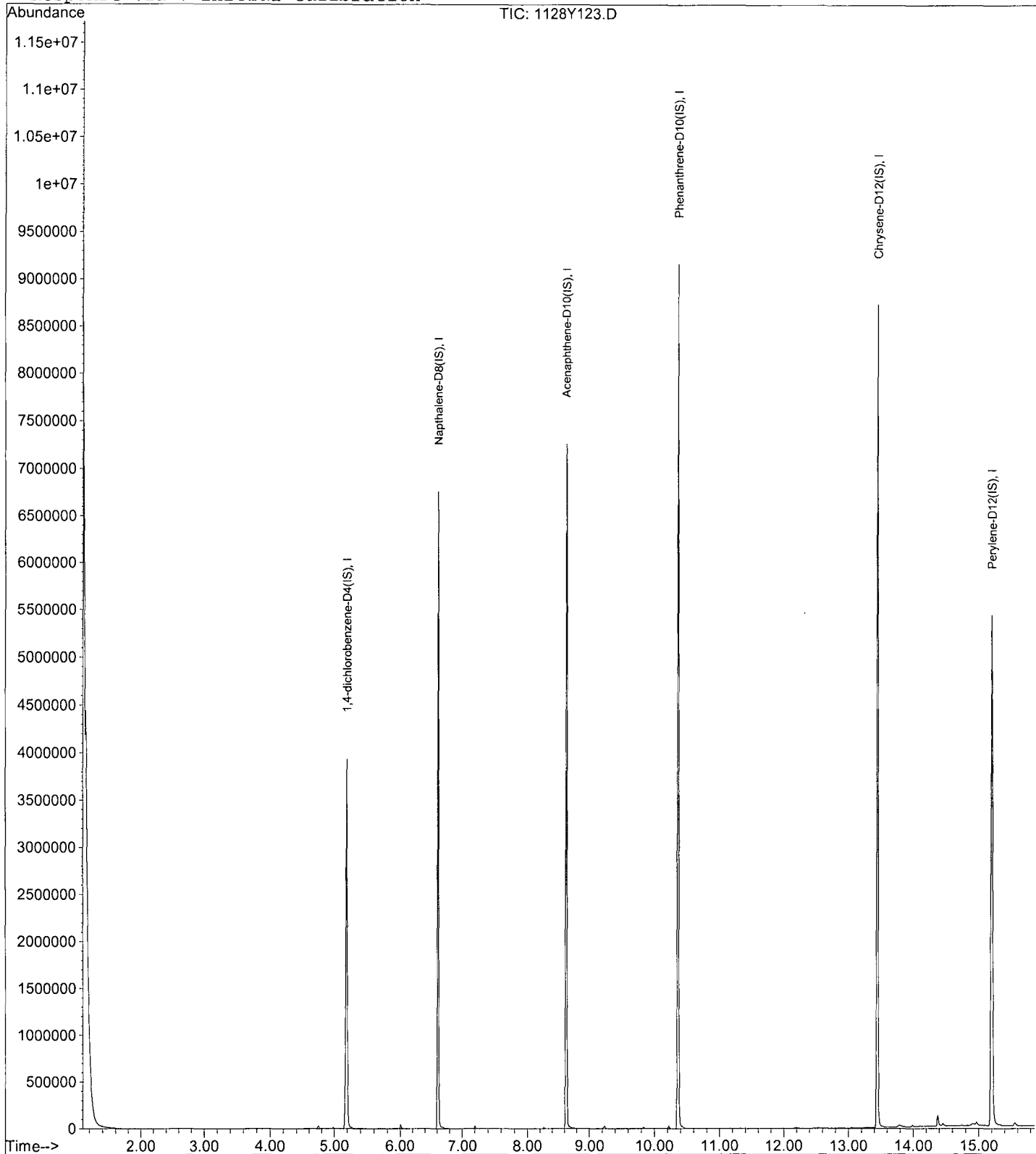
Data File : M:\YODA\DATA\Y181128M\1128Y123.D  
Acq On : 14 Feb 19 16:37  
Sample : AZ86200W18 2/500  
Misc : soil

Vial: 23  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Feb 14 17:21 2019

Quant Results File: YMEE1128.RES

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Fri Feb 15 06:17:35 2019  
Response via : Initial Calibration



Data File : M:\YODA\DATA\Y181128M\1128Y118.D Vial: 18  
 Acq On : 14 Feb 19 13:46 Operator: MA  
 Sample : 190213A Blk 2/500 Inst : Yoda  
 Misc : soil Multiplr: 1.00

Quant Time: Feb 14 14:00 2019 Quant Results File: YMEE1128.RES

Quant Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Thu Feb 14 13:22:16 2019  
 Response via : Initial Calibration  
 DataAcq Meth : GED

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.19	152	529059	40.0000	ppb	0.00
3) Napthalene-D8 (IS)	6.61	136	2121646	40.0000	ppb	0.00
4) Acenaphthene-D10 (IS)	8.62	164	1107176	40.0000	ppb	0.00
5) Phenanthrene-D10 (IS)	10.36	188	2126021	40.0000	ppb	0.00
6) Chrysene-D12 (IS)	13.45	240	1844396	40.0000	ppb	0.00
7) Perylene-D12 (IS)	15.19	264	1773114	40.0000	ppb	-0.20

System Monitoring Compounds

Target Compounds Qvalue

Quantitation Report

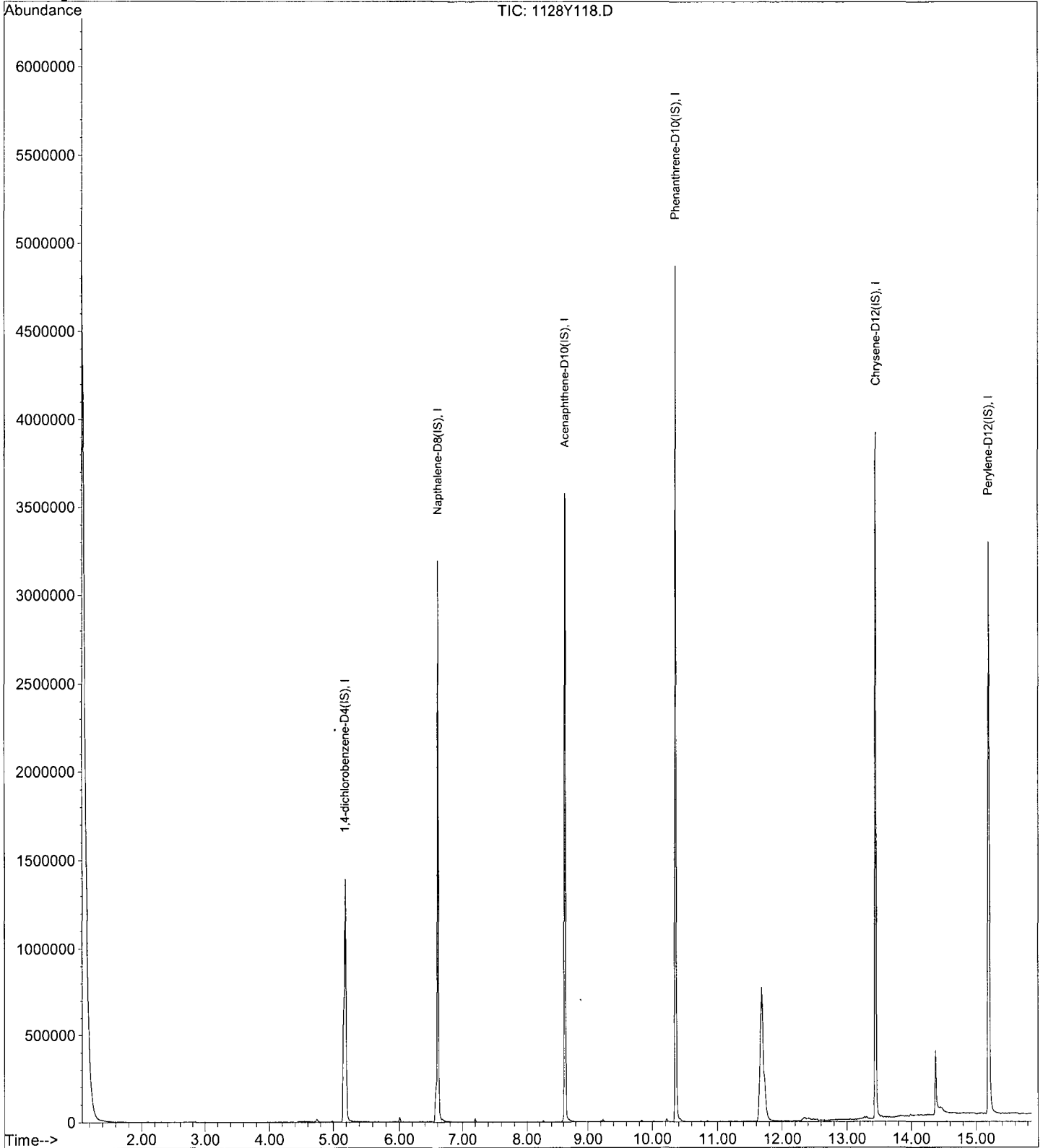
Data File : M:\YODA\DATA\Y181128M\1128Y118.D  
Acq On : 14 Feb 19 13:46  
Sample : 190213A Blk 2/500  
Misc : soil

Vial: 18  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Feb 14 14:00 2019

Quant Results File: YMEE1128.RES

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Fri Feb 15 06:17:35 2019  
Response via : Initial Calibration



Data File : M:\YODA\DATA\Y181128M\1128Y124.D Vial: 24  
 Acq On : 14 Feb 19 17:00 Operator: MA  
 Sample : 190213A LCS-1 2/500 Inst : Yoda  
 Misc : soil Multiplr: 1.00

Quant Time: Feb 15 6:19 2019 Quant Results File: YMEE1128.RES

Quant Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Fri Feb 15 06:17:35 2019  
 Response via : Initial Calibration  
 DataAcq Meth : GED

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.19	152	327005	40.0000	ppb	0.00
3) Napthalene-D8 (IS)	6.61	136	1321352	40.0000	ppb	0.00
4) Acenaphthene-D10 (IS)	8.62	164	688702	40.0000	ppb	0.00
5) Phenanthrene-D10 (IS)	10.36	188	1309723	40.0000	ppb	0.00
6) Chrysene-D12 (IS)	13.44	240	1121987	40.0000	ppb	0.00
7) Perylene-D12 (IS)	15.19	264	1125403	40.0000	ppb	-0.21

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) 2-(2-Methoxyethoxy) ethanol	4.48	45	97594m	49.6933	ppb	100

Quantitation Report

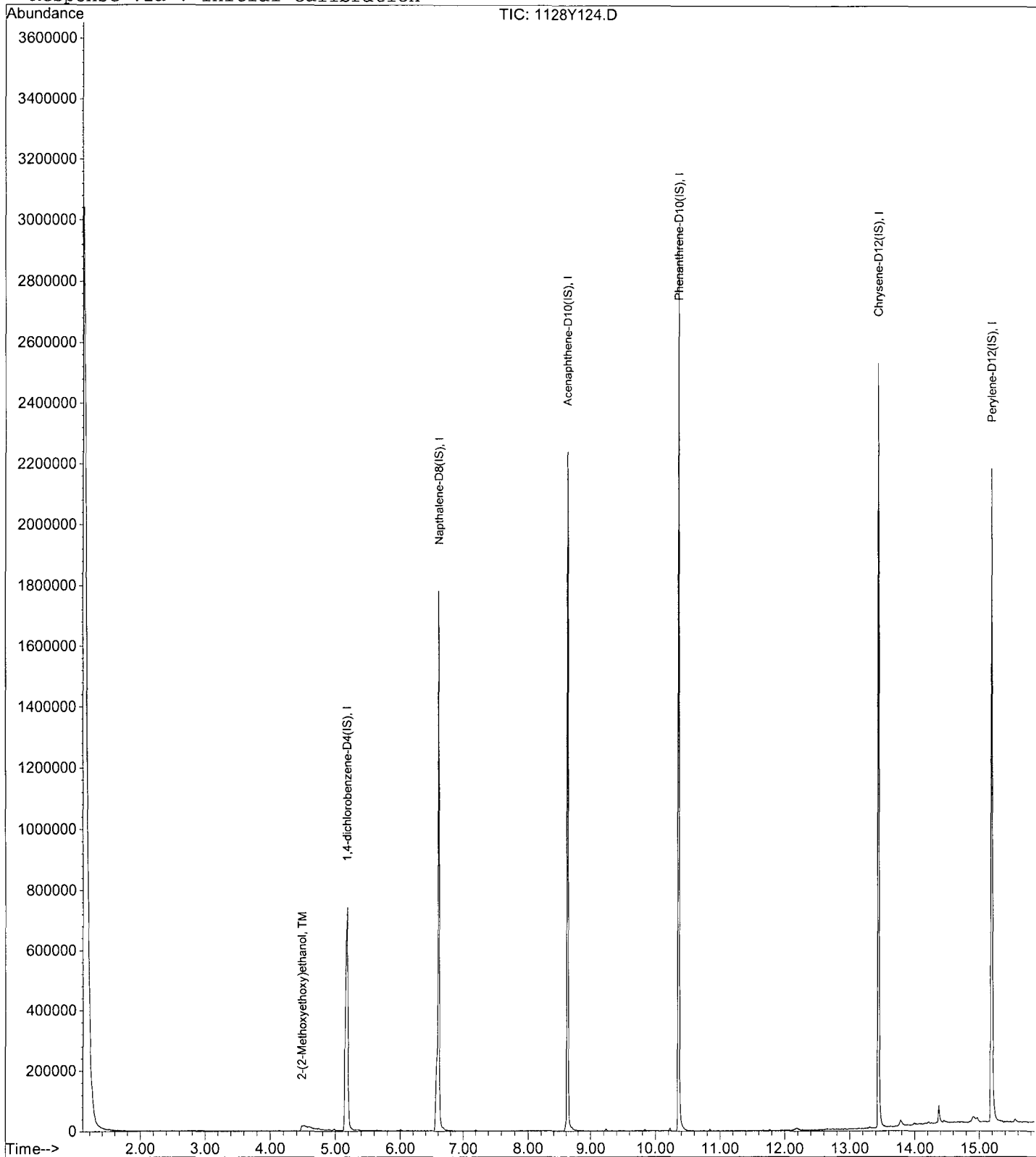
Data File : M:\YODA\DATA\Y181128M\1128Y124.D  
Acq On : 14 Feb 19 17:00  
Sample : 190213A LCS-1 2/500  
Misc : soil

Vial: 24  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Feb 15 6:19 2019

Quant Results File: YMEE1128.RES

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Fri Feb 15 06:17:35 2019  
Response via : Initial Calibration

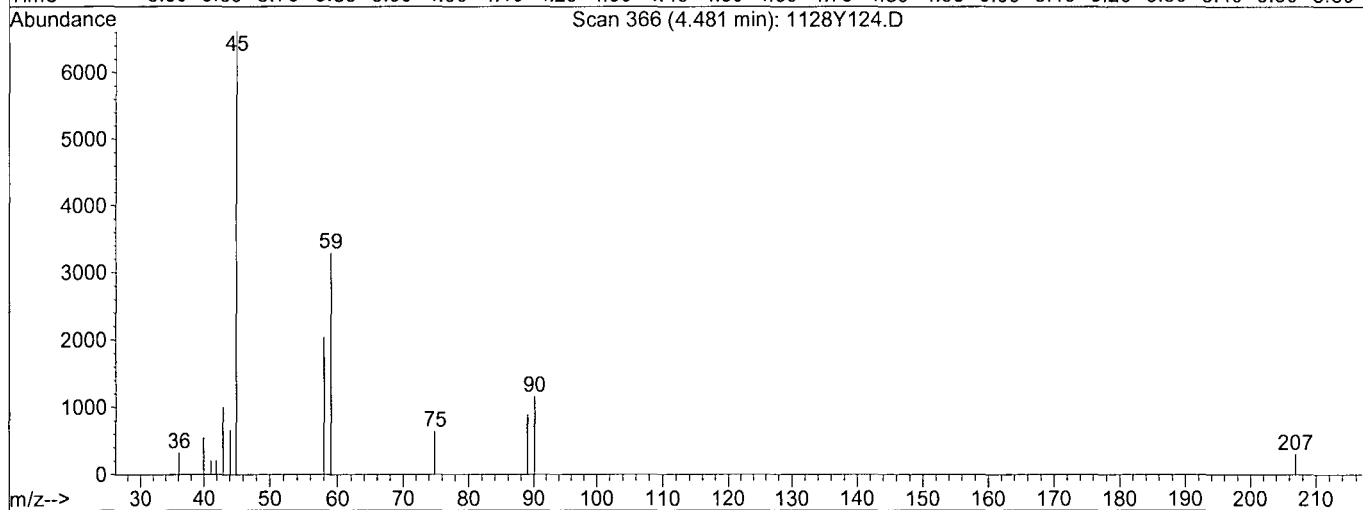
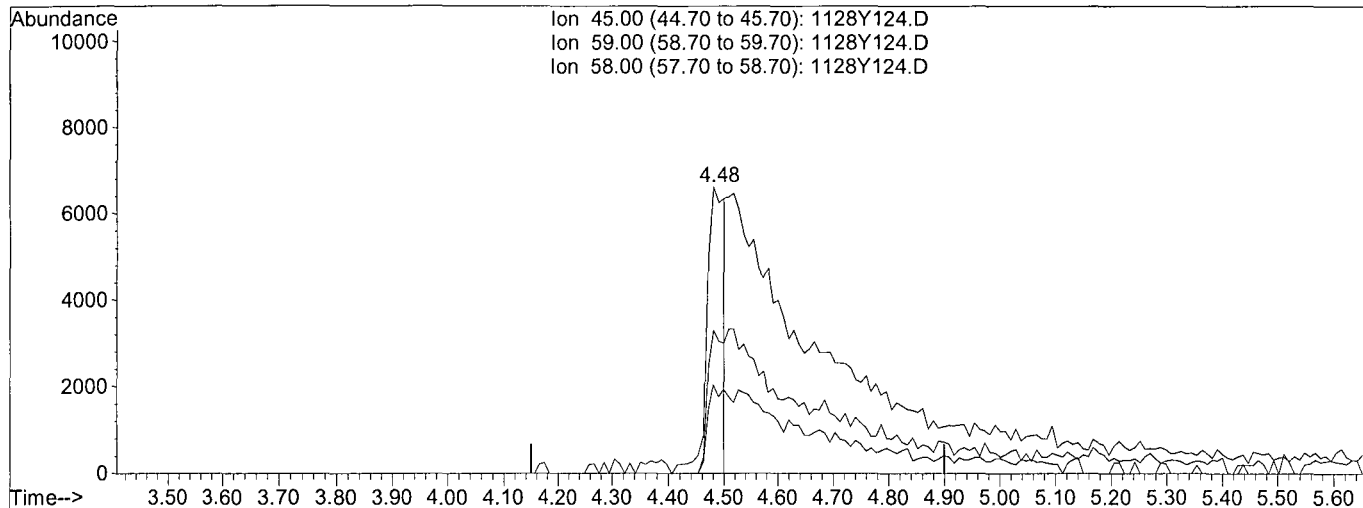


Quantitation Report

Data File : M:\YODA\DATA\Y181128M\1128Y124.D  
 Acq On : 14 Feb 19 17:00  
 Sample : 190213A LCS-1 2/500  
 Misc : soil  
 Quant Time: Feb 15 6:19 2019

Vial: 24  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00  
 Quant Results File: temp.res

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Fri Feb 15 06:17:35 2019  
 Response via : Multiple Level Calibration



TIC: 1128Y124.D

(2) 2-(2-Methoxyethoxy)ethanol (TM)

4.48min 7.5176ppb

response 14764

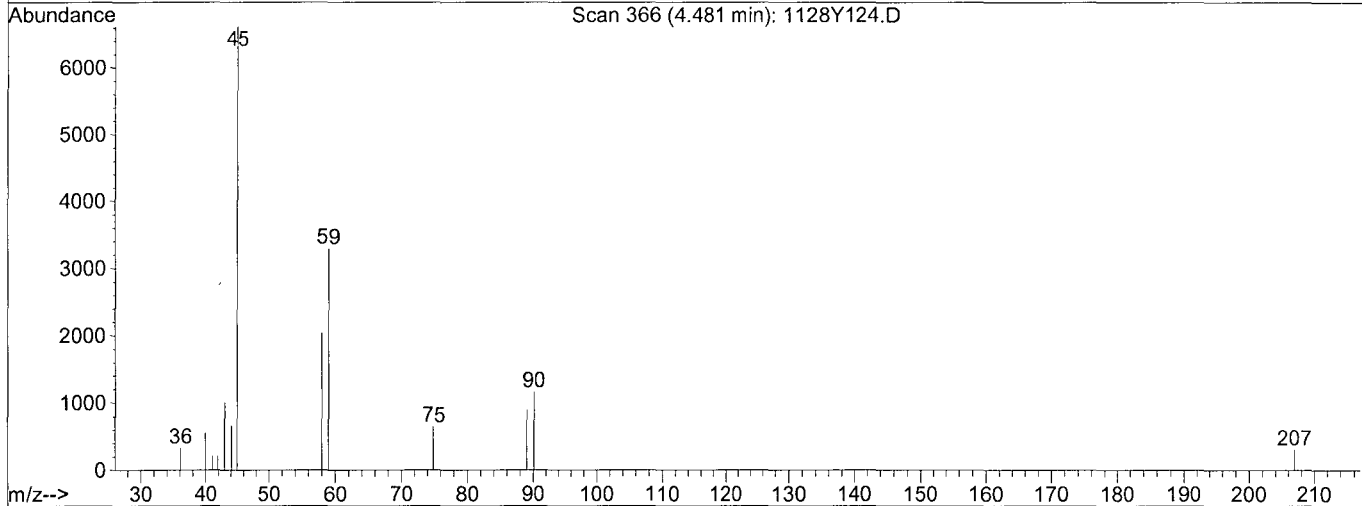
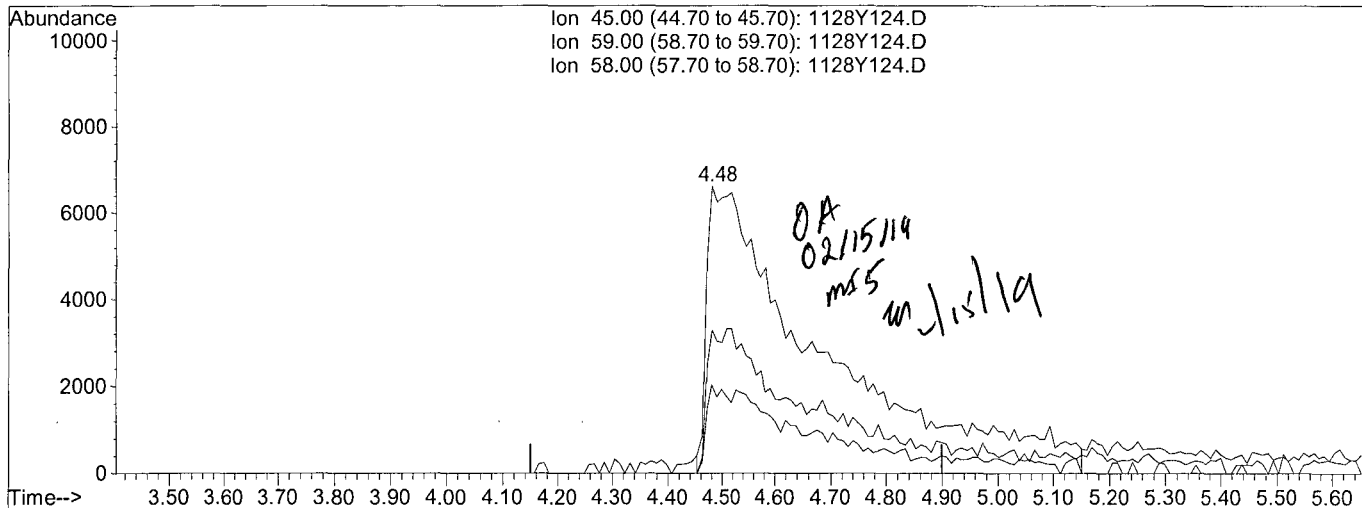
Ion	Exp%	Act%
45.00	100	100
59.00	50.10	49.69
58.00	30.70	30.73
0.00	0.00	0.00

Quantitation Report

Data File : M:\YODA\DATA\Y181128M\1128Y124.D  
 Acq On : 14 Feb 19 17:00  
 Sample : 190213A LCS-1 2/500  
 Misc : soil  
 Quant Time: Feb 15 6:19 2019

Vial: 24  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00  
 Quant Results File: temp.res

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Fri Feb 15 06:17:35 2019  
 Response via : Multiple Level Calibration



TIC: 1128Y124.D

(2) 2-(2-Methoxyethoxy)ethanol (TM)

4.48min 49.6933ppb m

response 97594

Ion	Exp%	Act%
45.00	100	100
59.00	50.10	49.69
58.00	30.70	30.73
0.00	0.00	0.00

Data File : M:\YODA\DATA\Y181128M\1128Y125.D Vial: 25  
 Acq On : 14 Feb 19 17:24 Operator: MA  
 Sample : 190213A LCSD-1 2/500 Inst : Yoda  
 Misc : soil Multiplr: 1.00

Quant Time: Feb 15 6:19 2019 Quant Results File: YMEE1128.RES

Quant Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Fri Feb 15 06:17:35 2019  
 Response via : Initial Calibration  
 DataAcq Meth : GED

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-dichlorobenzene-D4 (IS)	5.19	152	317374	40.0000	ppb	0.00
3) Napthalene-D8 (IS)	6.61	136	1462445	40.0000	ppb	0.00
4) Acenaphthene-D10 (IS)	8.62	164	786053	40.0000	ppb	0.00
5) Phenanthrene-D10 (IS)	10.36	188	1495972	40.0000	ppb	0.00
6) Chrysene-D12 (IS)	13.44	240	1092258	40.0000	ppb	0.00
7) Perylene-D12 (IS)	15.20	264	1018875	40.0000	ppb	-0.20

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) 2-(2-Methoxyethoxy)ethanol	4.52	45	103471m	54.2846	ppb	0



Quantitation Report

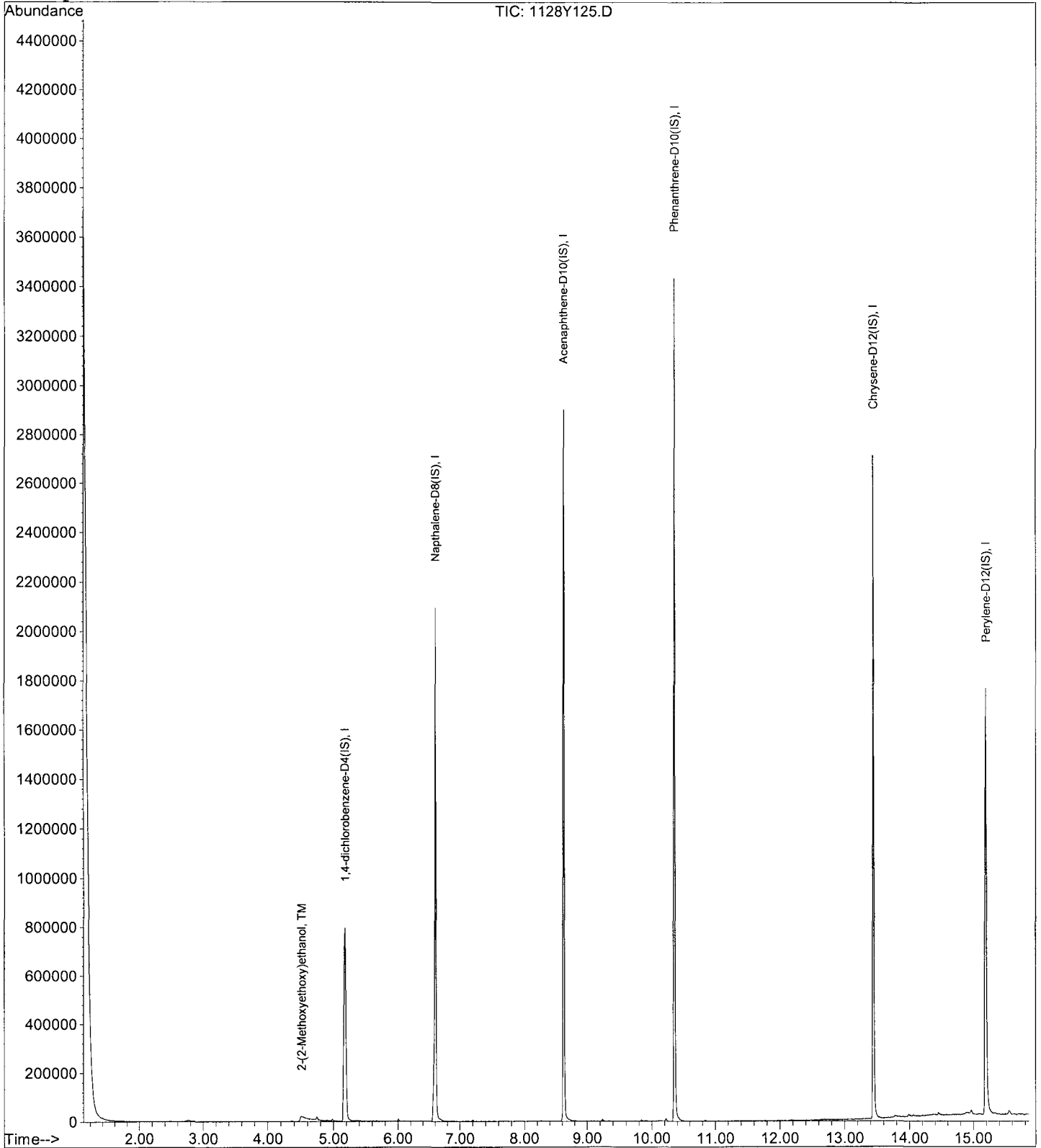
Data File : M:\YODA\DATA\Y181128M\1128Y125.D  
Acq On : 14 Feb 19 17:24  
Sample : 190213A LCSD-1 2/500  
Misc : soil

Vial: 25  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00

Quant Time: Feb 15 6:19 2019

Quant Results File: YMEE1128.RES

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
Title : EPA 8270C  
Last Update : Fri Feb 15 06:17:35 2019  
Response via : Initial Calibration

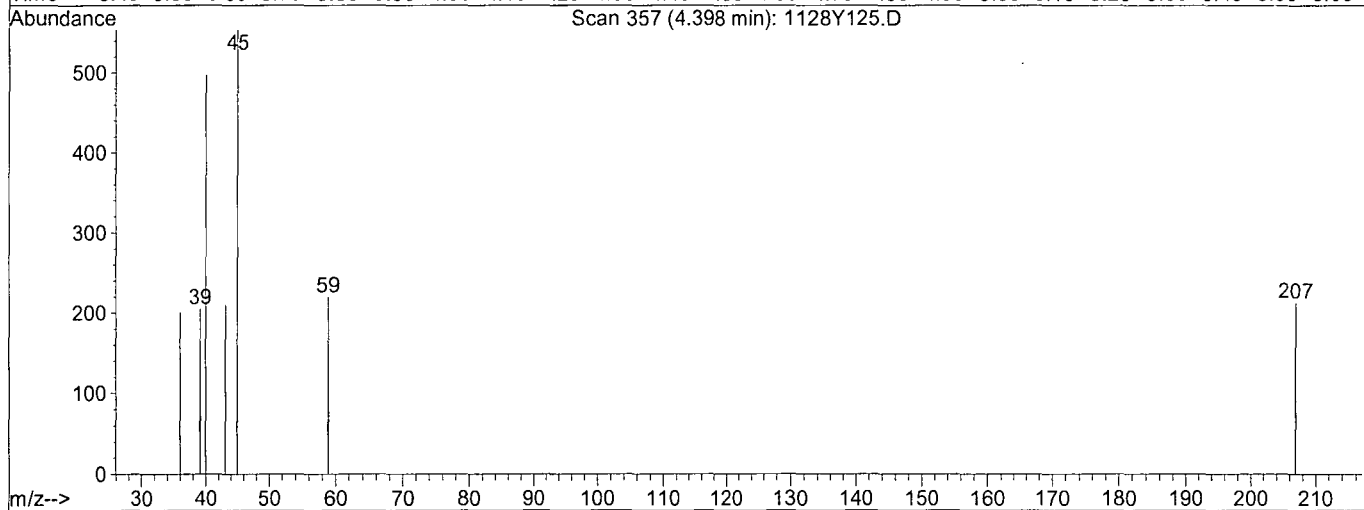
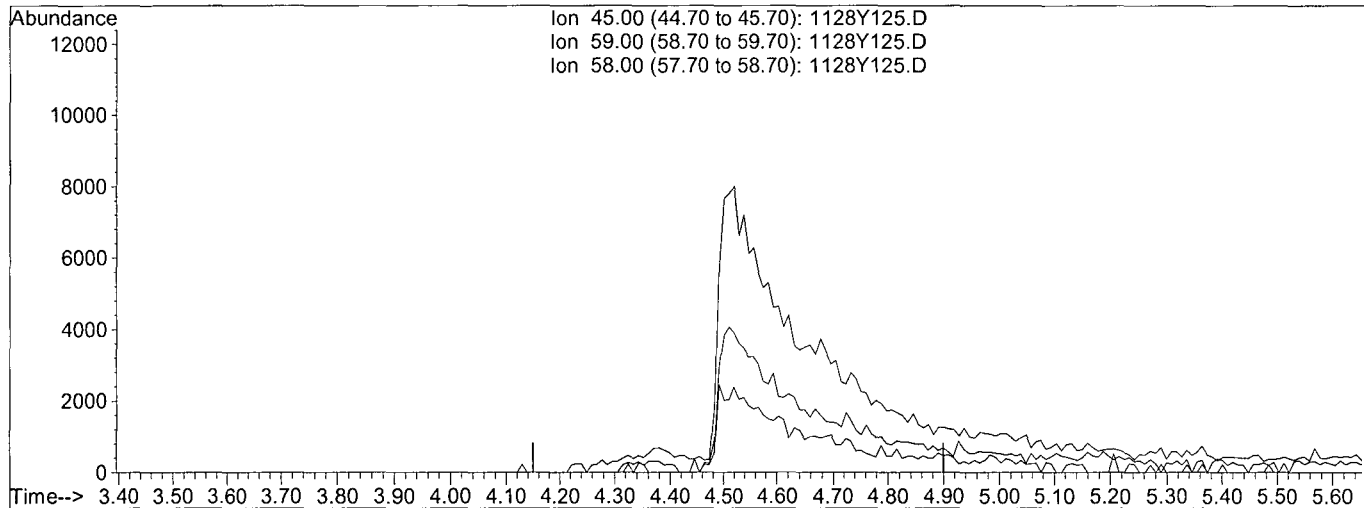


Quantitation Report

Data File : M:\YODA\DATA\Y181128M\1128Y125.D  
 Acq On : 14 Feb 19 17:24  
 Sample : 190213A LCSD-1 2/500  
 Misc : soil  
 Quant Time: Feb 15 6:18 2019

Vial: 25  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00  
 Quant Results File: temp.res

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Fri Feb 15 06:17:35 2019  
 Response via : Multiple Level Calibration



TIC: 1128Y125.D

(2) 2-(2-Methoxyethoxy)ethanol (TM)

4.40min 0.0000ppb

response 0

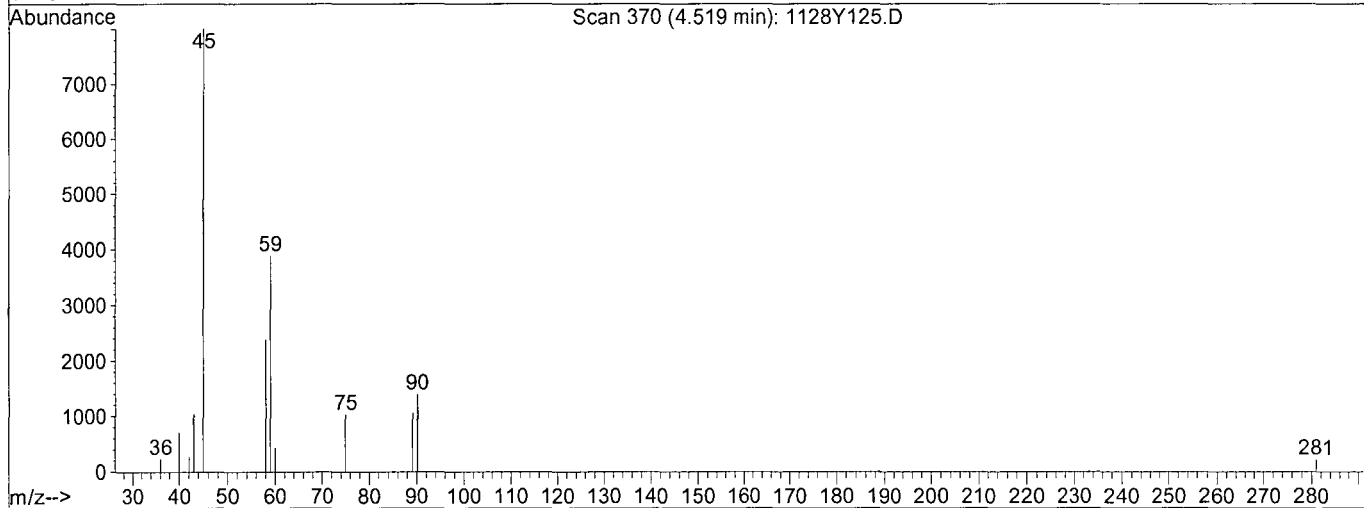
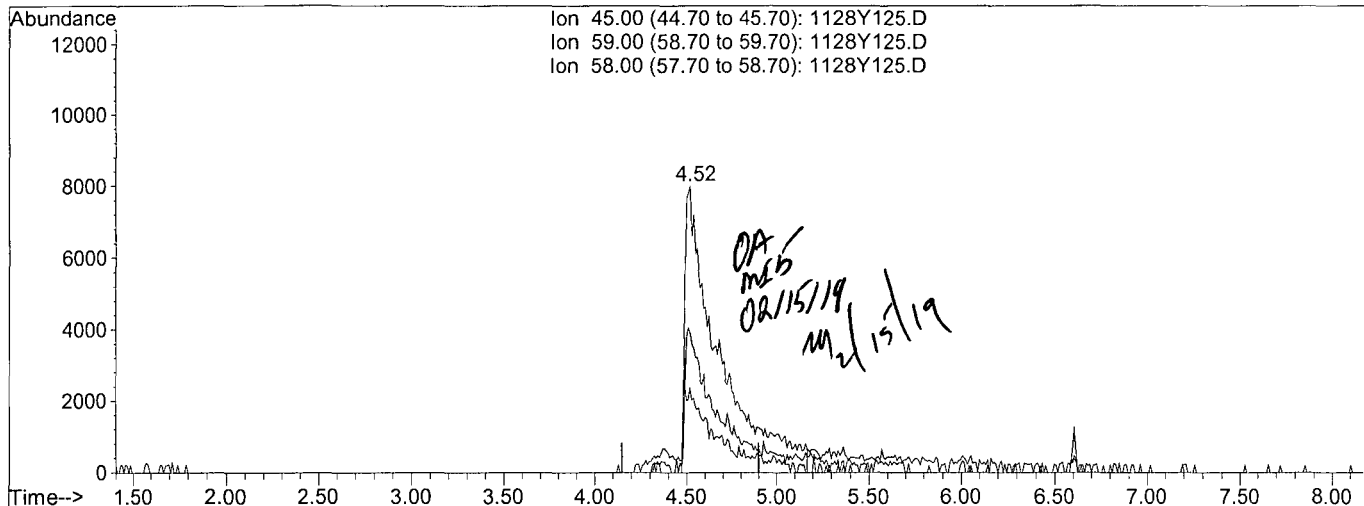
Ion	Exp%	Act%
45.00	100	0.00
59.00	50.10	0.00#
58.00	30.70	0.00#
0.00	0.00	0.00

Quantitation Report

Data File : M:\YODA\DATA\Y181128M\1128Y125.D  
 Acq On : 14 Feb 19 17:24  
 Sample : 190213A LCSD-1 2/500  
 Misc : soil  
 Quant Time: Feb 15 6:19 2019

Vial: 25  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00  
 Quant Results File: temp.res

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C  
 Last Update : Fri Feb 15 06:17:35 2019  
 Response via : Multiple Level Calibration



TIC: 1128Y125.D

(2) 2-(2-Methoxyethoxy)ethanol (TM)

4.52min 54.2846ppb m

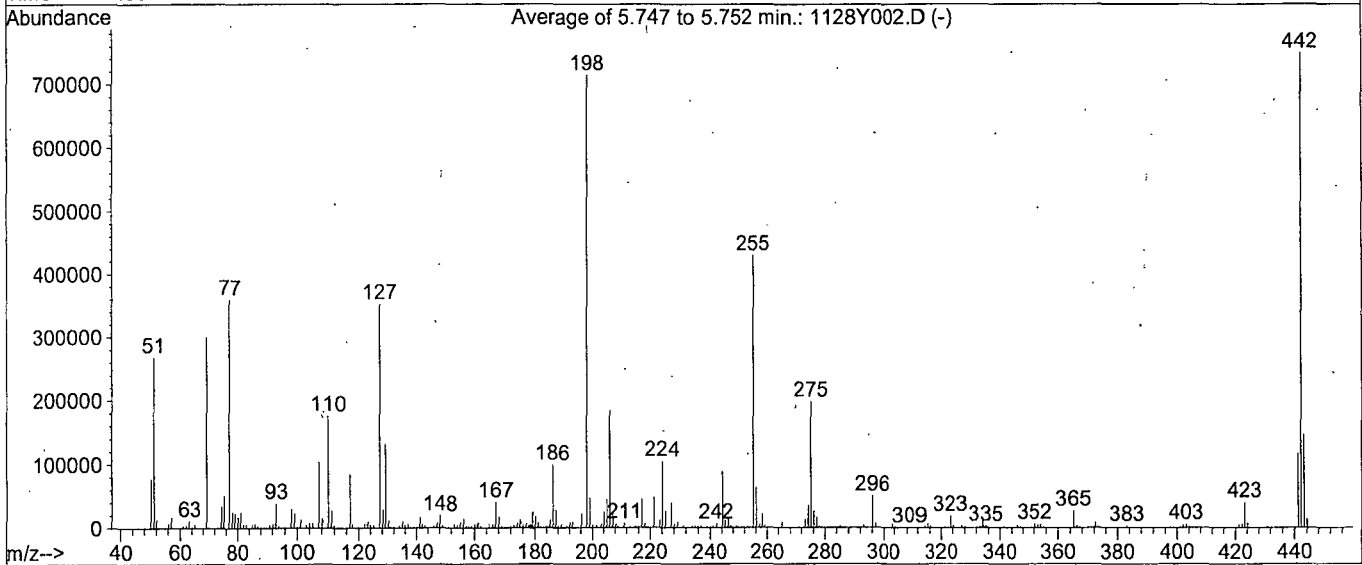
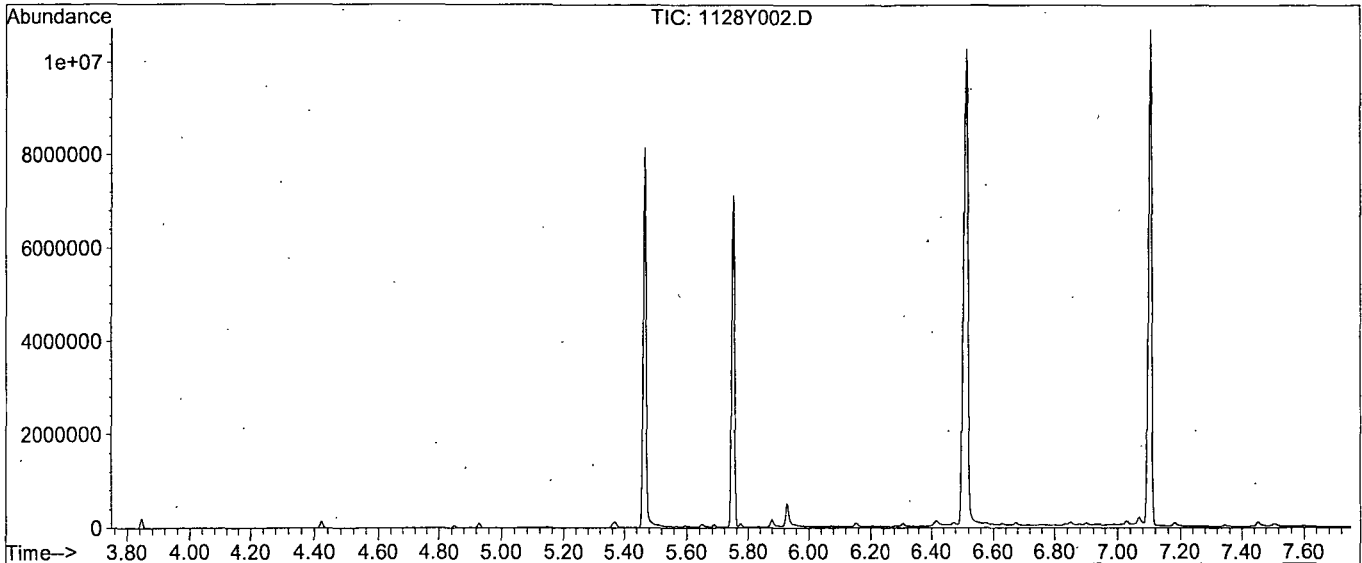
response 103471

Ion	Exp%	Act%
45.00	100	100
59.00	50.10	48.62
58.00	30.70	29.69
0.00	0.00	0.00

Data File : M:\YODA\DATA\Y181128M\1128Y002.D  
 Acq On : 28 Nov 18 7:30  
 Sample : SV Tune 03/07/18  
 Misc :

Vial: 2  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C



AutoFind: Scans 865, 866, 867; Background Corrected with Scan 856

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	37.6	268391	PASS
68	69	0.00	2	0.0	0	PASS
70	69	0.00	2	0.4	1292	PASS
127	198	10	80	49.3	352384	PASS
197	198	0.00	2	0.0	0	PASS
198	198	100	100	100.0	714581	PASS
199	198	5	9	6.6	46827	PASS
275	198	10	60	27.6	197547	PASS
365	198	1	100	3.7	26576	PASS
441	442	0.01	24	15.6	116851	PASS
442	198	50	150	104.9	749675	PASS
443	442	15	24	19.5	145880	PASS

Data File Name: 1128Y002.D  
Data File Path: M:\YODA\DATA\Y181128M\  
Operator: MA  
Date Acquired: 28 Nov 2018 07:30  
Method File: DFTPP2.M  
Sample Name: SV Tune 03/07/18  
Vial Number: 2  
Instrument Name: Yoda

#	Name	Ret Time	Target Response
1)	DDT	7.10	75896800
2)	DDD	6.90	747340
3)	DDE	7.03	414795

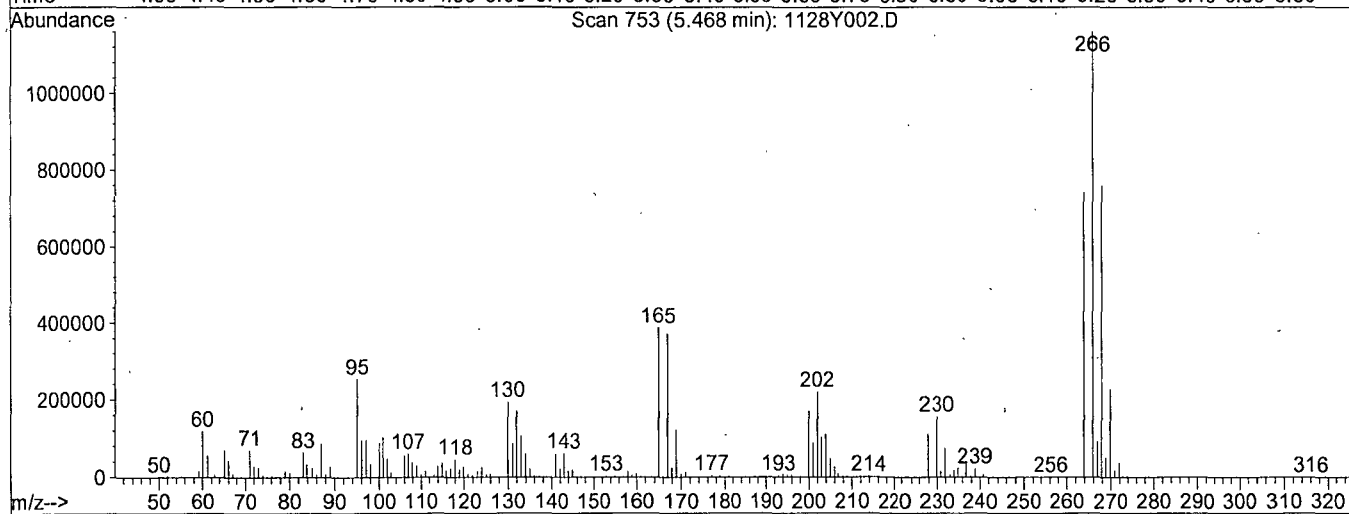
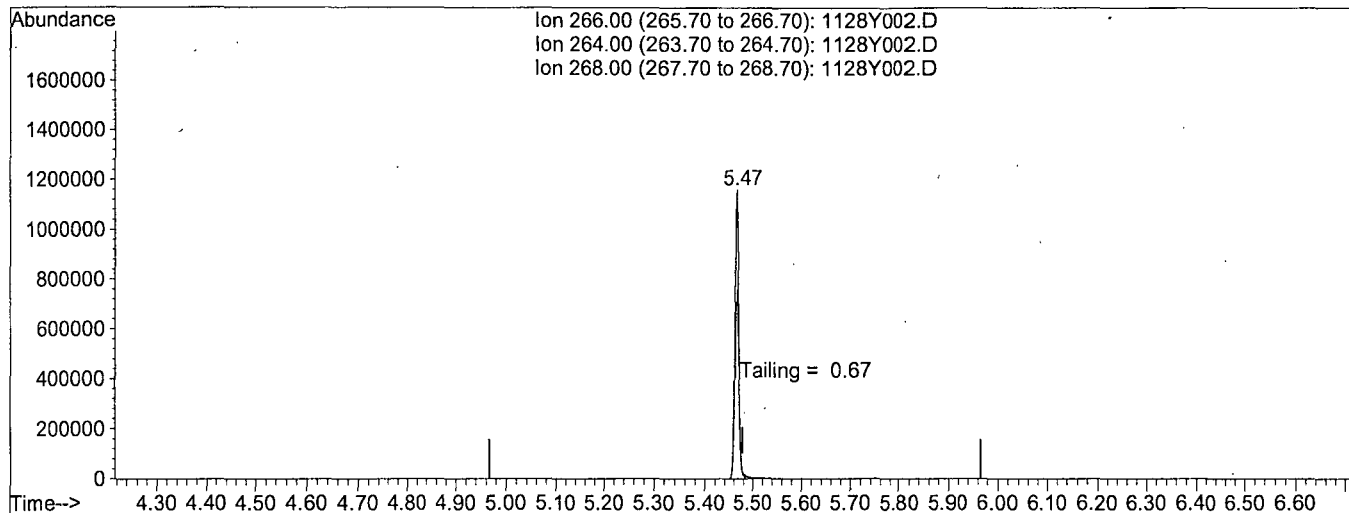
Breakdown 1.51

Quantitation Report

Data File : M:\YODA\DATA\Y181128M\1128Y002.D  
Acq On : 28 Nov 18 7:30  
Sample : SV Tune 03/07/18  
Misc :  
Quant Time: Nov 28 10:24 2018

Vial: 2  
Operator: MA  
Inst : Yoda  
Multiplr: 1.00  
Quant Results File: temp.res

Method : M:\YODA\DATA\Y181128M\DFTPP2.M (Chemstation Integrator)  
Title :  
Last Update : Wed Nov 28 10:24:36 2018  
Response via : Single Level Calibration



TIC: 1128Y002.D

(5) Pentachlorophenol

5.47min 0.0000

response 7009891

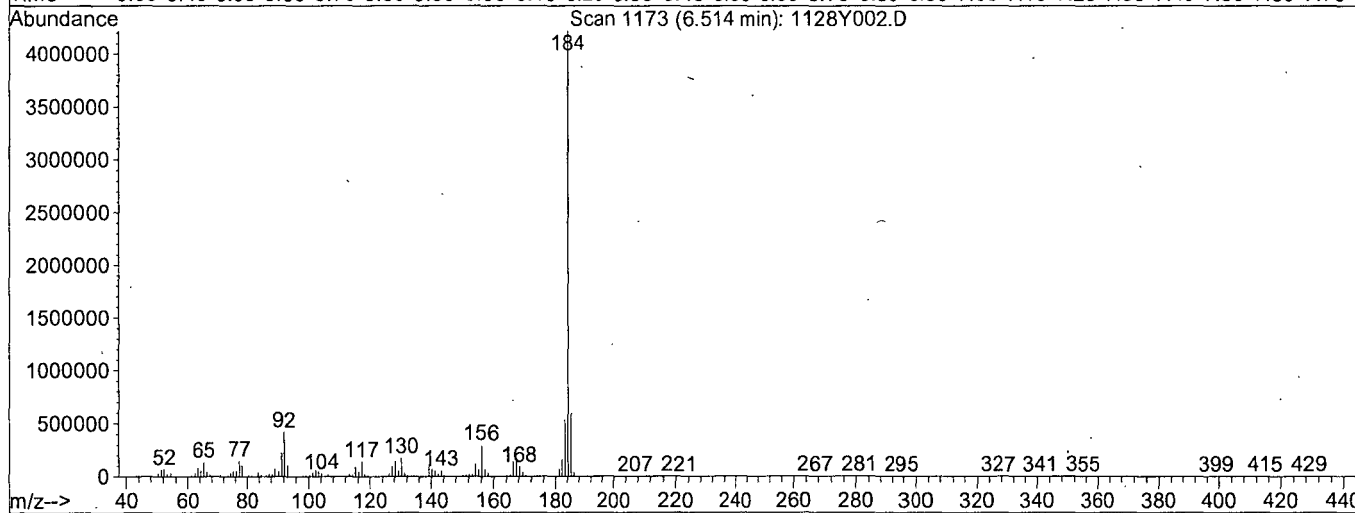
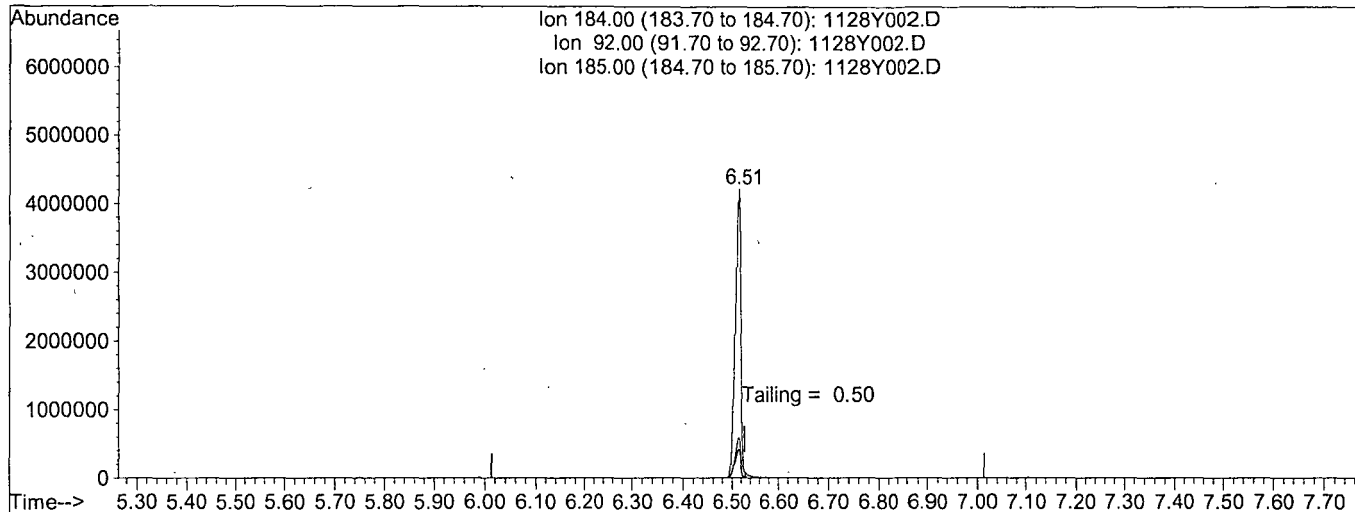
Ion	Exp%	Act%
266.00	100	100
264.00	63.80	61.59
268.00	65.50	63.39
0.00	0.00	0.00

Quantitation Report

Data File : M:\YODA\DATA\Y181128M\1128Y002.D  
 Acq On : 28 Nov 18 7:30  
 Sample : SV Tune 03/07/18  
 Misc :  
 Quant Time: Nov 28 10:24 2018

Vial: 2  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00  
 Quant Results File: temp.res

Method : M:\YODA\DATA\Y181128M\DFTPP2.M (Chemstation Integrator)  
 Title :  
 Last Update : Wed Nov 28 10:24:36 2018  
 Response via : Single Level Calibration



TIC: 1128Y002.D

(6) Benzidine

6.52min 0.0000

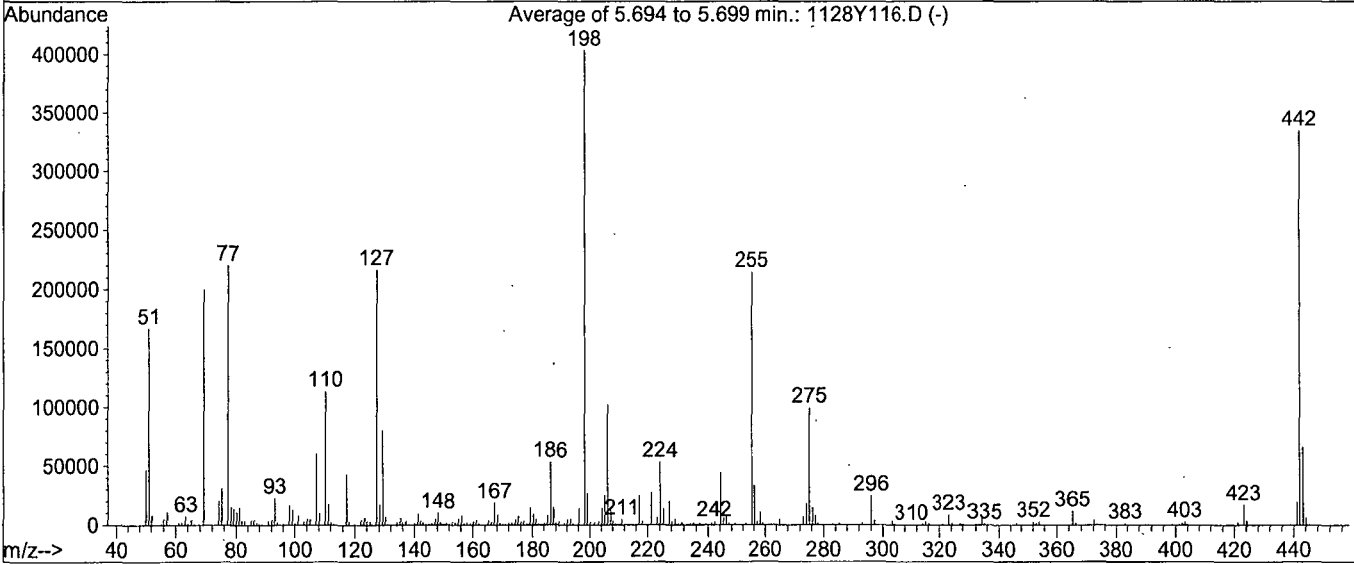
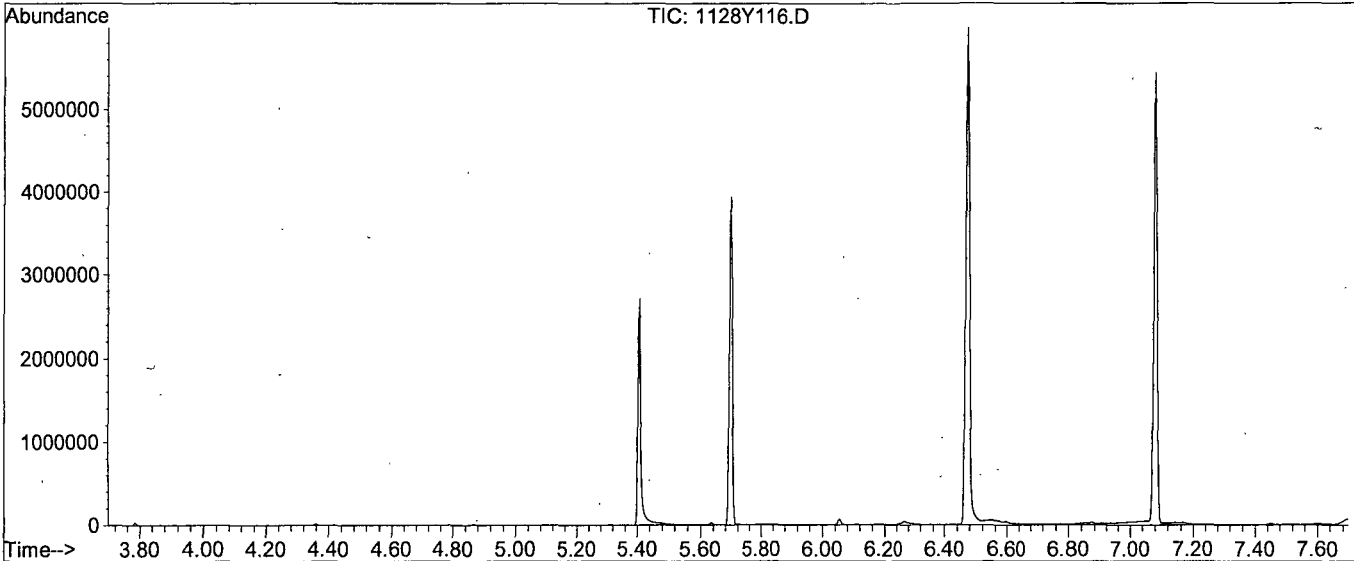
response 35701269

Ion	Exp%	Act%
184.00	100	100
92.00	9.90	10.15
185.00	14.00	14.16
0.00	0.00	0.00

Data File : M:\YODA\DATA\Y181128M\1128Y116.D  
 Acq On : 14 Feb 19 8:44  
 Sample : SV TUNE 11/10/18  
 Misc : soil

Vial: 16  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00

Method : M:\YODA\DATA\Y181128M\YMEE1128.M (RTE Integrator)  
 Title : EPA 8270C



AutoFind: Scans 844, 845, 846; Background Corrected with Scan 836

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	41.4	167061	PASS
68	69	0.00	2	0.0	0	PASS
70	69	0.00	2	0.4	810	PASS
127	198	10	80	53.6	216384	PASS
197	198	0.00	2	0.0	0	PASS
198	198	100	100	100.0	403755	PASS
199	198	5	9	6.7	26896	PASS
275	198	10	60	24.6	99464	PASS
365	198	1	100	2.9	11642	PASS
441	442	0.01	24	5.9	19605	PASS
442	198	50	150	82.9	334656	PASS
443	442	15	24	19.8	66104	PASS



Data File Name: 1128Y116.D  
Data File Path: M:\YODA\DATA\Y181128M\  
Operator: MA  
Date Acquired: 14 Feb 2019 08:44  
Method File: DFTPP2.M  
Sample Name: SV TUNE 11/10/18  
Vial Number: 16  
Instrument Name: Yoda

#	Name	Ret Time	Target Response
1)	DDT	7.06	40792500
2)	DDD	6.85	155482
3)	DDE	6.98	0

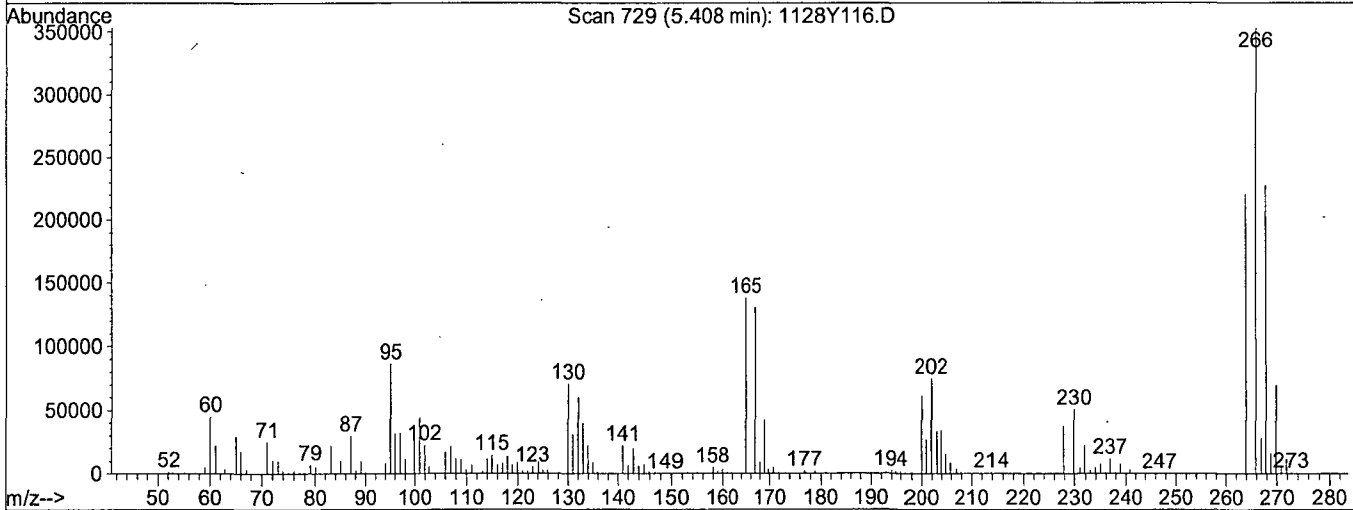
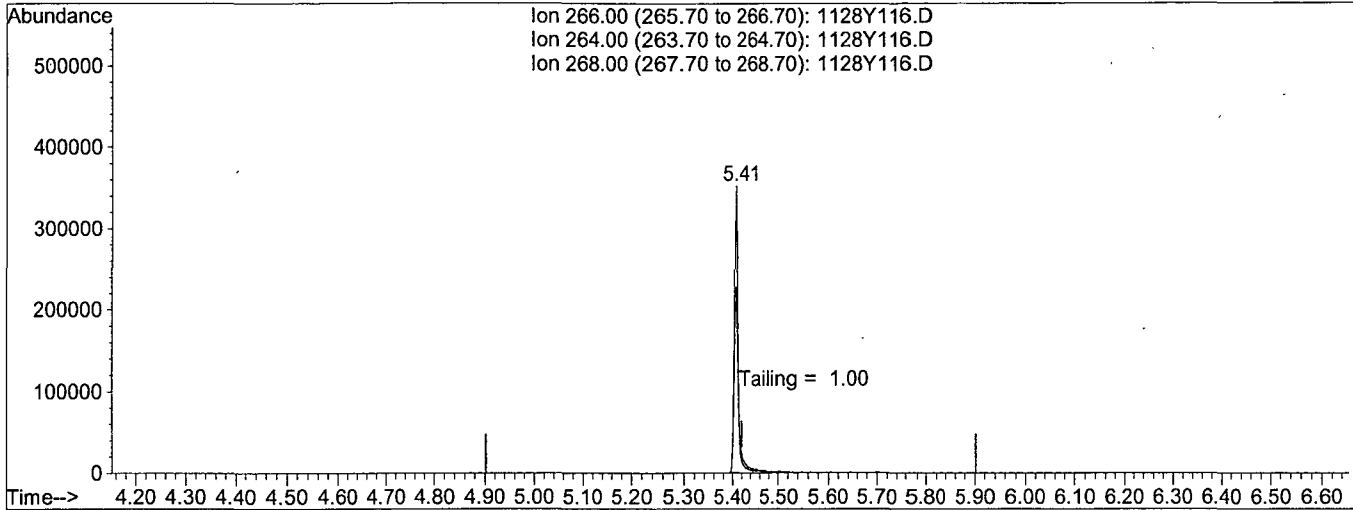
Breakdown 0.38

Quantitation Report

Data File : M:\YODA\DATA\Y181128M\1128Y116.D  
 Acq On : 14 Feb 19 8:44  
 Sample : SV TUNE 11/10/18  
 Misc : soil  
 Quant Time: Feb 14 10:32 2019

Vial: 16  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00  
 Quant Results File: temp.res

Method : M:\YODA\DATA\Y181128M\DFTPP2.M (Chemstation Integrator)  
 Title :  
 Last Update : Fri Feb 08 15:13:55 2019  
 Response via : Single Level Calibration



TIC: 1128Y116.D

(5) Pentachlorophenol

5.41min 0.0000

response 2180401

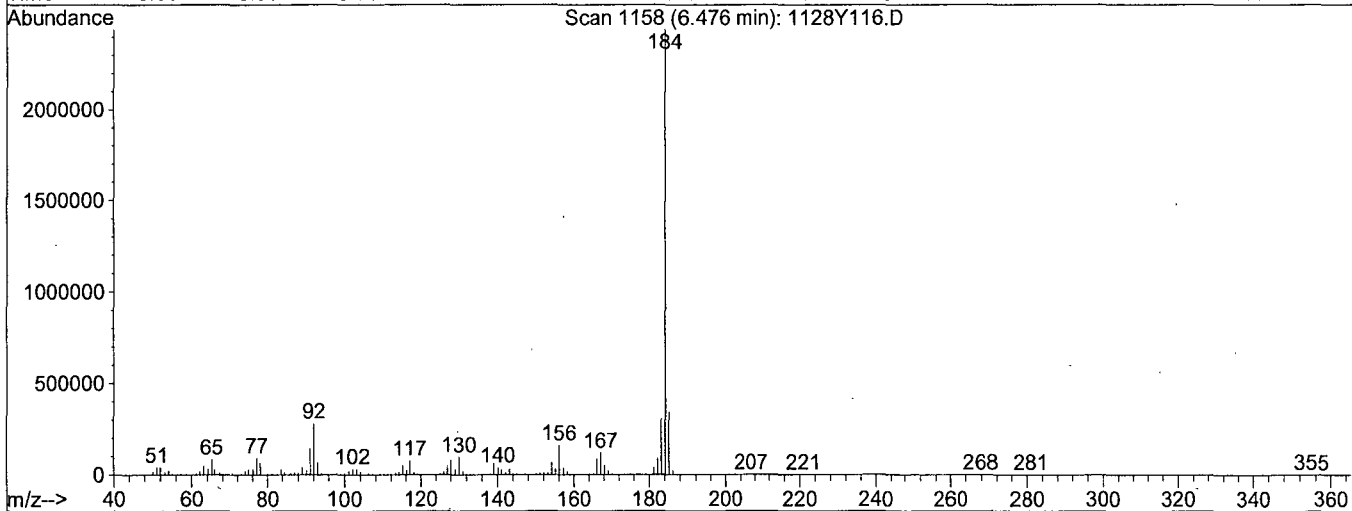
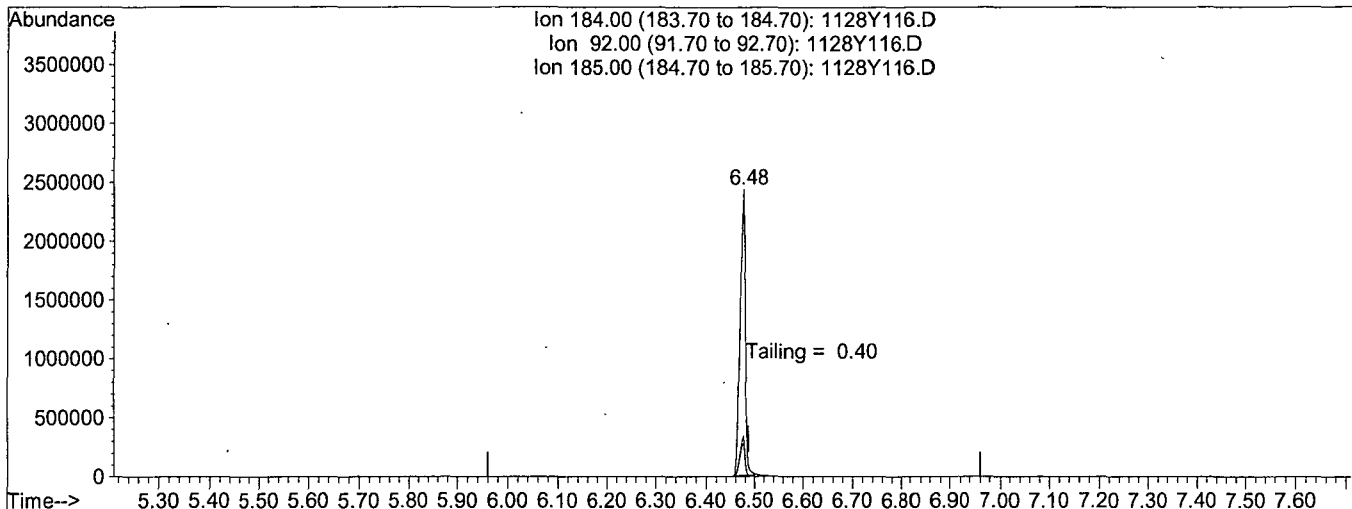
Ion	Exp%	Act%
266.00	100	100
264.00	62.90	62.56
268.00	63.40	67.92
0.00	0.00	0.00

Quantitation Report

Data File : M:\YODA\DATA\Y181128M\1128Y116.D  
 Acq On : 14 Feb 19 8:44  
 Sample : SV TUNE 11/10/18  
 Misc : soil  
 Quant Time: Feb 14 10:32 2019

Vial: 16  
 Operator: MA  
 Inst : Yoda  
 Multiplr: 1.00  
 Quant Results File: temp.res

Method : M:\YODA\DATA\Y181128M\DFTPP2.M (Chemstation Integrator)  
 Title :  
 Last Update : Fri Feb 08 15:13:55 2019  
 Response via : Single Level Calibration



TIC: 1128Y116.D

(6) Benzidine

6.48min 0.0000

response 18319828

Ion	Exp%	Act%
184.00	100	100
92.00	10.60	11.62
185.00	13.60	14.16
0.00	0.00	0.00

Name of  
Final  
Standard **Diethylene Glycol**

Prep'd By (Initials) **OA**

Prep Date **12/17/18**

Exp Date **02/28/19**

Initial Standard Information						Final Standard		
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Standard Conc (range)
Diethylene glycol monomethyl ether	AccuStandard	72273	2000 ug/mL	<b>21610100 7-37332 and 37333</b>	<b>02/28/19</b>	2.0 mL	4 mL	1000 ug/mL

Given to Extraction to do **MEE M STD Stock** (used for ICAL) Final concentration 2000ug/L  
 APPL re-certified diethylene glycol monomethyl ether lot 216101007-37330 to 37333 and extended the expiration date to 02/28/19 per verification with a second source from ChemService lot 7079100-39.

Name of Final Standard 2MEE Second Source Stock

Prep'd By (Initials) GA

Prep Date 08/03/18  
 Exp Date 08/03/19

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
Methoxyethanol-Neat	Chem Service	N-12404-1G	Neat 99.5%	7079100.-39417	08/03/19	0.1035g	10 mL	MC #56258	10320 ug/mL

Given to Extraction to do **MEE SS** (used for ICAL SS)  
 0.097ml were spiked in 500ml of water and extracted on 12/18/18. Final concentration is 2000ug/L

Name of Final Standard MEE CCV  
 Prep Date 12/19/18  
 Exp Date 11/06/19

Prep'd By (Initials) OA

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
MEE M STD	APPL		2000 ug/mL	12/17/18	12/17/19	50 uL	200uL	Methanol 150uL	500 ug/mL
SV Internal Standard	APPL	8270 I.S.	2000 ug/mL	11/29/18	11/06/19	4 uL	*	*	*

Methoxyethoxyethanol-Neat (MEE) SS Stock: 5/22/17-R.H. ex: 08/04/19						
STANDARD	INITIAL CONC.	SOURCE DATE	ALIQUOT	FINAL VOL	FINAL CONC.	SOLVENT /LOT#
MEE	Neat 99.5%	HEM SERVICE	0.1032g	10 mL	10320 ug/ml	MC
		Cat: N-12404-1G				#56258
		Lot: 5259000-37082				
		OP: 09/27/16				
		EXP: 7/31/22				

0.097ml were spiked in 500ml of water and extracted on 07/27/18. Final concentration is 2000ug/L  
 QC on 05/04/18

Name of Final Standard Diethylene Glycol

Prep'd By (Initials) GA

Prep Date 07/25/18

Exp Date 11/10/18

Initial Standard Information					Final Standard Information				
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
Diethylene glycol monomethyl ether	AccuStand ard	72273	2000 ug/mL	21610100 7-37330 and 37331	10/03/18	2.0 mL	4 mL	Methanol #042317C	1000 ug/mL

Given to Extraction to do **MEE M STD Stock** (used for ICAL) Final concentration 2000ug/L  
 APPL re-certified diethylene glycol monomethyl ether lot 216101007-37330 and 37331 and extended the expiration date to 11/10/18 per verification with a second source from ChemService lot 7079100-39417 Inj on Yoda 0801Y064



Methoxyethoxyethanol-Neat (MEE) SS Stock: 5/22/17-R.H. ex: 08/04/18						
STANDARD	INITIAL CONC.	SOURCE DATE	ALIQOT	FINAL VOL	FINAL CONC.	SOLVENT /LOT#
MEE	Neat 99.5%	HEM SERVIC	0.1032g	10 mL	10320 ug/ml	MC
		Cat: N-12404-1G				#56258
		Lot: 5259000-37082				
		OP: 09/27/16				
		EXP: 08/04/18				

0.097ml were spiked in 500ml of water and extracted on 06/07/17. Final concentration is 2000ug

APPL re-certified MEE SS stock Lot 5259000-37082 and extended the expiration date to 8/04/18 per verification with a different source Accu Standards Lot # 216101007-37334,5 injected on 05/04/18

Name of Final Standard 8270 Internal Standard (Ampule)

Prep'd By (Initials)

OA

Prep Date 06/22/18

Exp Date 06/22/19

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
EPA 8270 Semivolatiles Internal Standard	RESTEK	CRM48902	2000 ug/mL	A0130603-38562	06/22/19	1000 uL	1 mL	NA	100ug/mL

Name of

Final

Standard

MEE CCV

Prep'd By (Initials)

OA

Prep Date

12/19/18

Exp Date

11/06/19

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
MEE M STD	APPL		2000 ug/mL	12/17/18	12/17/19	50 uL	200uL	Methanol. 150uL	500 ug/mL
SV Internal Standard	APPL	8270 I.S.	2000 ug/mL	11/29/18	11/06/19	4 uL	*	*	*

Name of

Final

Standard Diethylene Glycol

Prep'd By (Initials) OA

Prep Date 12/17/18

Exp Date 02/28/19

Initial Standard Information					Final Standard Information				
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
Diethylene glycol monomethyl ether	AccuStandard	72273	2000 ug/mL	21610100 7-37332 and 37333	02/28/19	2.0 mL	4 mL	Methanol #042317C	1000 ug/mL

Given to Extraction to do **MEE M STD Stock** (used for ICAL) Final concentration 2000ug/L  
APPL re-certified diethylene glycol monomethyl ether lot 216101007-37330 and 37331 and extended the expiration date to 02/28/19 per verification with a second source from ChemService lot 7079100-39417 Inj on Yoda 1128Y014

Name of

Final

Standard

MEE Curve

Prep'd By (Initials)

GA

Prep Date

08/01/18

Exp Date

02/28/19

Initial Standard Information						Final Standard Information			
MEE M STD Stock	APPL		200 ug/mL	07/27/18	02/28/19	5 uL	200uL	Methanol 195uL	50 ug/mL
SV Internal Standard	APPL	8270 I.S.	2000 ug/mL	06/22/18	06/22/19	4 uL	*	*	*
MEE M STD Stock	APPL		2000 ug/mL	07/27/18	02/28/19	5 uL	100uL	Methanol 95uL	100 ug/mL
SV Internal Standard	APPL	8270 I.S.	2000 ug/mL	06/22/18	06/22/19	2 uL	*	*	*
MEE M STD Stock	APPL		2000 ug/mL	07/27/18	02/28/19	10 uL	100uL	Methanol 90 uL	200 ug/mL
SV Internal Standard	APPL	8270 I.S.	2000 ug/mL	06/22/18	06/22/19	2 uL	*	*	*
MEE M STD Stock	APPL		2000 ug/mL	07/27/18	02/28/19	20 uL	100uL	Methanol 80 uL	400 ug/mL
SV Internal Standard	APPL	8270 I.S.	2000 ug/mL	06/22/18	06/22/19	2 uL	*	*	*
MEE M STD Stock	APPL		2000 ug/mL	07/27/18	02/28/19	50 uL	200 uL	Methanol 150 uL	500 ug/mL
SV Internal Standard	APPL	8270 I.S.	2000 ug/mL	06/22/18	06/22/19	4 uL	*	*	*
MEE M STD Stock	APPL		2000 ug/mL	07/27/18	02/28/19	30 uL	100uL	Methanol 70 uL	600 ug/mL
SV Internal Standard	APPL	8270 I.S.	2000 ug/mL	06/22/18	06/22/19	2 uL	*	*	*
MEE M STD Stock	APPL		2000 ug/mL	07/27/18	02/28/19	40 uL	100uL	Methanol 60 uL	800 ug/mL
SV Internal Standard	APPL	8270 I.S.	2000 ug/mL	06/22/18	06/22/19	2 uL	*	*	*
MEE M STD Stock	APPL		2000 ug/mL	07/27/18	02/28/19	50 uL	100uL	Methanol 50uL	1000 ug/mL
SV Internal Standard	APPL	8270 I.S.	2000 ug/mL	06/22/18	06/22/19	2 uL	*	*	*

Name of

Final

Standard

MEE Second Source

Prep'd By (Initials)

GA

Prep Date

08/01/18

Exp Date

06/22/19

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
MEE SS	APPL		2000 ug/mL	07/27/18	07/27/19	50 uL	200uL	Methanol 150uL	500 ug/mL
SV Internal Standard	APPL	8270 I.S.	2000 ug/mL	06/22/18	06/22/19	4 uL	*	*	*

# Organic Extraction Worksheet






<b>Method</b>	Solid Phase Extraction of 2MEE in Water	<b>Extraction Set</b>	190213A	<b>Extraction Method</b>	MWE2MEE	<b>Units</b>	mL
Spiked ID 1	Diethylene Glycol 1-31-19 EXP 1-31-20		Surrogate ID 1				
Spiked ID 2	2MEE SS 10320ug/mL 8-3-18 exp 8-3-19		Surrogate ID 2				
Spiked ID 3			Surrogate ID 3				
Spiked ID 4			Surrogate ID 4				
Spiked ID 5			Surrogate ID 5				
Spiked ID 6			Sufficient Vol for Matrix QC:		NO		
Spiked ID 7			Ext. Start Time:	02/13/19 8:10			
Spiked ID 8			Ext. End Time:	02/13/19 12:45			
			GC Requires Extract By:	02/15/19 0:00			
			pH1			Water Bath Temp Criteria	
			pH2				
			pH3				

Spiked By: DL

Date 02/13/19

Witnessed By: CFM

Date 02/13/19

Sample	Sample Container	Spike Amount	Spike ID	Surrogate Amount	Surrogate ID	Extract Amount	Final Volume	pH	Extract Date/Time	Comments
1	190213A Bk			NA	NA	500	2	7	02/13/19 8:10	
					equip					
2	190213A LCS-1	0.040	1	NA	NA	500	2	7	02/13/19 8:10	
					equip					
3	190213A LCSD-1	0.040	1	NA	NA	500	2	7	02/13/19 8:10	
					equip					
4	AZ86200 AZ86200W18			NA	NA	500	2	7	02/13/19 8:10	88062
					equip					
5	SS	0.097	2	NA	NA	500	2	7	02/13/19 8:10	
					equip					

Kus 2/14/19

Solvent and Lot#	
ENVI-Carb Plus 400MG/1ML	
Reverible Tube Lot:	10689901
PH Strip	HC 849161
Di Water	2-13-19
Dichloromethane	18G194011
Methanol	58179

Extraction COC Transfer	
Extraction lab employee Initials	KY
GC analyst's initials	DA
Date	02/14/19
Time	7:57
Refrigerator	GC-C

Technician's Initials	
Scanned By	DL
Sample Preparation	DL
Extraction	DL
Concentration	DL
Modified	02/12/19 8:18:35 AM

Reviewed By: Kus

Date 2/14/19

## Injection Log

Directory: M:\YODA\DATA\Y181128M\

Vial	FileName	Multiplier	SampleName	Misc Info	Injected
2	1128Y002.D	1	SV Tune 03/07/18		28 Nov 18 7:30
4	1128Y004.D	1	50ug/ml MEE 08/01/18		28 Nov 18 8:08
5	1128Y005.D	1	100ug/ml MEE 08/01/18		28 Nov 18 8:32
6	1128Y006.D	1	200ug/ml MEE 08/01/18		28 Nov 18 8:55
7	1128Y007.D	1	400ug/ml MEE 08/01/18		28 Nov 18 9:19
8	1128Y008.D	1	600ug/ml MEE 08/01/18		28 Nov 18 9:43
9	1128Y009.D	1	800ug/ml MEE 08/01/18		28 Nov 18 10:06
10	1128Y010.D	1	1000ug/ml MEE 08/01/18		28 Nov 18 10:30
12	1128Y012.D	1	500ug/ml MEE 08/01/18		28 Nov 18 11:17
14	1128Y014.D	1	SS ug/ml MEE 08/01/18		28 Nov 18 12:26
16	1128Y116.D	1	SV TUNE 11/10/18		14 Feb 19 8:44
17	1128Y117.D	1	500ug/ml MEE 12/19/18		14 Feb 19 10:52
18	1128Y118.D	1	190213A Blk 2/500		14 Feb 19 13:46
23	1128Y123.D	1	AZ86200W18 2/500		14 Feb 19 16:37
24	1128Y124.D	1	190213A LCS-1 2/500		14 Feb 19 17:00
25	1128Y125.D	1	190213A LCSD-1 2/500		14 Feb 19 17:24
26	1128Y126.D	1	500ug/ml MEE 12/19/18		14 Feb 19 17:48



**ORGANICS**  
**Calibration Data**

**VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS**

**Form 6  
Initial Calibration**

Lab Name: APPL, Inc.

SDG No: \_\_\_\_\_

Case No: \_\_\_\_\_

Initial Cal. Date: 02/11/19

Matrix: water

Instrument: Loki

Initials: DG

0211L03.D    0211L04.D    0211L05.D    0211L06.D    0211L07.D    0211L08.D    0211L09.D    0211L10.D    0211L12.D    0211L11.D

1	Compound	1	2	3	4	5	6	7	8	9	8A	Avg	%RSD	Type	r <sup>2</sup>	Q	MRF
1	I Fluorobenzene (IS)																
2	TM Freon 1113		0.2161	0.1949	0.1834	0.2191	0.2212	0.2182	0.1829	0.2312	0.1707	0.20	10	TM			
3	TM Dichlorodifluoromethane		0.4903	0.5184	0.4351	0.3733	0.4314	0.4486	0.3807	0.4162	0.3462	0.43	13	TM			
4	TM Freon 114		0.3626	0.4415	0.4295	0.4043	0.4456	0.4299	0.3830	0.4289	0.3513	0.41	8.6	TM			
5	TM**L Chloromethane		0.8128	0.6937	0.5744	0.6390	0.6351	0.6255				0.66	12	TM**L	1.000		
6	TM* Vinyl chloride		0.5289	0.6168	0.4470	0.4515	0.4829	0.4833	0.4072	0.5131	0.3749	0.48	15	TM*			
7	TM 2-Chloro-1,1,1-trifluoroethane		0.3516	0.3451	0.2800	0.3482	0.3396	0.3379	0.2799	0.3106	0.2486	0.32	12	TM			
8	TML Bromomethane		0.5145	0.4321	0.3164	0.3073	0.3821	0.3754				0.39	20	TML	0.997		
9	TM Chloroethane		0.3184	0.2332	0.2139	0.2345	0.2458	0.2277				0.25	15	TML	0.998		
10	TM Dichlorofluoromethane		0.9458	0.9329	0.7663	0.7561	0.8168	0.8051	0.6781	0.7943	0.6253	0.79	13	TM			
11	TM Trichlorofluoromethane		0.7446	0.7916	0.6891	0.7021	0.7858	0.7362	0.6330	0.7745	0.5744	0.71	10	TM			
12	TM Acrolein		0.0430	0.0413	0.0353	0.0449	0.0457	0.0434	0.0384	0.0464	0.0335	0.04	11	TM			
13	TML Acetone					0.0620	0.0596	0.0493	0.0365	0.0389	0.0361	0.05	25	TML	0.991		
14	TM Freon-113		0.3618	0.4155	0.3595	0.3785	0.3953	0.3899	0.3323	0.3828	0.2939	0.37	9.9	TM			
15	TM*Q 1,1-DCE		0.1614	0.1281	0.1206	0.1078	0.1226	0.1239	0.1048	0.1273	0.0950	0.12	16	TM*Q	0.995		
16	TM t-Butanol	0.0193	0.0244	0.0212	0.0192	0.0227	0.0236	0.0229	0.0210	0.0259	0.0187	0.02	11	TM			
17	TM 2-Propanol		0.0139	0.0128	0.0109	0.0138	0.0146	0.0151	0.0128	0.0160	0.0118	0.01	12	TM			
18	TM Acetonitrile		0.0445	0.0395	0.0348	0.0411	0.0405	0.0392	0.0331	0.0394	0.0313	0.04	11	TM			
19	TMQ Methyl Acetate		0.3320	0.2729	0.2362	0.2301	0.2332	0.2219	0.1892	0.2241	0.1756	0.24	19	TMQ	0.996		
20	TMQ Iodomethane		0.1345	0.1183	0.1090	0.1481	0.1755	0.2116	0.1961	0.2461	0.1764	0.17	27	TMQ	0.996		
21	TMQ Acrylonitrile		0.1267	0.1208	0.0758	0.0888	0.1013	0.0928	0.0801	0.0934	0.0722	0.09	20	TMQ	0.995		
22	TM Methylene chloride		0.5627	0.5762	0.4391	0.4775	0.5090	0.5651	0.4328	0.4969	0.3787	0.49	14	TM			
23	TM Carbon disulfide		1.650	1.458	1.184	1.285	1.345	1.328	1.136	1.329	1.027	1.3	14	TM			
24	TM Methyl t-butyl ether (MtBE)		1.101	0.9856	0.8196	0.9057	0.9879	0.9809	0.8694	1.087	0.8043	0.95	11	TM			
25	TM Trans-1,2-DCE		0.2178	0.2499	0.1952	0.1994	0.2374	0.2126	0.1826	0.2345	0.1701	0.21	13	TM			
26	TM Diisopropyl Ether		1.358	1.341	1.125	1.216	1.328	1.369	1.205	1.480	1.106	1.3	9.7	TM			
27	TM** 2,2-Dichloro-1,1,1-trifluoroethane		0.0367	0.0320	0.0281	0.0293	0.0297	0.0301	0.0251	0.0290	0.0218	0.03	14	TM**			
28	TM** 1,1-DCA		1.011	0.9652	0.7923	0.8801	0.8814	0.8548	0.7335	0.8622	0.6638	0.85	13	TM**			
29	TMQ Vinyl Acetate		0.4293	0.3041	0.2465	0.2583	0.2777	0.2604	0.2439	0.3105	0.2264	0.28	21	TMQ	0.997		
30	TM Ethyl tert Butyl Ether		1.111	1.144	0.9701	1.106	1.174	1.153	1.028	1.323	0.9574	1.1	10	TM			
31	TMQ MEK (2-Butanone)			0.1608	0.1222	0.1644	0.1421	0.1396	0.1090	0.1280	0.1021	0.13	17	TMQ	0.994		
32	TM Cis-1,2-DCE		0.5488	0.5091	0.4687	0.5038	0.5169	0.5126	0.4350	0.5254	0.3955	0.49	9.9	TM			
33	TM 2,2-Dichloropropane		0.8103	0.8321	0.7248	0.7341	0.7807	0.7331	0.6434	0.7568	0.5727	0.73	11	TM			
34	TM 2-Methylpentane													TM			
35	TM 3-Methylpentane													TM			

VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 6  
Initial Calibration

Lab Name: APPL, Inc. \_\_\_\_\_  
Case No: \_\_\_\_\_  
Matrix: water \_\_\_\_\_

SDG No: \_\_\_\_\_  
Initial Cal. Date: 02/11/19 \_\_\_\_\_  
Instrument: Loki \_\_\_\_\_

Initials:   DG  

	Compound	1	2	3	4	5	6	7	8	9	8A	Avg	%RSD	Type	Q	MRF
36	TM*	Chloroform		1.068	0.9859	0.8172	0.8894	0.9481	0.8804	0.7492	0.8910	0.6806	0.88	13	TM*	
37	TML	Bromochloromethane		0.1570	0.1586	0.1085	0.1244	0.1193	0.1111	0.0940	0.1030	0.0837	0.12	22	TML	0.990
38	SQ	Dibromofluoromethane(S)	0.3607	0.5529	0.4249	0.3553	0.4609	0.4698	0.4429	0.3866		0.3288	0.42	17	SQ	0.994
39	TM	1,1,1-TCA		0.4025	0.4063	0.3160	0.3152	0.3669	0.3420	0.2922	0.3528	0.2715	0.34	14	TM	
40	TM	Cyclohexane		0.4463	0.4411	0.3741	0.3558	0.3906	0.3887	0.3528	0.4171	0.3166	0.39	11	TM	
41	TM	1,1-Dichloropropene		0.5642	0.5866	0.5125	0.5433	0.6117	0.6024	0.5272	0.6511	0.4877	0.57	9.3	TM	
42	TM	2,2,4-Trimethylpentane		1.212	1.219	1.111	1.194	1.300	1.349	1.191	1.446	1.078	1.2	9.3	TM	
43	S	1,2-DCA-D4(S)	0.4179	0.6055	0.4741	0.4160	0.5258	0.5579	0.5127	0.4394	0.5038	0.3749	0.48	15	S	
44	TM	Carbon Tetrachloride		0.7903	0.8029	0.6732	0.6824	0.7405	0.7106	0.6180	0.7346	0.5576	0.70	11	TM	
45	TM	Tert Amyl Methyl Ether		1.037	0.9585	0.8509	0.9688	1.068	1.072	0.9470	1.173	0.8880	1.00	10	TM	
46	TM	Methylcyclopentane													TM	
47	TM	1,2-DCA		0.7915	0.7562	0.6034	0.6962	0.6993	0.6676	0.5709	0.6782	0.5224	0.67	13	TM	
48	TM	Benzene		2.322	2.086	1.705	1.809	1.935	1.895	1.611	1.913	1.463	1.9	14	TM	
49	TM	TCE		0.3176	0.3075	0.2406	0.2764	0.2780	0.2588	0.2247	0.2791	0.2125	0.27	13	TM	
50	TM	2-Pentanone		0.1945	0.1819	0.1675	0.2052	0.2188	0.2158	0.1936	0.2222	0.1770	0.20	9.9	TM	
51	TM*	1,2-Dichloropropane		0.5804	0.5803	0.4748	0.5079	0.5339	0.4983	0.4366	0.5137	0.3919	0.50	12	TM*	
52	TMQ	Bromodichloromethane		0.4983	0.4214	0.3442	0.3795	0.3917	0.3698	0.3190	0.3692	0.2853	0.38	16	TMQ	0.995
53	TM	Methyl Cyclohexane		0.5924	0.5741	0.5340	0.5711	0.6301	0.6515	0.5813	0.7285	0.5339	0.60	10	TM	
54	TMQ	Dibromomethane		0.3587	0.3450	0.2661	0.2904	0.2959	0.2729	0.2325	0.2727	0.2112	0.28	17	TMQ	0.995
55	TM	2-Chloroethyl vinyl ether													TM	
56	TM	MIBK (methyl isobutyl ketone)		0.2790	0.3016	0.2284	0.2913	0.2929	0.2869	0.2254	0.2757	0.2156	0.27	13	TM	
57	TM	1-Bromo-2-chloroethane		0.3393	0.3905	0.2712	0.3309	0.3280	0.3232	0.2634	0.3116	0.2446	0.31	14	TM	
58	TM	Cis-1,3-Dichloropropene		0.7674	0.7873	0.6936	0.7191	0.7664	0.7603	0.6589	0.8170	0.6090	0.73	9.1	TM	
59	TM*	Toluene		1.205	1.045	0.9887	1.052	1.139	1.161	0.9793	1.194	0.9196	1.1	9.6	TM*	
60	TM	Trans-1,3-Dichloropropene		0.7544	0.7001	0.5998	0.6304	0.6919	0.6773	0.5702	0.7070	0.5419	0.65	11	TM	
61	TM	1,1,2-TCA		0.3597	0.3310	0.2835	0.3251	0.3222	0.3128	0.2622	0.3055	0.2430	0.30	12	TM	
62	TM	2-Hexanone		0.1809	0.1734	0.1548	0.1605	0.1789	0.1679	0.1504	0.1837	0.1397	0.17	9.2	TM	
63	I	Chlorobenzene-D5 (IS)														
64	S	Toluene-D8(S)	1.828	2.520	1.979	1.715	2.089	2.247	2.130	1.868	2.165	1.603	2.0	14	S	
65	TMQ	1,2-EDB		0.3531	0.3228	0.2555	0.2393	0.2846	0.2467	0.2030	0.2419	0.1936	0.26	20	TMQ	0.995
66	TM	Tetrachloroethene		0.5224	0.4498	0.3820	0.3869	0.4385	0.3896	0.3487	0.4028	0.3086	0.40	15	TM	
67	TM	1-Chlorohexane		0.6432	0.7026	0.6288	0.6225	0.7491	0.7137	0.6638	0.8164	0.6078	0.68	10	TM	
68	TMQ	1,1,1,2-Tetrachloroethane		0.8500	0.8443	0.6869	0.6695	0.7626	0.6640	0.5837	0.6701	0.5245	0.70	16	TMQ	0.995
69	TM	m&p-Xylene		1.849	1.933	1.703	1.908	2.299	2.211	1.990	2.374	1.819	2.0	12	TM	
70	TM	o-Xylene		0.4503	0.4659	0.4321	0.5290	0.6091	0.5591	0.5372	0.6334	0.4849	0.52	13	TM	

VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

**Form 6**  
**Initial Calibration**

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: water

SDG No: \_\_\_\_\_  
Initial Cal. Date: 02/11/19  
Instrument: Loki

Initials: DG

		Compound	1	2	3	4	5	6	7	8	9	8A	Avg	%RSD	Type	Q	MRF
71	TM	Styrene		1.556	1.562	1.405	1.576	1.829	1.842	1.674	1.980	1.510	1.7	11	TM		
72	S	4-Bromofluorobenzene(S)	0.7804	0.9806	0.7332	0.6368	0.7638	0.8373	0.7810	0.6939	0.7837	0.5948	0.76	14	S		
73	TM	1,3-Dichloropropane		1.046	0.9668	0.7972	0.8328	0.8911	0.8183	0.7308	0.8326	0.6563	0.84	14	TM		
74	TM	Dibromochloromethane		0.7178	0.7193	0.6022	0.6447	0.6684	0.6083	0.5293	0.6225	0.4858	0.62	13	TM		
75	TM**	Chlorobenzene		1.955	1.883	1.600	1.684	1.921	1.740	1.531	1.757	1.378	1.7	11	TM**		
76	TM*	Ethylbenzene		1.581	1.735	1.379	1.409	1.657	1.649	1.425	1.753	1.331	1.5	10	TM*		
77	TM**	Bromoform		0.4092	0.4483	0.3760	0.3947	0.4247	0.3644	0.3273	0.3884	0.2971	0.38	12	TM**		
78	I	1,4-Dichlorobenzene-D (IS)															
79	TM	Isopropylbenzene		5.092	4.873	4.363	4.598	5.163	4.859	4.556	5.077	4.178	4.8	7.3	TM		
80	TM**Q	1,1,2,2-Tetrachloroethane		1.408	1.180	1.050	1.030	1.066	0.9648	0.8715	0.9360	0.7823	1.0	18	TM**Q	0.996	
81	TML	1,2,3-Trichloropropane		0.2067	0.2093	0.1673	0.1889	0.1853	0.1581	0.1400	0.1521	0.1234	0.17	17	TML	0.990	
82	TM	t-1,4-Dichloro-2-Butene		0.1734	0.2240	0.2140	0.2191	0.2277	0.2054	0.1900	0.2254	0.1753	0.21	10	TM		
83	TM	Bromobenzene		0.8322	0.8463	0.7247	0.7208	0.7959	0.7288	0.6319	0.6734	0.5743	0.73	12	TM		
84	TM	n-Propylbenzene		3.357	3.235	2.816	2.954	3.436	3.387	3.171	3.354	2.782	3.2	8.0	TM		
85	TM	4-Ethyltoluene		4.515	4.171	3.797	4.348	5.147	5.156	4.734	5.157	4.231	4.6	11	TM		
86	TM	2-Chlorotoluene		2.246	2.228	1.720	1.840	2.108	1.925	1.819	1.883	1.588	1.9	12	TM		
87	TM	1,3,5-Trimethylbenzene		3.919	3.481	3.251	3.689	4.343	4.363	3.983	4.369	3.620	3.9	11	TM		
88	TM	4-Chlorotoluene		2.246	2.425	2.034	2.189	2.470	2.348	2.085	2.233	1.856	2.2	8.9	TM		
89	TM	Tert-Butylbenzene		4.219	4.039	3.156	3.691	4.275	4.131	3.838	4.271	3.479	3.9	10	TM		
90	TM	1,2,4-Trimethylbenzene		3.588	3.448	2.980	3.431	4.190	4.181	3.903	4.490	3.595	3.8	13	TM		
91	TM	Sec-Butylbenzene		4.546	4.802	4.273	4.648	5.495	5.250	4.847	5.423	4.430	4.9	9.1	TM		
92	TM	p-Isopropyltoluene		1.946	2.181	1.822	2.051	2.506	2.520	2.391	2.738	2.169	2.3	13	TM		
93	TM	Benzyl Chloride		1.465	1.452	1.192	1.197	1.346	1.284	1.228	1.581	1.159	1.3	11	TM		
94	TM	1,3-DCB		1.461	1.615	1.388	1.322	1.512	1.370	1.226	1.351	1.142	1.4	10	TM		
95	TM	1,4-DCB		2.964	2.959	2.766	2.731	2.839	2.613	2.318	2.638	2.124	2.7	11	TM		
96	TM	n-Butylbenzene		3.286	3.300	2.817	2.922	3.571	3.657	3.480	4.173	3.229	3.4	12	TM		
97	TM	1,2-DCB		2.939	2.866	2.305	2.382	2.624	2.425	2.206	2.488	2.027	2.5	12	TM		
98	TM	Hexachloroethane		1.218	1.153	0.9524	0.8819	0.9880	0.9183				1.0	13	TM		
99	TM	1,2-Dibromo-3-chloropropane		0.1490	0.2082	0.1673	0.1795	0.1983	0.1821	0.1591	0.1733	0.1523	0.17	12	TM		
100	TM	1,2,4-Trichlorobenzene		1.463	1.468	1.262	1.341	1.569	1.583	1.482	1.740	1.409	1.5	9.5	TM		
101	TM	Hexachlorobutadiene		1.075	1.029	0.8873	0.8577	1.012	0.9455	0.8646	0.9697	0.8072	0.94	9.6	TM		
102	TMQ	Naphthalene		2.002	1.657	1.574	1.665	2.034	2.136	2.174	2.636	2.097	2.0	17	TMQ	0.999	
103	TM	1,2,3-Trichlorobenzene		0.7441	0.5891	0.5288	0.5682	0.6969	0.6454	0.6331	0.7111	0.5915	0.63	11	TM		
104																	
105																	

Data File : M:\LOKI\DATA\190211\0211L03.D Vial: 2  
 Acq On : 11 Feb 19 8:32 Operator: PM,DG,SV,CMM,KV  
 Sample : 0.3ug/L VOC STD 2/11/19 Inst : Loki  
 Misc : ISS 1/29/19 Multiplr: 1.00

Quant Time: Feb 12 9:02 2019 Quant Results File: L0211W.RES

Quant Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Feb 12 09:00:04 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	390976	25.000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.96	117	291712	25.000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.53	152	144256	25.000	ppb	0.00
System Monitoring Compounds						
38) Dibromofluoromethane(S)	5.64	111	28205	4.232	ppb	0.00
Spiked Amount				25.000		
					Recovery =	16.928%
43) 1,2-DCA-D4(S)	6.06	65	32679	3.892	ppb	0.00
Spiked Amount				25.000		
					Recovery =	15.568%
64) Toluene-D8(S)	8.36	98	106678	4.652	ppb	0.00
Spiked Amount				25.000		
					Recovery =	18.608%
72) 4-Bromofluorobenzene(S)	11.26	95	45529	5.517	ppb	0.00
Spiked Amount				25.000		
					Recovery =	22.068%
Target Compounds						
16) t-Butanol	3.34	59	3026	9.790	ppb	Qvalue # 75

Quantitation Report

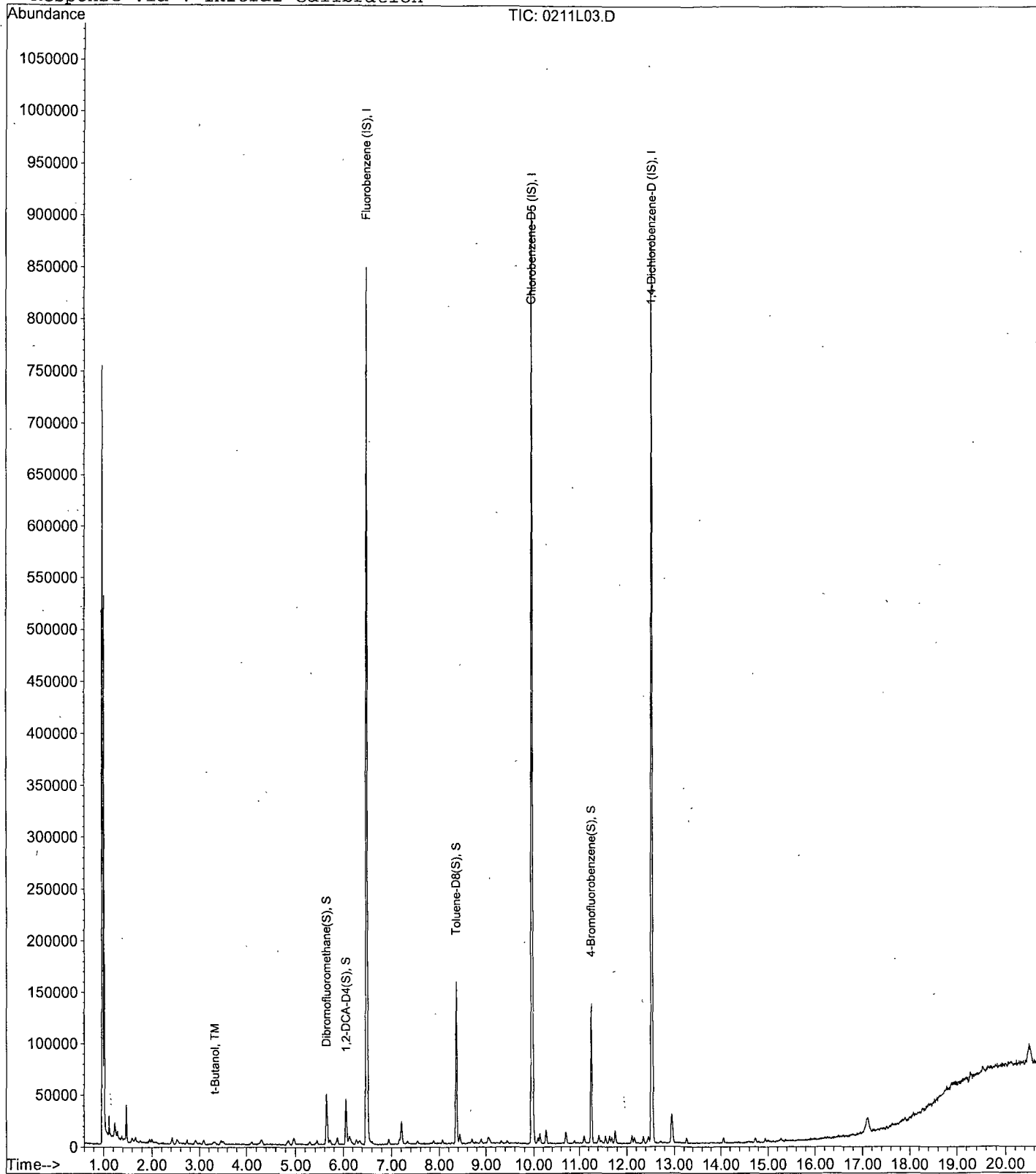
Data File : M:\LOKI\DATA\190211\0211L03.D  
Acq On : 11 Feb 19 8:32  
Sample : 0.3ug/L VOC STD 2/11/19  
Misc : ISS 1/29/19

Vial: 2  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 12 9:02 2019

Quant Results File: L0211W.RES

Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Feb 12 09:25:44 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190211\0211L04.D  
 Acq On : 11 Feb 19 9:00  
 Sample : 0.5ug/L VOC STD 2/11/19  
 Misc : ISS 1/29/19

Vial: 3  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 12 9:26 2019

Quant Results File: L0211W.RES

Quant Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Feb 12 09:25:44 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	253440	25.000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.96	117	196992	25.000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.53	152	90248	25.000	ppb	0.00

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
38) Dibromofluoromethane(S)	5.65	111	28023	6.584	ppb	0.00
Spiked Amount	25.000		Recovery	=	26.336%	
43) 1,2-DCA-D4(S)	6.06	65	30690	6.270	ppb	0.00
Spiked Amount	25.000		Recovery	=	25.080%	
64) Toluene-D8(S)	8.36	98	99274	6.254	ppb	0.00
Spiked Amount	25.000		Recovery	=	25.016%	
72) 4-Bromofluorobenzene(S)	11.26	95	38636	6.464	ppb	0.00
Spiked Amount	25.000		Recovery	=	25.856%	

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Freon 1113	1.12	116	10953	5.291	ppb	95
3) Dichlorodifluoromethane	1.15	85	2485	0.574	ppb	97
4) Freon 114	1.25	85	1838	0.444	ppb	90
5) Chloromethane	1.29	50	4120	0.583	ppb	98
6) Vinyl chloride	1.38	62	2681	0.553	ppb	98
7) 2-Chloro-1,1,1-trifluoroet	1.48	118	17824	5.569	ppb	97
8) Bromomethane	1.66	94	2608	0.830	ppb	91
9) Chloroethane	1.76	64	1614	0.563	ppb	99
10) Dichlorofluoromethane	1.95	67	4794	0.598	ppb	98
11) Trichlorofluoromethane	2.00	101	3774	0.521	ppb	90
12) Acrolein	2.42	56	10891	26.010	ppb	92
13) Acetone	2.60	43	1050	-1.020	ppb	94
14) Freon-113	2.55	101	1834	0.492	ppb	87
15) 1,1-DCE	2.52	63	818	-1.369	ppb	# 61
16) t-Butanol	3.33	59	6188	27.885	ppb	94
17) 2-Propanol	2.82	45	707	5.157	ppb	# 96
18) Acetonitrile	2.91	41	11276	29.140	ppb	100
19) Methyl Acetate	3.01	43	1683	-1.426	ppb	93
20) Iodomethane	2.67	142	682	-0.375	ppb	# 88
21) Acrylonitrile	3.43	52	642	-1.355	ppb	99
22) Methylene chloride	3.09	84	2852	0.571	ppb	85
23) Carbon disulfide	2.73	76	8365	0.632	ppb	97
24) Methyl t-butyl ether (MtBE)	3.51	73	5580	0.580	ppb	97
25) Trans-1,2-DCE	2.52	96	1104	0.516	ppb	# 81
26) Diisopropyl Ether	4.31	45	6883	0.530	ppb	91
27) 2,2-Dichloro-1,1,1-trifluo	1.95	85	186	0.631	ppb	# 30
28) 1,1-DCA	4.11	63	5124	0.595	ppb	# 92
29) Vinyl Acetate	4.31	43	2176	-1.151	ppb	100
30) Ethyl tert Butyl Ether	4.86	59	5629	0.501	ppb	# 83
31) MEK (2-Butanone)	5.05	43	1311	-2.364	ppb	# 45
32) Cis-1,2-DCE	4.98	96	2782	0.559	ppb	86
33) 2,2-Dichloropropane	4.96	77	4107	0.553	ppb	# 90
36) Chloroform	5.44	83	5411	0.607	ppb	91
37) Bromochloromethane	5.29	128	796	0.624	ppb	98
39) 1,1,1-TCA	5.65	97	2040	0.591	ppb	100
40) Cyclohexane	5.71	41	2262	0.577	ppb	# 73
41) 1,1-Dichloropropene	5.88	75	2860	0.499	ppb	# 86
42) 2,2,4-Trimethylpentane	6.29	57	6144	0.491	ppb	91
44) Carbon Tetrachloride	5.86	117	4006	0.564	ppb	100

(#) = qualifier out of range (m) = manual integration

Data File : M:\LOKI\DATA\190211\0211L04.D  
 Acq On : 11 Feb 19 9:00  
 Sample : 0.5ug/L VOC STD 2/11/19  
 Misc : ISS 1/29/19

Vial: 3  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 12 9:26 2019

Quant Results File: L0211W.RES

Quant Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Feb 12 09:25:44 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
45) Tert Amyl Methyl Ether	6.35	73	5258	0.521	ppb	# 82
47) 1,2-DCA	6.16	62	4012	0.595	ppb	# 93
48) Benzene	6.13	78	11770	0.624	ppb	95
49) TCE	6.95	130	1610	0.597	ppb	# 85
50) 2-Pentanone	7.21	43	49292	24.635	ppb	94
51) 1,2-Dichloropropane	7.19	63	2942	0.578	ppb	# 87
52) Bromodichloromethane	7.54	83	2526	-1.438	ppb	98
53) Methyl Cyclohexane	7.17	83	3003	0.494	ppb	90
54) Dibromomethane	7.33	93	1818	-1.697	ppb	87
56) MIBK (methyl isobutyl ket	8.27	43	1414	0.524	ppb	93
57) 1-Bromo-2-chloroethane	7.88	63	1720	0.545	ppb	90
58) Cis-1,3-Dichloropropene	8.07	75	3890	0.525	ppb	90
59) Toluene	8.44	91	6108	0.560	ppb	97
60) Trans-1,3-Dichloropropene	8.70	75	3824	0.578	ppb	95
61) 1,1,2-TCA	8.90	83	1823	0.590	ppb	98
62) 2-Hexanone	9.21	43	917	0.546	ppb	# 65
65) 1,2-EDB	9.44	107	1391	-1.638	ppb	# 77
66) Tetrachloroethene	9.05	166	2058	0.648	ppb	91
67) 1-Chlorohexane	10.00	91	2534	0.471	ppb	92
68) 1,1,1,2-Tetrachloroethane	10.09	131	3349	-1.574	ppb	91
69) m&p-Xylene	10.26	91	14573	0.920	ppb	94
70) o-Xylene	10.69	106	1774	0.431	ppb	97
71) Styrene	10.71	104	6132	0.469	ppb	98
73) 1,3-Dichloropropane	9.08	76	4123	0.622	ppb	92
74) Dibromochloromethane	9.32	129	2828	0.577	ppb	97
75) Chlorobenzene	9.99	112	7703	0.570	ppb	96
76) Ethylbenzene	10.13	91	6228	0.511	ppb	89
77) Bromoform	10.89	173	1612	0.537	ppb	99
79) Isopropylbenzene	11.11	105	9190	0.536	ppb	98
80) 1,1,2,2-Tetrachloroethane	11.43	83	2542	-0.970	ppb	# 74
81) 1,2,3-Trichloropropane	11.47	110	373	0.521	ppb	# 74
82) t-1,4-Dichloro-2-Butene	11.49	53	313	0.421	ppb	92
83) Bromobenzene	11.43	156	1502	0.574	ppb	77
84) n-Propylbenzene	11.56	91	6060	0.530	ppb	96
85) 4-Ethyltoluene	11.69	105	8150	0.493	ppb	90
86) 2-Chlorotoluene	11.76	91	4054	0.582	ppb	85
87) 1,3,5-Trimethylbenzene	11.76	105	7073	0.504	ppb	99
88) 4-Chlorotoluene	11.76	91	4054	0.508	ppb	89
89) Tert-Butylbenzene	12.11	119	7616	0.541	ppb	79
90) 1,2,4-Trimethylbenzene	12.16	105	6476	0.478	ppb	93
91) Sec-Butylbenzene	12.35	105	8205	0.468	ppb	98
92) p-Isopropyltoluene	12.52	119	3512	0.431	ppb	93
93) Benzyl Chloride	12.71	91	2644	0.554	ppb	# 90
94) 1,3-DCB	12.46	146	2637	0.531	ppb	92
95) 1,4-DCB	12.56	146	5349	0.557	ppb	88
96) n-Butylbenzene	12.97	91	5932	0.486	ppb	92
97) 1,2-DCB	12.97	146	5304	0.594	ppb	95
98) Hexachloroethane	13.26	117	2199	-1.536	ppb	# 73
99) 1,2-Dibromo-3-chloropropan	13.81	75	269	0.427	ppb	# 44
100) 1,2,4-Trichlorobenzene	14.73	180	2640	0.494	ppb	95
101) Hexachlorobutadiene	14.94	225	1941	0.573	ppb	93
102) Naphthalene	15.00	128	3613	0.231	ppb	94
103) 1,2,3-Trichlorobenzene	15.27	180	1343	0.587	ppb	89

(#) = qualifier out of range (m) = manual integration



Quantitation Report

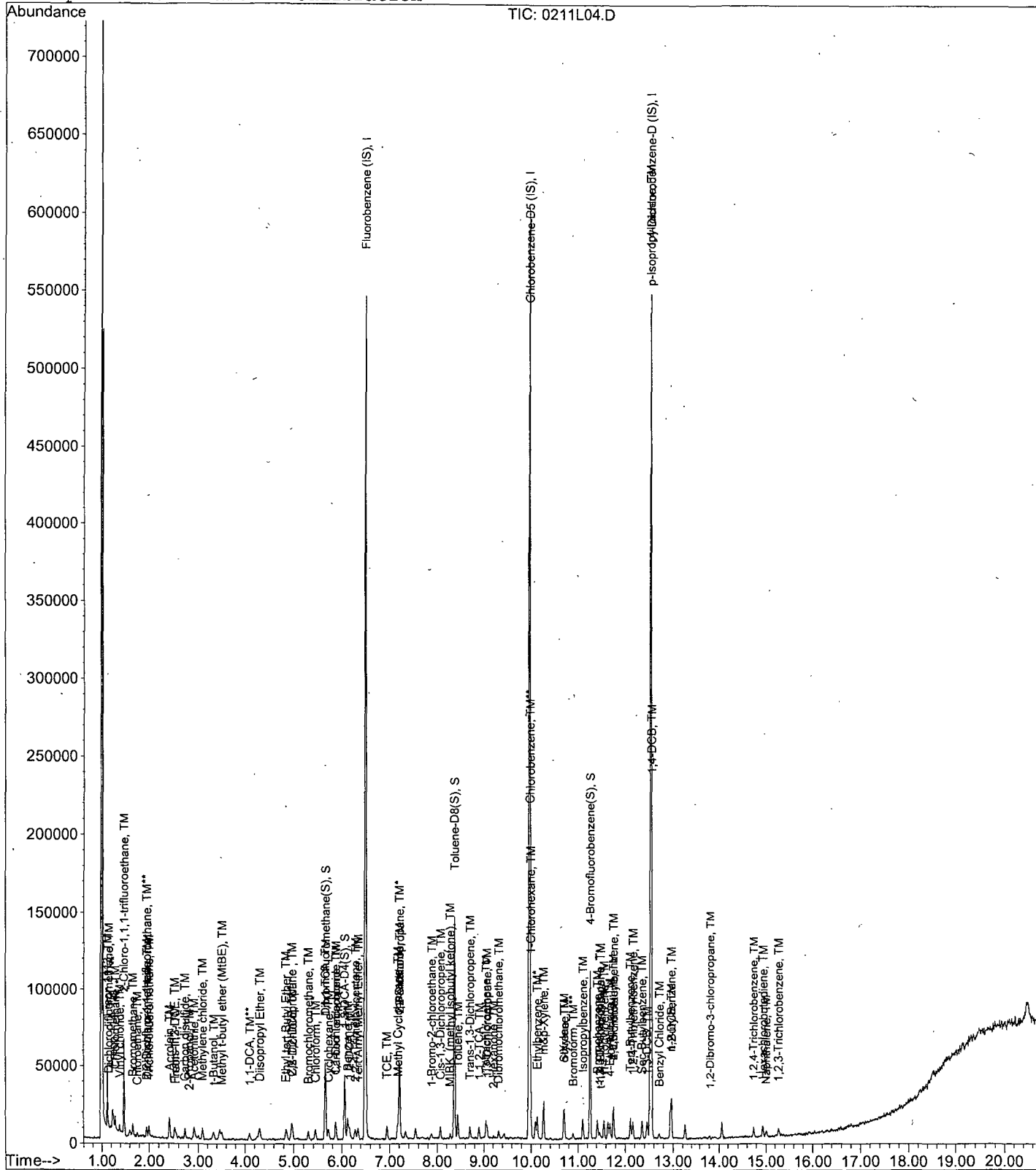
Data File : M:\LOKI\DATA\190211\0211L04.D  
Acq On : 11 Feb 19 9:00  
Sample : 0.5ug/L VOC STD 2/11/19  
Misc : ISS 1/29/19

Vial: 3  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 12 9:26 2019

Quant Results File: L0211W.RES

Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Feb 12 09:25:44 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190211\0211L05.D  
 Acq On : 11 Feb 19 9:28  
 Sample : 1.0ug/L VOC STD 2/11/19  
 Misc : ISS 1/29/19

Vial: 4  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 12 9:26 2019

Quant Results File: L0211W.RES

Quant Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Feb 12 09:25:44 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev (Min)
1) Fluorobenzene (IS)	6.50	96	269376	25.000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.96	117	203328	25.000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.53	152	96888	25.000	ppb	0.00

System Monitoring Compounds

38) Dibromofluoromethane(S)	5.64	111	45784	9.597	ppb	0.00
Spiked Amount	25.000		Recovery	=	38.388%	
43) 1,2-DCA-D4(S)	6.06	65	51080	9.819	ppb	0.00
Spiked Amount	25.000		Recovery	=	39.276%	
64) Toluene-D8(S)	8.36	98	160985	9.826	ppb	0.00
Spiked Amount	25.000		Recovery	=	39.304%	
72) 4-Bromofluorobenzene(S)	11.26	95	59629	9.665	ppb	0.00
Spiked Amount	25.000		Recovery	=	38.660%	

Target Compounds

	R.T.	QIon	Response	Conc	Units	Qvalue
2) Freon 1113	1.12	116	21002	9.545	ppb	96
3) Dichlorodifluoromethane	1.14	85	5586	1.215	ppb	94
4) Freon 114	1.25	85	4757	1.081	ppb	86
5) Chloromethane	1.29	50	7475	1.043	ppb	95
6) Vinyl chloride	1.38	62	6646	1.289	ppb	91
7) 2-Chloro-1,1,1-trifluoroet	1.48	118	37184	10.930	ppb	97
8) Bromomethane	1.66	94	4656	1.294	ppb	93
9) Chloroethane	1.76	64	2513	0.886	ppb	# 67
10) Dichlorofluoromethane	1.95	67	10052	1.179	ppb	97
11) Trichlorofluoromethane	2.00	101	8529	1.108	ppb	91
12) Acrolein	2.42	56	22228	49.944	ppb	97
13) Acetone	2.60	43	977	-1.374	ppb	# 85
14) Freon-113	2.54	101	4477	1.130	ppb	97
15) 1,1-DCE	2.52	63	1380	-0.758	ppb	97
16) t-Butanol	3.34	59	11433	48.472	ppb	# 75
17) 2-Propanol	2.80	45	1374	9.429	ppb	# 63
18) Acetonitrile	2.91	41	21295	51.775	ppb	95
19) Methyl Acetate	3.00	43	2940	-0.697	ppb	94
21) Acrylonitrile	3.43	52	1302	-0.424	ppb	93
22) Methylene chloride	3.10	84	6209	1.169	ppb	94
23) Carbon disulfide	2.73	76	15708	1.117	ppb	99
24) Methyl t-butyl ether (MtBE)	3.50	73	10620	1.039	ppb	96
25) Trans-1,2-DCE	2.52	96	2693	1.184	ppb	99
26) Diisopropyl Ether	4.30	45	14448	1.047	ppb	99
27) 2,2-Dichloro-1,1,1-trifluo	1.96	85	345	1.101	ppb	# 53
28) 1,1-DCA	4.09	63	10400	1.136	ppb	92
29) Vinyl Acetate	4.30	43	3277	-0.623	ppb	100
30) Ethyl tert Butyl Ether	4.86	59	12322	1.033	ppb	94
31) MEK (2-Butanone)	5.05	43	1733	-1.987	ppb	# 45
32) Cis-1,2-DCE	4.98	96	5486	1.038	ppb	95
33) 2,2-Dichloropropane	4.96	77	8966	1.137	ppb	93
36) Chloroform	5.44	83	10623	1.122	ppb	93
37) Bromochloromethane	5.29	128	1709	1.434	ppb	70
39) 1,1,1-TCA	5.64	97	4378	1.193	ppb	100
40) Cyclohexane	5.71	41	4753	1.140	ppb	70
41) 1,1-Dichloropropene	5.88	75	6321	1.038	ppb	95
42) 2,2,4-Trimethylpentane	6.28	57	13137	0.988	ppb	90
44) Carbon Tetrachloride	5.86	117	8651	1.145	ppb	92
45) Tert Amyl Methyl Ether	6.34	73	10328	0.962	ppb	99

(#) = qualifier out of range (m) = manual integration

Data File : M:\LOKI\DATA\190211\0211L05.D  
 Acq On : 11 Feb 19 9:28  
 Sample : 1.0ug/L VOC STD 2/11/19  
 Misc : ISS 1/29/19

Vial: 4  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 12 9:26 2019

Quant Results File: L0211W.RES

Quant Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Feb 12 09:25:44 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
47) 1,2-DCA	6.15	62	8148	1.137	ppb	95
48) Benzene	6.13	78	22482	1.122	ppb	97
49) TCE	6.95	130	3313	1.155	ppb #	86
50) 2-Pentanone	7.21	43	98016	46.088	ppb	95
51) 1,2-Dichloropropane	7.20	63	6253	1.156	ppb #	87
52) Bromodichloromethane	7.54	83	4541	-0.734	ppb	99
53) Methyl Cyclohexane	7.17	83	6186	0.957	ppb	82
54) Dibromomethane	7.33	93	3717	-0.766	ppb	93
56) MIBK (methyl isobutyl ket	8.27	43	3250	1.133	ppb #	95
57) 1-Bromo-2-chloroethane	7.88	63	4208	1.254	ppb #	81
58) Cis-1,3-Dichloropropene	8.07	75	8483	1.077	ppb	90
59) Toluene	8.44	91	11255	0.971	ppb	100
60) Trans-1,3-Dichloropropene	8.70	75	7544	1.073	ppb	91
61) 1,1,2-TCA	8.89	83	3566	1.085	ppb	78
62) 2-Hexanone	9.20	43	1868	1.047	ppb #	91
65) 1,2-EDB	9.44	107	2625	-0.736	ppb #	73
66) Tetrachloroethene	9.05	166	3658	1.115	ppb	90
67) 1-Chlorohexane	9.99	91	5714	1.028	ppb #	77
68) 1,1,1,2-Tetrachloroethane	10.09	131	6867	-0.646	ppb	99
69) m&p-Xylene	10.26	91	31441	1.924	ppb	92
70) o-Xylene	10.69	106	3789	0.892	ppb	91
71) Styrene	10.71	104	12701	0.941	ppb	96
73) 1,3-Dichloropropane	9.08	76	7863	1.149	ppb	89
74) Dibromochloromethane	9.32	129	5850	1.156	ppb	76
75) Chlorobenzene	9.99	112	15314	1.097	ppb	97
76) Ethylbenzene	10.13	91	14114	1.122	ppb	90
77) Bromoform	10.89	173	3646	1.176	ppb	100
79) Isopropylbenzene	11.11	105	18886	1.026	ppb	98
80) 1,1,2,2-Tetrachloroethane	11.43	83	4572	-0.315	ppb	91
81) 1,2,3-Trichloropropane	11.47	110	811	1.247	ppb	99
82) t-1,4-Dichloro-2-Butene	11.50	53	868	1.087	ppb	98
83) Bromobenzene	11.42	156	3280	1.167	ppb	89
84) n-Propylbenzene	11.56	91	12539	1.022	ppb	97
85) 4-Ethyltoluene	11.69	105	16165	0.910	ppb	93
86) 2-Chlorotoluene	11.64	91	8633	1.155	ppb	98
87) 1,3,5-Trimethylbenzene	11.76	105	13491	0.895	ppb	96
88) 4-Chlorotoluene	11.76	91	9399	1.098	ppb	97
89) Tert-Butylbenzene	12.11	119	15655	1.036	ppb	95
90) 1,2,4-Trimethylbenzene	12.16	105	13361	0.918	ppb	99
91) Sec-Butylbenzene	12.35	105	18610	0.989	ppb	93
92) p-Isopropyltoluene	12.52	119	8453	0.966	ppb	92
93) Benzyl Chloride	12.71	91	5627	1.098	ppb #	84
94) 1,3-DCB	12.46	146	6259	1.173	ppb	97
95) 1,4-DCB	12.55	146	11466	1.112	ppb #	86
96) n-Butylbenzene	12.96	91	12788	0.976	ppb	97
97) 1,2-DCB	12.97	146	11109	1.159	ppb	98
98) Hexachloroethane	13.26	117	4469	-0.629	ppb	90
99) 1,2-Dibromo-3-chloropropan	13.82	75	807	1.194	ppb #	67
100) 1,2,4-Trichlorobenzene	14.73	180	5691	0.993	ppb	91
101) Hexachlorobutadiene	14.94	225	3988	1.096	ppb	95
102) Naphthalene	15.00	128	6420	0.605	ppb	94
103) 1,2,3-Trichlorobenzene	15.27	180	2283	0.929	ppb	95

(#) = qualifier out of range (m) = manual integration

Quantitation Report

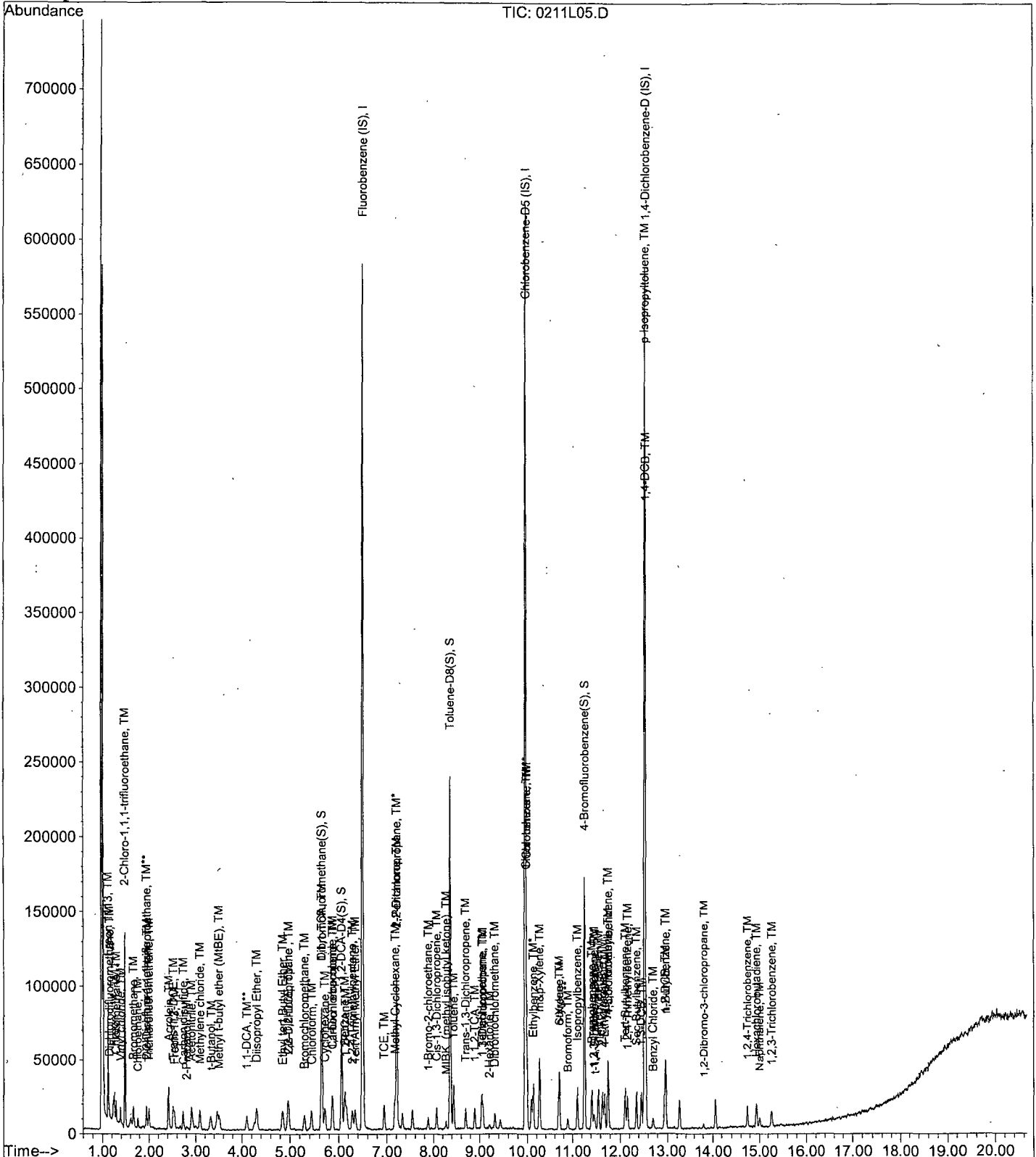
Data File : M:\LOKI\DATA\190211\0211L05.D  
Acq On : 11 Feb 19 9:28  
Sample : 1.0ug/L VOC STD. 2/11/19  
Misc : ISS 1/29/19

Vial: 4  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 12 9:26 2019

Quant Results File: L0211W.RES

Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Feb 12 09:25:44 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190211\0211L06.D  
 Acq On : 11 Feb 19 9:56  
 Sample : 2.0ug/L VOC STD 2/11/19  
 Misc : ISS 1/29/19

Vial: 5  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 12 9:26 2019

Quant Results File: L0211W.RES

Quant Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Feb 12 09:25:44 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	315456	25.000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.96	117	234112	25.000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.54	152	115144	25.000	ppb	0.00
System Monitoring Compounds						
38) Dibromofluoromethane(S)	5.65	111	44829	8.175	ppb	0.00
Spiked Amount	25.000		Recovery	=	32.700%	
43) 1,2-DCA-D4(S)	6.06	65	52490	8.616	ppb	0.00
Spiked Amount	25.000		Recovery	=	34.464%	
64) Toluene-D8(S)	8.36	98	160555	8.511	ppb	0.00
Spiked Amount	25.000		Recovery	=	34.044%	
72) 4-Bromofluorobenzene(S)	11.26	95	59637	8.395	ppb	0.00
Spiked Amount	25.000		Recovery	=	33.580%	
Target Compounds						
2) Freon 1113	1.12	116	46292	17.965	ppb	96
3) Dichlorodifluoromethane	1.15	85	10981	2.039	ppb	95
4) Freon 114	1.25	85	10838	2.103	ppb	91
5) Chloromethane	1.29	50	14496	1.771	ppb	93
6) Vinyl chloride	1.38	62	11281	1.869	ppb	97
7) 2-Chloro-1,1,1-trifluoroet	1.48	118	70664	17.737	ppb	99
8) Bromomethane	1.66	94	7986	1.826	ppb	93
9) Chloroethane	1.76	64	5399	1.735	ppb	99
10) Dichlorofluoromethane	1.95	67	19338	1.937	ppb	88
11) Trichlorofluoromethane	2.00	101	17391	1.929	ppb	94
12) Acrolein	2.42	56	33414	64.111	ppb	100
13) Acetone	2.60	43	1624	-0.331	ppb	97
14) Freon-113	2.55	101	9072	1.955	ppb	95
15) 1,1-DCE	2.52	63	3044	0.684	ppb	# 84
16) t-Butanol	3.34	59	18181	65.822	ppb	97
17) 2-Propanol	2.81	45	2756	16.151	ppb	# 98
18) Acetonitrile	2.91	41	32927	68.362	ppb	94
19) Methyl Acetate	3.00	43	5961	0.651	ppb	96
20) Iodomethane	2.67	142	2750	0.682	ppb	92
21) Acrylonitrile	3.44	52	1914	0.072	ppb	# 67
22) Methylene chloride	3.09	84	11082	1.781	ppb	98
23) Carbon disulfide	2.73	76	29871	1.815	ppb	99
24) Methyl t-butyl ether (MtBE)	3.51	73	20683	1.727	ppb	94
25) Trans-1,2-DCE	2.52	96	4927	1.850	ppb	87
26) Diisopropyl Ether	4.31	45	28400	1.757	ppb	# 88
27) 2,2-Dichloro-1,1,1-trifluo	1.95	85	708	1.929	ppb	83
28) 1,1-DCA	4.10	63	19996	1.866	ppb	98
29) Vinyl Acetate	4.31	43	6221	0.478	ppb	100
30) Ethyl tert Butyl Ether	4.85	59	24481	1.752	ppb	93
31) MEK (2-Butanone)	5.05	43	3084	-0.992	ppb	99
32) Cis-1,2-DCE	4.97	96	11829	1.911	ppb	90
33) 2,2-Dichloropropane	4.96	77	18291	1.980	ppb	96
36) Chloroform	5.44	83	20624	1.860	ppb	90
37) Bromochloromethane	5.29	128	2739	2.025	ppb	83
39) 1,1,1-TCA	5.64	97	7975	1.856	ppb	88
40) Cyclohexane	5.71	41	9442	1.933	ppb	83
41) 1,1-Dichloropropene	5.87	75	12933	1.813	ppb	98
42) 2,2,4-Trimethylpentane	6.28	57	28050	1.802	ppb	97
44) Carbon Tetrachloride	5.87	117	16989	1.920	ppb	99

(#) = qualifier out of range (m) = manual integration

Data File : M:\LOKI\DATA\190211\0211L06.D  
 Acq On : 11 Feb 19 9:56  
 Sample : 2.0ug/L VOC STD 2/11/19  
 Misc : ISS 1/29/19

Vial: 5  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 12 9:26 2019

Quant Results File: L0211W.RES

Quant Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Feb 12 09:25:44 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
45) Tert Amyl Methyl Ether	6.35	73	21473	1.709	ppb	# 89
47) 1,2-DCA	6.16	62	15228	1.815	ppb	99
48) Benzene	6.13	78	43024	1.833	ppb	97
49) TCE	6.95	130	6073	1.808	ppb	90
50) 2-Pentanone	7.21	43	158501	63.642	ppb	98
51) 1,2-Dichloropropane	7.20	63	11983	1.892	ppb	97
52) Bromodichloromethane	7.54	83	8687	0.348	ppb	97
53) Methyl Cyclohexane	7.17	83	13476	1.781	ppb	88
54) Dibromomethane	7.33	93	6715	0.277	ppb	89
56) MIBK (methyl isobutyl ket	8.27	43	5764	1.715	ppb	# 88
57) 1-Bromo-2-chloroethane	7.88	63	6844	1.742	ppb	97
58) Cis-1,3-Dichloropropene	8.07	75	17504	1.898	ppb	96
59) Toluene	8.44	91	24952	1.838	ppb	97
60) Trans-1,3-Dichloropropene	8.70	75	15136	1.838	ppb	99
61) 1,1,2-TCA	8.90	83	7155	1.859	ppb	86
62) 2-Hexanone	9.20	43	3907	1.870	ppb	96
65) 1,2-EDB	9.43	107	4785	0.414	ppb	98
66) Tetrachloroethene	9.05	166	7154	1.894	ppb	90
67) 1-Chlorohexane	9.99	91	11777	1.841	ppb	89
68) 1,1,1,2-Tetrachloroethane	10.09	131	12865	0.515	ppb	99
69) m&p-Xylene	10.26	91	63799	3.390	ppb	94
70) o-Xylene	10.69	106	8092	1.654	ppb	98
71) Styrene	10.71	104	26315	1.693	ppb	96
73) 1,3-Dichloropropane	9.08	76	14931	1.895	ppb	92
74) Dibromochloromethane	9.32	129	11279	1.936	ppb	83
75) Chlorobenzene	9.99	112	29959	1.864	ppb	98
76) Ethylbenzene	10.13	91	25824	1.783	ppb	98
77) Bromoform	10.89	173	7042	1.973	ppb	94
79) Isopropylbenzene	11.11	105	40190	1.837	ppb	95
80) 1,1,2,2-Tetrachloroethane	11.43	83	9672	0.946	ppb	89
81) 1,2,3-Trichloropropane	11.47	110	1541	2.106	ppb	95
82) t-1,4-Dichloro-2-Butene	11.49	53	1971	2.077	ppb	96
83) Bromobenzene	11.42	156	6676	1.998	ppb	98
84) n-Propylbenzene	11.56	91	25936	1.779	ppb	99
85) 4-Ethyltoluene	11.69	105	34980	1.657	ppb	99
86) 2-Chlorotoluene	11.64	91	15842	1.784	ppb	99
87) 1,3,5-Trimethylbenzene	11.76	105	29948	1.671	ppb	100
88) 4-Chlorotoluene	11.76	91	18736	1.841	ppb	100
89) Tert-Butylbenzene	12.11	119	29073	1.619	ppb	97
90) 1,2,4-Trimethylbenzene	12.16	105	27451	1.587	ppb	95
91) Sec-Butylbenzene	12.35	105	39361	1.760	ppb	92
92) p-Isopropyltoluene	12.52	119	16784	1.614	ppb	98
93) Benzyl Chloride	12.71	91	10983	1.803	ppb	96
94) 1,3-DCB	12.46	146	12786	2.017	ppb	96
95) 1,4-DCB	12.56	146	25479	2.079	ppb	97
96) n-Butylbenzene	12.96	91	25949	1.666	ppb	96
97) 1,2-DCB	12.97	146	21234	1.864	ppb	95
98) Hexachloroethane	13.25	117	8773	0.609	ppb	97
99) 1,2-Dibromo-3-chloropropan	13.81	75	1541	1.919	ppb	# 67
100) 1,2,4-Trichlorobenzene	14.74	180	11622	1.706	ppb	91
101) Hexachlorobutadiene	14.94	225	8173	1.890	ppb	96
102) Naphthalene	15.00	128	14498	1.451	ppb	92
103) 1,2,3-Trichlorobenzene	15.27	180	4871	1.667	ppb	93

(#) = qualifier out of range (m) = manual integration

Quantitation Report

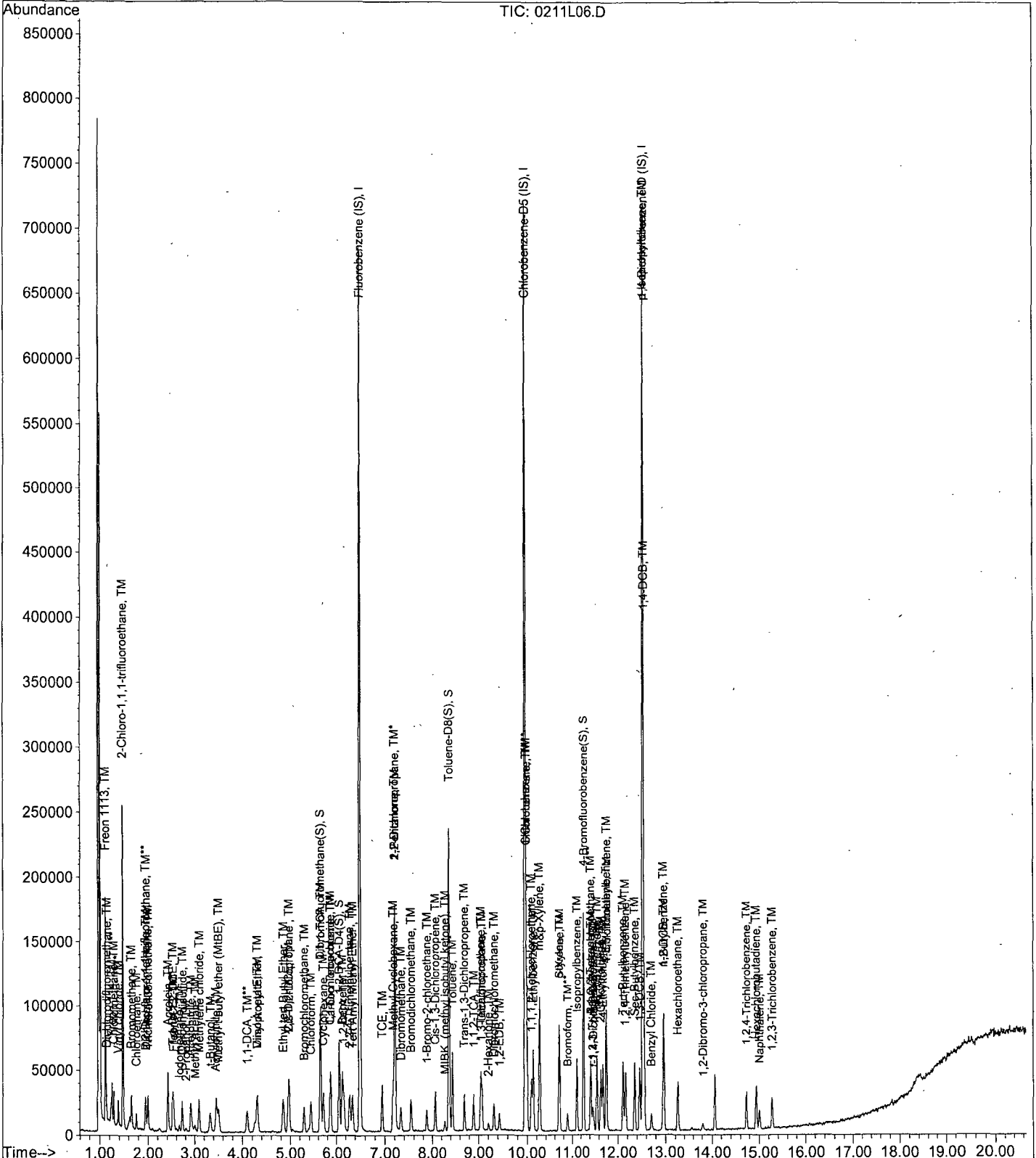
Data File : M:\LOKI\DATA\190211\0211L06.D  
Acq On : 11 Feb 19 9:56  
Sample : 2.0ug/L VOC STD 2/11/19  
Misc : ISS 1/29/19

Vial: 5  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 12 9:26 2019

Quant Results File: L0211W.RES

Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Feb 12 09:25:44 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190211\0211L07.D  
 Acq On : 11 Feb 19 10:24  
 Sample : 5.0ug/L VOC STD 2/11/19  
 Misc : ISS 1/29/19

Vial: 6  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 12 9:26 2019

Quant Results File: L0211W.RES

Quant Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Feb 12 09:25:44 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	263424	25.000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.96	117	207488	25.000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.53	152	106008	25.000	ppb	0.00

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
38) Dibromofluoromethane(S)	5.65	111	121402	25.509	ppb	0.00
Spiked Amount				25.000		
				Recovery	=	102.036%
43) 1,2-DCA-D4(S)	6.06	65	138512	27.227	ppb	0.00
Spiked Amount				25.000		
				Recovery	=	108.908%
64) Toluene-D8(S)	8.36	98	433365	25.921	ppb	0.00
Spiked Amount				25.000		
				Recovery	=	103.684%
72) 4-Bromofluorobenzene(S)	11.26	95	158480	25.173	ppb	0.00
Spiked Amount				25.000		
				Recovery	=	100.692%

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Freon 1113	1.12	116	92318	42.904	ppb	99
3) Dichlorodifluoromethane	1.15	85	19668	4.374	ppb	98
4) Freon 114	1.25	85	21299	4.948	ppb	95
5) Chloromethane	1.29	50	33664	5.047	ppb	97
6) Vinyl chloride	1.38	62	23788	4.719	ppb	99
7) 2-Chloro-1,1,1-trifluoroet	1.48	118	146752	44.112	ppb	97
8) Bromomethane	1.66	94	16190	4.221	ppb	98
9) Chloroethane	1.76	64	12357	4.985	ppb	92
10) Dichlorofluoromethane	1.95	67	39837	4.779	ppb	95
11) Trichlorofluoromethane	2.00	101	36989	4.913	ppb	99
12) Acrolein	2.42	56	47265	108.600	ppb	98
13) Acetone	2.60	43	3267	4.642	ppb	99
14) Freon-113	2.55	101	19940	5.146	ppb	98
15) 1,1-DCE	2.52	63	5678	4.365	ppb	92
16) t-Butanol	3.33	59	23877	103.518	ppb	93
17) 2-Propanol	2.81	45	5819	40.836	ppb	# 92
18) Acetonitrile	2.91	41	43328	107.725	ppb	92
19) Methyl Acetate	3.00	43	12125	5.109	ppb	91
20) Iodomethane	2.67	142	7804	4.233	ppb	97
21) Acrylonitrile	3.44	52	4678	4.663	ppb	98
22) Methylene chloride	3.09	84	25159	4.842	ppb	97
23) Carbon disulfide	2.73	76	67677	4.923	ppb	99
24) Methyl t-butyl ether (MtBE)	3.51	73	47717	4.772	ppb	94
25) Trans-1,2-DCE	2.52	96	10503	4.723	ppb	89
26) Diisopropyl Ether	4.31	45	64041	4.745	ppb	95
27) 2,2-Dichloro-1,1,1-trifluo	1.95	85	1544	5.038	ppb	100
28) 1,1-DCA	4.10	63	46368	5.181	ppb	97
29) Vinyl Acetate	4.30	43	13606	4.937	ppb	# 100
30) Ethyl tert Butyl Ether	4.85	59	58256	4.993	ppb	97
31) MEK (2-Butanone)	5.04	43	8661	5.649	ppb	92
32) Cis-1,2-DCE	4.97	96	26540	5.134	ppb	92
33) 2,2-Dichloropropane	4.96	77	38677	5.015	ppb	96
36) Chloroform	5.44	83	46859	5.060	ppb	99
37) Bromochloromethane	5.29	128	6555	6.123	ppb	89
39) 1,1,1-TCA	5.64	97	16608	4.628	ppb	99
40) Cyclohexane	5.71	41	18744	4.596	ppb	90
41) 1,1-Dichloropropene	5.87	75	28622	4.806	ppb	96
42) 2,2,4-Trimethylpentane	6.28	57	62893	4.839	ppb	98
44) Carbon Tetrachloride	5.86	117	35951	4.866	ppb	99

(#) = qualifier out of range (m) = manual integration



Data File : M:\LOKI\DATA\190211\0211L07.D  
 Acq On : 11 Feb 19 10:24  
 Sample : 5.0ug/L VOC STD 2/11/19  
 Misc : ISS 1/29/19

Vial: 6  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 12 9:26 2019

Quant Results File: L0211W.RES

Quant Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Feb 12 09:25:44 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
45) Tert Amyl Methyl Ether	6.35	73	51041	4.864	ppb	96
47) 1,2-DCA	6.16	62	36680	5.234	ppb	99
48) Benzene	6.13	78	95328	4.864	ppb	97
49) TCE	6.95	130	14561	5.192	ppb	97
50) 2-Pentanone	7.21	43	216179	103.945	ppb	99
51) 1,2-Dichloropropane	7.20	63	26759	5.059	ppb	98
52) Bromodichloromethane	7.54	83	19992	5.118	ppb	97
53) Methyl Cyclohexane	7.17	83	30086	4.761	ppb	93
54) Dibromomethane	7.33	93	15299	5.256	ppb	92
56) MIBK (methyl isobutyl ket	8.27	43	15347	5.469	ppb	# 90
57) 1-Bromo-2-chloroethane	7.88	63	17432	5.312	ppb	99
58) Cis-1,3-Dichloropropene	8.07	75	37886	4.919	ppb	95
59) Toluene	8.44	91	55448	4.891	ppb	99
60) Trans-1,3-Dichloropropene	8.70	75	33212	4.830	ppb	97
61) 1,1,2-TCA	8.90	83	17130	5.330	ppb	96
62) 2-Hexanone	9.21	43	8454	4.846	ppb	# 86
65) 1,2-EDB	9.44	107	9931	4.509	ppb	99
66) Tetrachloroethene	9.05	166	16056	4.797	ppb	97
67) 1-Chlorohexane	9.99	91	25834	4.557	ppb	95
68) 1,1,1,2-Tetrachloroethane	10.09	131	27784	4.744	ppb	99
69) m&p-Xylene	10.26	91	158395	9.496	ppb	100
70) o-Xylene	10.69	106	21952	5.064	ppb	99
71) Styrene	10.71	104	65417	4.750	ppb	94
73) 1,3-Dichloropropane	9.08	76	34559	4.949	ppb	99
74) Dibromochloromethane	9.32	129	26754	5.182	ppb	98
75) Chlorobenzene	9.99	112	69878	4.905	ppb	97
76) Ethylbenzene	10.13	91	58488	4.556	ppb	97
77) Bromoform	10.89	173	16381	5.179	ppb	99
79) Isopropylbenzene	11.10	105	97486	4.839	ppb	98
80) 1,1,2,2-Tetrachloroethane	11.43	83	21842	5.070	ppb	97
81) 1,2,3-Trichloropropane	11.47	110	4006	6.288	ppb	94
82) t-1,4-Dichloro-2-Butene	11.49	53	4645	5.317	ppb	97
83) Bromobenzene	11.42	156	15283	4.969	ppb	95
84) n-Propylbenzene	11.56	91	62636	4.666	ppb	98
85) 4-Ethyltoluene	11.68	105	92191	4.743	ppb	94
86) 2-Chlorotoluene	11.64	91	39008	4.770	ppb	99
87) 1,3,5-Trimethylbenzene	11.75	105	78220	4.741	ppb	94
88) 4-Chlorotoluene	11.76	91	46408	4.953	ppb	99
89) Tert-Butylbenzene	12.11	119	78247	4.732	ppb	95
90) 1,2,4-Trimethylbenzene	12.16	105	72741	4.567	ppb	97
91) Sec-Butylbenzene	12.35	105	98552	4.785	ppb	99
92) p-Isopropyltoluene	12.52	119	43480	4.541	ppb	99
93) Benzyl Chloride	12.71	91	25379	4.524	ppb	97
94) 1,3-DCB	12.46	146	28024	4.802	ppb	99
95) 1,4-DCB	12.56	146	57896	5.131	ppb	97
96) n-Butylbenzene	12.96	91	61959	4.321	ppb	95
97) 1,2-DCB	12.97	146	50499	4.815	ppb	96
98) Hexachloroethane	13.25	117	18698	4.621	ppb	96
99) 1,2-Dibromo-3-chloropropan	13.81	75	3806	5.148	ppb	# 69
100) 1,2,4-Trichlorobenzene	14.73	180	28425	4.531	ppb	97
101) Hexachlorobutadiene	14.93	225	18184	4.568	ppb	90
102) Naphthalene	15.00	128	35295	4.333	ppb	99
103) 1,2,3-Trichlorobenzene	15.27	180	12047	4.479	ppb	94

(#) = qualifier out of range (m) = manual integration

Quantitation Report

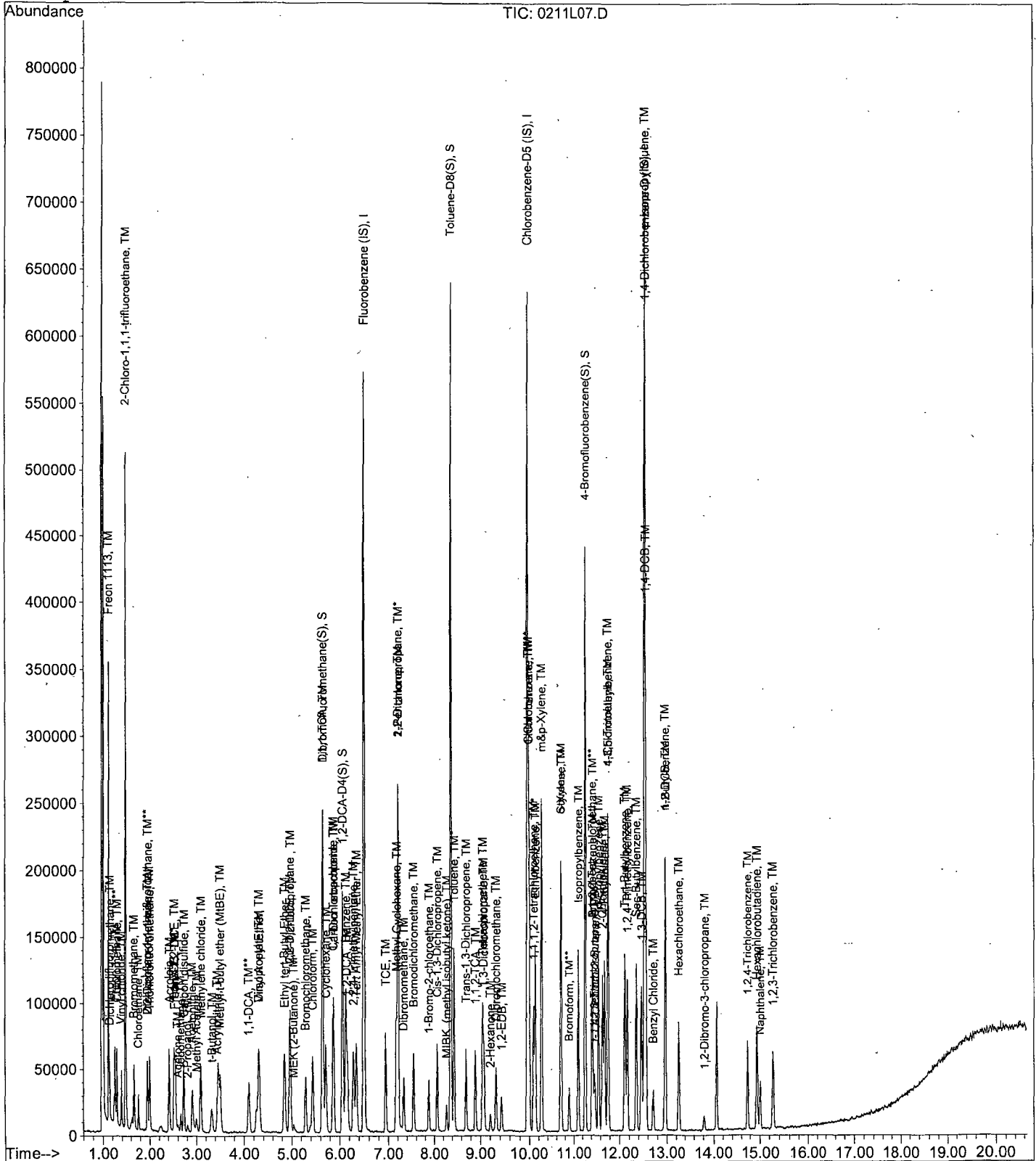
Data File : M:\LOKI\DATA\190211\0211L07.D  
Acq On : 11 Feb 19 10:24  
Sample : 5.0ug/L VOC STD 2/11/19  
Misc : ISS 1/29/19

Vial: 6  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 12 9:26 2019

Quant Results File: L0211W.RES

Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Feb 12 09:25:44 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190211\0211L08.D  
 Acq On : 11 Feb 19 10:52  
 Sample : 10ug/L VOC STD 2/11/19  
 Misc : ISS 1/29/19

Vial: 7  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 12 9:26 2019

Quant Results File: L0211W.RES

Quant Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Feb 12 09:25:44 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	248256	25.000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.96	117	187584	25.000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.53	152	101024	25.000	ppb	0.00

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
38) Dibromofluoromethane(S)	5.64	111	116635	26.035	ppb	0.00
Spiked Amount	25.000		Recovery	=	104.140%	
43) 1,2-DCA-D4(S)	6.06	65	138507	28.890	ppb	0.00
Spiked Amount	25.000		Recovery	=	115.560%	
64) Toluene-D8(S)	8.36	98	421523	27.888	ppb	0.00
Spiked Amount	25.000		Recovery	=	111.552%	
72) 4-Bromofluorobenzene(S)	11.26	95	157058	27.594	ppb	0.00
Spiked Amount	25.000		Recovery	=	110.376%	

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Freon 1113	1.12	116	219597	108.291	ppb	100
3) Dichlorodifluoromethane	1.14	85	42843	10.111	ppb	100
4) Freon 114	1.25	85	44250	10.908	ppb	100
5) Chloromethane	1.29	50	63064	10.098	ppb	100
6) Vinyl chloride	1.38	62	47958	10.095	ppb	100
7) 2-Chloro-1,1,1-trifluoroet	1.47	118	337216	107.558	ppb	100
8) Bromomethane	1.65	94	37946	10.278	ppb	100
9) Chloroethane	1.75	64	24408	10.593	ppb	100
10) Dichlorofluoromethane	1.95	67	81114	10.324	ppb	100
11) Trichlorofluoromethane	2.00	101	78036	10.997	ppb	100
12) Acrolein	2.42	56	56671	138.168	ppb	100
13) Acetone	2.60	43	5922	12.495	ppb	100
14) Freon-113	2.54	101	39252	10.750	ppb	100
15) 1,1-DCE	2.52	63	12171	12.332	ppb	100
16) t-Butanol	3.33	59	29312	134.846	ppb	100
17) 2-Propanol	2.81	45	14498	107.960	ppb	# 100
18) Acetonitrile	2.91	41	50302	132.706	ppb	100
19) Methyl Acetate	3.00	43	23157	12.468	ppb	100
20) Iodomethane	2.66	142	17424	10.678	ppb	100
21) Acrylonitrile	3.44	52	10055	13.095	ppb	100
22) Methylene chloride	3.09	84	50547	10.323	ppb	100
23) Carbon disulfide	2.73	76	133557	10.309	ppb	100
24) Methyl t-butyl ether (MtBE)	3.51	73	98101	10.409	ppb	100
25) Trans-1,2-DCE	2.52	96	23576	11.249	ppb	100
26) Diisopropyl Ether	4.31	45	131831	10.365	ppb	100
27) 2,2-Dichloro-1,1,1-trifluo	1.95	85	2953	10.223	ppb	# 65
28) 1,1-DCA	4.10	63	87523	10.377	ppb	100
29) Vinyl Acetate	4.31	43	27576	12.552	ppb	100
30) Ethyl tert Butyl Ether	4.85	59	116612	10.606	ppb	100
31) MEK (2-Butanone)	5.05	43	14106	12.152	ppb	100
32) Cis-1,2-DCE	4.97	96	51326	10.534	ppb	100
33) 2,2-Dichloropropane	4.96	77	77521	10.665	ppb	100
36) Chloroform	5.44	83	94149	10.789	ppb	100
37) Bromochloromethane	5.29	128	11843	11.895	ppb	100
39) 1,1,1-TCA	5.65	97	36432	10.772	ppb	100
40) Cyclohexane	5.71	41	38783	10.091	ppb	100
41) 1,1-Dichloropropene	5.87	75	60747	10.823	ppb	100
42) 2,2,4-Trimethylpentane	6.29	57	129138	10.543	ppb	100
44) Carbon Tetrachloride	5.86	117	73530	10.561	ppb	100

(#) = qualifier out of range (m) = manual integration

Data File : M:\LOKI\DATA\190211\0211L08.D  
 Acq On. : 11 Feb 19 10:52  
 Sample : 10ug/L VOC STD 2/11/19  
 Misc : ISS 1/29/19

Vial: 7  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 12 9:26 2019

Quant Results File: L0211W.RES

Quant Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Feb 12 09:25:44 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
45) Tert Amyl Methyl Ether	6.35	73	106088	10.726	ppb	100
47) 1,2-DCA	6.16	62	69438	10.514	ppb	100
48) Benzene	6.13	78	192130	10.402	ppb	100
49) TCE	6.94	130	27608	10.447	ppb	100
50) 2-Pentanone	7.21	43	271532	138.538	ppb	100
51) 1,2-Dichloropropane	7.20	63	53015	10.635	ppb	100
52) Bromodichloromethane	7.54	83	38896	12.670	ppb	100
53) Methyl Cyclohexane	7.17	83	62571	10.508	ppb	100
54) Dibromomethane	7.33	93	29385	12.959	ppb	100
56) MIBK (methyl isobutyl ket	8.27	43	29085	10.998	ppb	100
57) 1-Bromo-2-chloroethane	7.88	63	32568	10.532	ppb	100
58) Cis-1,3-Dichloropropene	8.07	75	76109	10.485	ppb	100
59) Toluene	8.44	91	113072	10.583	ppb	100
60) Trans-1,3-Dichloropropene	8.70	75	68707	10.603	ppb	100
61) 1,1,2-TCA	8.90	83	31994	10.564	ppb	100
62) 2-Hexanone	9.20	43	17769	10.808	ppb	100
65) 1,2-EDB	9.43	107	21352	13.821	ppb	100
66) Tetrachloroethene	9.05	166	32904	10.874	ppb	100
67) 1-Chlorohexane	9.99	91	56208	10.966	ppb	100
68) 1,1,1,2-Tetrachloroethane	10.09	131	57222	13.436	ppb	100
69) m&p-Xylene	10.26	91	344955	22.876	ppb	100
70) o-Xylene	10.69	106	45704	11.661	ppb	100
71) Styrene	10.71	104	137261	11.024	ppb	100
73) 1,3-Dichloropropane	9.08	76	66863	10.591	ppb	100
74) Dibromochloromethane	9.32	129	50154	10.745	ppb	100
75) Chlorobenzene	9.99	112	144105	11.189	ppb	100
76) Ethylbenzene	10.13	91	124360	10.715	ppb	100
77) Bromoform	10.89	173	31870	11.144	ppb	100
79) Isopropylbenzene	11.11	105	208624	10.867	ppb	100
80) 1,1,2,2-Tetrachloroethane	11.43	83	43078	12.308	ppb	100
81) 1,2,3-Trichloropropane	11.47	110	7488	12.513	ppb	100
82) t-1,4-Dichloro-2-Butene	11.49	53	9201	11.051	ppb	100
83) Bromobenzene	11.42	156	32160	10.972	ppb	100
84) n-Propylbenzene	11.56	91	138859	10.854	ppb	100
85) 4-Ethyltoluene	11.69	105	208008	11.229	ppb	100
86) 2-Chlorotoluene	11.64	91	85184	10.931	ppb	100
87) 1,3,5-Trimethylbenzene	11.75	105	175483	11.161	ppb	100
88) 4-Chlorotoluene	11.76	91	99792	11.177	ppb	100
89) Tert-Butylbenzene	12.11	119	172738	10.961	ppb	100
90) 1,2,4-Trimethylbenzene	12.16	105	169320	11.155	ppb	100
91) Sec-Butylbenzene	12.35	105	222041	11.313	ppb	100
92) p-Isopropyltoluene	12.52	119	101272	11.098	ppb	100
93) Benzyl Chloride	12.71	91	54409	10.178	ppb	100
94) 1,3-DCB	12.46	146	61104	10.987	ppb	100
95) 1,4-DCB	12.56	146	114714	10.667	ppb	100
96) n-Butylbenzene	12.96	91	144299	10.560	ppb	100
97) 1,2-DCB	12.97	146	106031	10.608	ppb	100
98) Hexachloroethane	13.26	117	39925	12.850	ppb	100
99) 1,2-Dibromo-3-chloropropan	13.82	75	8015	11.376	ppb	100
100) 1,2,4-Trichlorobenzene	14.73	180	63414	10.607	ppb	100
101) Hexachlorobutadiene	14.93	225	40894	10.781	ppb	100
102) Naphthalene	15.00	128	82189	10.733	ppb	100
103) 1,2,3-Trichlorobenzene	15.27	180	28160	10.987	ppb	100

(#) = qualifier out of range (m) = manual integration

Quantitation Report

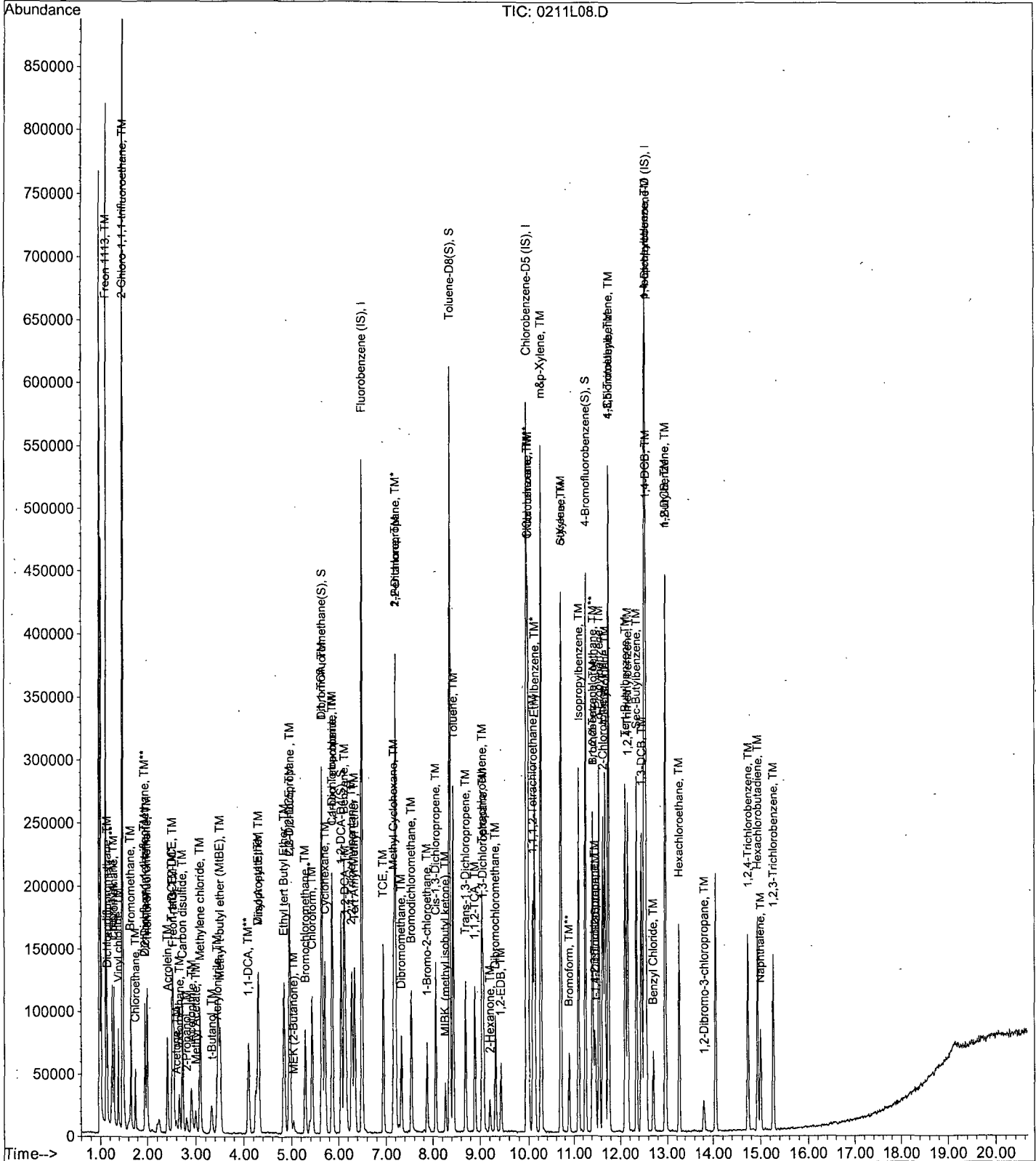
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Acq On : 11 Feb 19 10:52  
Sample : 10ug/L VOC STD 2/11/19  
Misc : ISS 1/29/19

Vial: 7  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 12 9:26 2019

Quant Results File: L0211W.RES

Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Feb 12 09:25:44 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190211\0211L09.D  
 Acq On : 11 Feb 19 11:20  
 Sample : 20ug/L VOC STD 2/11/19  
 Misc : ISS 1/29/19

Vial: 8  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 12 9:26 2019

Quant Results File: L0211W.RES

Quant Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Feb 12 09:25:44 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	266496	25.000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.96	117	213632	25.000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.53	152	114808	25.000	ppb	0.00

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
38) Dibromofluoromethane(S)	5.65	111	236073	53.969	ppb	0.00
Spiked Amount	25.000		Recovery	=	215.876%	
43) 1,2-DCA-D4 (S)	6.06	65	273282	53.100	ppb	0.00
Spiked Amount	25.000		Recovery	=	212.400%	
64) Toluene-D8 (S)	8.36	98	910086	52.871	ppb	0.00
Spiked Amount	25.000		Recovery	=	211.484%	
72) 4-Bromofluorobenzene(S)	11.26	95	333710	51.482	ppb	0.00
Spiked Amount	25.000		Recovery	=	205.928%	

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Freon 1113	1.11	116	279028	128.181	ppb	97
3) Dichlorodifluoromethane	1.14	85	95650	21.028	ppb	98
4) Freon 114	1.25	85	91658	21.049	ppb	94
5) Chloromethane	1.29	50	133356	19.958	ppb	99
6) Vinyl chloride	1.38	62	103044	20.205	ppb	96
7) 2-Chloro-1,1,1-trifluoroet	1.47	118	432192	128.416	ppb	99
8) Bromomethane	1.65	94	80031	20.050	ppb	100
9) Chloroethane	1.75	64	48544	19.738	ppb	99
10) Dichlorofluoromethane	1.95	67	171641	20.351	ppb	97
11) Trichlorofluoromethane	2.00	101	156958	20.605	ppb	100
12) Acrolein	2.42	56	69372	157.557	ppb #	98
13) Acetone	2.60	43	10521	23.208	ppb	94
14) Freon-113	2.54	101	83116	21.204	ppb	93
15) 1,1-DCE	2.52	63	26408	25.387	ppb	90
16) t-Butanol	3.34	59	36556	156.661	ppb	98
17) 2-Propanol	2.82	45	19289	133.805	ppb #	92
18) Acetonitrile	2.91	41	62632	153.925	ppb	91
19) Methyl Acetate	3.00	43	47299	24.545	ppb	98
20) Iodomethane	2.66	142	45104	24.595	ppb	96
21) Acrylonitrile	3.43	52	19783	24.612	ppb	89
22) Methylene chloride	3.09	84	120478	22.920	ppb	99
23) Carbon disulfide	2.73	76	283179	20.362	ppb	99
24) Methyl t-butyl ether (MtBE)	3.51	73	209116	20.670	ppb	96
25) Trans-1,2-DCE	2.51	96	45336	20.150	ppb	95
26) Diisopropyl Ether	4.31	45	291808	21.373	ppb	96
27) 2,2-Dichloro-1,1,1-trifluo	1.95	85	6426	20.724	ppb	92
28) 1,1-DCA	4.10	63	182231	20.127	ppb	96
29) Vinyl Acetate	4.31	43	55520	23.607	ppb #	100
30) Ethyl tert Butyl Ether	4.85	59	245854	20.830	ppb	93
31) MEK (2-Butanone)	5.04	43	29765	25.887	ppb	98
32) Cis-1,2-DCE	4.97	96	109283	20.895	ppb	91
33) 2,2-Dichloropropane	4.96	77	156291	20.030	ppb	98
36) Chloroform	5.44	83	187693	20.036	ppb	94
37) Bromochloromethane	5.29	128	23696	22.319	ppb	97
39) 1,1,1-TCA	5.65	97	72904	20.080	ppb	99
40) Cyclohexane	5.72	41	82877	20.089	ppb	98
41) 1,1-Dichloropropene	5.87	75	128427	21.316	ppb	97
42) 2,2,4-Trimethylpentane	6.28	57	287663	21.878	ppb	97
44) Carbon Tetrachloride	5.86	117	151492	20.270	ppb	96

(#) = qualifier out of range (m) = manual integration

Data File : M:\LOKI\DATA\190211\0211L09.D  
 Acq On : 11 Feb 19 11:20  
 Sample : 20ug/L VOC STD 2/11/19  
 Misc : ISS 1/29/19

Vial: 8  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 12 9:26 2019

Quant Results File: L0211W.RES

Quant Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Feb 12 09:25:44 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
45) Tert Amyl Methyl Ether	6.34	73	228553	21.527	ppb	100
47) 1,2-DCA	6.16	62	142339	20.077	ppb	97
48) Benzene	6.13	78	403975	20.374	ppb	99
49) TCE	6.94	130	55176	19.449	ppb	95
50) 2-Pentanone	7.21	43	344994	163.971	ppb	97
51) 1,2-Dichloropropane	7.20	63	106235	19.853	ppb	99
52) Bromodichloromethane	7.54	83	78840	24.682	ppb	98
53) Methyl Cyclohexane	7.17	83	138903	21.730	ppb	98
54) Dibromomethane	7.33	93	58172	24.719	ppb	89
56) MIBK (methyl isobutyl ket	8.27	43	61162	21.545	ppb	96
57) 1-Bromo-2-chloroethane	7.88	63	68904	20.757	ppb	99
58) Cis-1,3-Dichloropropene	8.07	75	162100	20.802	ppb	96
59) Toluene	8.44	91	247424	21.573	ppb	96
60) Trans-1,3-Dichloropropene	8.70	75	144390	20.757	ppb	99
61) 1,1,2-TCA	8.90	83	66693	20.513	ppb	96
62) 2-Hexanone	9.21	43	35792	20.280	ppb	95
65) 1,2-EDB	9.43	107	42160	24.717	ppb	92
66) Tetrachloroethene	9.05	166	66592	19.325	ppb	93
67) 1-Chlorohexane	9.99	91	121972	20.896	ppb	99
68) 1,1,1,2-Tetrachloroethane	10.09	131	113487	24.093	ppb	98
69) m&p-Xylene	10.26	91	755834	44.012	ppb	100
70) o-Xylene	10.69	106	95552	21.408	ppb	93
71) Styrene	10.71	104	314839	22.203	ppb	99
73) 1,3-Dichloropropane	9.08	76	139847	19.451	ppb	95
74) Dibromochloromethane	9.32	129	103970	19.560	ppb	99
75) Chlorobenzene	9.99	112	297383	20.275	ppb	98
76) Ethylbenzene	10.13	91	281856	21.325	ppb	98
77) Bromoform	10.89	173	62285	19.124	ppb	92
79) Isopropylbenzene	11.11	105	446236	20.453	ppb	99
80) 1,1,2,2-Tetrachloroethane	11.43	83	88612	23.167	ppb	98
81) 1,2,3-Trichloropropane	11.46	110	14524	21.490	ppb	96
82) t-1,4-Dichloro-2-Butene	11.49	53	18865	19.938	ppb	97
83) Bromobenzene	11.42	156	66936	20.094	ppb	97
84) n-Propylbenzene	11.56	91	311111	21.399	ppb	99
85) 4-Ethyltoluene	11.69	105	473540	22.494	ppb	99
86) 2-Chlorotoluene	11.64	91	176828	19.967	ppb	97
87) 1,3,5-Trimethylbenzene	11.75	105	400726	22.427	ppb	96
88) 4-Chlorotoluene	11.76	91	215616	21.249	ppb	99
89) Tert-Butylbenzene	12.11	119	379415	21.185	ppb	94
90) 1,2,4-Trimethylbenzene	12.16	105	383993	22.261	ppb	99
91) Sec-Butylbenzene	12.35	105	482177	21.617	ppb	95
92) p-Isopropyltoluene	12.52	119	231488	22.322	ppb	99
93) Benzyl Chloride	12.71	91	117940	19.414	ppb	98
94) 1,3-DCB	12.46	146	125792	19.903	ppb	99
95) 1,4-DCB	12.56	146	239961	19.635	ppb	98
96) n-Butylbenzene	12.96	91	335891	21.629	ppb	97
97) 1,2-DCB	12.97	146	222720	19.608	ppb	98
98) Hexachloroethane	13.25	117	84341	24.470	ppb	93
99) 1,2-Dibromo-3-chloropropan	13.81	75	16721	20.883	ppb	87
100) 1,2,4-Trichlorobenzene	14.74	180	145351	21.392	ppb	98
101) Hexachlorobutadiene	14.93	225	86841	20.145	ppb	95
102) Naphthalene	15.00	128	196180	21.755	ppb	100
103) 1,2,3-Trichlorobenzene	15.27	180	59280	20.353	ppb	97

(#) = qualifier out of range (m) = manual integration

Quantitation Report

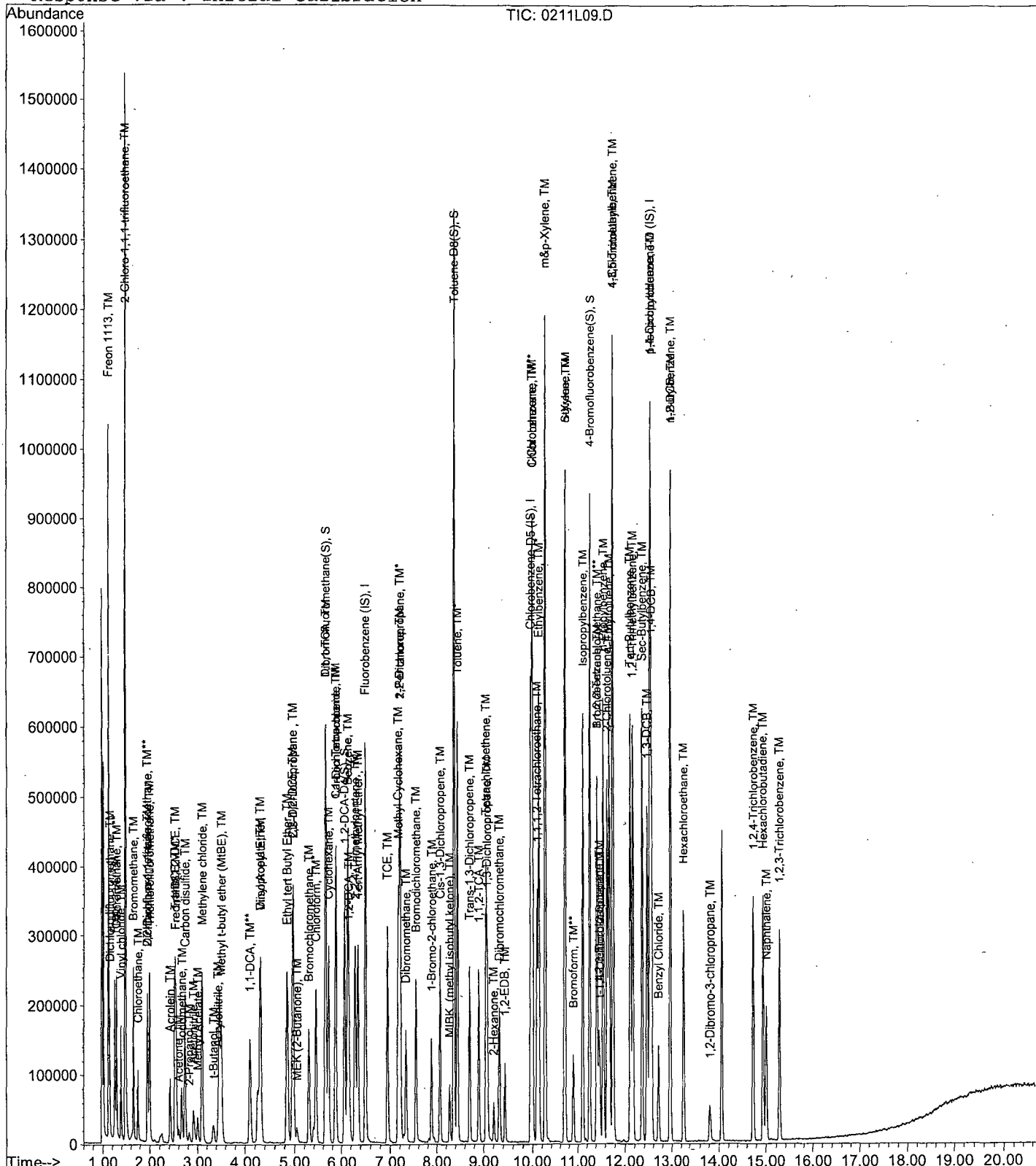
Data File : M:\LOKI\DATA\190211\0211L09.D  
Acq On : 11 Feb 19 11:20  
Sample : 20ug/L VOC STD 2/11/19  
Misc : ISS 1/29/19

Vial: 8  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 12 9:26 2019

Quant Results File: L0211W.RES

Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Feb 12 09:25:44 2019  
Response via : Initial Calibration





Data File : M:\LOKI\DATA\190211\0211L10.D  
 Acq On : 11 Feb 19 11:48  
 Sample : 40ug/L VOC STD 2/11/19  
 Misc : ISS 1/29/19

Vial: 9  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 12 9:26 2019

Quant Results File: L0211W.RES

Quant Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Feb 12 09:25:44 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev (Min)
1) Fluorobenzene (IS)	6.50	96	317824	25.000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.96	117	248320	25.000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.53	152	132864	25.000	ppb	0.00

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev (Min)
38) Dibromofluoromethane(S)	5.65	111	245711	45.567	ppb	0.00
Spiked Amount	25.000		Recovery	=	182.268%	
43) 1,2-DCA-D4 (S)	6.06	65	279296	45.504	ppb	0.00
Spiked Amount	25.000		Recovery	=	182.016%	
64) Toluene-D8 (S)	8.36	98	927589	46.360	ppb	0.00
Spiked Amount	25.000		Recovery	=	185.440%	
72) 4-Bromofluorobenzene(S)	11.26	95	344642	45.741	ppb	0.00
Spiked Amount	25.000		Recovery	=	182.964%	

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Freon 1113	1.12	116	325476	125.371	ppb	99
3) Dichlorodifluoromethane	1.14	85	193612	35.691	ppb	96
4) Freon 114	1.25	85	194755	37.501	ppb	100
5) Chloromethane	1.29	50	257170	32.314	ppb	98
6) Vinyl chloride	1.38	62	207054	34.043	ppb	99
7) 2-Chloro-1,1,1-trifluoroet	1.48	118	498176	124.116	ppb	99
8) Bromomethane	1.65	94	156288	32.737	ppb	100
9) Chloroethane	1.74	64	93688	32.023	ppb	96
10) Dichlorofluoromethane	1.95	67	344827	34.283	ppb	97
11) Trichlorofluoromethane	1.99	101	321915	35.436	ppb	99
12) Acrolein	2.42	56	85379	162.596	ppb	# 98
13) Acetone	2.60	43	18536	36.127	ppb	# 88
14) Freon-113	2.54	101	168970	36.145	ppb	96
15) 1,1-DCE	2.51	63	53312	41.114	ppb	93
16) t-Butanol	3.35	59	46735	167.937	ppb	99
17) 2-Propanol	2.82	45	22819	132.729	ppb	# 90
18) Acetonitrile	2.91	41	73728	151.932	ppb	93
19) Methyl Acetate	3.00	43	96212	40.659	ppb	98
20) Iodomethane	2.66	142	99720	41.838	ppb	97
21) Acrylonitrile	3.43	52	40726	41.177	ppb	89
22) Methylene chloride	3.09	84	220068	35.104	ppb	95
23) Carbon disulfide	2.73	76	577799	34.838	ppb	100
24) Methyl t-butyl ether (MtBE)	3.51	73	442125	36.644	ppb	96
25) Trans-1,2-DCE	2.51	96	92840	34.600	ppb	91
26) Diisopropyl Ether	4.31	45	612714	37.629	ppb	96
27) 2,2-Dichloro-1,1,1-trifluo	1.95	85	12742	34.457	ppb	96
28) 1,1-DCA	4.10	63	372984	34.543	ppb	98
29) Vinyl Acetate	4.26	43	124040	41.232	ppb	# 100
30) Ethyl tert Butyl Ether	4.85	59	522531	37.122	ppb	96
31) MEK (2-Butanone)	5.04	43	55444	40.066	ppb	88
32) Cis-1,2-DCE	4.97	96	221186	35.460	ppb	98
33) 2,2-Dichloropropane	4.96	77	327190	35.160	ppb	97
36) Chloroform	5.44	83	380963	34.099	ppb	99
37) Bromochloromethane	5.29	128	47792	37.863	ppb	94
39) 1,1,1-TCA	5.65	97	148608	34.321	ppb	99
40) Cyclohexane	5.71	41	179426	36.468	ppb	97
41) 1,1-Dichloropropene	5.87	75	268100	37.312	ppb	97
42) 2,2,4-Trimethylpentane	6.28	57	605551	38.617	ppb	96
44) Carbon Tetrachloride	5.86	117	314275	35.260	ppb	97

(#) = qualifier out of range (m) = manual integration

Data File : M:\LOKI\DATA\190211\0211L10.D  
 Acq On : 11 Feb 19 11:48  
 Sample : 40ug/L VOC STD 2/11/19  
 Misc : ISS 1/29/19

Vial: 9  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 12 9:26 2019

Quant Results File: L0211W.RES

Quant Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Feb 12 09:25:44 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
45) Tert Amyl Methyl Ether	6.35	73	481551	38.032	ppb	98
47) 1,2-DCA	6.16	62	290310	34.335	ppb	98
48) Benzene	6.13	78	819399	34.652	ppb	99
49) TCE	6.95	130	114272	33.775	ppb	97
50) 2-Pentanone	7.21	43	430804	171.688	ppb	98
51) 1,2-Dichloropropane	7.20	63	222023	34.790	ppb	100
52) Bromodichloromethane	7.54	83	162240	41.338	ppb	99
53) Methyl Cyclohexane	7.17	83	295606	38.776	ppb	100
54) Dibromomethane	7.33	93	118252	40.975	ppb	90
56) MIBK (methyl isobutyl ket	8.27	43	114636	33.860	ppb	99
57) 1-Bromo-2-chloroethane	7.88	63	133952	33.835	ppb	99
58) Cis-1,3-Dichloropropene	8.07	75	335059	36.054	ppb	96
59) Toluene	8.44	91	497984	36.407	ppb	98
60) Trans-1,3-Dichloropropene	8.70	75	289966	34.953	ppb	99
61) 1,1,2-TCA	8.90	83	133326	34.386	ppb	99
62) 2-Hexanone	9.21	43	76466	36.329	ppb	95
65) 1,2-EDB	9.43	107	80656	39.861	ppb	90
66) Tetrachloroethene	9.05	166	138560	34.592	ppb	97
67) 1-Chlorohexane	9.99	91	263724	38.869	ppb	99
68) 1,1,1,2-Tetrachloroethane	10.09	131	231891	41.277	ppb	95
69) m&p-Xylene	10.26	91	1581579	79.230	ppb	100
70) o-Xylene	10.69	106	213440	41.139	ppb	95
71) Styrene	10.71	104	664988	40.345	ppb	99
73) 1,3-Dichloropropane	9.08	76	290337	34.741	ppb	98
74) Dibromochloromethane	9.32	129	210306	34.037	ppb	99
75) Chlorobenzene	9.99	112	608178	35.672	ppb	99
76) Ethylbenzene	10.13	91	566144	36.850	ppb	99
77) Bromoform	10.89	173	130048	34.352	ppb	97
79) Isopropylbenzene	11.11	105	968576	38.362	ppb	99
80) 1,1,2,2-Tetrachloroethane	11.43	83	185267	41.476	ppb	98
81) 1,2,3-Trichloropropane	11.46	110	29752	38.183	ppb	95
82) t-1,4-Dichloro-2-Butene	11.49	53	40398	36.894	ppb	90
83) Bromobenzene	11.42	156	134336	34.847	ppb	96
84) n-Propylbenzene	11.56	91	674028	40.061	ppb	99
85) 4-Ethyltoluene	11.69	105	1006263	41.304	ppb	98
86) 2-Chlorotoluene	11.64	91	386728	37.733	ppb	100
87) 1,3,5-Trimethylbenzene	11.75	105	846665	40.945	ppb	97
88) 4-Chlorotoluene	11.76	91	443328	37.753	ppb	99
89) Tert-Butylbenzene	12.11	119	815805	39.361	ppb	94
90) 1,2,4-Trimethylbenzene	12.17	105	829742	41.565	ppb	100
91) Sec-Butylbenzene	12.35	105	1030466	39.920	ppb	97
92) p-Isopropyltoluene	12.52	119	508288	42.352	ppb	99
93) Benzyl Chloride	12.71	91	261107	37.140	ppb	99
94) 1,3-DCB	12.46	146	260608	35.630	ppb	99
95) 1,4-DCB	12.56	146	492698	34.837	ppb	99
96) n-Butylbenzene	12.96	91	739738	41.160	ppb	99
97) 1,2-DCB	12.97	146	468889	35.670	ppb	97
98) Hexachloroethane	13.25	117	172658	41.586	ppb	93
99) 1,2-Dibromo-3-chloropropan	13.81	75	33817	36.496	ppb	87
100) 1,2,4-Trichlorobenzene	14.74	180	315150	40.080	ppb	100
101) Hexachlorobutadiene	14.93	225	183802	36.843	ppb	96
102) Naphthalene	15.00	128	462232	41.026	ppb	99
103) 1,2,3-Trichlorobenzene	15.27	180	134592	39.930	ppb	100

(#) = qualifier out of range (m) = manual integration

Quantitation Report

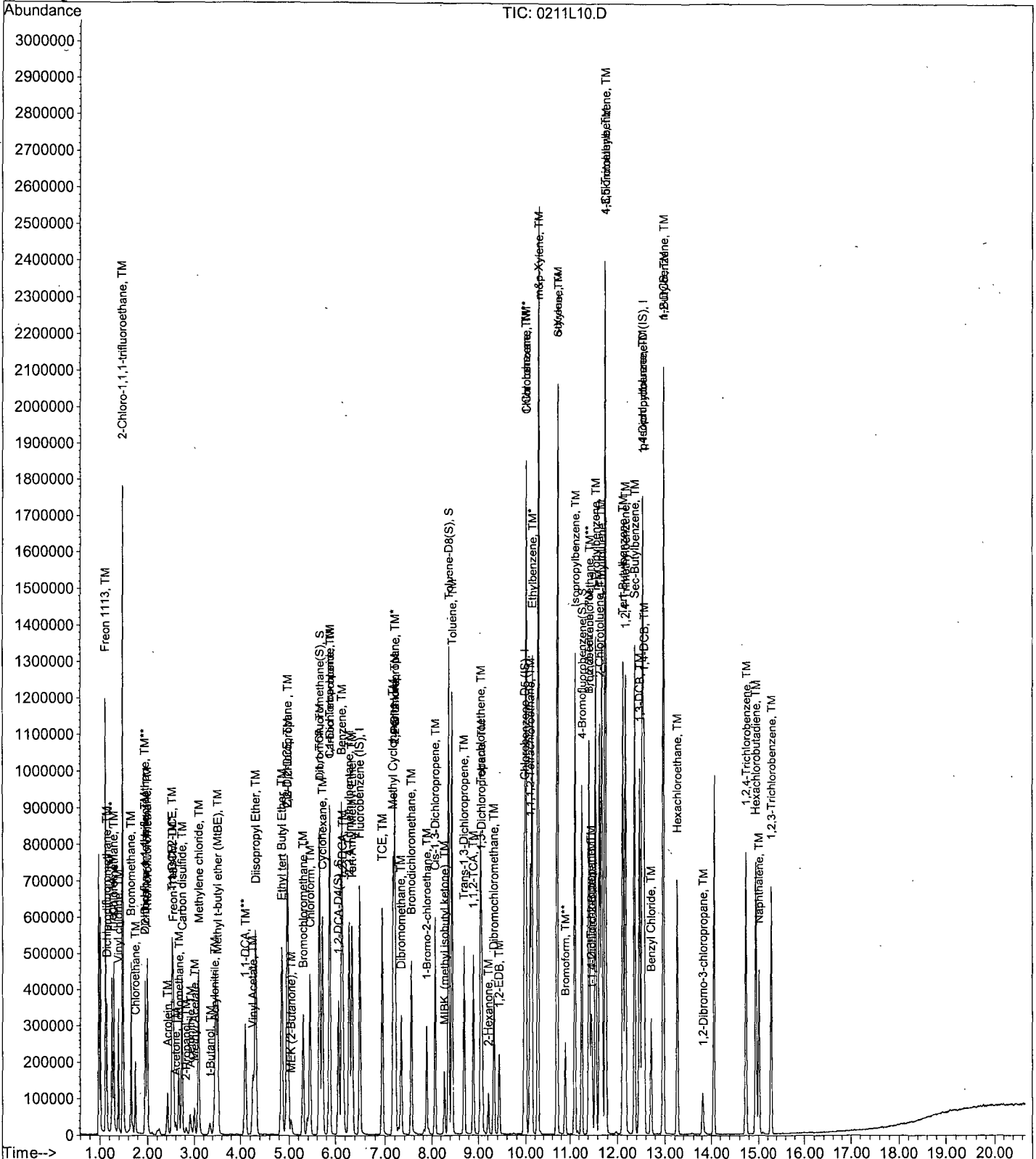
Data File : M:\LOKI\DATA\190211\0211L10.D  
Acq On : 11 Feb 19 11:48  
Sample : 40ug/L VOC STD 2/11/19  
Misc : ISS 1/29/19

Vial: 9  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 12 9:26 2019

Quant Results File: L0211W.RES

Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Feb 12 09:25:44 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190211\0211L11.D  
 Acq On : .11 Feb 19 12:16  
 Sample : 50ug/L VOC STD 2/11/19  
 Misc : ISS 1/29/19

Vial: 10  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 12 9:26 2019

Quant Results File: L0211W.RES

Quant Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Feb 12 09:25:44 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	345280	25.000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.96	117	276032	25.000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.53	152	148992	25.000	ppb	0.00

System Monitoring Compounds

38) Dibromofluoromethane(S)	5.65	111	454164	100.162	ppb	0.00
Spiked Amount	25.000		Recovery	=	400.648%	
43) 1,2-DCA-D4(S)	6.06	65	517762	77.648	ppb	0.00
Spiked Amount	25.000		Recovery	=	310.592%	
64) Toluene-D8(S)	8.36	98	1770113	79.587	ppb	0.00
Spiked Amount	25.000		Recovery	=	318.348%	
72) 4-Bromofluorobenzene(S)	11.26	95	656711	78.409	ppb	0.00
Spiked Amount	25.000		Recovery	=	313.636%	

Target Compounds

	R.T.	QIon	Response	Conc	Units	Qvalue
2) Freon 1113	1.12	116	353442	125.318	ppb	98
3) Dichlorodifluoromethane	1.14	85	239103	40.572	ppb	96
4) Freon 114	1.25	85	242578	42.996	ppb	94
5) Chloromethane	1.29	50	323136	37.384	ppb	99
6) Vinyl chloride	1.38	62	258908	39.184	ppb	99
7) 2-Chloro-1,1,1-trifluoroet	1.48	118	515072	118.122	ppb	99
8) Bromomethane	1.65	94	190400	36.692	ppb	100
9) Chloroethane	1.74	64	113787	35.816	ppb	98
10) Dichlorofluoromethane	1.95	67	431808	39.517	ppb	97
11) Trichlorofluoromethane	1.99	101	396638	40.189	ppb	98
12) Acrolein	2.42	56	92618	162.356	ppb #	98
13) Acetone	2.60	43	24960	45.704	ppb	93
14) Freon-113	2.54	101	202976	39.967	ppb	97
15) 1,1-DCE	2.52	63	65592	45.803	ppb	95
16) t-Butanol	3.35	59	51647	170.831	ppb	96
17) 2-Propanol	2.83	45	24472	131.024	ppb #	90
18) Acetonitrile	2.91	41	86542	164.157	ppb	90
19) Methyl Acetate	3.00	43	121285	46.443	ppb	97
20) Iodomethane	2.66	142	121832	46.064	ppb	98
21) Acrylonitrile	3.43	52	49857	45.821	ppb	89
22) Methylene chloride	3.09	84	261483	38.394	ppb	95
23) Carbon disulfide	2.73	76	709191	39.359	ppb	100
24) Methyl t-butyl ether (MtBE)	3.51	73	555427	42.374	ppb	95
25) Trans-1,2-DCE	2.52	96	117464	40.296	ppb	93
26) Diisopropyl Ether	4.31	45	764060	43.192	ppb	97
27) 2,2-Dichloro-1,1,1-trifluo	1.95	85	15072	37.517	ppb #	83
28) 1,1-DCA	4.10	63	458366	39.075	ppb	99
29) Vinyl Acetate	4.26	43	156352	46.647	ppb #	100
30) Ethyl tert Butyl Ether	4.85	59	661129	43.234	ppb	97
31) MEK (2-Butanone)	5.04	43	70500	46.335	ppb	92
32) Cis-1,2-DCE	4.97	96	273149	40.309	ppb	98
33) 2,2-Dichloropropane	4.96	77	395451	39.116	ppb	97
36) Chloroform	5.44	83	469985	38.722	ppb	99
37) Bromochloromethane	5.29	128	57776	42.153	ppb	98
39) 1,1,1-TCA	5.65	97	187456	39.851	ppb	100
40) Cyclohexane	5.72	41	218637	40.904	ppb	99
41) 1,1-Dichloropropene	5.87	75	336809	43.147	ppb	98
42) 2,2,4-Trimethylpentane	6.28	57	744523	43.705	ppb	95
44) Carbon Tetrachloride	5.86	117	385043	39.764	ppb	95

(#) = qualifier out of range (m) = manual integration

Data File : M:\LOKI\DATA\190211\0211L11.D  
 Acq On : 11 Feb 19 12:16  
 Sample : 50ug/L VOC STD 2/11/19  
 Misc : ISS 1/29/19

Vial: 10  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 12 9:26 2019

Quant Results File: L0211W.RES

Quant Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Feb 12 09:25:44 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
45) Tert Amyl Methyl Ether	6.35	73	613228	44.580	ppb	97
47) 1,2-DCA	6.16	62	360740	39.272	ppb	95
48) Benzene	6.13	78	1010373	39.330	ppb	98
49) TCE	6.95	130	146752	39.925	ppb	98
50) 2-Pentanone	7.21	43	488931	179.359	ppb	99
51) 1,2-Dichloropropane	7.20	63	270641	39.036	ppb	100
52) Bromodichloromethane	7.54	83	196992	45.677	ppb	98
53) Methyl Cyclohexane	7.17	83	368681	44.516	ppb	99
54) Dibromomethane	7.33	93	145877	45.923	ppb	89
56) MIBK (methyl isobutyl ket	8.27	43	148910	40.486	ppb	97
57) 1-Bromo-2-chloroethane	7.88	63	168896	39.269	ppb	97
58) Cis-1,3-Dichloropropene	8.07	75	420572	41.657	ppb	94
59) Toluene	8.44	91	635072	42.738	ppb	99
60) Trans-1,3-Dichloropropene	8.70	75	374195	41.519	ppb	99
61) 1,1,2-TCA	8.90	83	167823	39.841	ppb	97
62) 2-Hexanone	9.21	43	96445	42.178	ppb	93
65) 1,2-EDB	9.44	107	106896	46.760	ppb	91
66) Tetrachloroethene	9.05	166	170368	38.263	ppb	95
67) 1-Chlorohexane	9.99	91	335538	44.488	ppb	98
68) 1,1,1,2-Tetrachloroethane	10.09	131	289563	45.856	ppb	94
69) m&p-Xylene	10.26	91	2008230	90.503	ppb	100
70) o-Xylene	10.69	106	267712	46.420	ppb	99
71) Styrene	10.71	104	833795	45.508	ppb	99
73) 1,3-Dichloropropane	9.08	76	362333	39.003	ppb	97
74) Dibromochloromethane	9.32	129	268181	39.047	ppb	94
75) Chlorobenzene	9.99	112	760971	40.153	ppb	98
76) Ethylbenzene	10.13	91	734912	43.033	ppb	98
77) Bromoform	10.89	173	164023	38.977	ppb	97
79) Isopropylbenzene	11.11	105	1244837	43.966	ppb	99
80) 1,1,2,2-Tetrachloroethane	11.43	83	233116	46.239	ppb	99
81) 1,2,3-Trichloropropane	11.47	110	36760	42.089	ppb	95
82) t-1,4-Dichloro-2-Butene	11.49	53	52250	42.552	ppb	93
83) Bromobenzene	11.42	156	171136	39.588	ppb	99
84) n-Propylbenzene	11.56	91	828946	43.936	ppb	98
85) 4-Ethyltoluene	11.69	105	1260876	46.153	ppb	99
86) 2-Chlorotoluene	11.64	91	473128	41.166	ppb	99
87) 1,3,5-Trimethylbenzene	11.76	105	1078817	46.524	ppb	98
88) 4-Chlorotoluene	11.76	91	553030	41.997	ppb	99
89) Tert-Butylbenzene	12.11	119	1036657	44.603	ppb	95
90) 1,2,4-Trimethylbenzene	12.16	105	1071375	47.859	ppb	99
91) Sec-Butylbenzene	12.35	105	1319933	45.599	ppb	98
92) p-Isopropyltoluene	12.52	119	646272	48.020	ppb	99
93) Benzyl Chloride	12.71	91	345410	43.813	ppb	99
94) 1,3-DCB	12.46	146	340288	41.487	ppb	99
95) 1,4-DCB	12.56	146	633018	39.913	ppb	97
96) n-Butylbenzene	12.96	91	962159	47.741	ppb	100
97) 1,2-DCB	12.97	146	603944	40.970	ppb	99
98) Hexachloroethane	13.26	117	215296	45.650	ppb	95
99) 1,2-Dibromo-3-chloropropan	13.81	75	45391	43.684	ppb	90
100) 1,2,4-Trichlorobenzene	14.73	180	419716	47.600	ppb	100
101) Hexachlorobutadiene	14.94	225	240529	42.995	ppb	97
102) Naphthalene	15.00	128	624910	48.099	ppb	100
103) 1,2,3-Trichlorobenzene	15.27	180	176256	46.630	ppb	99

(#) = qualifier out of range (m) = manual integration

Quantitation Report

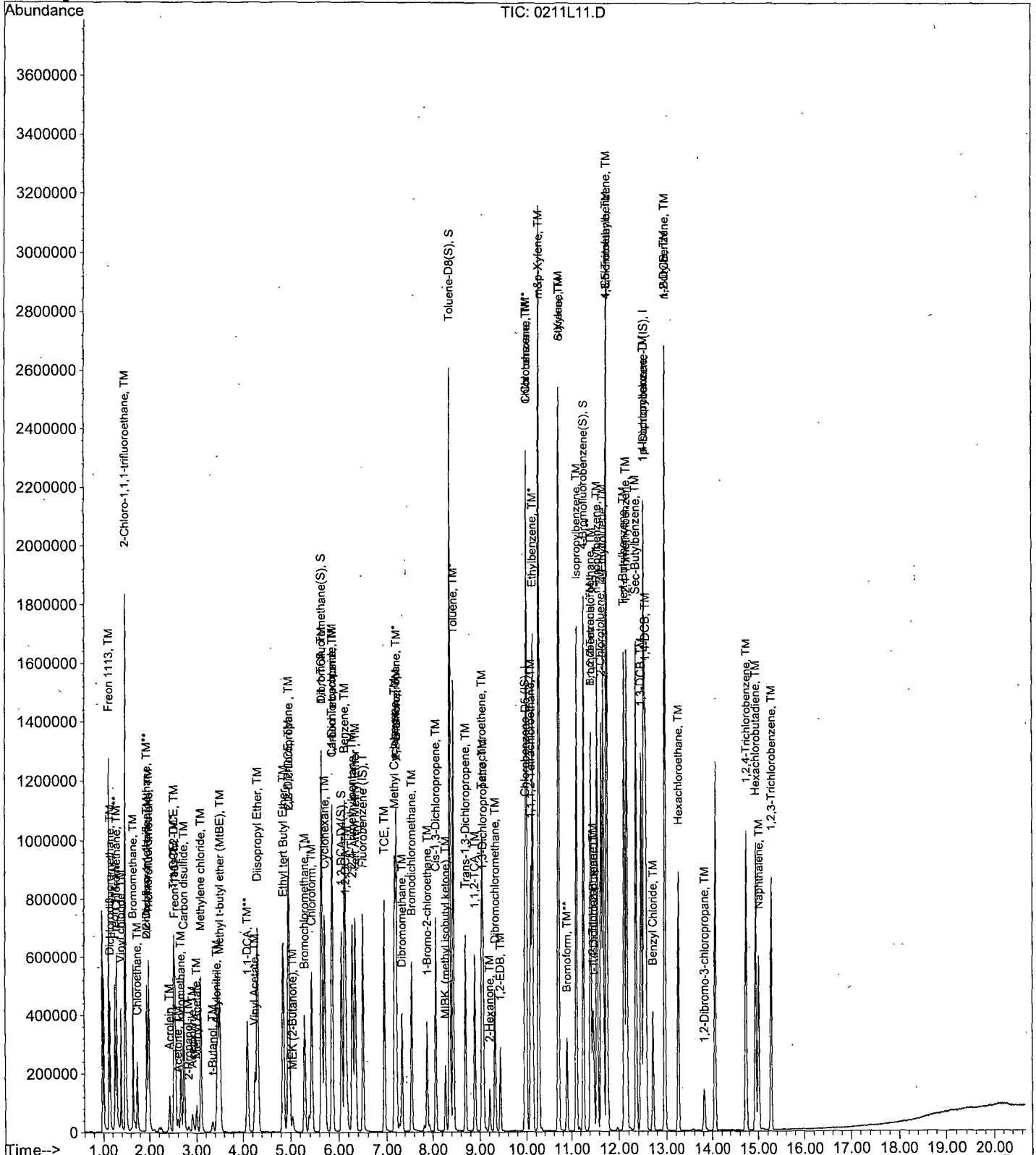
Data File : M:\LOKI\DATA\190211\0211L11.D  
Acq On : 11 Feb 19 12:16  
Sample : 50ug/L VOC STD 2/11/19  
Misc : ISS 1/29/19

Vial: 10  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 12 9:26 2019

Quant Results File: L0211W.RES

Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Feb 12 09:25:44 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190211\0211L12.D  
 Acq On : 11 Feb 19 12:44  
 Sample : 100ug/L VOC STD 2/11/19  
 Misc : ISS 1/29/19

Vial: 11  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 12 9:26 2019

Quant Results File: L0211W.RES

Quant Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Feb 12 09:25:44 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	269312	25.000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.97	117	214400	25.000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.53	152	124576	25.000	ppb	0.00

System Monitoring Compounds

38) Dibromofluoromethane(S)	5.65	111	482133	-25.000	ppb	0.00
Spiked Amount	25.000					
						Recovery = -100.000%
43) 1,2-DCA-D4(S)	6.06	65	542735	104.353	ppb	0.00
Spiked Amount	25.000					Recovery = 417.412%
64) Toluene-D8(S)	8.36	98	1856690	107.477	ppb	0.00
Spiked Amount	25.000					Recovery = 429.908%
72) 4-Bromofluorobenzene(S)	11.26	95	672110	103.316	ppb	0.00
Spiked Amount	25.000					Recovery = 413.264%

Target Compounds

	R.T.	QIon	Response	Conc	Units	Qvalue
2) Freon 1113	1.12	116	398482	181.142	ppb	98
3) Dichlorodifluoromethane	1.14	85	448345	97.536	ppb	97
4) Freon 114	1.25	85	462034	104.994	ppb	94
5) Chloromethane	1.29	50	654428	97.177	ppb	100
6) Vinyl chloride	1.38	62	552737	107.251	ppb	100
7) 2-Chloro-1,1,1-trifluoroet	1.48	118	535360	157.407	ppb	99
8) Bromomethane	1.65	94	397824	98.042	ppb	98
9) Chloroethane	1.74	64	319257	129.177	ppb	99
10) Dichlorofluoromethane	1.95	67	855620	100.389	ppb	96
11) Trichlorofluoromethane	1.99	101	834300	108.381	ppb	97
12) Acrolein	2.42	56	112455	252.737	ppb #	100
13) Acetone	2.61	43	41904	102.824	ppb	93
14) Freon-113	2.54	101	412390	104.107	ppb	96
15) 1,1-DCE	2.51	63	137088	100.496	ppb	97
16) t-Butanol	3.38	59	62686	265.832	ppb	99
17) 2-Propanol	2.83	45	27528	188.961	ppb #	99
18) Acetonitrile	2.92	41	95607	232.508	ppb	89
19) Methyl Acetate	3.00	43	241375	100.462	ppb	97
20) Iodomethane	2.66	142	265088	100.389	ppb	97
21) Acrylonitrile	3.44	52	100579	100.515	ppb	85
22) Methylene chloride	3.09	84	535234	100.758	ppb	97
23) Carbon disulfide	2.73	76	1431456	101.854	ppb	100
24) Methyl t-butyl ether (MtBE)	3.51	73	1171367	114.572	ppb	95
25) Trans-1,2-DCE	2.51	96	252608	111.102	ppb	95
26) Diisopropyl Ether	4.31	45	1594416	115.557	ppb	97
27) 2,2-Dichloro-1,1,1-trifluo	1.95	85	31193	99.547	ppb	95
28) 1,1-DCA	4.10	63	928806	101.514	ppb	99
29) Vinyl Acetate	4.26	43	334534	100.362	ppb #	100
30) Ethyl tert Butyl Ether	4.85	59	1424829	119.457	ppb	98
31) MEK (2-Butanone)	5.05	43	137834	100.520	ppb	90
32) Cis-1,2-DCE	4.97	96	565960	107.079	ppb	98
33) 2,2-Dichloropropane	4.96	77	815293	103.394	ppb	97
36) Chloroform	5.44	83	959831	101.388	ppb	99
37) Bromochloromethane	5.29	128	110984	104.063	ppb	98
39) 1,1,1-TCA	5.65	97	380032	103.579	ppb	100
40) Cyclohexane	5.71	41	449320	107.774	ppb	98
41) 1,1-Dichloropropene	5.88	75	701428	115.203	ppb	98
42) 2,2,4-Trimethylpentane	6.28	57	1557432	117.212	ppb	94
44) Carbon Tetrachloride	5.86	117	791333	104.775	ppb	97

(#) = qualifier out of range (m) = manual integration

Data File : M:\LOKI\DATA\190211\0211L12.D  
 Acq On : 11 Feb 19 12:44  
 Sample : 100ug/L VOC STD 2/11/19  
 Misc : ISS 1/29/19

Vial: 11  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 12 9:26 2019

Quant Results File: L0211W.RES

Quant Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Feb 12 09:25:44 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
45) Tert Amyl Methyl Ether	6.35	73	1263548	117.768	ppb	96
47) 1,2-DCA	6.16	62	730622	101.977	ppb	97
48) Benzene	6.13	78	2061313	102.874	ppb	99
49) TCE	6.95	130	300608	104.853	ppb	99
50) 2-Pentanone	7.21	43	538454	253.245	ppb	98
51) 1,2-Dichloropropane	7.20	63	553405	102.337	ppb	100
52) Bromodichloromethane	7.54	83	397760	100.524	ppb	97
53) Methyl Cyclohexane	7.17	83	784818	121.492	ppb	98
54) Dibromomethane	7.33	93	293730	100.515	ppb	91
56) MIBK (methyl isobutyl ket	8.27	43	296971	103.516	ppb	97
57) 1-Bromo-2-chloroethane	7.88	63	335680	100.064	ppb	99
58) Cis-1,3-Dichloropropene	8.07	75	880064	111.757	ppb	96
59) Toluene	8.44	91	1286656	111.011	ppb	99
60) Trans-1,3-Dichloropropene	8.70	75	761624	108.345	ppb	98
61) 1,1,2-TCA	8.90	83	329066	100.156	ppb	98
62) 2-Hexanone	9.21	43	197853	110.933	ppb	92
65) 1,2-EDB	9.44	107	207424	100.488	ppb	94
66) Tetrachloroethene	9.05	166	345472	99.894	ppb	96
67) 1-Chlorohexane	9.99	91	700143	119.515	ppb	97
68) 1,1,1,2-Tetrachloroethane	10.09	131	574676	100.513	ppb	96
69) m&p-Xylene	10.26	91	4072007	236.262	ppb	100
70) o-Xylene	10.70	106	543232	121.270	ppb	97
71) Styrene	10.71	104	1697683	119.294	ppb	100
73) 1,3-Dichloropropane	9.08	76	714035	98.957	ppb	99
74) Dibromochloromethane	9.32	129	533896	100.080	ppb	98
75) Chlorobenzene	9.99	112	1506410	102.337	ppb	98
76) Ethylbenzene	10.13	91	1503744	113.364	ppb	100
77) Bromoform	10.90	173	333114	101.913	ppb	99
79) Isopropylbenzene	11.11	105	2529721	106.859	ppb	99
80) 1,1,2,2-Tetrachloroethane	11.43	83	466400	100.477	ppb	98
81) 1,2,3-Trichloropropane	11.47	110	75792	104.064	ppb	95
82) t-1,4-Dichloro-2-Butene	11.49	53	112323	109.404	ppb	96
83) Bromobenzene	11.42	156	335552	92.834	ppb	97
84) n-Propylbenzene	11.56	91	1671120	105.932	ppb	99
85) 4-Ethyltoluene	11.69	105	2569513	112.487	ppb	98
86) 2-Chlorotoluene	11.64	91	938238	97.634	ppb	100
87) 1,3,5-Trimethylbenzene	11.76	105	2176978	112.283	ppb	98
88) 4-Chlorotoluene	11.76	91	1112937	101.081	ppb	97
89) Tert-Butylbenzene	12.11	119	2128167	109.512	ppb	95
90) 1,2,4-Trimethylbenzene	12.17	105	2237438	119.538	ppb	99
91) Sec-Butylbenzene	12.35	105	2702323	111.653	ppb	99
92) p-Isopropyltoluene	12.52	119	1364296	121.241	ppb	98
93) Benzyl Chloride	12.71	91	788028	119.548	ppb	99
94) 1,3-DCB	12.46	146	673280	98.173	ppb	100
95) 1,4-DCB	12.56	146	1314731	99.144	ppb	99
96) n-Butylbenzene	12.96	91	2079310	123.394	ppb	99
97) 1,2-DCB	12.97	146	1239696	100.581	ppb	99
98) Hexachloroethane	13.26	117	477738	100.495	ppb	96
99) 1,2-Dibromo-3-chloropropan	13.81	75	86356	99.396	ppb	87
100) 1,2,4-Trichlorobenzene	14.74	180	866823	117.574	ppb	99
101) Hexachlorobutadiene	14.94	225	483224	103.306	ppb	97
102) Naphthalene	15.00	128	1313609	100.193	ppb	100
103) 1,2,3-Trichlorobenzene	15.27	180	354368	112.125	ppb	98

(#) = qualifier out of range (m) = manual integration



Quantitation Report

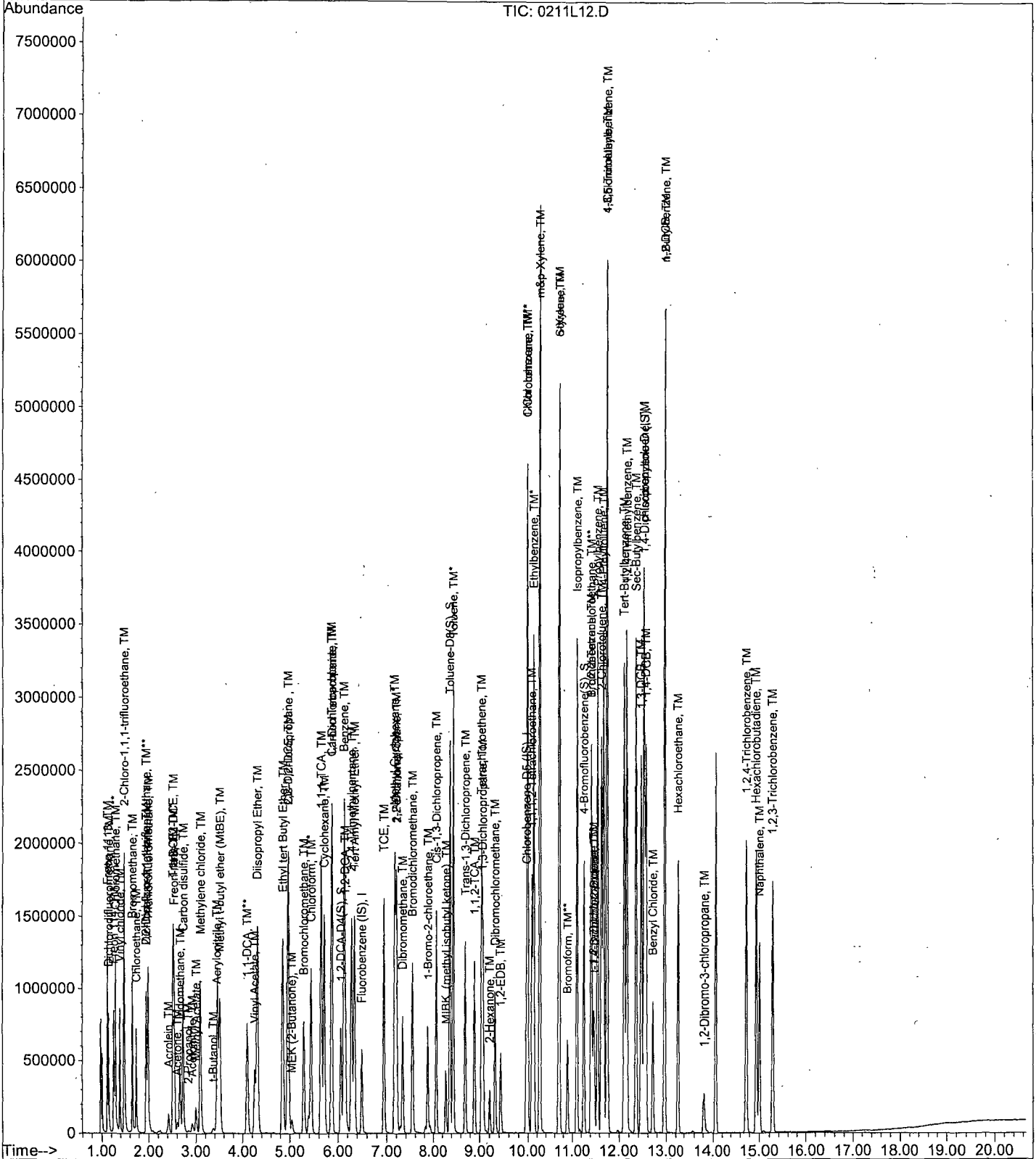
Data File : M:\LOKI\DATA\190211\0211L12.D  
Acq On : 11 Feb 19 12:44  
Sample : 100ug/L VOC STD 2/11/19  
Misc : ISS 1/29/19

Vial: 11  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 12 9:26 2019

Quant Results File: L0211W.RES

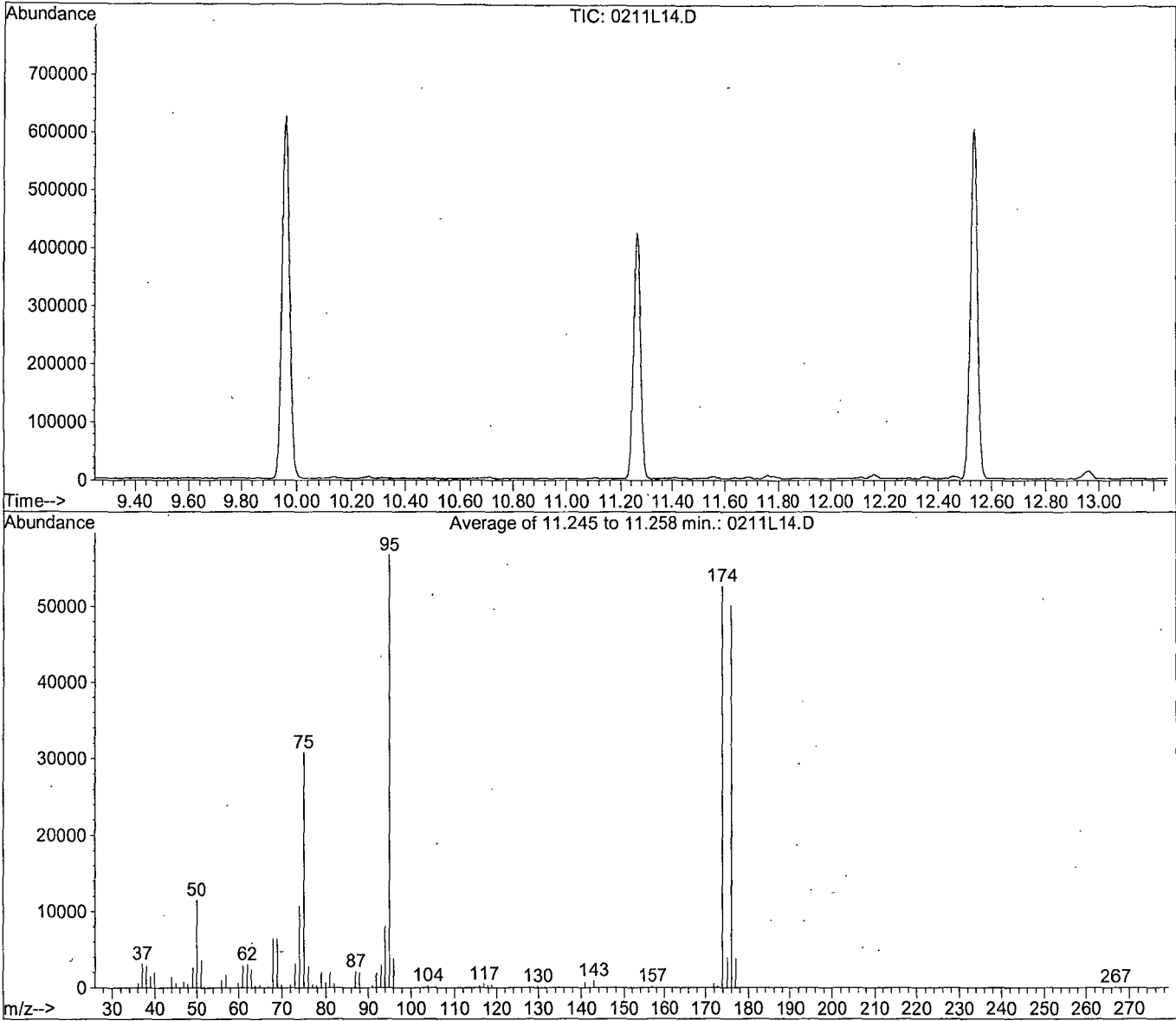
Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Feb 12 09:25:44 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190211\0211L14.D  
 Acq On : 11 Feb 19 13:41  
 Sample : 25ug/L BFB STD 1/18/19  
 Misc : ISS 1/29/19

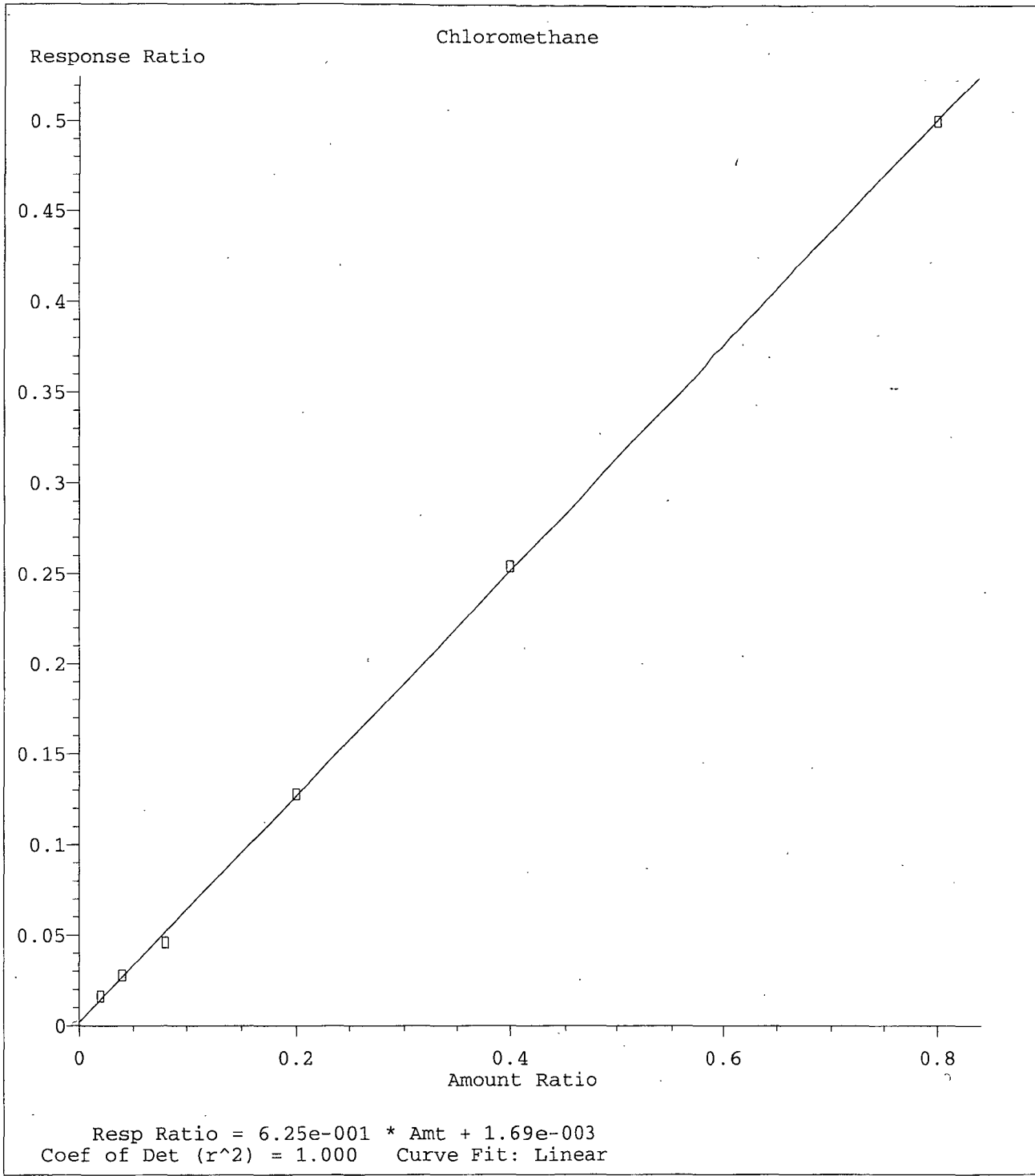
Vial: 13  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
 Title : METHOD 8260B



Spectrum Information: Average of 11.245 to 11.258 min.

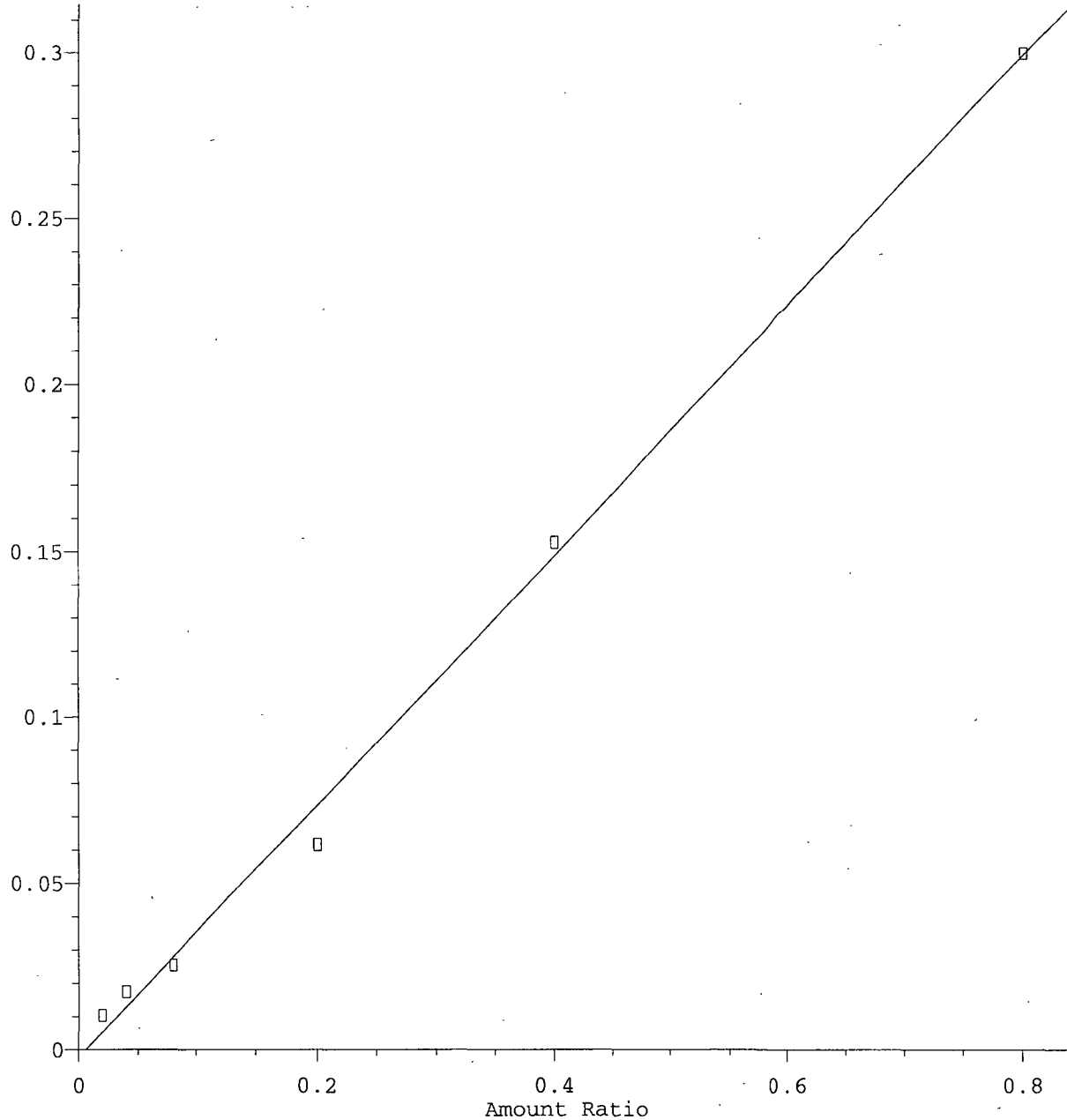
Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	20.3	11561	PASS
75	95	30	60	54.2	30819	PASS
95	95	100	100	100.0	56848	PASS
96	95	5	9	6.8	3853	PASS
173	174	0.00	2	0.4	227	PASS
174	95	50	100	92.8	52766	PASS
175	174	5	9	7.6	3994	PASS
176	174	95	101	95.2	50216	PASS
177	176	5	9	7.6	3839	PASS



Method Name: M:\LOKI\DATA\190211\L0211W.M  
Calibration Table Last Updated: Tue Feb 12 13:49:15 2019

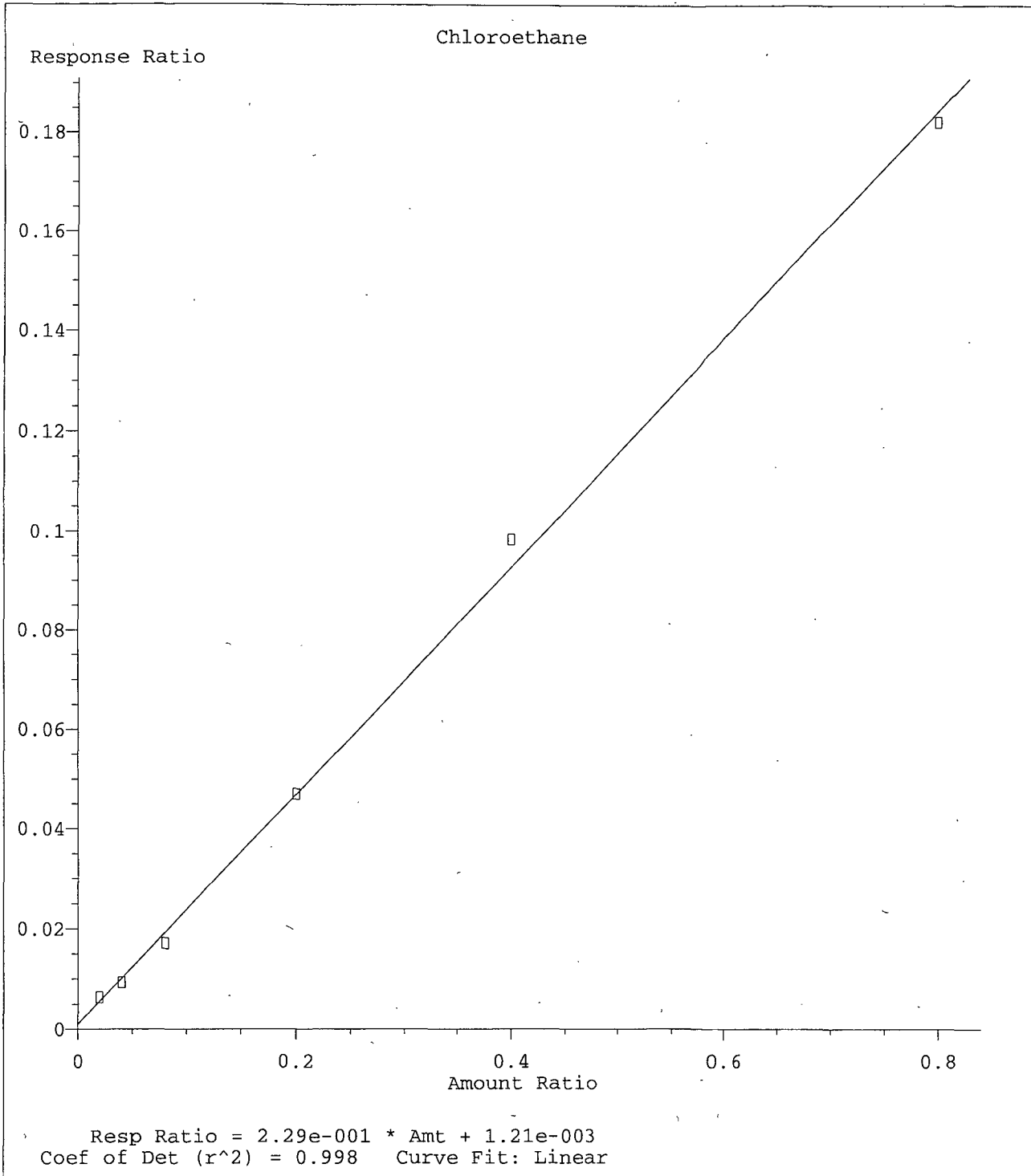
Bromomethane

Response Ratio

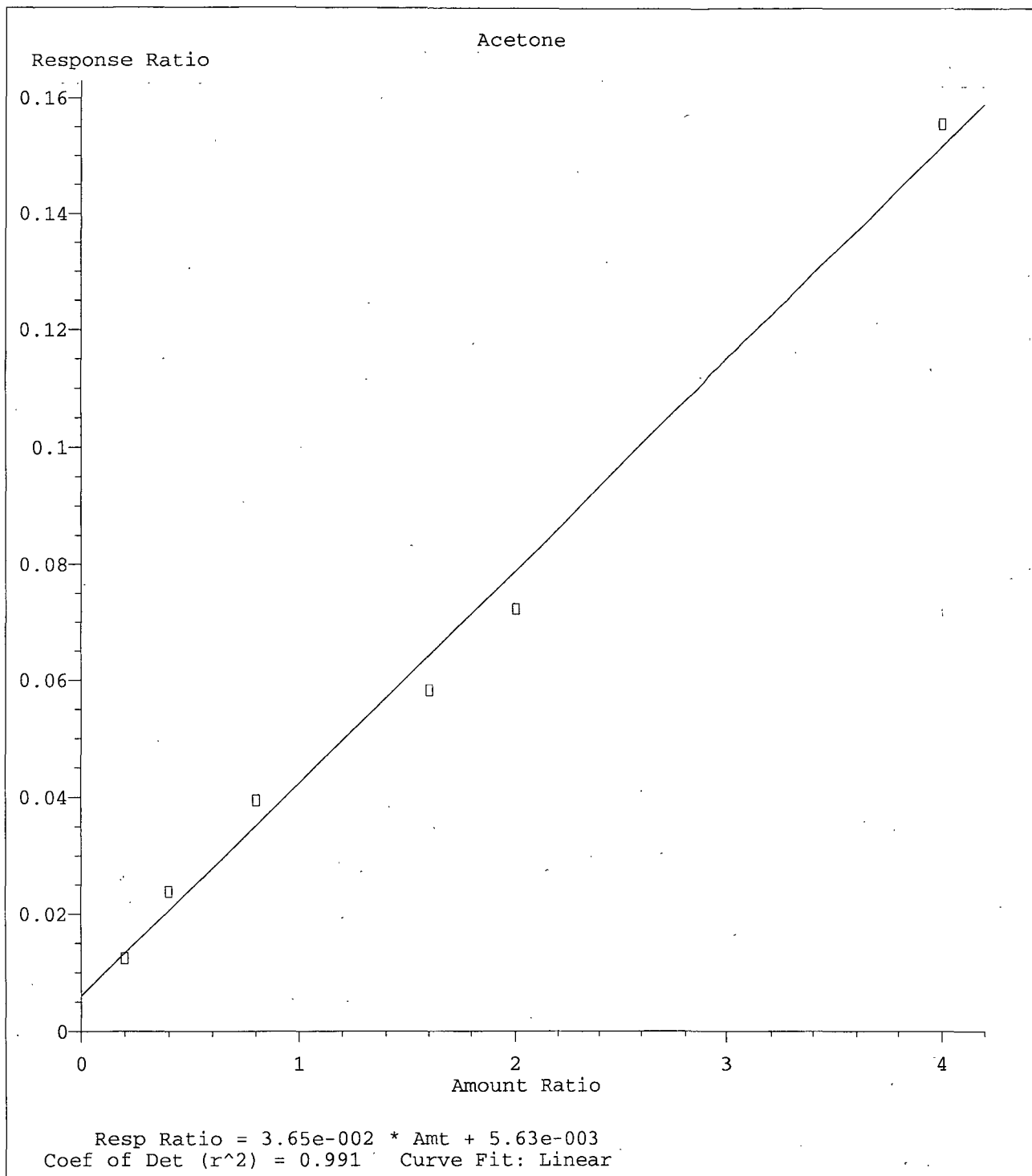


Resp Ratio = 3.77e-001 \* Amt - 2.24e-003  
Coef of Det (r^2) = 0.997 Curve Fit: Linear

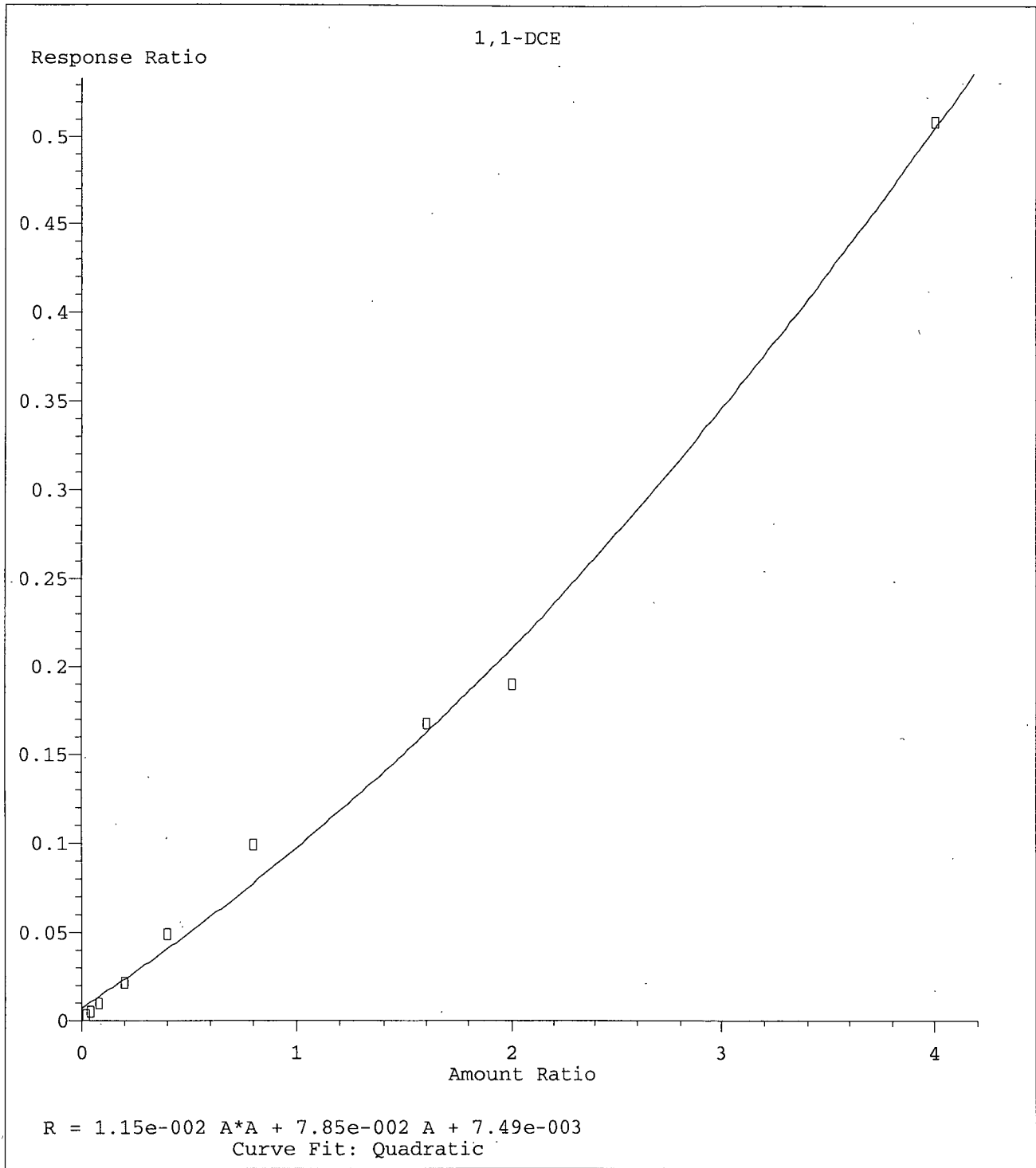
Method Name: M:\LOKI\DATA\190211\L0211W.M  
Calibration Table Last Updated: Tue Feb 12 13:49:15 2019



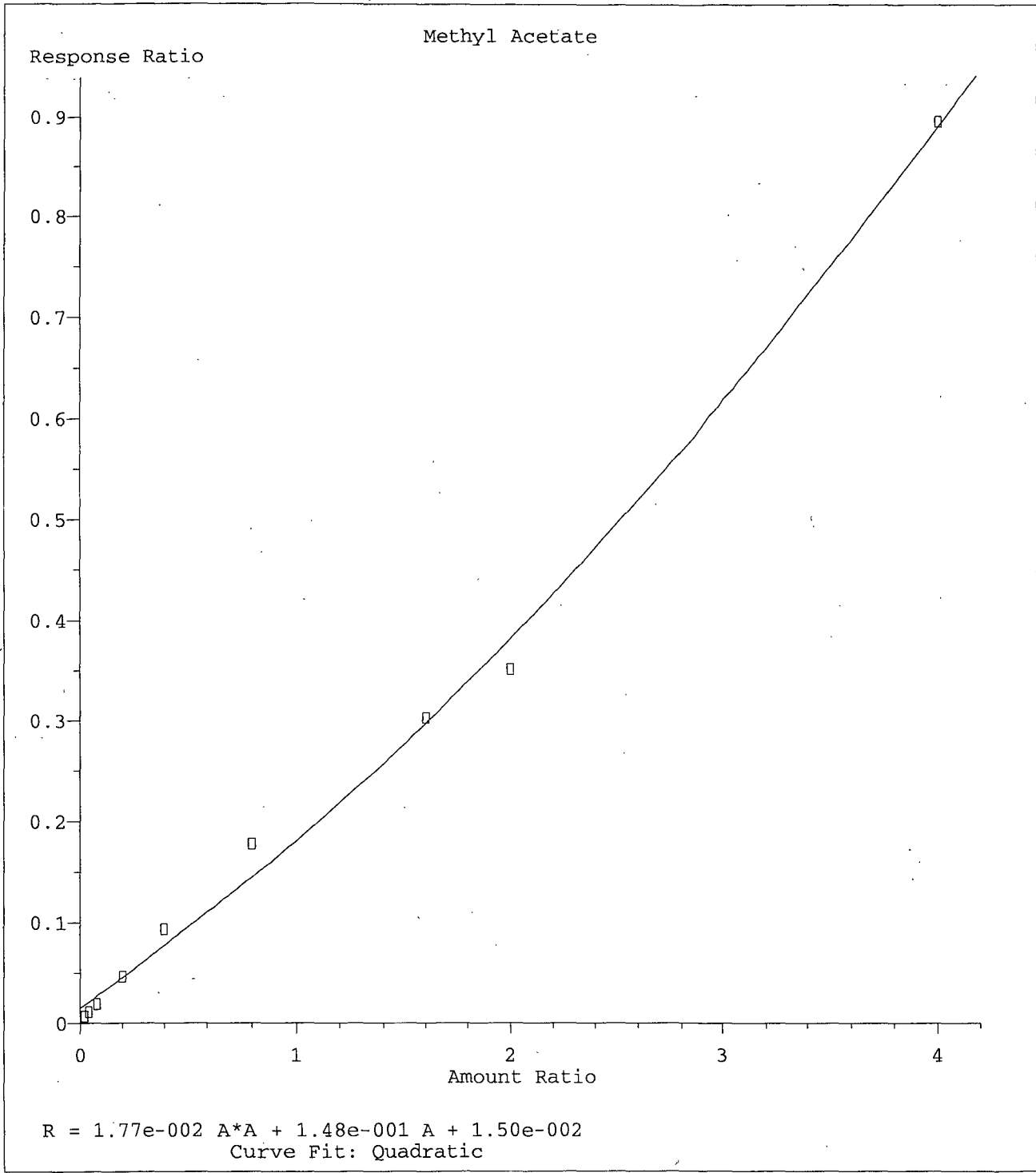
Method Name: M:\LOKI\DATA\190211\L0211W.M  
Calibration Table Last Updated: Tue Feb 12 13:49:15 2019



Method Name: M:\LOKI\DATA\190211\L0211W.M  
 Calibration Table Last Updated: Tue Feb 12 13:49:15 2019

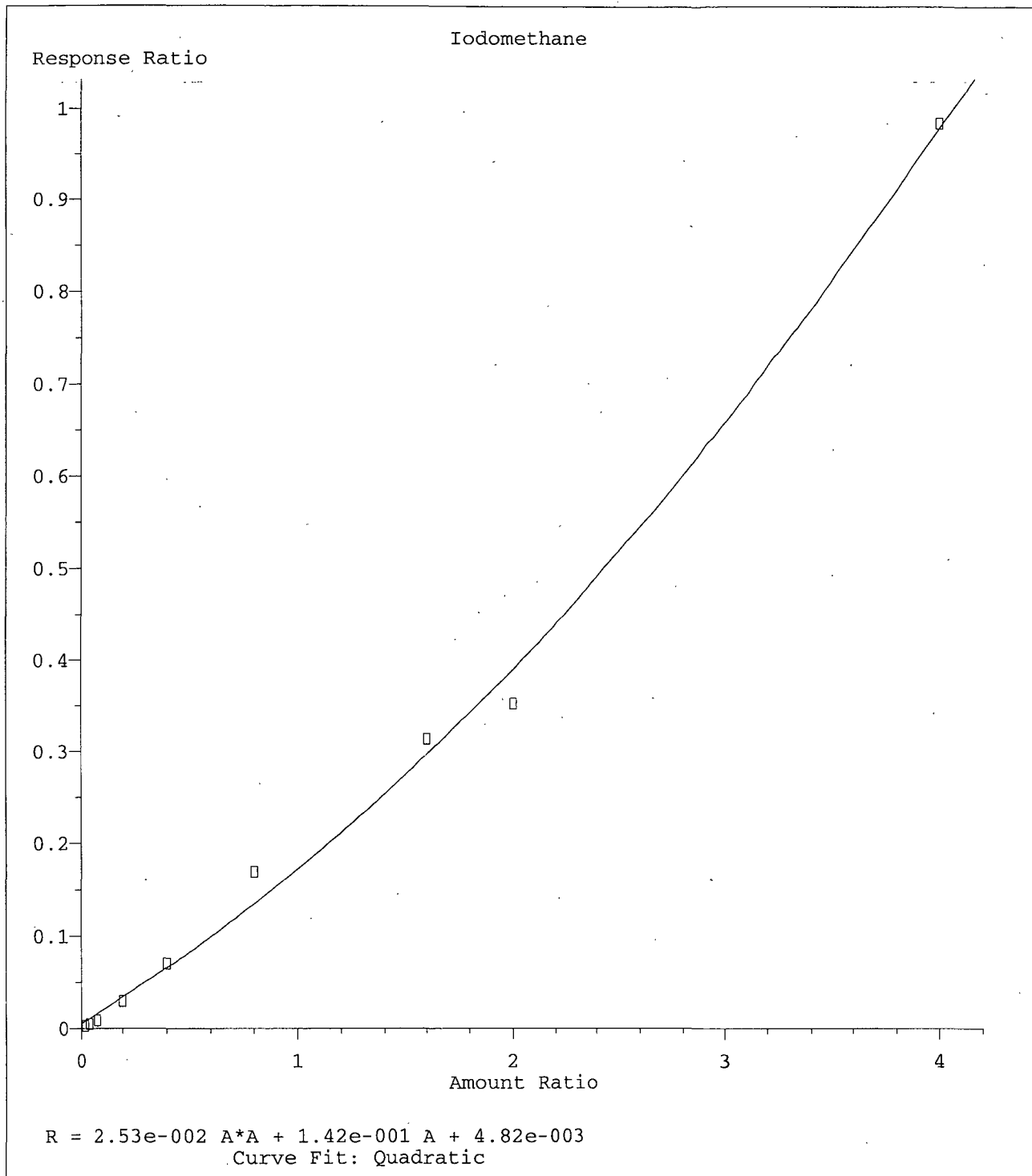


Method Name: M:\LOKI\DATA\190211\L0211W.M  
Calibration Table Last Updated: Tue Feb 12 13:49:15 2019

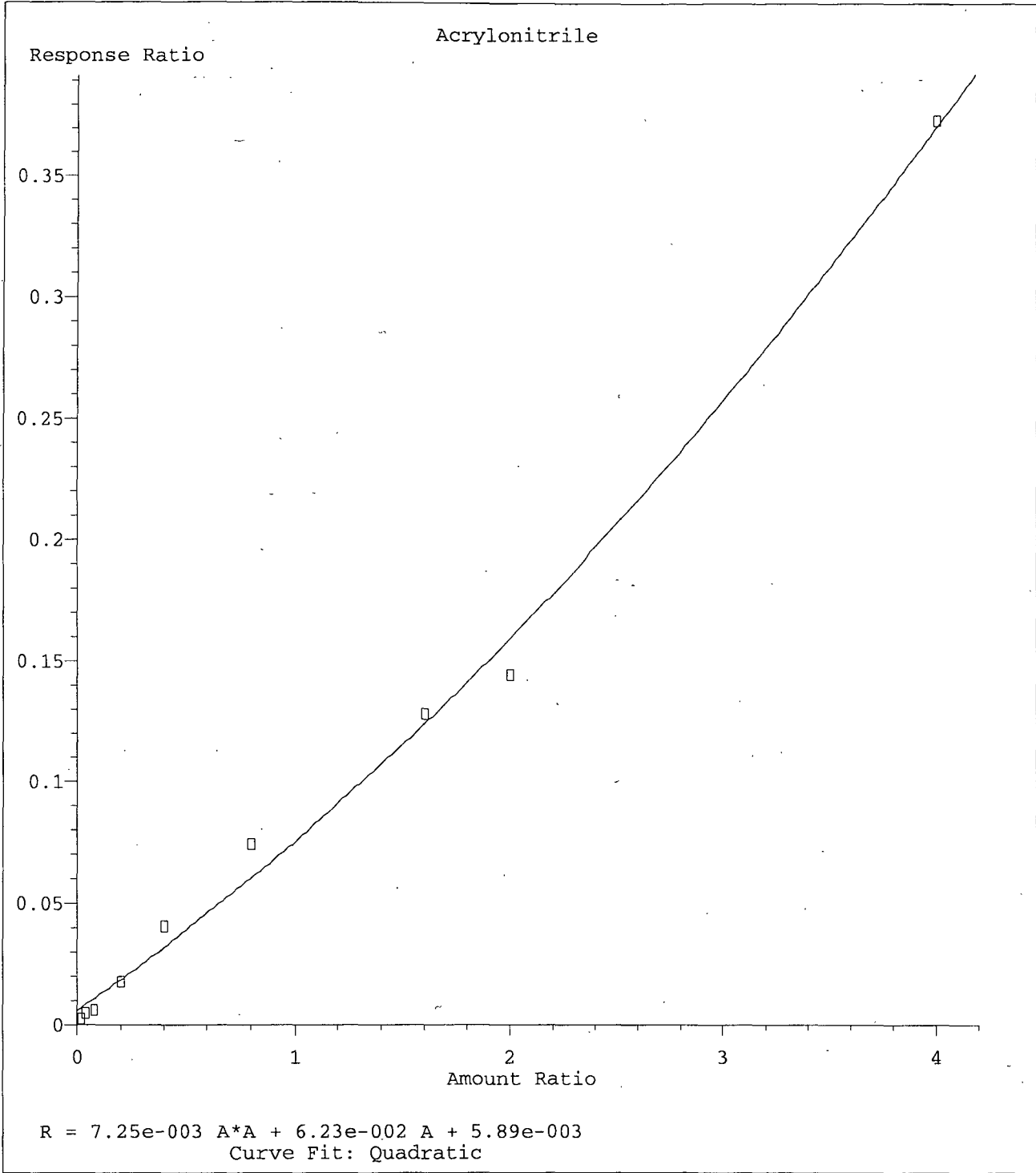


Method Name: M:\LOKI\DATA\190211\L0211W.M  
Calibration Table Last Updated: Tue Feb 12 13:49:15 2019





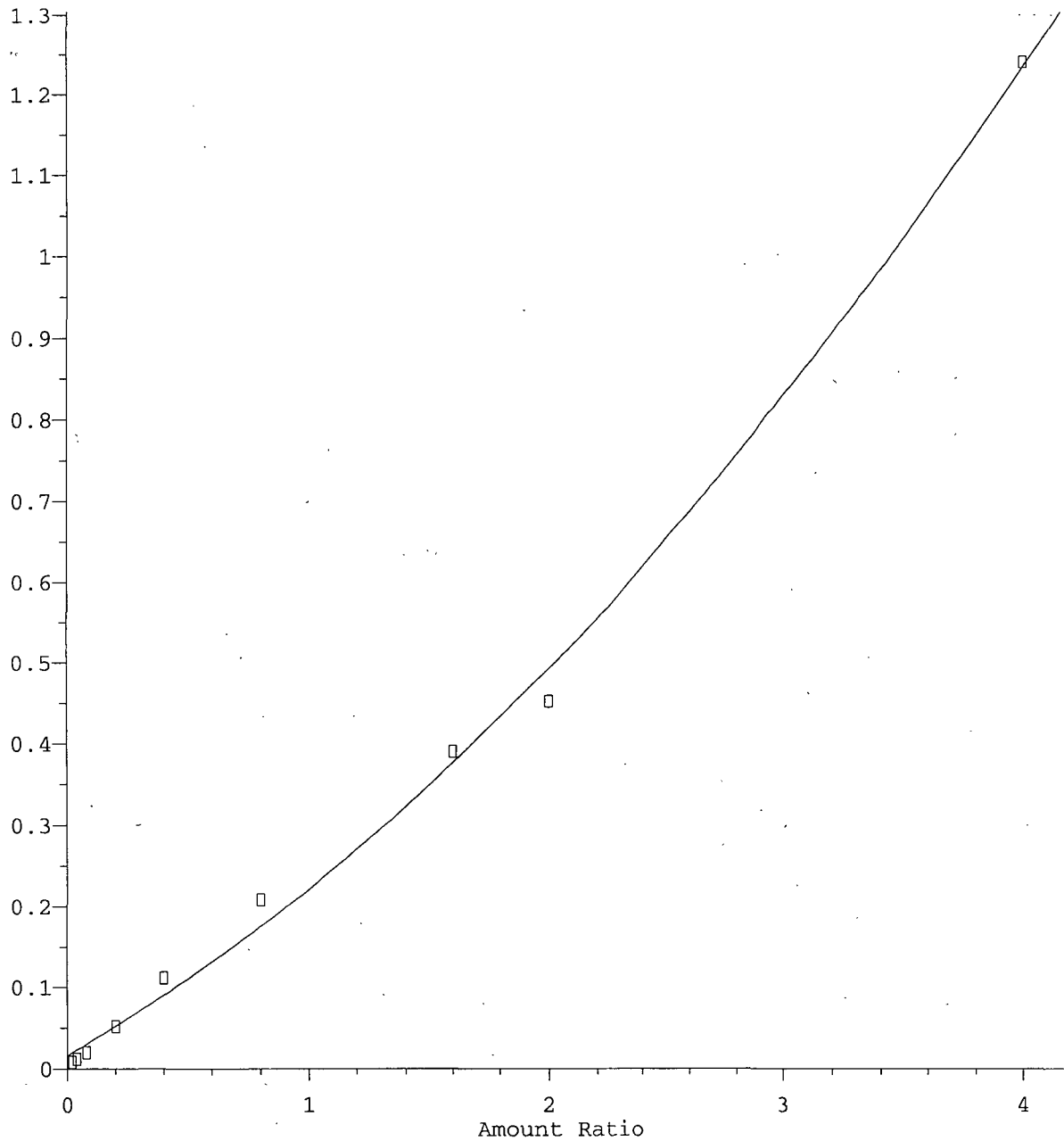
Method Name: M:\LOKI\DATA\190211\L0211W.M  
Calibration Table Last Updated: Tue Feb 12 13:49:15 2019



Method Name: M:\LOKI\DATA\190211\L0211W.M  
Calibration Table Last Updated: Tue Feb 12 13:49:15 2019

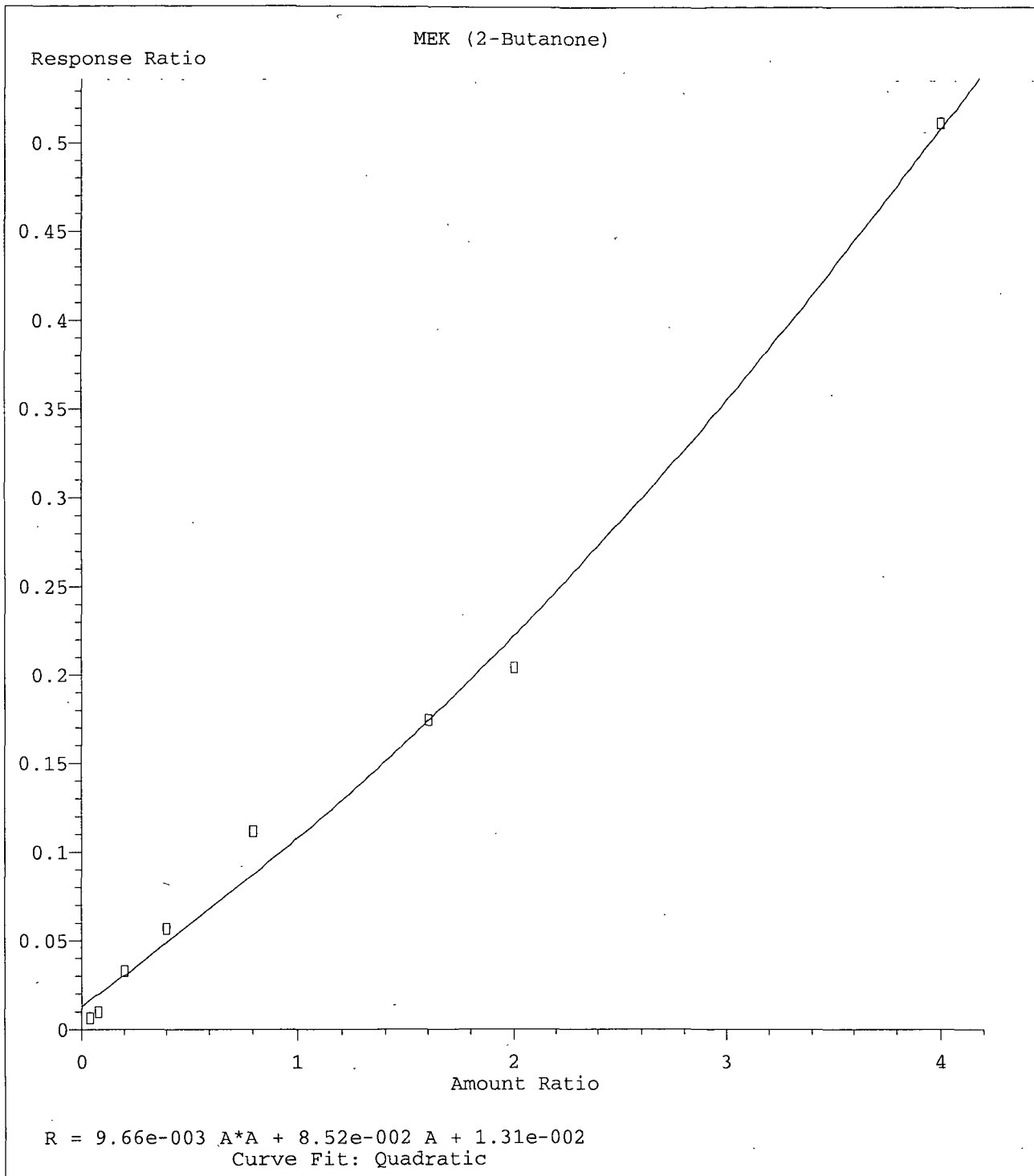
Vinyl Acetate

Response Ratio

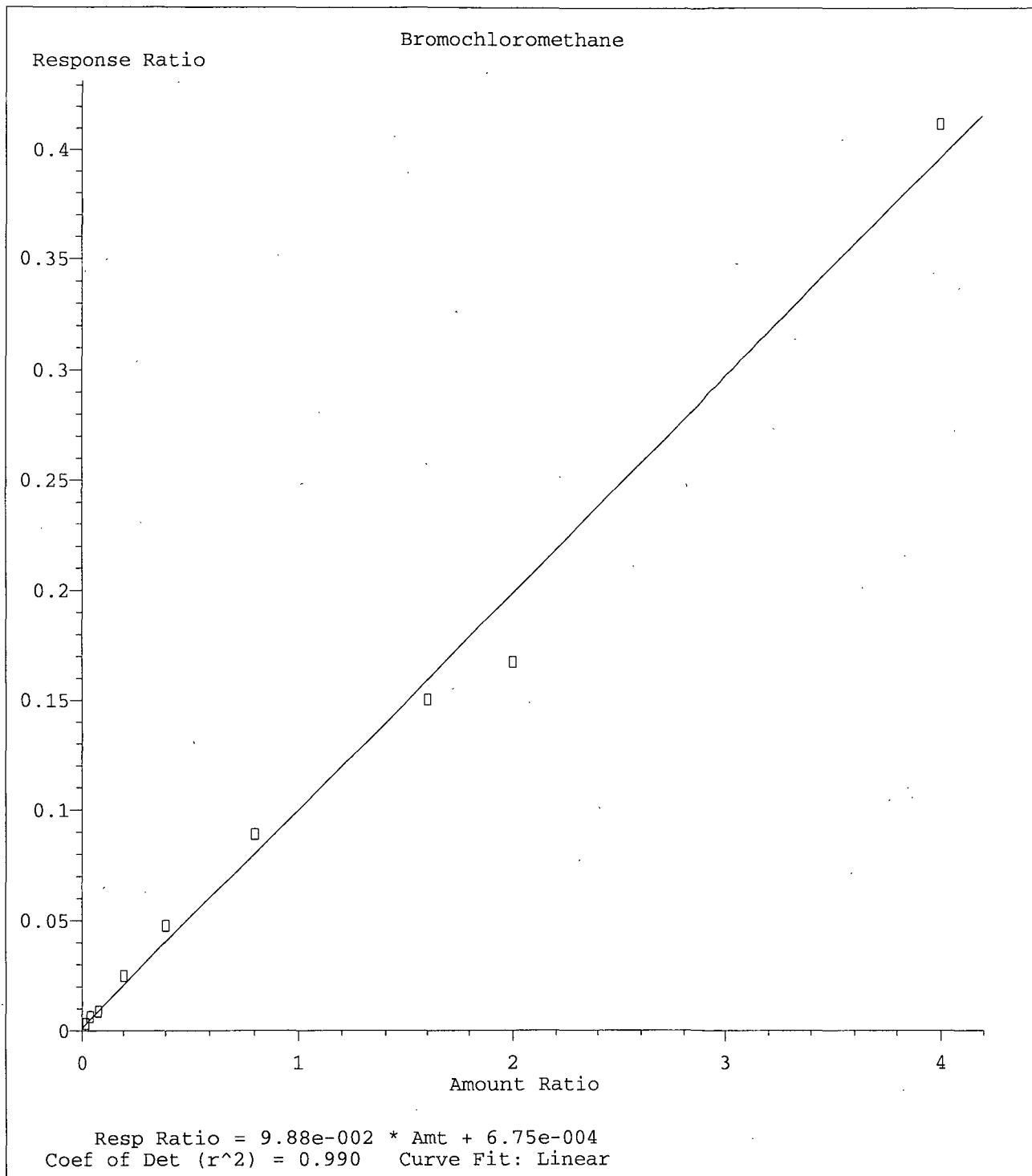


$R = 3.33e-002 A^2 + 1.72e-001 A + 1.64e-002$   
Curve Fit: Quadratic

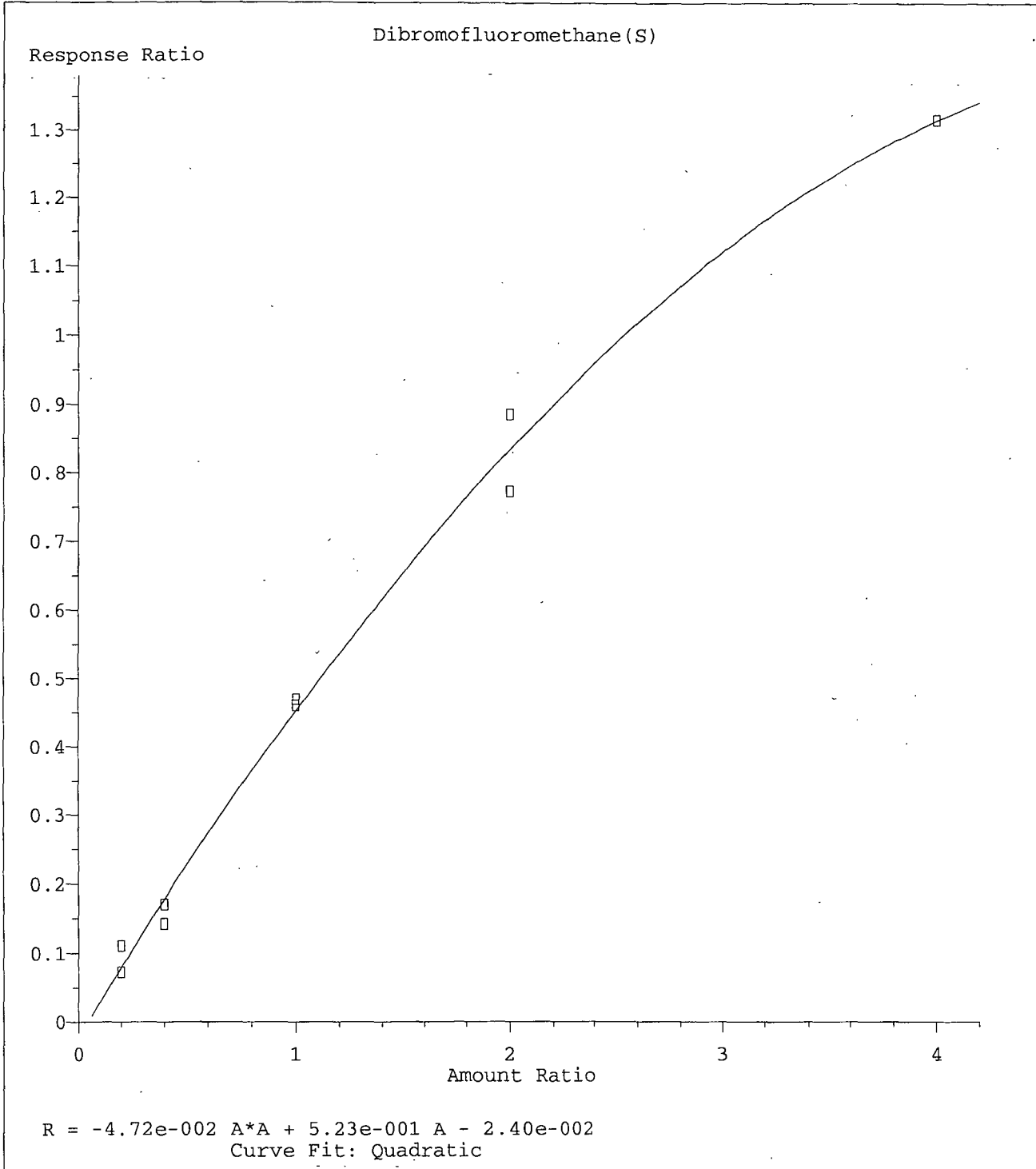
Method Name: M:\LOKI\DATA\190211\L0211W.M  
Calibration Table Last Updated: Tue Feb 12 13:49:15 2019



Method Name: M:\LOKI\DATA\190211\L0211W.M  
Calibration Table Last Updated: Tue Feb 12 13:49:15 2019



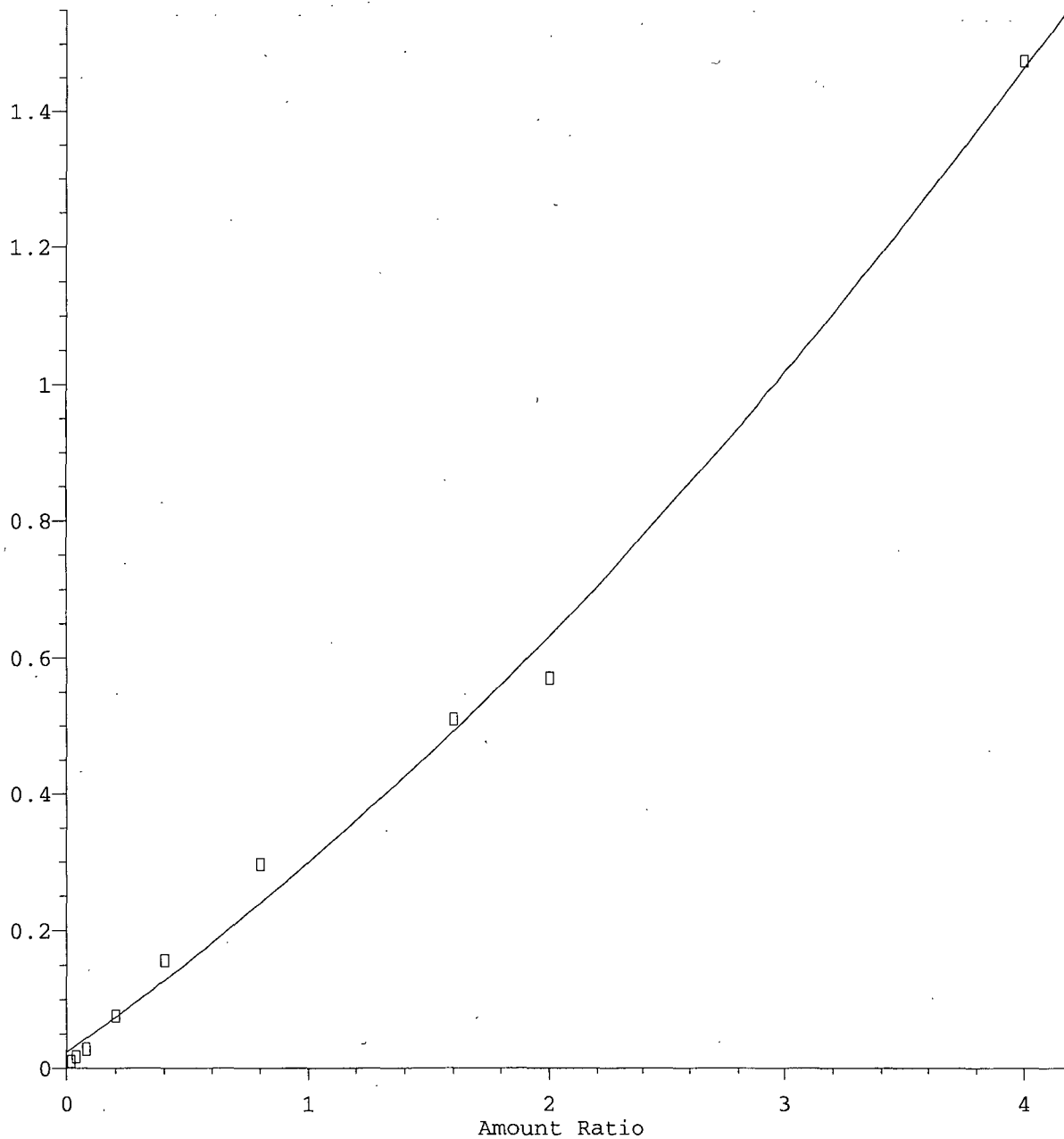
Method Name: M:\LOKI\DATA\190211\L0211W.M  
Calibration Table Last Updated: Tue Feb 12 13:49:15 2019



Method Name: M:\LOKI\DATA\190211\L0211W.M  
Calibration Table Last Updated: Tue Feb 12 13:49:15 2019

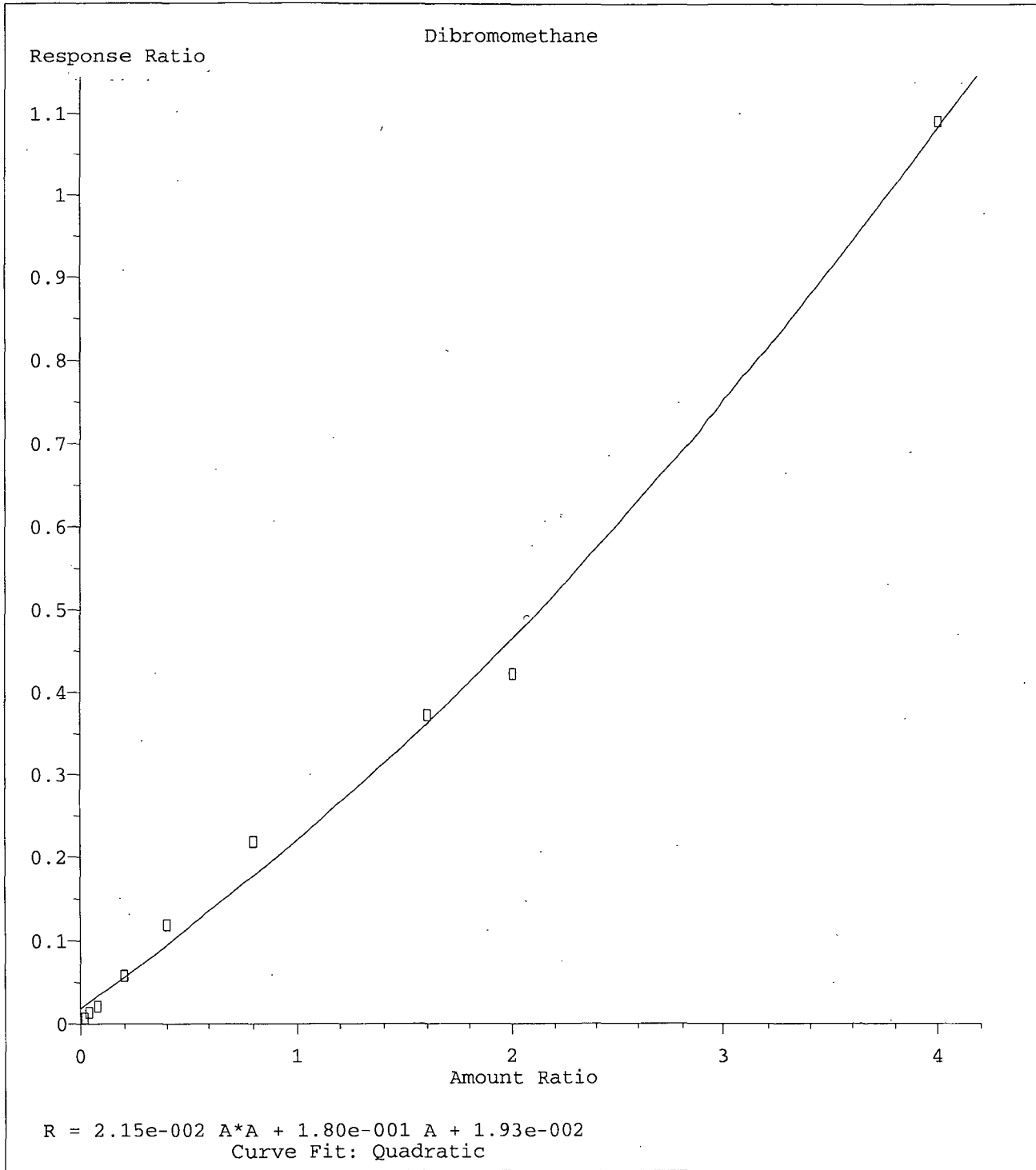
Bromodichloromethane

Response Ratio



$R = 2.84e-002 A^2 + 2.47e-001 A + 2.41e-002$   
Curve Fit: Quadratic

Method Name: M:\LOKI\DATA\190211\L0211W.M  
Calibration Table Last Updated: Tue Feb 12 13:49:15 2019

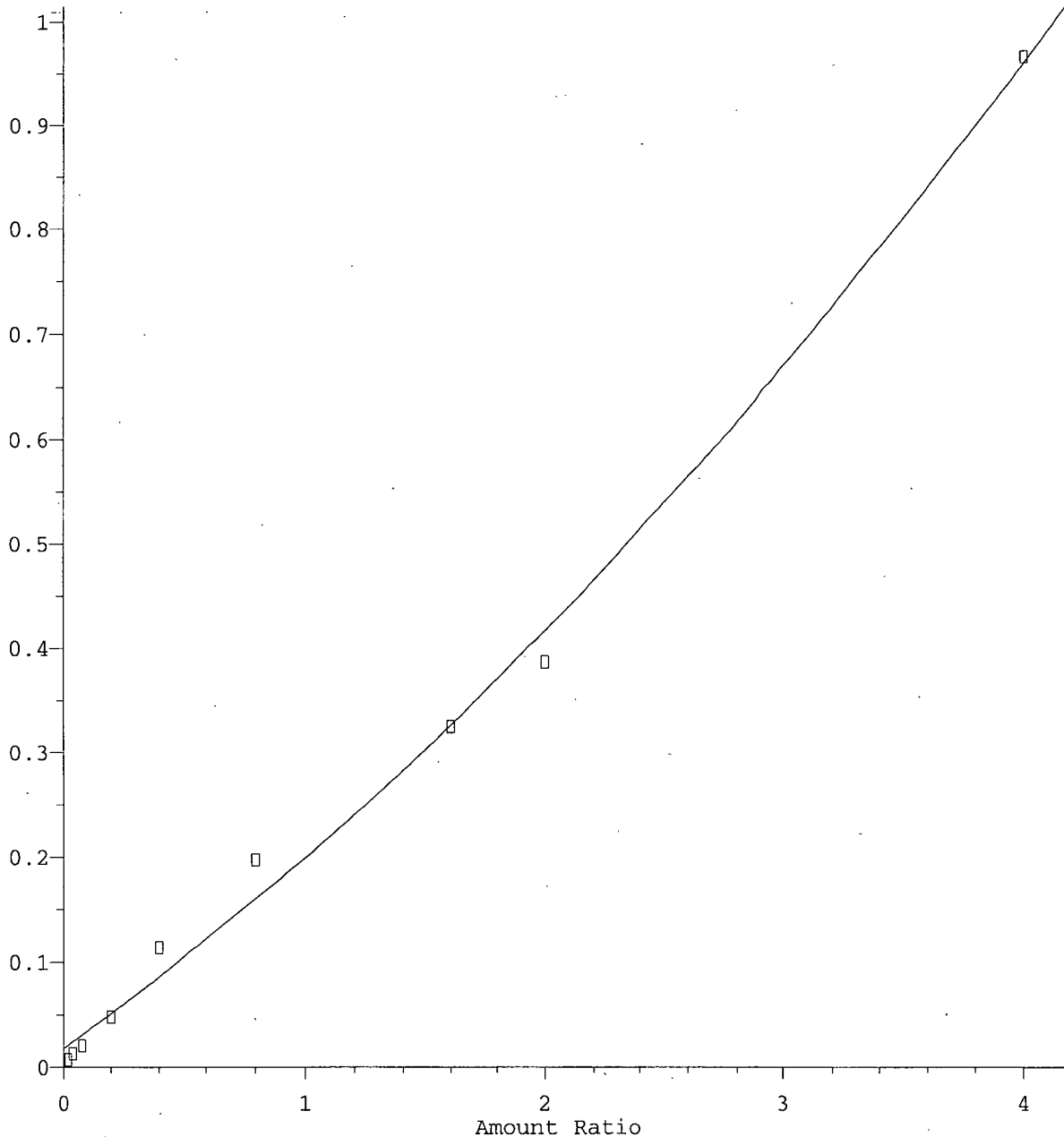


Method Name: M:\LOKI\DATA\190211\L0211W.M  
Calibration Table Last Updated: Tue Feb 12 13:49:15 2019



1,2-EDB

Response Ratio

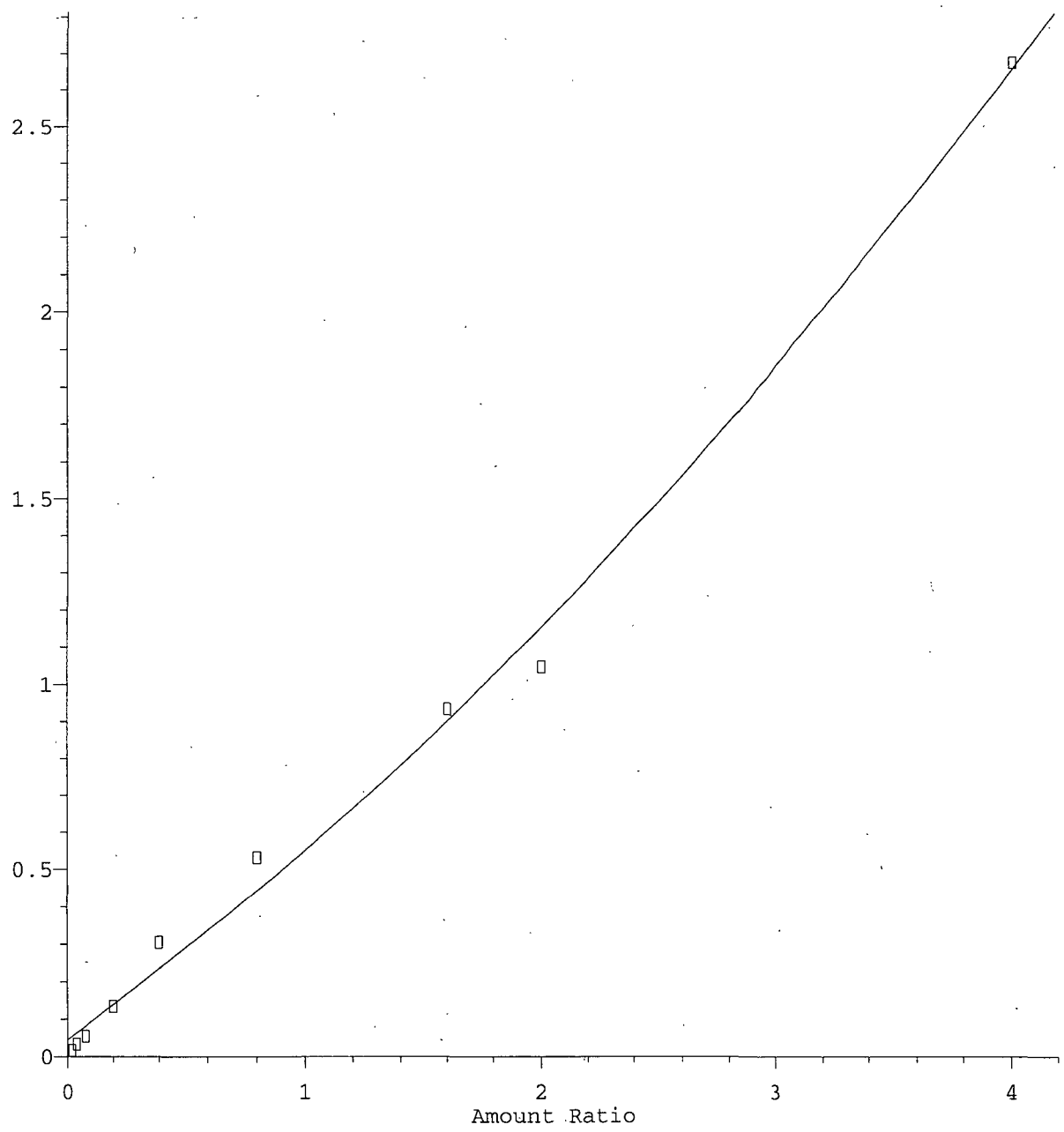


$R = 1.80e-002 A^2 + 1.64e-001 A + 1.77e-002$   
Curve Fit: Quadratic

Method Name: M:\LOKI\DATA\190211\L0211W.M  
Calibration Table Last Updated: Tue Feb 12 13:49:15 2019

1,1,1,2-Tetrachloroethane

Response Ratio

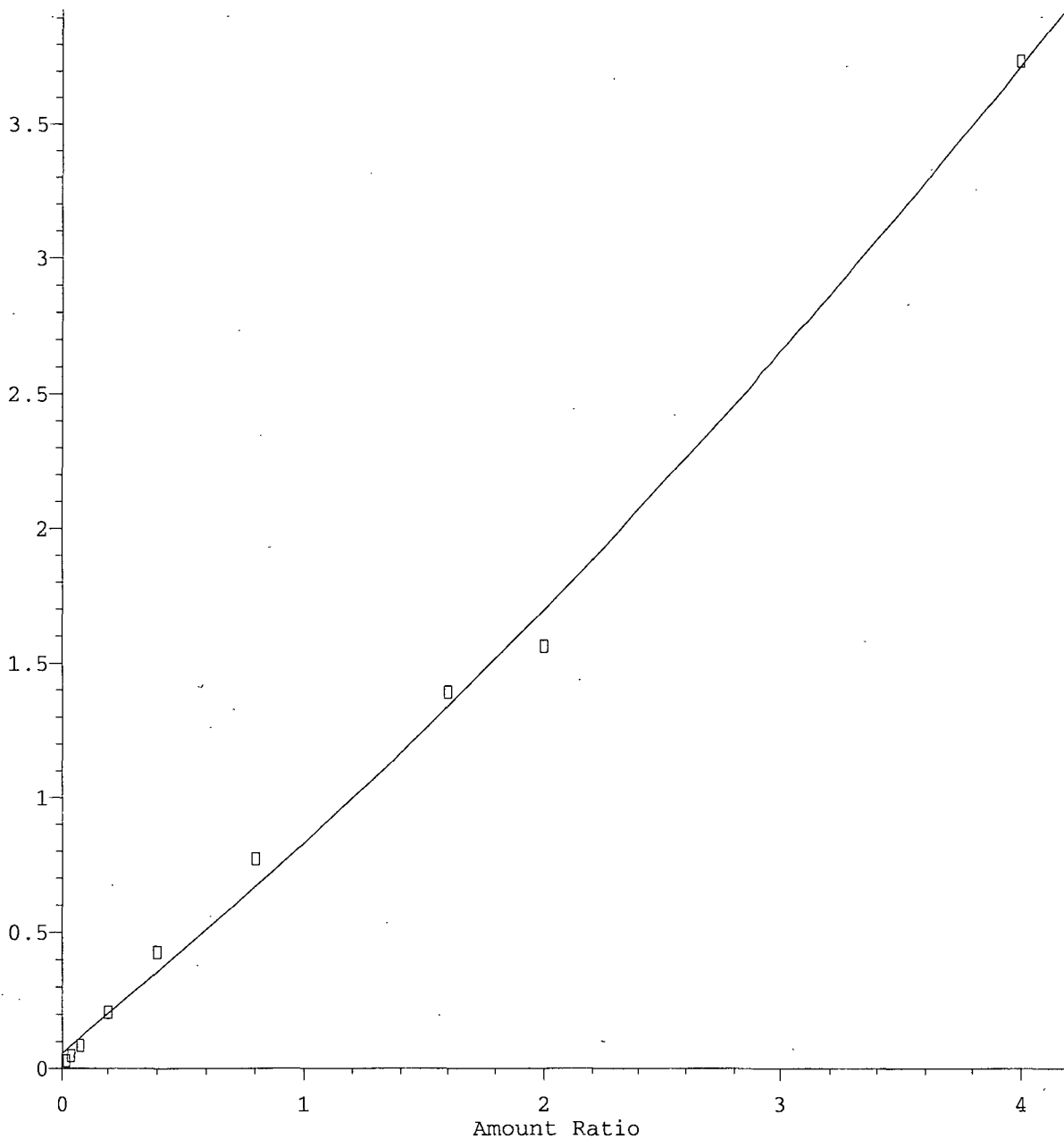


$R = 4.95e-002 A^2 + 4.56e-001 A + 4.55e-002$   
Curve Fit: Quadratic

Method Name: M:\LOKI\DATA\190211\L0211W.M  
Calibration Table Last Updated: Tue Feb 12 13:49:15 2019

1,1,2,2-Tetrachloroethane

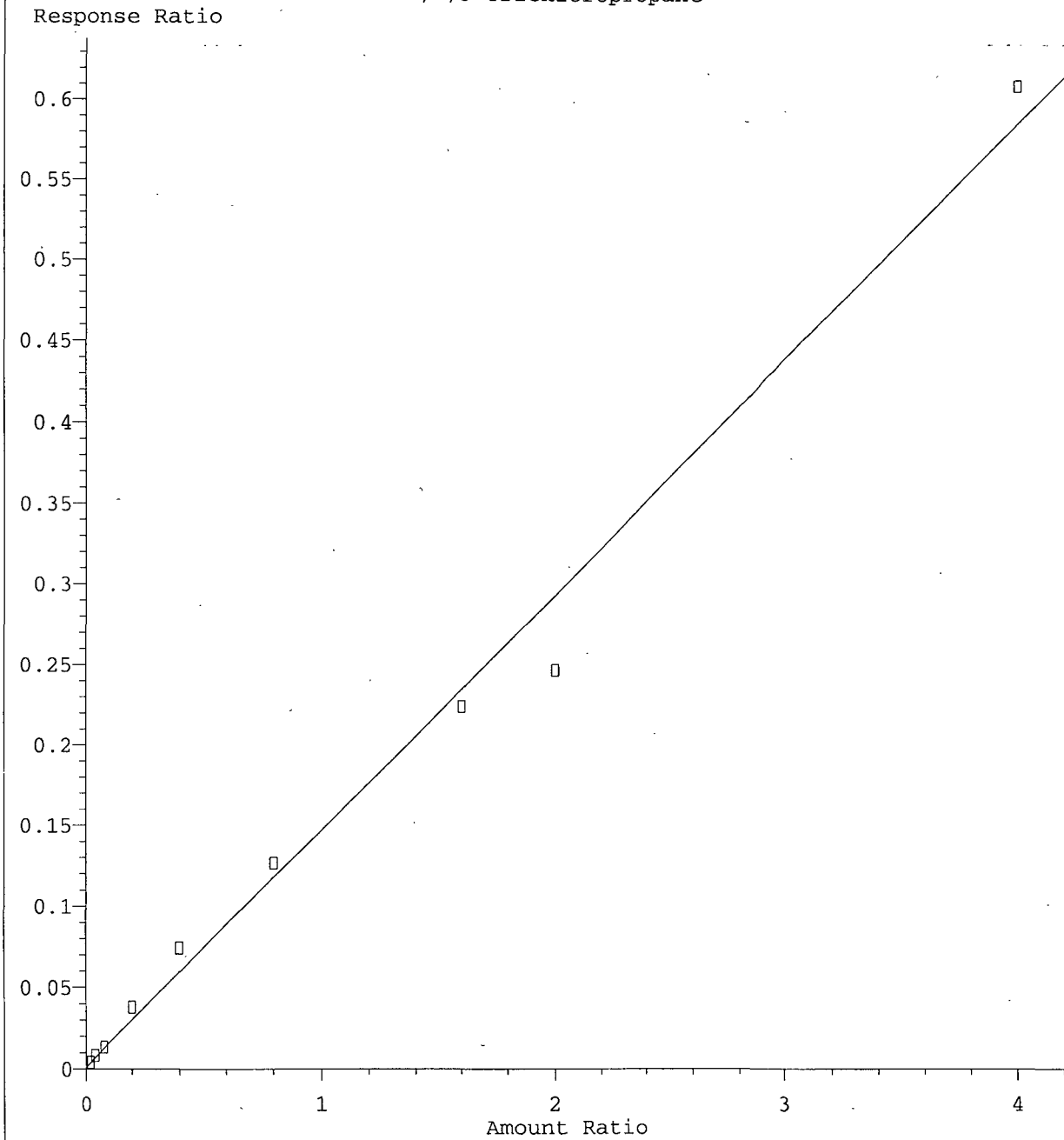
Response Ratio



$R = 4.70e-002 A^2 + 7.28e-001 A + 5.64e-002$   
Curve Fit: Quadratic

Method Name: M:\LOKI\DATA\190211\L0211W.M  
Calibration Table Last Updated: Tue Feb 12 13:49:15 2019

1,2,3-Trichloropropane

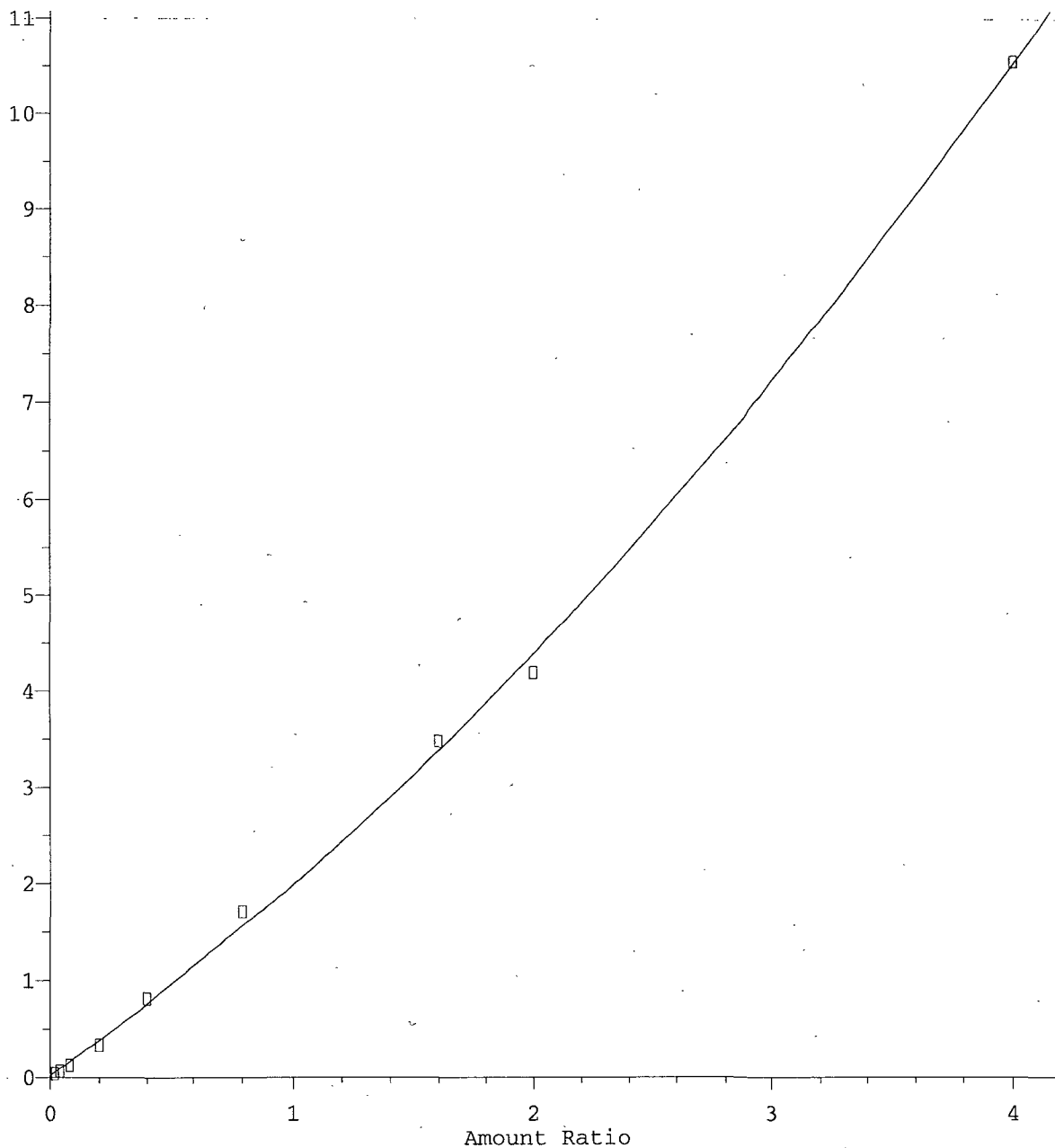


Resp Ratio = 1.46e-001 \* Amt + 1.09e-003  
Coef of Det (r^2) = 0.990 Curve Fit: Linear

Method Name: M:\LOKI\DATA\190211\L0211W.M  
Calibration Table Last Updated: Tue Feb 12 13:49:15 2019

Naphthalene

Response Ratio



$R = 2.20e-001 A^2 + 1.75e+000 A + 2.39e-002$   
Curve Fit: Quadratic

Method Name: M:\LOKI\DATA\190211\L0211W.M  
Calibration Table Last Updated: Tue Feb 12 13:49:15 2019

VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 7

Second Source Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: water

SDG No: \_\_\_\_\_  
Date Analyzed: 02/11/19  
Instrument: Loki  
Initial Cal. Date: 02/11/19  
Data File: 0211L15.D

		Compound	MEAN	CCRF	%D	%Drift
1	TM	Freon 1113	0.2042	0.2162	5.9	TM
2	TM	Dichlorodifluoromethane	0.4267	0.3965	7.1	TM
3	TM	Freon 114	0.4085	0.4255	4.2	TM
4	TM**L	Chloromethane	0.6634	0.6121	7.7	TM**L 2.7
5	TM*	Vinyl chloride	0.4784	0.4734	1.1	TM*
6	TM	2-Chloro-1,1,1-trifluoroethane	0.3157	0.3505	11	TM
7	TML	Bromomethane	0.3880	0.4101	5.7	TML 10
8	TML	Chloroethane	0.2456	0.2167	12	TML 6.8
9	TM	Dichlorofluoromethane	0.7912	0.7821	1.1	TM
10	TM	Trichlorofluoromethane	0.7146	0.7175	0.41	TM
11	TM	Acrolein	0.0413	0.0420	1.7	TM
12	TML	Acetone	0.0471	0.0564	20	TML 16
13	TM	Freon-113	0.3677	0.3737	1.6	TM
14	TM*Q	1,1-DCE	0.1213	0.1143	5.7	TM*Q 14
15	TM	t-Butanol	0.0219	0.0236	7.7	TM
16	TM	2-Propanol	0.0135	0.0146	7.7	TM
17	TM	Acetonitrile	0.0382	0.0378	0.88	TM
18	TMQ	Methyl Acetate	0.2350	0.2221	5.5	TMQ 18
19	TMQ	Iodomethane	0.1684	0.1521	9.7	TMQ 7.6
20	TMQ	Acrylonitrile	0.0946	0.0900	5.0	TMQ 15
21	TM	Methylene chloride	0.4931	0.5070	2.8	TM
22	TM	Carbon disulfide	1.305	1.292	0.98	TM
23	TM	Methyl t-butyl ether (MtBE)	0.9491	1.001	5.5	TM
24	TM	Trans-1,2-DCE	0.2111	0.2176	3.1	TM
25	TM	Diisopropyl Ether	1.281	1.337	4.4	TM
26	TM**	2,2-Dichloro-1,1,1-trifluoroethane	0.0291	0.0290	0.40	TM**
27	TM**	1,1-DCA	0.8493	0.8296	2.3	TM**
28	TMQ	Vinyl Acetate	0.2841	0.2621	7.8	TMQ 18
29	TM	Ethyl tert Butyl Ether	1.107	1.154	4.2	TM
30	TMQ	MEK (2-Butanone)	0.1335	0.1366	2.3	TMQ 16
31	TM	Cis-1,2-DCE	0.4906	0.5108	4.1	TM
32	TM	2,2-Dichloropropane	0.7320	0.7171	2.0	TM
33	TM	2-Methylpentane	0.0000	0.0004	0.00	TM
34	TM	3-Methylpentane	0.0000	0.0198	0.00	TM
35	TM*	Chloroform	0.8788	0.8838	0.57	TM*
36	TML	Bromochloromethane	0.1177	0.1056	10	TML 5.2
37	TM	1,1,1-TCA	0.3406	0.3365	1.2	TM
38	TM	Cyclohexane	0.3870	0.3714	4.0	TM
39	TM	1,1-Dichloropropene	0.5652	0.5789	2.4	TM
40	TM	2,2,4-Trimethylpentane	1.233	1.252	1.5	TM

Average

4.5

VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 7

Second Source Calibration

Lab Name: APPL, Inc.

SDG No: \_\_\_\_\_

Case No: \_\_\_\_\_

Date Analyzed: 02/11/19

Matrix: water

Instrument: Loki

Cal. Date: 02/11/19

Data File: 0211L15.D

		Compound	MEAN	CCRF	%D	%Drift	
41	TM	Carbon Tetrachloride	0.7011	0.6951	0.86	TM	
42	TM	Tert Amyl Methyl Ether	0.9960	1.067	7.2	TM	
43	TM	Methylcyclopentane	0.0000	0.0006	0.00	TM	
44	TM	1,2-DCA	0.6651	0.6582	1.0	TM	
45	TM	Benzene	1.860	1.874	0.77	TM	
46	TM	TCE	0.2661	0.2647	0.54	TM	
47	TM	2-Pentanone	0.1974	0.2030	2.8	TM	
48	TM*	1,2-Dichloropropane	0.5020	0.4977	0.86	TM*	
49	TMQ	Bromodichloromethane	0.3754	0.3706	1.3	TMQ	19
50	TM	Methyl Cyclohexane	0.5997	0.6199	3.4	TM	
51	TMQ	Dibromomethane	0.2828	0.2687	5.0	TMQ	16
52	TM	MIBK (methyl isobutyl ketone)	0.2663	0.2601	2.3	TM	
53	TM	1-Bromo-2-chloroethane	0.3114	0.3083	0.98	TM	
54	TM	Cis-1,3-Dichloropropene	0.7310	0.7626	4.3	TM	
55	TM*	Toluene	1.076	1.114	3.6	TM*	
56	TM	Trans-1,3-Dichloropropene	0.6526	0.6797	4.2	TM	
57	TM	1,1,2-TCA	0.3050	0.3060	0.34	TM	
58	TM	2-Hexanone	0.1656	0.1691	2.1	TM	
59	TMQ	1,2-EDB	0.2600	0.2402	7.6	TMQ	14
60	TM	Tetrachloroethene	0.4033	0.4217	4.6	TM	
61	TM	1-Chlorohexane	0.6831	0.6791	0.59	TM	
62	TMQ	1,1,1,2-Tetrachloroethane	0.6951	0.6773	2.6	TMQ	18
63	TM	m&p-Xylene	2.010	2.101	4.6	TM	
64	TM	o-Xylene	0.5223	0.5656	8.3	TM	
65	TM	Styrene	1.659	1.767	6.5	TM	
66	TM	1,3-Dichloropropane	0.8414	0.8351	0.74	TM	
67	TM	Dibromochloromethane	0.6220	0.6243	0.37	TM	
68	TM**	Chlorobenzene	1.716	1.724	0.44	TM**	
69	TM*	Ethylbenzene	1.547	1.550	0.23	TM*	
70	TM**	Bromoform	0.3811	0.3917	2.8	TM**	
71	TM	Isopropylbenzene	4.751	4.927	3.7	TM	
72	TM**Q	1,1,2,2-Tetrachloroethane	1.032	1.014	1.7	TM**Q	16
73	TML	1,2,3-Trichloropropane	0.1701	0.1682	1.1	TML	13
74	TM	t-1,4-Dichloro-2-Butene	0.2060	0.2131	3.4	TM	
75	TM	Bromobenzene	0.7254	0.7578	4.5	TM	
76	TM	n-Propylbenzene	3.166	3.279	3.6	TM	
77	TM	4-Ethyltoluene	4.584	5.014	9.4	TM	
78	TM	2-Chlorotoluene	1.928	1.946	0.88	TM	
79	TM	1,3,5-Trimethylbenzene	3.891	4.259	9.5	TM	
80	TM	4-Chlorotoluene	2.210	2.396	8.4	TM	

Average

3.2

VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 7

Second Source Calibration

Lab Name: APPL, Inc.

SDG No: \_\_\_\_\_

Case No: \_\_\_\_\_

Date Analyzed: 02/11/19

Matrix: water

Instrument: Loki

Cal. Date: 02/11/19

Data File: 0211L15.D

		Compound	MEAN	CCRF	%D	%Drift
81	TM	Tert-Butylbenzene	3.900	4.062	4.1	TM
82	TM	1,2,4-Trimethylbenzene	3.756	3.998	6.4	TM
83	TM	Sec-Butylbenzene	4.857	5.229	7.6	TM
84	TM	p-Isopropyltoluene	2.258	2.455	8.7	TM
85	TM	Benzyl Chloride	1.323	1.237	6.5	TM
86	TM	1,3-DCB	1.376	1.435	4.2	TM
87	TM	1,4-DCB	2.661	2.699	1.4	TM
88	TM	n-Butylbenzene	3.382	3.514	3.9	TM
89	TM	1,2-DCB	2.473	2.503	1.2	TM
90	TM	Hexachloroethane	1.019	0.9483	6.9	TM
91	TM	1,2-Dibromo-3-chloropropane	0.1744	0.1810	3.8	TM
92	TM	1,2,4-Trichlorobenzene	1.480	1.519	2.7	TM
93	TM	Hexachlorobutadiene	0.9387	0.9355	0.34	TM
94	TMQ	Naphthalene	1.997	2.103	5.3	TMQ 11
95	TM	1,2,3-Trichlorobenzene	0.6342	0.6257	1.3	TM
96						
97						
98						
99						
100						
101						
102						
103						
104						
105						
106						
107						
108						
109						
110						
111						
112						
113						
114						
115						
116						
117						
118						
119						
120						

Average

4.3



Data File : M:\LOKI\DATA\190211\0211L15.D  
 Acq On : 11 Feb 19 14:09  
 Sample : (SS) 10ug/L VOC STD 2/11/19  
 Misc : ISS 1/29/19

Vial: 14  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 12 13:49 2019

Quant Results File: L0211W.RES

Quant Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Feb 12 13:49:15 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	274496	25.000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.96	117	219520	25.000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.53	152	113728	25.000	ppb	0.00

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
38) Dibromofluoromethane(S)	5.64	111	120899	24.320	ppb	0.00
Spiked Amount			Recovery	=	97.280%	
43) 1,2-DCA-D4(S)	6.06	65	139586	26.332	ppb	0.00
Spiked Amount			Recovery	=	105.328%	
64) Toluene-D8(S)	8.36	98	451462	25.524	ppb	0.00
Spiked Amount			Recovery	=	102.096%	
72) 4-Bromofluorobenzene(S)	11.26	95	167062	25.082	ppb	0.00
Spiked Amount			Recovery	=	100.328%	

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Freon 1113	1.12	116	237415	105.886	ppb	99
3) Dichlorodifluoromethane	1.14	85	43534	9.292	ppb	97
4) Freon 114	1.25	85	46720	10.416	ppb	94
5) Chloromethane	1.29	50	67207	9.730	ppb	97
6) Vinyl chloride	1.38	62	51974	9.894	ppb	98
7) 2-Chloro-1,1,1-trifluoroet	1.48	118	384832	111.012	ppb	98
8) Bromomethane	1.65	94	45032	11.020	ppb	95
9) Chloroethane	1.75	64	23792	9.323	ppb	95
10) Dichlorofluoromethane	1.95	67	85876	9.885	ppb	95
11) Trichlorofluoromethane	2.00	101	78778	10.041	ppb	97
12) Acrolein	2.42	56	57657	127.134	ppb	100
13) Acetone	2.60	43	6190	11.601	ppb	100
14) Freon-113	2.54	101	41035	10.164	ppb	96
15) 1,1-DCE	2.52	63	12553	11.411	ppb	97
16) t-Butanol	3.34	59	32346	134.579	ppb	97
17) 2-Propanol	2.81	45	15988	107.674	ppb	# 93
18) Acetonitrile	2.91	41	51926	123.895	ppb	90
19) Methyl Acetate	3.00	43	24388	11.797	ppb	98
20) Iodomethane	2.66	142	16704	9.242	ppb	95
21) Acrylonitrile	3.43	52	9877	11.467	ppb	80
22) Methylene chloride	3.09	84	55670	10.282	ppb	94
23) Carbon disulfide	2.73	76	141840	9.902	ppb	99
24) Methyl t-butyl ether (MtBE)	3.51	73	109923	10.549	ppb	96
25) Trans-1,2-DCE	2.52	96	23896	10.311	ppb	95
26) Diisopropyl Ether	4.31	45	146765	10.436	ppb	93
27) 2,2-Dichloro-1,1,1-trifluo	1.95	85	3181	9.960	ppb	97
28) 1,1-DCA	4.09	63	91085	9.767	ppb	97
29) Vinyl Acetate	4.31	43	28776	11.787	ppb	# 100
30) Ethyl tert Butyl Ether	4.85	59	126709	10.423	ppb	97
31) MEK (2-Butanone)	5.04	43	14994	11.570	ppb	86
32) Cis-1,2-DCE	4.97	96	56084	10.411	ppb	97
33) 2,2-Dichloropropane	4.96	77	78736	9.797	ppb	97
36) Chloroform	5.44	83	97043	10.057	ppb	98
37) Bromochloromethane	5.29	128	11599	10.517	ppb	97
39) 1,1,1-TCA	5.65	97	36944	9.879	ppb	99
40) Cyclohexane	5.71	41	40779	9.597	ppb	97
41) 1,1-Dichloropropene	5.87	75	63558	10.242	ppb	99
42) 2,2,4-Trimethylpentane	6.28	57	137479	10.151	ppb	98
44) Carbon Tetrachloride	5.86	117	76317	9.914	ppb	90

(#) = qualifier out of range (m) = manual integration

Data File : M:\LOKI\DATA\190211\0211L15.D  
 Acq On : 11 Feb 19 14:09  
 Sample : (SS) 10ug/L VOC STD 2/11/19  
 Misc : ISS 1/29/19

Vial: 14  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 12 13:49 2019

Quant Results File: L0211W.RES

Quant Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Feb 12 13:49:15 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
45) Tert Amyl Methyl Ether	6.34	73	117195	10.717	ppb	96
47) 1,2-DCA	6.16	62	72266	9.896	ppb #	93
48) Benzene	6.13	78	205808	10.077	ppb	98
49) TCE	6.95	130	29064	9.946	ppb	99
50) 2-Pentanone	7.21	43	278605	128.558	ppb	98
51) 1,2-Dichloropropane	7.20	63	54643	9.914	ppb	100
52) Bromodichloromethane	7.54	83	40688	11.902	ppb	97
53) Methyl Cyclohexane	7.17	83	68068	10.338	ppb	98
54) Dibromomethane	7.33	93	29505	11.607	ppb	86
56) MIBK (methyl isobutyl ket	8.27	43	28562	9.768	ppb	97
57) 1-Bromo-2-chloroethane	7.88	63	33856	9.902	ppb	98
58) Cis-1,3-Dichloropropene	8.07	75	83728	10.432	ppb	96
59) Toluene	8.44	91	122344	10.356	ppb	98
60) Trans-1,3-Dichloropropene	8.70	75	74634	10.417	ppb	100
61) 1,1,2-TCA	8.90	83	33603	10.034	ppb	97
62) 2-Hexanone	9.21	43	18567	10.214	ppb	93
65) 1,2-EDB	9.44	107	21088	11.382	ppb	92
66) Tetrachloroethene	9.05	166	37032	10.458	ppb	98
67) 1-Chlorohexane	9.99	91	59628	9.941	ppb	98
68) 1,1,1,2-Tetrachloroethane	10.09	131	59473	11.751	ppb	93
69) m&p-Xylene	10.26	91	368997	20.910	ppb	99
70) o-Xylene	10.69	106	49664	10.828	ppb	96
71) Styrene	10.71	104	155151	10.648	ppb	100
73) 1,3-Dichloropropane	9.08	76	73330	9.926	ppb	93
74) Dibromochloromethane	9.32	129	54821	10.037	ppb	98
75) Chlorobenzene	9.99	112	151376	10.044	ppb	98
76) Ethylbenzene	10.13	91	136128	10.023	ppb	99
77) Bromoform	10.89	173	34390	10.276	ppb	98
79) Isopropylbenzene	11.11	105	224148	10.371	ppb	98
80) 1,1,2,2-Tetrachloroethane	11.43	83	46137	11.638	ppb	96
81) 1,2,3-Trichloropropane	11.47	110	7650	11.339	ppb	96
82) t-1,4-Dichloro-2-Butene	11.49	53	9696	10.345	ppb	88
83) Bromobenzene	11.42	156	34472	10.447	ppb	96
84) n-Propylbenzene	11.56	91	149175	10.358	ppb	97
85) 4-Ethyltoluene	11.69	105	228093	10.938	ppb	98
86) 2-Chlorotoluene	11.64	91	88504	10.088	ppb	96
87) 1,3,5-Trimethylbenzene	11.76	105	193745	10.946	ppb	99
88) 4-Chlorotoluene	11.76	91	108992	10.843	ppb	99
89) Tert-Butylbenzene	12.11	119	184765	10.415	ppb	94
90) 1,2,4-Trimethylbenzene	12.16	105	181871	10.644	ppb	98
91) Sec-Butylbenzene	12.35	105	237856	10.765	ppb	98
92) p-Isopropyltoluene	12.52	119	111664	10.870	ppb	97
93) Benzyl Chloride	12.71	91	56291	9.354	ppb	98
94) 1,3-DCB	12.46	146	65264	10.424	ppb	97
95) 1,4-DCB	12.56	146	122775	10.142	ppb	96
96) n-Butylbenzene	12.96	91	159850	10.391	ppb	97
97) 1,2-DCB	12.97	146	113853	10.118	ppb	97
98) Hexachloroethane	13.26	117	43140	9.309	ppb	96
99) 1,2-Dibromo-3-chloropropan	13.81	75	8234	10.381	ppb #	79
100) 1,2,4-Trichlorobenzene	14.74	180	69104	10.267	ppb	93
101) Hexachlorobutadiene	14.93	225	42559	9.966	ppb	99
102) Naphthalene	15.00	128	95663	11.089	ppb	98
103) 1,2,3-Trichlorobenzene	15.27	180	28464	9.865	ppb	95

(#) = qualifier out of range (m) = manual integration

Quantitation Report

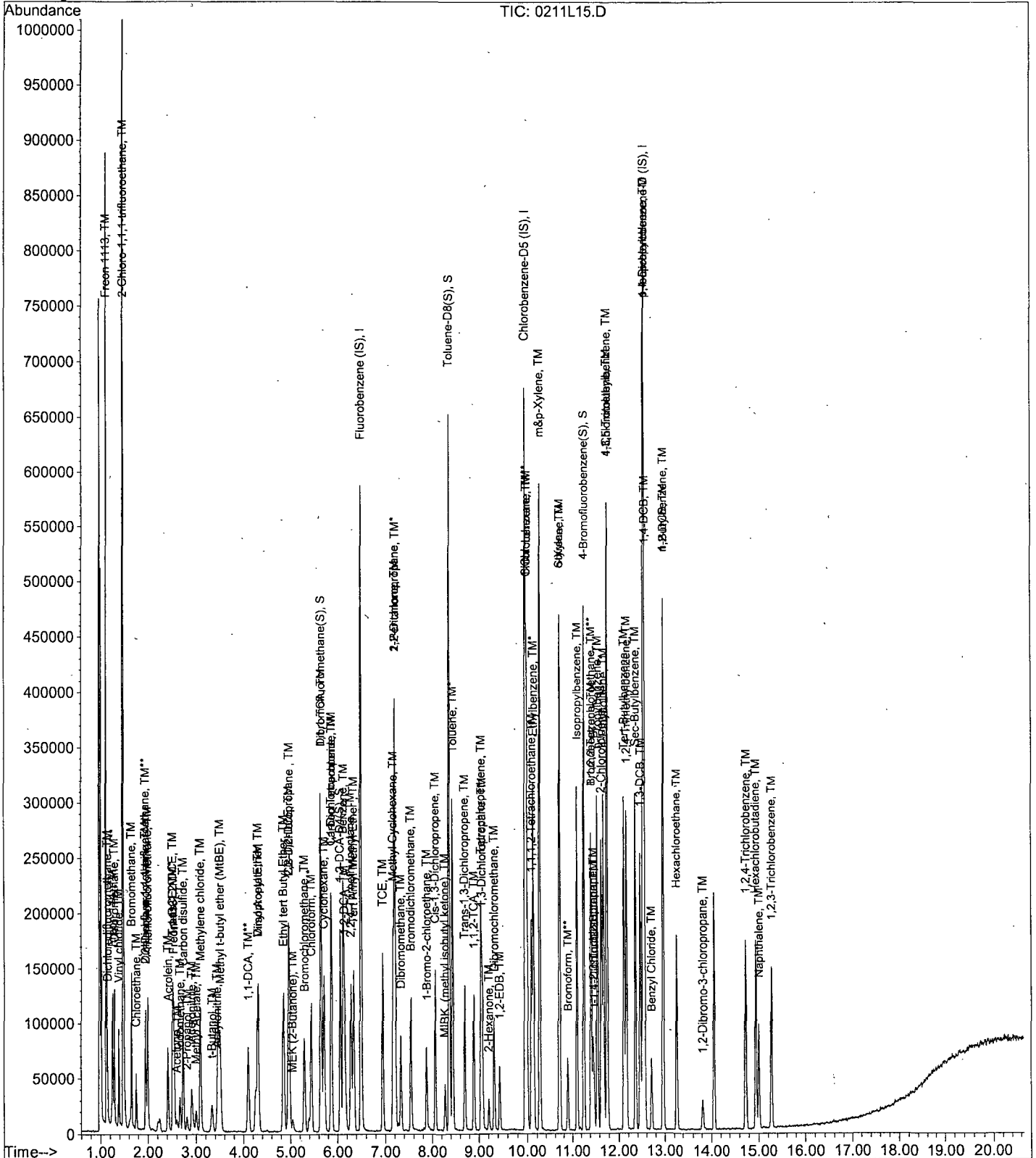
Data File : M:\LOKI\DATA\190211\0211L15.D  
Acq On : 11 Feb 19 14:09  
Sample : (SS) 10ug/L VOC STD 2/11/19  
Misc : ISS 1/29/19

Vial: 14  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 12 13:49 2019

Quant Results File: L0211W.RES

Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Feb 12 13:49:15 2019  
Response via : Initial Calibration



VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 7

Continuing Calibration

Lab Name: APPL, Inc.

SDG No: \_\_\_\_\_

Case No: \_\_\_\_\_

Date Analyzed: 02/12/19

Matrix: water

Instrument: Loki

Initial Cal. Date: 02/11/19

Data File: 0212L04.D

	Compound	MEAN	CCRF	%D	%Drift
1	I Fluorobenzene (IS)	ISTD			I
2	TM Freon 1113	0.2042	0.1840	9.9	TM
3	TM Dichlorodifluoromethane	0.4267	0.3882	9.0	TM
4	TM Freon 114	0.4085	0.3899	4.6	TM
5	TM**L Chloromethane	0.6634	0.5101	23	TM**L 19
6	TM* Vinyl chloride	0.4784	0.3974	17	TM*
7	TM 2-Chloro-1,1,1-trifluoroethane	0.3157	0.3081	2.4	TM
8	TML Bromomethane	0.3880	0.3399	12	TML 8.4
9	TML Chloroethane	0.2456	0.1910	22	TML 18
10	TM Dichlorofluoromethane	0.7912	0.7045	11	TM
11	TM Trichlorofluoromethane	0.7146	0.6492	9.1	TM
12	TM Acrolein	0.0413	0.0352	15	TM
13	TML Acetone	0.0471	0.0433	8.1	TML 20
14	TM Freon-113	0.3677	0.3511	4.5	TM
15	TM*Q 1,1-DCE	0.1213	0.0964	21	TM*Q 6.3
16	TM t-Butanol	0.0219	0.0189	14	TM
17	TM 2-Propanol	0.0135	0.0111	18	TM
18	TM Acetonitrile	0.0382	0.0318	17	TM
19	TMQ Methyl Acetate	0.2350	0.1854	21	TMQ 4.5
20	TMQ Iodomethane	0.1684	0.1369	19	TMQ 17
21	TMQ Acrylonitrile	0.0946	0.0732	23	TMQ 9.9
22	TM Methylene chloride	0.4931	0.4096	17	TM
23	TM Carbon disulfide	1.305	1.141	13	TM
24	TM Methyl t-butyl ether (MtBE)	0.9491	0.8381	12	TM
25	TM Trans-1,2-DCE	0.2111	0.1940	8.1	TM
26	TM Diisopropyl Ether	1.281	1.160	9.5	TM
27	TM** 2,2-Dichloro-1,1,1-trifluoroethane	0.0291	0.0308	5.8	TM**
28	TM** 1,1-DCA	0.8493	0.7361	13	TM**
29	TMQ Vinyl Acetate	0.2841	0.2252	21	TMQ 0.50
30	TM Ethyl tert Butyl Ether	1.107	1.014	8.5	TM
31	TMQ MEK (2-Butanone)	0.1335	0.1112	17	TMQ 12
32	TM Cis-1,2-DCE	0.4906	0.4386	11	TM
33	TM 2,2-Dichloropropane	0.7320	0.7143	2.4	TM
34	TM 3-Methylpentane	0.0000	0.0166	0.00	TM
35	TM* Chloroform	0.8788	0.7846	11	TM*
36	TML Bromochloromethane	0.1177	0.0992	16	TML 1.3
37	SQ Dibromofluoromethane(S)	0.4203	0.3753	11	SQ 18
38	TM 1,1,1-TCA	0.3406	0.3115	8.5	TM
39	TM Cyclohexane	0.3870	0.3371	13	TM
40	TM 1,1-Dichloropropene	0.5652	0.5310	6.0	TM

Average

12.4

VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 7

Continuing Calibration

Lab Name: APPL, Inc.

SDG No: \_\_\_\_\_

Case No: \_\_\_\_\_

Date Analyzed: 02/12/19

Matrix: water

Instrument: Loki

Cal. Date: 02/11/19

Data File: 0212L04.D

		Compound	MEAN	CCRF	%D	%Drift
41	TM	2,2,4-Trimethylpentane	1.233	1.204	2.4	TM
42	S	1,2-DCA-D4(S)	0.4828	0.4342	10	S
43	TM	Carbon Tetrachloride	0.7011	0.6525	6.9	TM
44	TM	Tert Amyl Methyl Ether	0.9960	0.8797	12	TM
45	TM	Methylcyclopentane	0.0000	0.0004	0.00	TM
46	TM	1,2-DCA	0.6651	0.5621	15	TM
47	TM	Benzene	1.860	1.663	11	TM
48	TM	TCE	0.2661	0.2397	9.9	TM
49	TM	2-Pentanone	0.1974	0.1662	16	TM
50	TM*	1,2-Dichloropropane	0.5020	0.4367	13	TM*
51	TMQ	Bromodichloromethane	0.3754	0.3206	15	TMQ 0.65
52	TM	Methyl Cyclohexane	0.5997	0.5837	2.7	TM
53	TMQ	Dibromomethane	0.2828	0.2428	14	TMQ 3.0
54	TM	MIBK (methyl isobutyl ketone)	0.2663	0.2172	18	TM
55	TM	1-Bromo-2-chloroethane	0.3114	0.2640	15	TM
56	TM	Cis-1,3-Dichloropropene	0.7310	0.6673	8.7	TM
57	TM*	Toluene	1.076	0.9717	9.7	TM*
58	TM	Trans-1,3-Dichloropropene	0.6526	0.5844	10	TM
59	TM	1,1,2-TCA	0.3050	0.2616	14	TM
60	TM	2-Hexanone	0.1656	0.1351	18	TM
61	I	Chlorobenzene-D5 (IS)	ISTD			I
62	S	Toluene-D8(S)	2.014	1.819	9.7	S
63	TMQ	1,2-EDB	0.2600	0.2137	18	TMQ 0.92
64	TM	Tetrachloroethene	0.4033	0.3827	5.1	TM
65	TM	1-Chlorohexane	0.6831	0.6519	4.6	TM
66	TMQ	1,1,1,2-Tetrachloroethane	0.6951	0.6121	12	TMQ 4.5
67	TM	m&p-Xylene	2.010	1.973	1.8	TM
68	TM	o-Xylene	0.5223	0.5286	1.2	TM
69	TM	Styrene	1.659	1.601	3.5	TM
70	S	4-Bromofluorobenzene(S)	0.7586	0.6612	13	S
71	TM	1,3-Dichloropropane	0.8414	0.7393	12	TM
72	TM	Dibromochloromethane	0.6220	0.5513	11	TM
73	TM**	Chlorobenzene	1.716	1.580	7.9	TM**
74	TM*	Ethylbenzene	1.547	1.488	3.8	TM*
75	TM**	Bromoform	0.3811	0.3289	14	TM**
76	I	1,4-Dichlorobenzene-D (IS)	ISTD			I
77	TM	Isopropylbenzene	4.751	4.738	0.27	TM
78	TM**Q	1,1,2,2-Tetrachloroethane	1.032	0.8743	15	TM**Q 1.8
79	TML	1,2,3-Trichloropropane	0.1701	0.1422	16	TML 4.4
80	TM	t-1,4-Dichloro-2-Butene	0.2060	0.1945	5.6	TM

Average

9.9

VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 7

Continuing Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: water

SDG No: \_\_\_\_\_  
Date Analyzed: 02/12/19  
Instrument: Loki  
Cal. Date: 02/11/19  
Data File: 0212L04.D

		Compound	MEAN	CCRF	%D	%Drift
81	TM	Bromobenzene	0.7254	0.6984	3.7	TM
82	TM	n-Propylbenzene	3.166	3.102	2.0	TM
83	TM	4-Ethyltoluene	4.584	4.777	4.2	TM
84	TM	2-Chlorotoluene	1.928	1.869	3.1	TM
85	TM	1,3,5-Trimethylbenzene	3.891	4.047	4.0	TM
86	TM	4-Chlorotoluene	2.210	2.187	1.0	TM
87	TM	Tert-Butylbenzene	3.900	3.979	2.0	TM
88	TM	1,2,4-Trimethylbenzene	3.756	3.836	2.1	TM
89	TM	Sec-Butylbenzene	4.857	5.021	3.4	TM
90	TM	p-Isopropyltoluene	2.258	2.428	7.5	TM
91	TM	Benzyl Chloride	1.323	1.201	9.2	TM
92	TM	1,3-DCB	1.376	1.356	1.5	TM
93	TM	1,4-DCB	2.661	2.548	4.3	TM
94	TM	n-Butylbenzene	3.382	3.370	0.34	TM
95	TM	1,2-DCB	2.473	2.271	8.2	TM
96	TM	Hexachloroethane	1.019	0.8590	16	TM
97	TM	1,2-Dibromo-3-chloropropane	0.1744	0.1574	9.7	TM
98	TM	1,2,4-Trichlorobenzene	1.480	1.469	0.72	TM
99	TM	Hexachlorobutadiene	0.9387	0.8948	4.7	TM
100	TMQ	Naphthalene	1.997	1.912	4.3	TMQ 1.00
101	TM	1,2,3-Trichlorobenzene	0.6342	0.5816	8.3	TM
102						
103						
104						
105						
106						
107						
108						
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111						
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113						
114						
115						
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117						
118						
119						
120						

Average

4.8

Data File : M:\LOKI\DATA\190211\0212L04.D  
 Acq On : 12 Feb 19 8:48  
 Sample : 190212A CCV/LCS 10ug/L  
 Misc : ISS 1/29/19

Vial: 3  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 12 13:51 2019

Quant Results File: L0211W.RES

Quant Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Feb 12 13:49:15 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	302656	25.000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.96	117	232704	25.000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.53	152	119360	25.000	ppb	0.00

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
38) Dibromofluoromethane(S)	5.65	111	113586	20.606	ppb	0.00
Spiked Amount 25.000			Recovery =	82.424%		
43) 1,2-DCA-D4(S)	6.06	65	131421	22.485	ppb	0.00
Spiked Amount 25.000			Recovery =	89.940%		
64) Toluene-D8(S)	8.36	98	423243	22.573	ppb	0.00
Spiked Amount 25.000			Recovery =	90.292%		
72) 4-Bromofluorobenzene(S)	11.26	95	153863	21.791	ppb	0.00
Spiked Amount 25.000			Recovery =	87.164%		

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Freon 1113	1.12	116	222805	90.124	ppb	99
3) Dichlorodifluoromethane	1.15	85	46999	9.098	ppb	98
4) Freon 114	1.25	85	47202	9.545	ppb	94
5) Chloromethane	1.29	50	61748	8.097	ppb	98
6) Vinyl chloride	1.38	62	48107	8.306	ppb	98
7) 2-Chloro-1,1,1-trifluoroet	1.48	118	372992	97.585	ppb	98
8) Bromomethane	1.65	94	41152	9.159	ppb	96
9) Chloroethane	1.75	64	23120	8.201	ppb	99
10) Dichlorofluoromethane	1.95	67	85294	8.905	ppb	93
11) Trichlorofluoromethane	2.00	101	78597	9.085	ppb	97
12) Acrolein	2.42	56	53317	106.626	ppb	97
13) Acetone	2.60	43	5236	8.001	ppb	# 88
14) Freon-113	2.54	101	42506	9.548	ppb	94
15) 1,1-DCE	2.52	63	11665	9.371	ppb	89
16) t-Butanol	3.34	59	28570	107.808	ppb	93
17) 2-Propanol	2.81	45	13423	81.989	ppb	# 96
18) Acetonitrile	2.91	41	48056	103.993	ppb	# 85
19) Methyl Acetate	3.00	43	22443	9.547	ppb	95
20) Iodomethane	2.66	142	16576	8.291	ppb	98
21) Acrylonitrile	3.43	52	8859	9.008	ppb	86
22) Methylene chloride	3.09	84	49589	8.307	ppb	99
23) Carbon disulfide	2.73	76	138080	8.743	ppb	99
24) Methyl t-butyl ether (MtBE)	3.51	73	101468	8.831	ppb	96
25) Trans-1,2-DCE	2.52	96	23488	9.192	ppb	92
26) Diisopropyl Ether	4.31	45	140393	9.054	ppb	99
27) 2,2-Dichloro-1,1,1-trifluo	1.95	85	3727	10.584	ppb	93
28) 1,1-DCA	4.10	63	89118	8.667	ppb	98
29) Vinyl Acetate	4.31	43	27264	9.950	ppb	# 100
30) Ethyl tert Butyl Ether	4.85	59	122706	9.154	ppb	97
31) MEK (2-Butanone)	5.04	43	13460	8.843	ppb	91
32) Cis-1,2-DCE	4.97	96	53099	8.939	ppb	97
33) 2,2-Dichloropropane	4.96	77	86471	9.758	ppb	93
36) Chloroform	5.44	83	94990	8.928	ppb	99
37) Bromochloromethane	5.29	128	12010	9.866	ppb	87
39) 1,1,1-TCA	5.65	97	37712	9.146	ppb	99
40) Cyclohexane	5.71	41	40816	8.712	ppb	93
41) 1,1-Dichloropropene	5.87	75	64286	9.395	ppb	96
42) 2,2,4-Trimethylpentane	6.29	57	145781	9.763	ppb	96
44) Carbon Tetrachloride	5.86	117	78988	9.306	ppb	96

(#) = qualifier out of range (m) = manual integration

Data File : M:\LOKI\DATA\190211\0212L04.D  
 Acq On : 12 Feb 19 8:48  
 Sample : 190212A CCV/LCS 10ug/L  
 Misc : ISS 1/29/19

Vial: 3  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 12 13:51 2019

Quant Results File: L0211W.RES

Quant Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Feb 12 13:49:15 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
45) Tert Amyl Methyl Ether	6.34	73	106497	8.832	ppb	99
47) 1,2-DCA	6.16	62	68052	8.452	ppb	96
48) Benzene	6.13	78	201358	8.942	ppb	97
49) TCE	6.94	130	29016	9.006	ppb	98
50) 2-Pentanone	7.21	43	251555	105.276	ppb	99
51) 1,2-Dichloropropane	7.20	63	52872	8.700	ppb	98
52) Bromodichloromethane	7.54	83	38808	10.065	ppb	94
53) Methyl Cyclohexane	7.17	83	70659	9.733	ppb	96
54) Dibromomethane	7.33	93	29389	10.301	ppb	92
56) MIBK (methyl isobutyl ket	8.27	43	26299	8.157	ppb	98
57) 1-Bromo-2-chloroethane	7.88	63	31960	8.477	ppb	93
58) Cis-1,3-Dichloropropene	8.07	75	80789	9.129	ppb	98
59) Toluene	8.44	91	117640	9.032	ppb	98
60) Trans-1,3-Dichloropropene	8.70	75	70743	8.955	ppb	99
61) 1,1,2-TCA	8.90	83	31672	8.578	ppb	98
62) 2-Hexanone	9.21	43	16350	8.157	ppb	92
65) 1,2-EDB	9.43	107	19896	9.908	ppb	97
66) Tetrachloroethene	9.05	166	35624	9.491	ppb	96
67) 1-Chlorohexane	9.99	91	60677	9.543	ppb	97
68) 1,1,1,2-Tetrachloroethane	10.09	131	56974	10.447	ppb	91
69) m&p-Xylene	10.26	91	367305	19.635	ppb	98
70) o-Xylene	10.69	106	49200	10.119	ppb	100
71) Styrene	10.71	104	149061	9.650	ppb	96
73) 1,3-Dichloropropane	9.08	76	68819	8.787	ppb	98
74) Dibromochloromethane	9.32	129	51319	8.863	ppb	100
75) Chlorobenzene	9.99	112	147098	9.207	ppb	99
76) Ethylbenzene	10.13	91	138496	9.620	ppb	98
77) Bromoform	10.89	173	30611	8.628	ppb	88
79) Isopropylbenzene	11.10	105	226221	9.973	ppb	99
80) 1,1,2,2-Tetrachloroethane	11.43	83	41744	9.819	ppb	95
81) 1,2,3-Trichloropropane	11.47	110	6787	9.556	ppb	86
82) t-1,4-Dichloro-2-Butene	11.49	53	9284	9.438	ppb	94
83) Bromobenzene	11.42	156	33344	9.628	ppb	98
84) n-Propylbenzene	11.56	91	148090	9.798	ppb	99
85) 4-Ethyltoluene	11.69	105	228091	10.422	ppb	100
86) 2-Chlorotoluene	11.64	91	89256	9.694	ppb	95
87) 1,3,5-Trimethylbenzene	11.75	105	193228	10.402	ppb	98
88) 4-Chlorotoluene	11.76	91	104416	9.898	ppb	99
89) Tert-Butylbenzene	12.11	119	189951	10.202	ppb	94
90) 1,2,4-Trimethylbenzene	12.16	105	183159	10.213	ppb	99
91) Sec-Butylbenzene	12.35	105	239727	10.338	ppb	100
92) p-Isopropyltoluene	12.52	119	115928	10.752	ppb	98
93) Benzyl Chloride	12.71	91	57335	9.078	ppb	96
94) 1,3-DCB	12.46	146	64744	9.853	ppb	98
95) 1,4-DCB	12.56	146	121639	9.574	ppb	97
96) n-Butylbenzene	12.96	91	160899	9.966	ppb	99
97) 1,2-DCB	12.97	146	108429	9.182	ppb	97
98) Hexachloroethane	13.25	117	41010	8.432	ppb	93
99) 1,2-Dibromo-3-chloropropan	13.81	75	7516	9.029	ppb #	80
100) 1,2,4-Trichlorobenzene	14.74	180	70132	9.928	ppb	97
101) Hexachlorobutadiene	14.93	225	42723	9.533	ppb	95
102) Naphthalene	15.00	128	91278	10.100	ppb	100
103) 1,2,3-Trichlorobenzene	15.27	180	27768	9.170	ppb	100

(#) = qualifier out of range (m) = manual integration



Quantitation Report

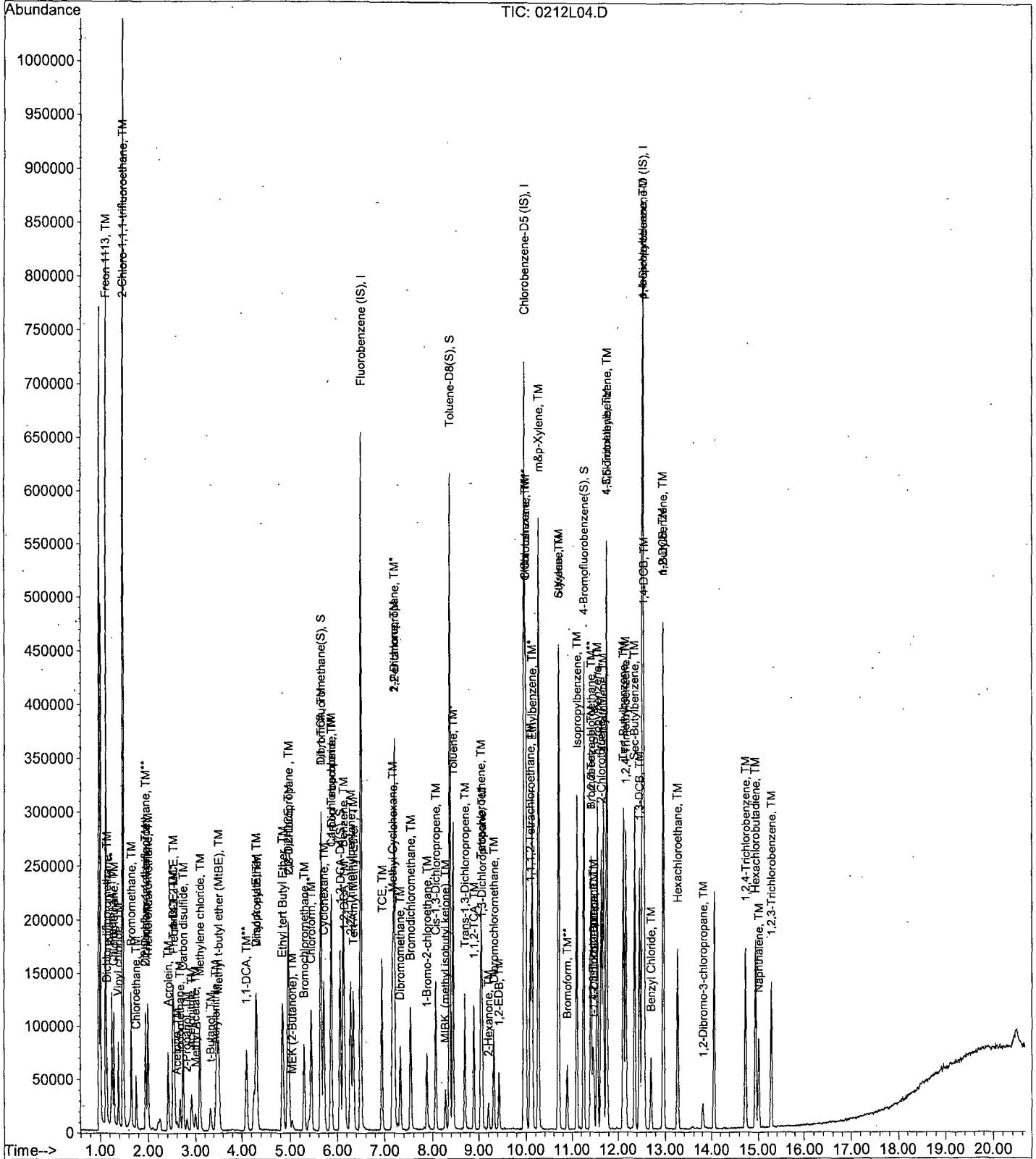
Data File : M:\LOKI\DATA\190211\0212L04.D  
Acq On : 12 Feb 19 8:48  
Sample : 190212A CCV/LCS 10ug/L  
Misc : ISS 1/29/19

Vial: 3  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 12 13:51 2019

Quant Results File: L0211W.RES

Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Feb 12 13:49:15 2019  
Response via : Initial Calibration



VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 7

Ending Continuing Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: water

SDG No: \_\_\_\_\_  
Date Analyzed: 02/12/19  
Instrument: Loki  
Initial Cal. Date: 02/11/19  
Data File: 0212L26.D

		Compound	MEAN	CCRF	%D	%Drift
1	I	Fluorobenzene (IS)	ISTD			I
2	TM	Dichlorodifluoromethane	0.4267	0.4576	7.2	TM
3	TM	Freon 114	0.4085	0.4438	8.6	TM
4	TM**L	Chloromethane	0.6634	0.5512	17	TM**L 12
5	TM*	Vinyl chloride	0.4784	0.4516	5.6	TM*
6	TM	2-Chloro-1,1,1-trifluoroethane	0.3157	0.0001	100	TM
7	TML	Bromomethane	0.3880	0.3417	12	TML 7.9
8	TML	Chloroethane	0.2456	0.2355	4.1	TML 1.5
9	TM	Dichlorofluoromethane	0.7912	0.8098	2.4	TM
10	TM	Trichlorofluoromethane	0.7146	0.7907	11	TM
11	TM	Acrolein	0.0413	0.0411	0.54	TM
12	TML	Acetone	0.0471	0.0532	13	TML 7.2
13	TM	Freon-113	0.3677	0.4042	9.9	TM
14	TM*Q	1,1-DCE	0.1213	0.1217	0.33	TM*Q 22
15	TM	t-Butanol	0.0219	0.0242	10	TM
16	TM	2-Propanol	0.0135	0.0000	100	TM
17	TM	Acetonitrile	0.0382	0.0370	3.2	TM
18	TMQ	Methyl Acetate	0.2350	0.2089	11	TMQ 9.9
19	TMQ	Iodomethane	0.1684	0.1117	34	TMQ 33
20	TMQ	Acrylonitrile	0.0946	0.0852	9.9	TMQ 7.8
21	TM	Methylene chloride	0.4931	0.4661	5.5	TM
22	TM	Carbon disulfide	1.305	1.227	5.9	TM
23	TM	Methyl t-butyl ether (MtBE)	0.9491	0.9928	4.6	TM
24	TM	Trans-1,2-DCE	0.2111	0.2228	5.6	TM
25	TM	Diisopropyl Ether	1.281	1.283	0.19	TM
26	TM**	2,2-Dichloro-1,1,1-trifluoroethane	0.0291	0.0293	0.78	TM**
27	TM**	1,1-DCA	0.8493	0.8590	1.1	TM**
28	TMQ	Vinyl Acetate	0.2841	0.2544	10	TMQ 14
29	TM	Ethyl tert Butyl Ether	1.107	1.120	1.1	TM
30	TMQ	MEK (2-Butanone)	0.1335	0.1366	2.3	TMQ 16
31	TM	Cis-1,2-DCE	0.4906	0.5338	8.8	TM
32	TM	2,2-Dichloropropane	0.7320	0.7523	2.8	TM
33	TM	3-Methylpentane	0.0000	0.0199	0.00	TM
34	TM*	Chloroform	0.8788	0.9035	2.8	TM*
35	TML	Bromochloromethane	0.1177	0.1118	5.0	TML 11
36	SQ	Dibromofluoromethane(S)	0.4203	0.4563	8.6	SQ 0.98
37	TM	1,1,1-TCA	0.3406	0.3409	0.10	TM
38	TM	Cyclohexane	0.3870	0.3886	0.42	TM
39	TM	1,1-Dichloropropene	0.5652	0.6099	7.9	TM
40	TM	2,2,4-Trimethylpentane	1.233	1.209	2.0	TM

Average

11.2

VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 7

Ending Continuing Calibration

Lab Name: APPL, Inc.

SDG No: \_\_\_\_\_

Case No: \_\_\_\_\_

Date Analyzed: 02/12/19

Matrix: water

Instrument: Loki

Cal. Date: 02/11/19

Data File: 0212L26.D

		Compound	MEAN	CCRF	%D	%Drift
41	S	1,2-DCA-D4(S)	0.4828	0.5308	9.9	S
42	TM	Carbon Tetrachloride	0.7011	0.7428	5.9	TM
43	TM	Tert Amyl Methyl Ether	0.9960	1.057	6.2	TM
44	TM	Methylcyclopentane	0.0000	0.0004	0.00	TM
45	TM	1,2-DCA	0.6651	0.6701	0.76	TM
46	TM	Benzene	1.860	1.843	0.91	TM
47	TM	TCE	0.2661	0.2860	7.5	TM
48	TM	2-Pentanone	0.1974	0.2008	1.7	TM
49	TM*	1,2-Dichloropropane	0.5020	0.4960	1.2	TM*
50	TMQ	Bromodichloromethane	0.3754	0.3858	2.8	TMQ 25
51	TM	Methyl Cyclohexane	0.5997	0.6147	2.5	TM
52	TMQ	Dibromomethane	0.2828	0.2781	1.7	TMQ 21
53	TM	MIBK (methyl isobutyl ketone)	0.2663	0.2624	1.5	TM
54	TM	1-Bromo-2-chloroethane	0.3114	0.3108	0.19	TM
55	TM	Cis-1,3-Dichloropropene	0.7310	0.7288	0.30	TM
56	TM*	Toluene	1.076	1.096	1.9	TM*
57	TM	Trans-1,3-Dichloropropene	0.6526	0.6655	2.0	TM
58	TM	1,1,2-TCA	0.3050	0.3098	1.6	TM
59	TM	2-Hexanone	0.1656	0.1603	3.2	TM
60	I	Chlorobenzene-D5 (IS)	ISTD			I
61	S	Toluene-D8(S)	2.014	2.104	4.4	S
62	TMQ	1,2-EDB	0.2600	0.2520	3.1	TMQ 20
63	TM	Tetrachloroethene	0.4033	0.4456	10	TM
64	TM	1-Chlorohexane	0.6831	0.6742	1.3	TM
65	TMQ	1,1,1,2-Tetrachloroethane	0.6951	0.6940	0.15	TMQ 21
66	TM	m&p-Xylene	2.010	2.118	5.4	TM
67	TM	o-Xylene	0.5223	0.5292	1.3	TM
68	TM	Styrene	1.659	1.764	6.3	TM
69	S	4-Bromofluorobenzene(S)	0.7586	0.7655	0.91	S
70	TM	1,3-Dichloropropane	0.8414	0.8496	0.98	TM
71	TM	Dibromochloromethane	0.6220	0.6419	3.2	TM
72	TM**	Chlorobenzene	1.716	1.731	0.87	TM**
73	TM*	Ethylbenzene	1.547	1.580	2.1	TM*
74	TM**	Bromoform	0.3811	0.3910	2.6	TM**
75	I	1,4-Dichlorobenzene-D (IS)	ISTD			I
76	TM	Isopropylbenzene	4.751	4.849	2.1	TM
77	TM**Q	1,1,2,2-Tetrachloroethane	1.032	0.9675	6.3	TM**Q 10
78	TML	1,2,3-Trichloropropane	0.1701	0.1790	5.3	TML 21
79	TM	t-1,4-Dichloro-2-Butene	0.2060	0.1998	3.0	TM
80	TM	Bromobenzene	0.7254	0.7556	4.2	TM

Average

3.0

VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 7

Ending Continuing Calibration

Lab Name: APPL, Inc.

SDG No: \_\_\_\_\_

Case No: \_\_\_\_\_

Date Analyzed: 02/12/19

Matrix: water

Instrument: Loki

Cal. Date: 02/11/19

Data File: 0212L26.D

		Compound	MEAN	CCRF	%D	%Drift
81	TM	n-Propylbenzene	3.166	3.258	2.9	TM
82	TM	4-Ethyltoluene	4.584	4.777	4.2	TM
83	TM	2-Chlorotoluene	1.928	1.877	2.6	TM
84	TM	1,3,5-Trimethylbenzene	3.891	4.085	5.0	TM
85	TM	4-Chlorotoluene	2.210	2.294	3.8	TM
86	TM	Tert-Butylbenzene	3.900	4.043	3.7	TM
87	TM	1,2,4-Trimethylbenzene	3.756	3.816	1.6	TM
88	TM	Sec-Butylbenzene	4.857	5.138	5.8	TM
89	TM	p-Isopropyltoluene	2.258	2.427	7.5	TM
90	TM	Benzyl Chloride	1.323	1.167	12	TM
91	TM	1,3-DCB	1.376	1.408	2.3	TM
92	TM	1,4-DCB	2.661	2.677	0.59	TM
93	TM	n-Butylbenzene	3.382	3.425	1.3	TM
94	TM	1,2-DCB	2.473	2.455	0.73	TM
95	TM	Hexachloroethane	1.019	0.8957	12	TM
96	TM	1,2-Dibromo-3-chloropropane	0.1744	0.1653	5.2	TM
97	TM	1,2,4-Trichlorobenzene	1.480	1.529	3.3	TM
98	TM	Hexachlorobutadiene	0.9387	0.9815	4.6	TM
99	TMQ	Naphthalene	1.997	1.921	3.8	TMQ 1.5
100	TM	1,2,3-Trichlorobenzene	0.6342	0.6366	0.37	TM
101						
102						
103						
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112						
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114						
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116						
117						
118						
119						
120						

Average

4.2

Data File : M:\LOKI\DATA\190211\0212L26.D  
 Acq On : 12 Feb 19 19:05  
 Sample : Ending CCV 10ug/L 02/12/19  
 Misc : ISS 1/29/19

Vial: 25  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 13 7:48 2019

Quant Results File: L0211W.RES

Quant Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Feb 12 13:49:15 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	236992	25.000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.96	117	187136	25.000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.53	152	101008	25.000	ppb	0.00
<b>System Monitoring Compounds</b>						
38) Dibromofluoromethane(S)	5.65	111	108149	25.245	ppb	0.00
Spiked Amount	25.000		Recovery	=	100.980%	
43) 1,2-DCA-D4(S)	6.06	65	125791	27.485	ppb	0.00
Spiked Amount	25.000		Recovery	=	109.940%	
64) Toluene-D8(S)	8.36	98	393725	26.112	ppb	0.00
Spiked Amount	25.000		Recovery	=	104.448%	
72) 4-Bromofluorobenzene(S)	11.26	95	143248	25.228	ppb	0.00
Spiked Amount	25.000		Recovery	=	100.912%	
<b>Target Compounds</b>						
3) Dichlorodifluoromethane	1.15	85	43376	10.723	ppb	Qvalue 98
4) Freon 114	1.25	85	42069	10.864	ppb	93
5) Chloromethane	1.29	50	52248	8.755	ppb	99
6) Vinyl chloride	1.38	62	42812	9.440	ppb	98
8) Bromomethane	1.66	94	32392	9.206	ppb	94
9) Chloroethane	1.76	64	22328	10.145	ppb	100
10) Dichlorofluoromethane	1.95	67	76769	10.236	ppb	99
11) Trichlorofluoromethane	2.00	101	74960	11.066	ppb	98
12) Acrolein	2.42	56	48680	124.326	ppb	# 94
13) Acetone	2.60	43	5040	10.720	ppb	91
14) Freon-113	2.54	101	38313	10.991	ppb	94
15) 1,1-DCE	2.52	63	11533	12.231	ppb	96
16) t-Butanol	3.33	59	28660	138.113	ppb	98
17) 2-Propanol	2.80	45	45	0.351	ppb	# 46
18) Acetonitrile	2.91	41	43796	121.033	ppb	92
19) Methyl Acetate	3.00	43	19800	10.991	ppb	91
20) Iodomethane	2.66	142	10589	6.689	ppb	# 94
21) Acrylonitrile	3.43	52	8080	10.780	ppb	# 60
22) Methylene chloride	3.09	84	44186	9.452	ppb	98
23) Carbon disulfide	2.73	76	116355	9.408	ppb	99
24) Methyl t-butyl ether (MtBE)	3.51	73	94113	10.461	ppb	94
25) Trans-1,2-DCE	2.52	96	21120	10.556	ppb	93
26) Diisopropyl Ether	4.31	45	121643	10.019	ppb	97
27) 2,2-Dichloro-1,1,1-trifluo	1.95	85	2779	10.078	ppb	100
28) 1,1-DCA	4.10	63	81431	10.114	ppb	97
29) Vinyl Acetate	4.31	43	24120	11.410	ppb	100
30) Ethyl tert Butyl Ether	4.85	59	106136	10.112	ppb	97
31) MEK (2-Butanone)	5.04	43	12950	11.575	ppb	97
32) Cis-1,2-DCE	4.98	96	50602	10.879	ppb	88
33) 2,2-Dichloropropane	4.96	77	71312	10.277	ppb	97
36) Chloroform	5.44	83	85649	10.281	ppb	99
37) Bromochloromethane	5.29	128	10602	11.144	ppb	98
39) 1,1,1-TCA	5.65	97	32320	10.010	ppb	94
40) Cyclohexane	5.72	41	36841	10.042	ppb	98
41) 1,1-Dichloropropene	5.88	75	57815	10.791	ppb	97
42) 2,2,4-Trimethylpentane	6.28	57	114563	9.798	ppb	97
44) Carbon Tetrachloride	5.86	117	70416	10.595	ppb	93
45) Tert Amyl Methyl Ether	6.34	73	100244	10.617	ppb	99
47) 1,2-DCA	6.16	62	63526	10.076	ppb	# 93

(#) = qualifier out of range (m) = manual integration

Data File : M:\LOKI\DATA\190211\0212L26.D  
 Acq On : 12 Feb 19 19:05  
 Sample : Ending CCV 10ug/L 02/12/19  
 Misc : ISS 1/29/19

Vial: 25  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 13 7:48 2019

Quant Results File: L0211W.RES

Quant Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)

Title : METHOD 8260B

Last Update : Tue Feb 12 13:49:15 2019

Response via : Initial Calibration

DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
48) Benzene	6.13	78	174728	9.909	ppb	98
49) TCE	6.94	130	27112	10.746	ppb	95
50) 2-Pentanone	7.21	43	237930	127.164	ppb	99
51) 1,2-Dichloropropane	7.20	63	47017	9.880	ppb	97
52) Bromodichloromethane	7.54	83	36568	12.454	ppb #	97
53) Methyl Cyclohexane	7.17	83	58276	10.252	ppb	99
54) Dibromomethane	7.33	93	26360	12.073	ppb	94
56) MIBK (methyl isobutyl ket	8.27	43	24872	9.852	ppb	97
57) 1-Bromo-2-chloroethane	7.88	63	29464	9.981	ppb	95
58) Cis-1,3-Dichloropropene	8.07	75	69087	9.970	ppb	88
59) Toluene	8.44	91	103936	10.190	ppb	100
60) Trans-1,3-Dichloropropene	8.70	75	63089	10.199	ppb	99
61) 1,1,2-TCA	8.90	83	29367	10.157	ppb	93
62) 2-Hexanone	9.20	43	15197	9.683	ppb	97
65) 1,2-EDB	9.43	107	18864	12.038	ppb	92
66) Tetrachloroethene	9.05	166	33352	11.049	ppb	98
67) 1-Chlorohexane	9.99	91	50465	9.869	ppb	99
68) 1,1,1,2-Tetrachloroethane	10.09	131	51951	12.083	ppb	88
69) m&p-Xylene	10.26	91	317130	21.081	ppb	98
70) o-Xylene	10.69	106	39616	10.132	ppb	91
71) Styrene	10.71	104	132080	10.633	ppb	98
73) 1,3-Dichloropropane	9.08	76	63596	10.098	ppb	97
74) Dibromochloromethane	9.32	129	48050	10.319	ppb	90
75) Chlorobenzene	9.99	112	129597	10.087	ppb	98
76) Ethylbenzene	10.13	91	118264	10.215	ppb	98
77) Bromoform	10.89	173	29267	10.258	ppb	99
79) Isopropylbenzene	11.11	105	195928	10.207	ppb	98
80) 1,1,2,2-Tetrachloroethane	11.43	83	39090	11.032	ppb	96
81) 1,2,3-Trichloropropane	11.47	110	7234	12.084	ppb	90
82) t-1,4-Dichloro-2-Butene	11.49	53	8071	9.695	ppb	89
83) Bromobenzene	11.42	156	30528	10.417	ppb	96
84) n-Propylbenzene	11.56	91	131638	10.291	ppb	99
85) 4-Ethyltoluene	11.69	105	193021	10.422	ppb	99
86) 2-Chlorotoluene	11.64	91	75856	9.735	ppb	96
87) 1,3,5-Trimethylbenzene	11.75	105	165039	10.498	ppb	98
88) 4-Chlorotoluene	11.76	91	92680	10.382	ppb	99
89) Tert-Butylbenzene	12.11	119	163351	10.367	ppb	96
90) 1,2,4-Trimethylbenzene	12.16	105	154186	10.160	ppb	99
91) Sec-Butylbenzene	12.35	105	207612	10.579	ppb	99
92) p-Isopropyltoluene	12.52	119	98064	10.748	ppb	98
93) Benzyl Chloride	12.71	91	47135	8.819	ppb	96
94) 1,3-DCB	12.46	146	56896	10.232	ppb	98
95) 1,4-DCB	12.56	146	108151	10.059	ppb	98
96) n-Butylbenzene	12.97	91	138378	10.128	ppb	100
97) 1,2-DCB	12.97	146	99202	9.927	ppb	100
98) Hexachloroethane	13.25	117	36188	8.793	ppb	97
99) 1,2-Dibromo-3-chloropropan	13.82	75	6677	9.478	ppb #	82
100) 1,2,4-Trichlorobenzene	14.74	180	61779	10.335	ppb	98
101) Hexachlorobutadiene	14.93	225	39654	10.455	ppb	95
102) Naphthalene	15.00	128	77609	10.147	ppb	98
103) 1,2,3-Trichlorobenzene	15.27	180	25720	10.037	ppb	94

(#) = qualifier out of range (m) = manual integration

Quantitation Report

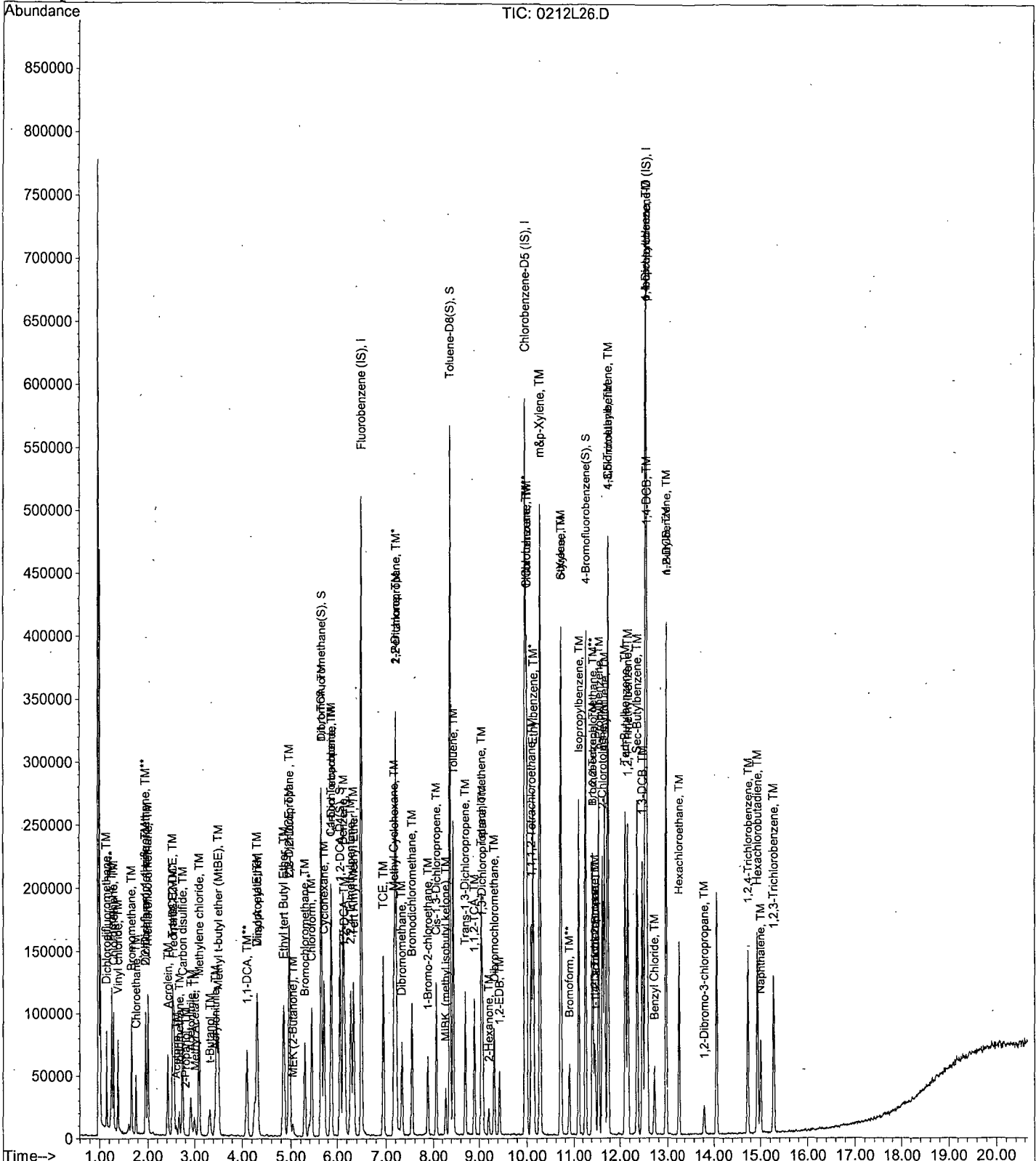
Data File : M:\LOKI\DATA\190211\0212L26.D  
Acq On : 12 Feb 19 19:05  
Sample : Ending CCV 10ug/L 02/12/19  
Misc : ISS 1/29/19

Vial: 25  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 13 7:48 2019

Quant Results File: L0211W.RES

Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Feb 12 13:49:15 2019  
Response via : Initial Calibration



**ORGANICS**  
**Raw Data**



Data File : M:\LOKI\DATA\190211\0212L21.D Vial: 20  
 Acq On : 12 Feb 19 16:45 Operator: PM,DG,SV,CMM,KV  
 Sample : AZ86199W01 Inst : Loki  
 Misc : ISS 1/29/19 Multiplr: 1.00

Quant Time: Feb 18 14:34 2019 Quant Results File: L0211W.RES

Quant Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Feb 12 13:49:15 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	246272	25.0000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.96	117	197504	25.0000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.53	152	93784	25.0000	ppb	0.00

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
38) Dibromofluoromethane(S)	5.65	111	111703	25.0832	ppb	0.00
Spiked Amount				25.000		
					Recovery =	100.332%
43) 1,2-DCA-D4(S)	6.06	65	126923	26.6870	ppb	0.00
Spiked Amount				25.000		
					Recovery =	106.748%
64) Toluene-D8(S)	8.36	98	396425	24.9106	ppb	0.00
Spiked Amount				25.000		
					Recovery =	99.644%
72) 4-Bromofluorobenzene(S)	11.26	95	138129	23.0494	ppb	0.00
Spiked Amount				25.000		
					Recovery =	92.196%

Target Compounds Qvalue

Quantitation Report

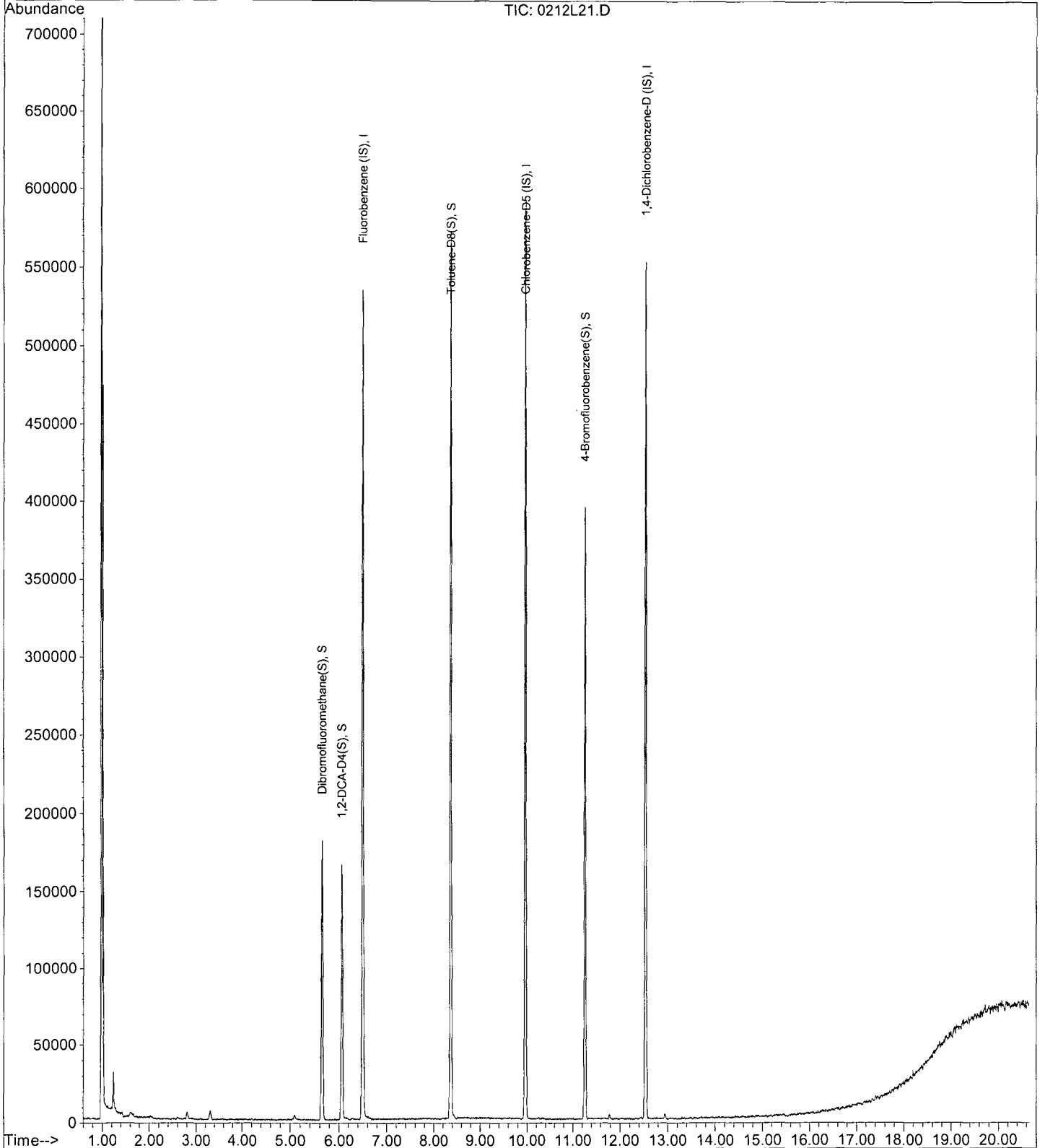
Data File : M:\LOKI\DATA\190211\0212L21.D  
Acq On : 12 Feb 19 16:45  
Sample : AZ86199W01  
Misc : ISS 1/29/19

Vial: 20  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 18 14:34 2019

Quant Results File: L0211W.RES

Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Feb 12 13:49:15 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190211\0212L22.D Vial: 21  
 Acq On : 12 Feb 19 17:13 Operator: PM, DG, SV, CMM, KV  
 Sample : AZ86200W01 Inst : Loki  
 Misc : ISS 1/29/19 Multiplr: 1.00

Quant Time: Feb 18 14:41 2019 Quant Results File: L0211W.RES

Quant Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Feb 12 13:49:15 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	228096	25.0000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.96	117	185088	25.0000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.53	152	85576	25.0000	ppb	0.00

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
38) Dibromofluoromethane(S)	5.65	111	110488	26.8951	ppb	0.00
Spiked Amount				25.000		
				Recovery	=	107.580%
43) 1,2-DCA-D4(S)	6.06	65	126131	28.6338	ppb	0.00
Spiked Amount				25.000		
				Recovery	=	114.536%
64) Toluene-D8(S)	8.36	98	394226	26.4342	ppb	0.00
Spiked Amount				25.000		
				Recovery	=	105.736%
72) 4-Bromofluorobenzene(S)	11.26	95	137034	24.4007	ppb	0.00
Spiked Amount				25.000		
				Recovery	=	97.604%

Target Compounds Qvalue

(#) = qualifier out of range (m) = manual integration

Quantitation Report

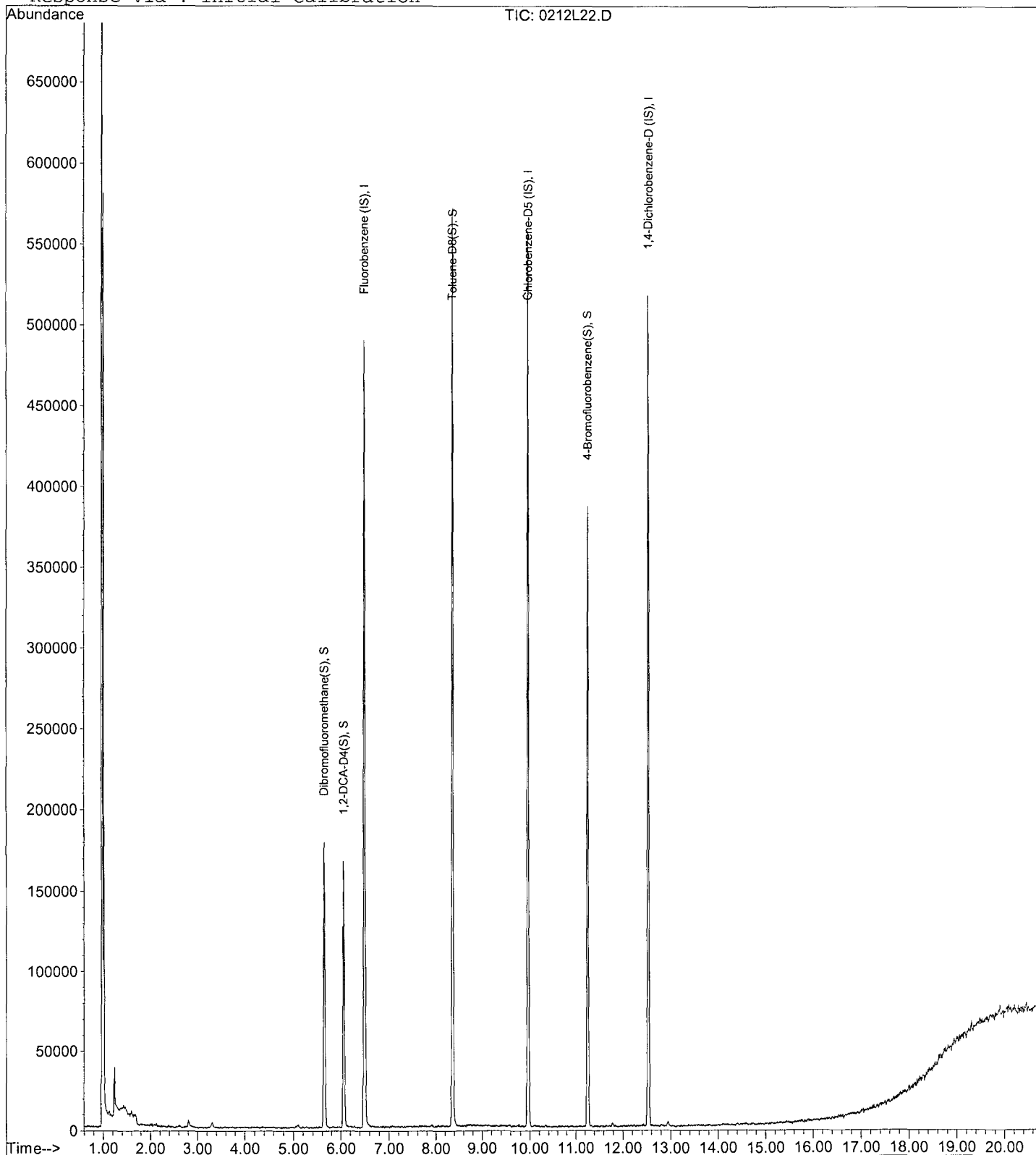
Data File : M:\LOKI\DATA\190211\0212L22.D  
Acq On : 12 Feb 19 17:13  
Sample : AZ86200W01  
Misc : ISS 1/29/19

Vial: 21  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 18 14:41 2019

Quant Results File: L0211W.RES

Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Feb 12 13:49:15 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190211\0212L15.D  
 Acq On : 12 Feb 19 13:56  
 Sample : 190212A BLK  
 Misc : ISS 1/29/19

Vial: 14  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 18 13:25 2019

Quant Results File: L0211W.RES

Quant Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Feb 12 13:49:15 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	242368	25.0000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.96	117	181568	25.0000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.53	152	90616	25.0000	ppb	0.00

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
38) Dibromofluoromethane(S)	5.64	111	108197	24.6664	ppb	0.00
Spiked Amount				25.000		
				Recovery	=	98.664%
43) 1,2-DCA-D4(S)	6.06	65	128786	27.5149	ppb	0.00
Spiked Amount				25.000		
				Recovery	=	110.060%
64) Toluene-D8(S)	8.36	98	399158	27.2838	ppb	0.00
Spiked Amount				25.000		
				Recovery	=	109.136%
72) 4-Bromofluorobenzene(S)	11.26	95	136575	24.7904	ppb	0.00
Spiked Amount				25.000		
				Recovery	=	99.160%

Target Compounds Qvalue

(#) = qualifier out of range (m) = manual integration

Quantitation Report

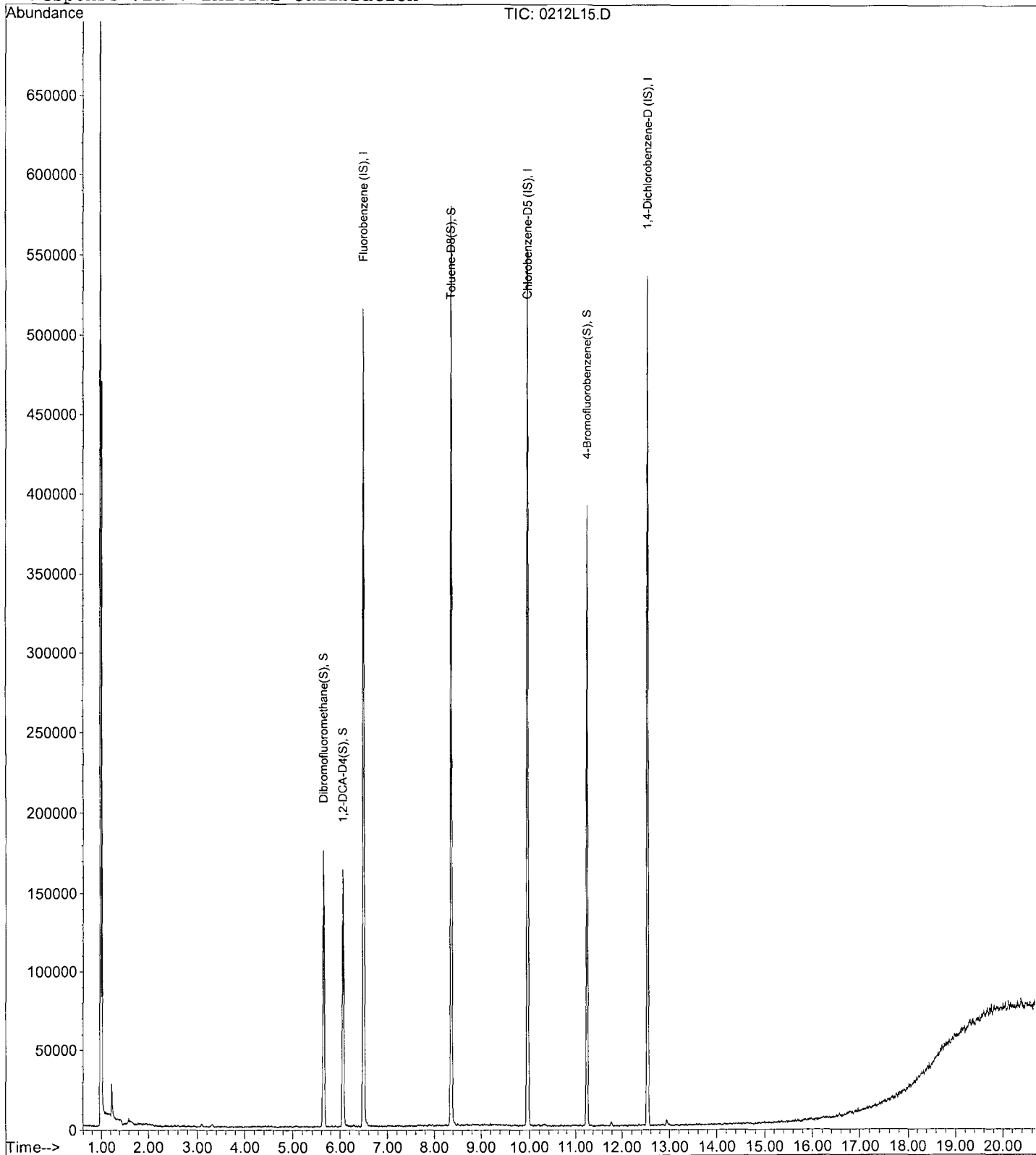
Data File : M:\LOKI\DATA\190211\0212L15.D  
Acq On : 12 Feb 19 13:56  
Sample : 190212A BLK  
Misc : ISS 1/29/19

Vial: 14  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 18 13:25 2019

Quant Results File: L0211W.RES

Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Feb 12 13:49:15 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190211\0212L04.D  
 Acq On : 12 Feb 19 8:48  
 Sample : 190212A CCV/LCS 10ug/L  
 Misc : ISS 1/29/19

Vial: 3  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 12 13:51 2019

Quant Results File: L0211W.RES

Quant Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Feb 12 13:49:15 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev (Min)
1) Fluorobenzene (IS)	6.50	96	302656	25.000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.96	117	232704	25.000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.53	152	119360	25.000	ppb	0.00

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev (Min)
38) Dibromofluoromethane (S)	5.65	111	113586	20.606	ppb	0.00
Spiked Amount			Recovery	=	82.424%	
43) 1,2-DCA-D4 (S)	6.06	65	131421	22.485	ppb	0.00
Spiked Amount			Recovery	=	89.940%	
64) Toluene-D8 (S)	8.36	98	423243	22.573	ppb	0.00
Spiked Amount			Recovery	=	90.292%	
72) 4-Bromofluorobenzene (S)	11.26	95	153863	21.791	ppb	0.00
Spiked Amount			Recovery	=	87.164%	

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Freon 1113	1.12	116	222805	90.124	ppb	99
3) Dichlorodifluoromethane	1.15	85	46999	9.098	ppb	98
4) Freon 114	1.25	85	47202	9.545	ppb	94
5) Chloromethane	1.29	50	61748	8.097	ppb	98
6) Vinyl chloride	1.38	62	48107	8.306	ppb	98
7) 2-Chloro-1,1,1-trifluoroet	1.48	118	372992	97.585	ppb	98
8) Bromomethane	1.65	94	41152	9.159	ppb	96
9) Chloroethane	1.75	64	23120	8.201	ppb	99
10) Dichlorofluoromethane	1.95	67	85294	8.905	ppb	93
11) Trichlorofluoromethane	2.00	101	78597	9.085	ppb	97
12) Acrolein	2.42	56	53317	106.626	ppb	97
13) Acetone	2.60	43	5236	8.001	ppb	# 88
14) Freon-113	2.54	101	42506	9.548	ppb	94
15) 1,1-DCE	2.52	63	11665	9.371	ppb	89
16) t-Butanol	3.34	59	28570	107.808	ppb	93
17) 2-Propanol	2.81	45	13423	81.989	ppb	# 96
18) Acetonitrile	2.91	41	48056	103.993	ppb	# 85
19) Methyl Acetate	3.00	43	22443	9.547	ppb	95
20) Iodomethane	2.66	142	16576	8.291	ppb	98
21) Acrylonitrile	3.43	52	8859	9.008	ppb	86
22) Methylene chloride	3.09	84	49589	8.307	ppb	99
23) Carbon disulfide	2.73	76	138080	8.743	ppb	99
24) Methyl t-butyl ether (MtBE)	3.51	73	101468	8.831	ppb	96
25) Trans-1,2-DCE	2.52	96	23488	9.192	ppb	92
26) Diisopropyl Ether	4.31	45	140393	9.054	ppb	99
27) 2,2-Dichloro-1,1,1-trifluo	1.95	85	3727	10.584	ppb	93
28) 1,1-DCA	4.10	63	89118	8.667	ppb	98
29) Vinyl Acetate	4.31	43	27264	9.950	ppb	# 100
30) Ethyl tert Butyl Ether	4.85	59	122706	9.154	ppb	97
31) MEK (2-Butanone)	5.04	43	13460	8.843	ppb	91
32) Cis-1,2-DCE	4.97	96	53099	8.939	ppb	97
33) 2,2-Dichloropropane	4.96	77	86471	9.758	ppb	93
36) Chloroform	5.44	83	94990	8.928	ppb	99
37) Bromochloromethane	5.29	128	12010	9.866	ppb	87
39) 1,1,1-TCA	5.65	97	37712	9.146	ppb	99
40) Cyclohexane	5.71	41	40816	8.712	ppb	93
41) 1,1-Dichloropropene	5.87	75	64286	9.395	ppb	96
42) 2,2,4-Trimethylpentane	6.29	57	145781	9.763	ppb	96
44) Carbon Tetrachloride	5.86	117	78988	9.306	ppb	96

(#) = qualifier out of range (m) = manual integration

Data File : M:\LOKI\DATA\190211\0212L04.D  
 Acq On : 12 Feb 19 8:48  
 Sample : 190212A CCV/LCS 10ug/L  
 Misc : ISS 1/29/19

Vial: 3  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 12 13:51 2019

Quant Results File: L0211W.RES

Quant Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Feb 12 13:49:15 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
45) Tert Amyl Methyl Ether	6.34	73	106497	8.832	ppb	99
47) 1,2-DCA	6.16	62	68052	8.452	ppb	96
48) Benzene	6.13	78	201358	8.942	ppb	97
49) TCE	6.94	130	29016	9.006	ppb	98
50) 2-Pentanone	7.21	43	251555	105.276	ppb	99
51) 1,2-Dichloropropane	7.20	63	52872	8.700	ppb	98
52) Bromodichloromethane	7.54	83	38808	10.065	ppb	94
53) Methyl Cyclohexane	7.17	83	70659	9.733	ppb	96
54) Dibromomethane	7.33	93	29389	10.301	ppb	92
56) MIBK (methyl isobutyl ket	8.27	43	26299	8.157	ppb	98
57) 1-Bromo-2-chloroethane	7.88	63	31960	8.477	ppb	93
58) Cis-1,3-Dichloropropene	8.07	75	80789	9.129	ppb	98
59) Toluene	8.44	91	117640	9.032	ppb	98
60) Trans-1,3-Dichloropropene	8.70	75	70743	8.955	ppb	99
61) 1,1,2-TCA	8.90	83	31672	8.578	ppb	98
62) 2-Hexanone	9.21	43	16350	8.157	ppb	92
65) 1,2-EDB	9.43	107	19896	9.908	ppb	97
66) Tetrachloroethene	9.05	166	35624	9.491	ppb	96
67) 1-Chlorohexane	9.99	91	60677	9.543	ppb	97
68) 1,1,1,2-Tetrachloroethane	10.09	131	56974	10.447	ppb	91
69) m&p-Xylene	10.26	91	367305	19.635	ppb	98
70) o-Xylene	10.69	106	49200	10.119	ppb	100
71) Styrene	10.71	104	149061	9.650	ppb	96
73) 1,3-Dichloropropane	9.08	76	68819	8.787	ppb	98
74) Dibromochloromethane	9.32	129	51319	8.863	ppb	100
75) Chlorobenzene	9.99	112	147098	9.207	ppb	99
76) Ethylbenzene	10.13	91	138496	9.620	ppb	98
77) Bromoform	10.89	173	30611	8.628	ppb	88
79) Isopropylbenzene	11.10	105	226221	9.973	ppb	99
80) 1,1,2,2-Tetrachloroethane	11.43	83	41744	9.819	ppb	95
81) 1,2,3-Trichloropropane	11.47	110	6787	9.556	ppb	86
82) t-1,4-Dichloro-2-Butene	11.49	53	9284	9.438	ppb	94
83) Bromobenzene	11.42	156	33344	9.628	ppb	98
84) n-Propylbenzene	11.56	91	148090	9.798	ppb	99
85) 4-Ethyltoluene	11.69	105	228091	10.422	ppb	100
86) 2-Chlorotoluene	11.64	91	89256	9.694	ppb	95
87) 1,3,5-Trimethylbenzene	11.75	105	193228	10.402	ppb	98
88) 4-Chlorotoluene	11.76	91	104416	9.898	ppb	99
89) Tert-Butylbenzene	12.11	119	189951	10.202	ppb	94
90) 1,2,4-Trimethylbenzene	12.16	105	183159	10.213	ppb	99
91) Sec-Butylbenzene	12.35	105	239727	10.338	ppb	100
92) p-Isopropyltoluene	12.52	119	115928	10.752	ppb	98
93) Benzyl Chloride	12.71	91	57335	9.078	ppb	96
94) 1,3-DCB	12.46	146	64744	9.853	ppb	98
95) 1,4-DCB	12.56	146	121639	9.574	ppb	97
96) n-Butylbenzene	12.96	91	160899	9.966	ppb	99
97) 1,2-DCB	12.97	146	108429	9.182	ppb	97
98) Hexachloroethane	13.25	117	41010	8.432	ppb	93
99) 1,2-Dibromo-3-chloropropan	13.81	75	7516	9.029	ppb	# 80
100) 1,2,4-Trichlorobenzene	14.74	180	70132	9.928	ppb	97
101) Hexachlorobutadiene	14.93	225	42723	9.533	ppb	95
102) Naphthalene	15.00	128	91278	10.100	ppb	100
103) 1,2,3-Trichlorobenzene	15.27	180	27768	9.170	ppb	100

(#) = qualifier out of range (m) = manual integration



Quantitation Report

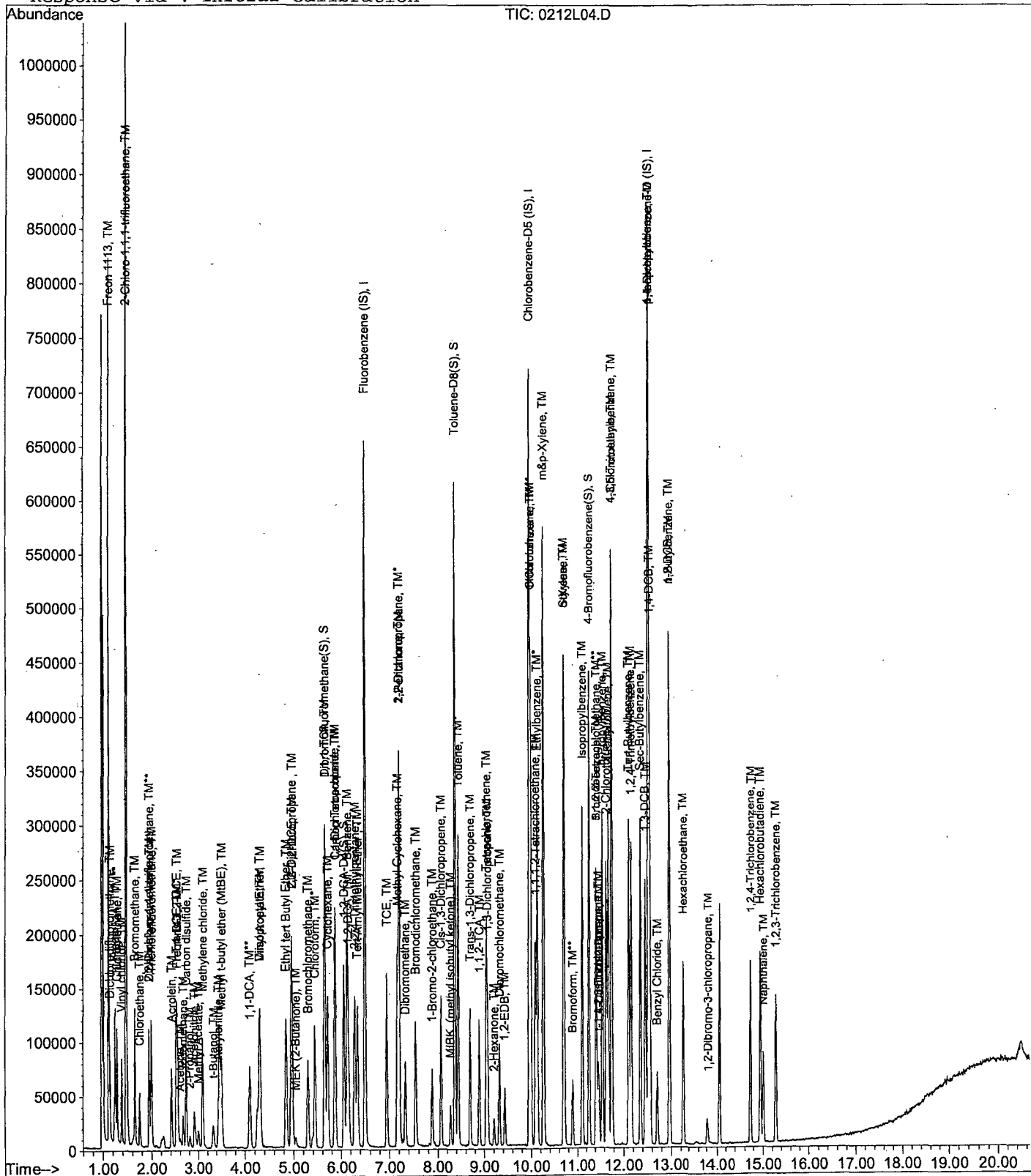
Data File : M:\LOKI\DATA\190211\0212L04.D  
Acq On : 12 Feb 19 8:48  
Sample : 190212A CCV/LCS 10ug/L  
Misc : ISS 1/29/19

Vial: 3  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 12 13:51 2019

Quant Results File: L0211W.RES

Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Feb 12 13:49:15 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190211\0212L05.D  
 Acq On : 12 Feb 19 9:15  
 Sample : 190212A LCSD 10ug/L  
 Misc : ISS 1/29/19

Vial: 4  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 12 13:51 2019

Quant Results File: L0211W.RES

Quant Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Feb 12 13:49:15 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	293568	25.000	ppb	0.00
63) Chlorobenzene-D5 (IS)	9.96	117	233344	25.000	ppb	0.00
78) 1,4-Dichlorobenzene-D (IS)	12.53	152	122904	25.000	ppb	0.00

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
38) Dibromofluoromethane(S)	5.65	111	115073	21.546	ppb	0.00
Spiked Amount				25.000		
			Recovery	=	86.184%	
43) 1,2-DCA-D4(S)	6.06	65	132579	23.385	ppb	0.00
Spiked Amount				25.000		
			Recovery	=	93.540%	
64) Toluene-D8(S)	8.36	98	428018	22.765	ppb	0.00
Spiked Amount				25.000		
			Recovery	=	91.060%	
72) 4-Bromofluorobenzene(S)	11.26	95	155819	22.008	ppb	0.00
Spiked Amount				25.000		
			Recovery	=	88.032%	

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Freon 1113	1.12	116	219132	91.383	ppb	100
3) Dichlorodifluoromethane	1.15	85	44334	8.848	ppb	98
4) Freon 114	1.25	85	43431	9.054	ppb	91
5) Chloromethane	1.29	50	62024	8.387	ppb	96
6) Vinyl chloride	1.38	62	48883	8.701	ppb	98
7) 2-Chloro-1,1,1-trifluoroet	1.48	118	366400	98.828	ppb	98
8) Bromomethane	1.65	94	38440	8.826	ppb	98
9) Chloroethane	1.75	64	23368	8.551	ppb	100
10) Dichlorofluoromethane	1.95	67	82800	8.912	ppb	96
11) Trichlorofluoromethane	2.00	101	80111	9.547	ppb	100
12) Acrolein	2.42	56	51603	106.393	ppb	# 100
13) Acetone	2.60	43	5060	7.957	ppb	94
14) Freon-113	2.54	101	40940	9.481	ppb	96
15) 1,1-DCE	2.52	63	11595	9.644	ppb	90
16) t-Butanol	3.33	59	29032	112.943	ppb	# 90
17) 2-Propanol	2.81	45	13418	84.495	ppb	# 94
18) Acetonitrile	2.91	41	45034	100.470	ppb	90
19) Methyl Acetate	3.00	43	19742	8.473	ppb	99
20) Iodomethane	2.66	142	16488	8.510	ppb	99
21) Acrylonitrile	3.43	52	9933	10.686	ppb	90
22) Methylene chloride	3.09	84	47676	8.233	ppb	97
23) Carbon disulfide	2.73	76	132131	8.625	ppb	99
24) Methyl t-butyl ether (MtBE)	3.51	73	98386	8.828	ppb	97
25) Trans-1,2-DCE	2.52	96	21560	8.699	ppb	93
26) Diisopropyl Ether	4.31	45	135292	8.995	ppb	98
27) 2,2-Dichloro-1,1,1-trifluo	1.95	85	3144	9.204	ppb	94
28) 1,1-DCA	4.10	63	86215	8.644	ppb	97
29) Vinyl Acetate	4.31	43	25736	9.645	ppb	100
30) Ethyl tert Butyl Ether	4.85	59	116542	8.964	ppb	100
31) MEK (2-Butanone)	5.05	43	12044	7.902	ppb	99
32) Cis-1,2-DCE	4.97	96	53032	9.205	ppb	92
33) 2,2-Dichloropropane	4.96	77	82601	9.610	ppb	96
36) Chloroform	5.44	83	92912	9.003	ppb	98
37) Bromochloromethane	5.29	128	11671	9.885	ppb	97
39) 1,1,1-TCA	5.65	97	35184	8.797	ppb	98
40) Cyclohexane	5.71	41	38800	8.538	ppb	99
41) 1,1-Dichloropropene	5.87	75	63242	9.529	ppb	97
42) 2,2,4-Trimethylpentane	6.28	57	135168	9.332	ppb	97
44) Carbon Tetrachloride	5.87	117	75325	9.149	ppb	96

(#) = qualifier out of range (m) = manual integration

Data File : M:\LOKI\DATA\190211\0212L05.D  
 Acq On : 12 Feb 19 9:15  
 Sample : 190212A LCSD 10ug/L  
 Misc : ISS 1/29/19

Vial: 4  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 12 13:51 2019

Quant Results File: L0211W.RES

Quant Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Feb 12 13:49:15 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
45) Tert Amyl Methyl Ether	6.35	73	106363	9.094	ppb	98
47) 1,2-DCA	6.16	62	67257	8.612	ppb	96
48) Benzene	6.13	78	193439	8.856	ppb	98
49) TCE	6.95	130	28632	9.162	ppb	98
50) 2-Pentanone	7.21	43	252624	108.997	ppb	100
51) 1,2-Dichloropropane	7.20	63	50435	8.556	ppb	100
52) Bromodichloromethane	7.54	83	38912	10.464	ppb	97
53) Methyl Cyclohexane	7.17	83	68801	9.771	ppb	90
54) Dibromomethane	7.33	93	27963	10.067	ppb	90
56) MIBK (methyl isobutyl ket	8.27	43	25780	8.244	ppb	99
57) 1-Bromo-2-chloroethane	7.88	63	30736	8.405	ppb	100
58) Cis-1,3-Dichloropropene	8.07	75	77792	9.062	ppb	93
59) Toluene	8.44	91	117128	9.271	ppb	99
60) Trans-1,3-Dichloropropene	8.70	75	68256	8.908	ppb	99
61) 1,1,2-TCA	8.90	83	31482	8.790	ppb	96
62) 2-Hexanone	9.21	43	17217	8.856	ppb	90
65) 1,2-EDB	9.43	107	19384	9.567	ppb	93
66) Tetrachloroethene	9.05	166	33040	8.778	ppb	94
67) 1-Chlorohexane	9.99	91	59037	9.260	ppb	93
68) 1,1,1,2-Tetrachloroethane	10.09	131	55215	10.034	ppb	97
69) m&p-Xylene	10.26	91	356725	19.017	ppb	98
70) o-Xylene	10.69	106	44888	9.207	ppb	93
71) Styrene	10.71	104	144646	9.339	ppb	99
73) 1,3-Dichloropropane	9.08	76	66782	8.504	ppb	99
74) Dibromochloromethane	9.32	129	50939	8.773	ppb	95
75) Chlorobenzene	9.99	112	146461	9.142	ppb	99
76) Ethylbenzene	10.13	91	126280	8.747	ppb	97
77) Bromoform	10.89	173	31146	8.755	ppb	100
79) Isopropylbenzene	11.11	105	221270	9.474	ppb	99
80) 1,1,1,2,2-Tetrachloroethane	11.43	83	41145	9.330	ppb	96
81) 1,2,3-Trichloropropane	11.47	110	6481	8.848	ppb	88
82) t-1,4-Dichloro-2-Butene	11.49	53	8342	8.236	ppb	85
83) Bromobenzene	11.42	156	30704	8.610	ppb	92
84) n-Propylbenzene	11.56	91	143786	9.239	ppb	97
85) 4-Ethyltoluene	11.69	105	220135	9.768	ppb	97
86) 2-Chlorotoluene	11.64	91	84542	8.917	ppb	95
87) 1,3,5-Trimethylbenzene	11.76	105	187431	9.799	ppb	98
88) 4-Chlorotoluene	11.76	91	102568	9.442	ppb	99
89) Tert-Butylbenzene	12.11	119	184400	9.618	ppb	95
90) 1,2,4-Trimethylbenzene	12.17	105	175070	9.481	ppb	97
91) Sec-Butylbenzene	12.35	105	231417	9.692	ppb	97
92) p-Isopropyltoluene	12.52	119	113064	10.184	ppb	97
93) Benzyl Chloride	12.71	91	55920	8.599	ppb	94
94) 1,3-DCB	12.46	146	62184	9.191	ppb	99
95) 1,4-DCB	12.56	146	116176	8.880	ppb	98
96) n-Butylbenzene	12.97	91	157027	9.445	ppb	100
97) 1,2-DCB	12.97	146	106419	8.752	ppb	98
98) Hexachloroethane	13.26	117	39498	7.887	ppb	93
99) 1,2-Dibromo-3-chloropropan	13.81	75	7138	8.328	ppb #	82
100) 1,2,4-Trichlorobenzene	14.74	180	66680	9.167	ppb	99
101) Hexachlorobutadiene	14.94	225	43149	9.350	ppb	91
102) Naphthalene	15.00	128	89878	9.664	ppb	94
103) 1,2,3-Trichlorobenzene	15.27	180	28496	9.139	ppb	92

(#) = qualifier out of range (m) = manual integration

Quantitation Report

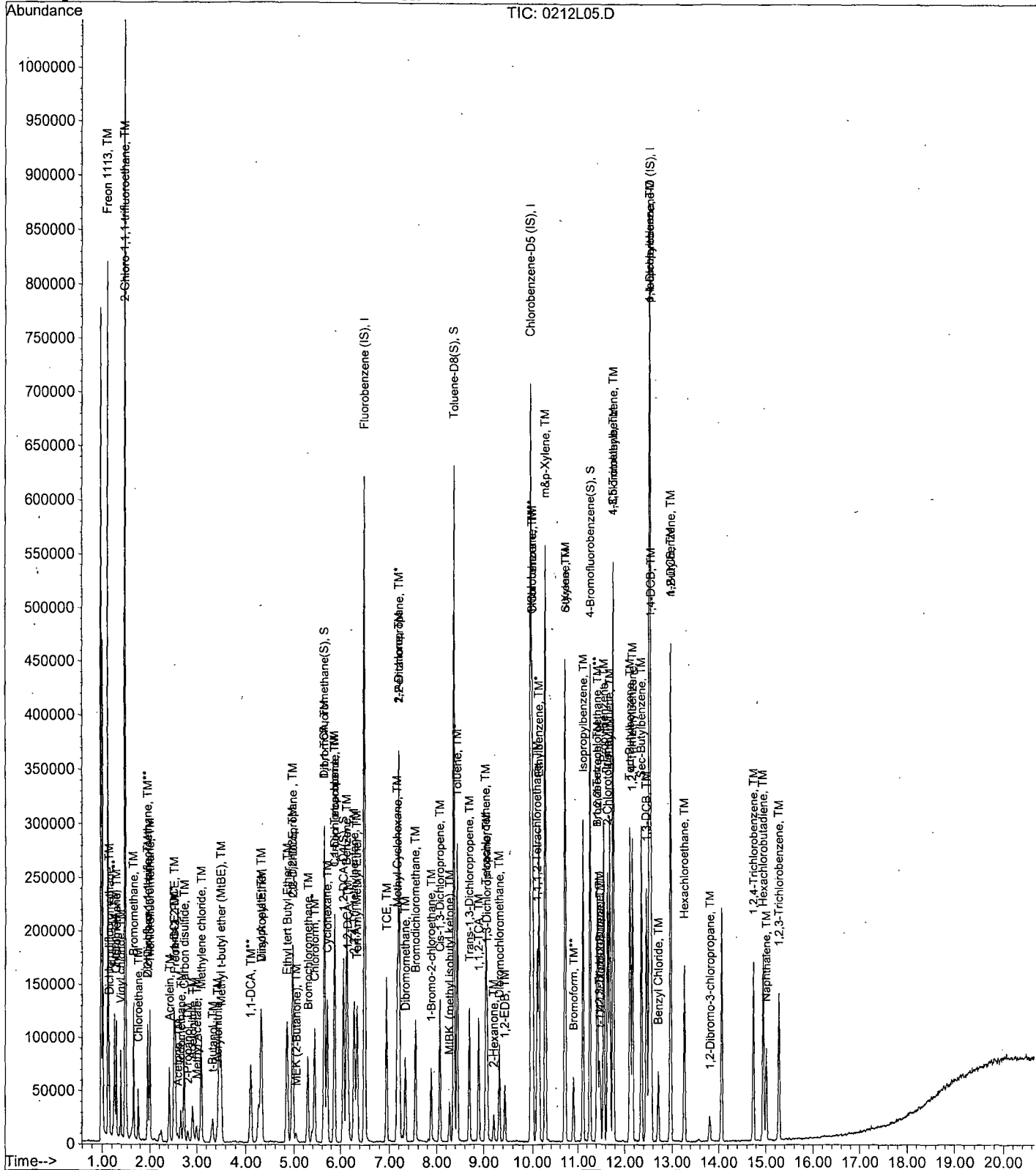
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Acq On : 12 Feb 19 9:15  
Sample : 190212A LCSD 10ug/L  
Misc : ISS 1/29/19

Vial: 4  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 12 13:51 2019

Quant Results File: L0211W.RES

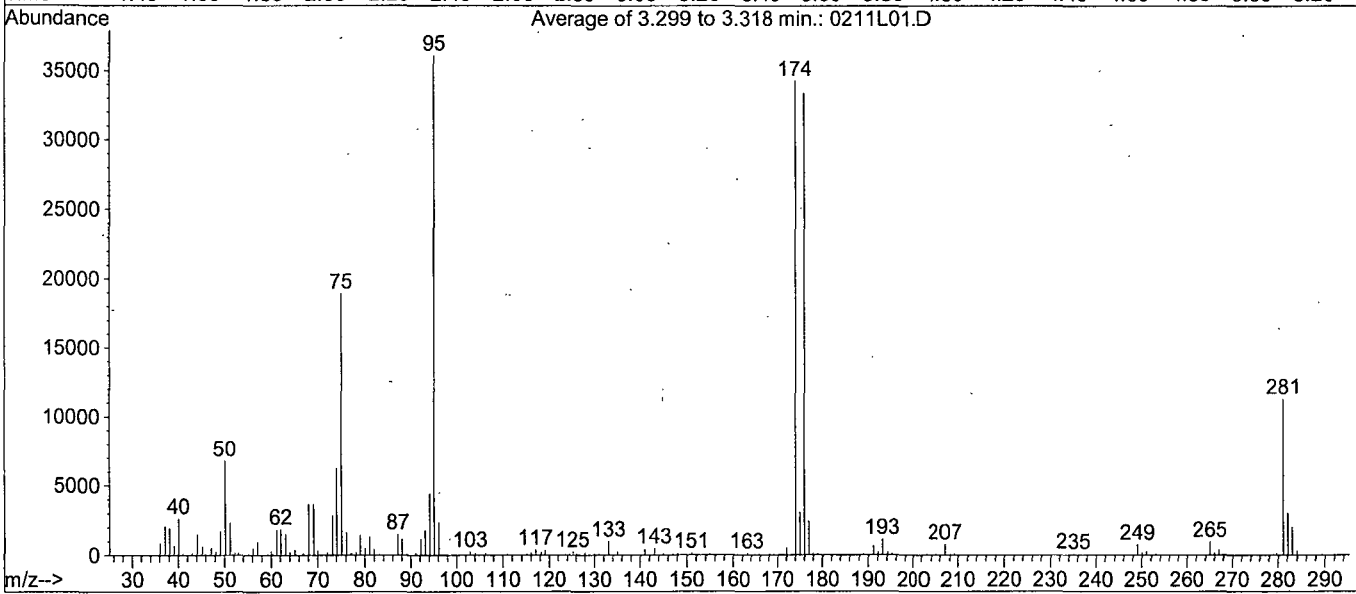
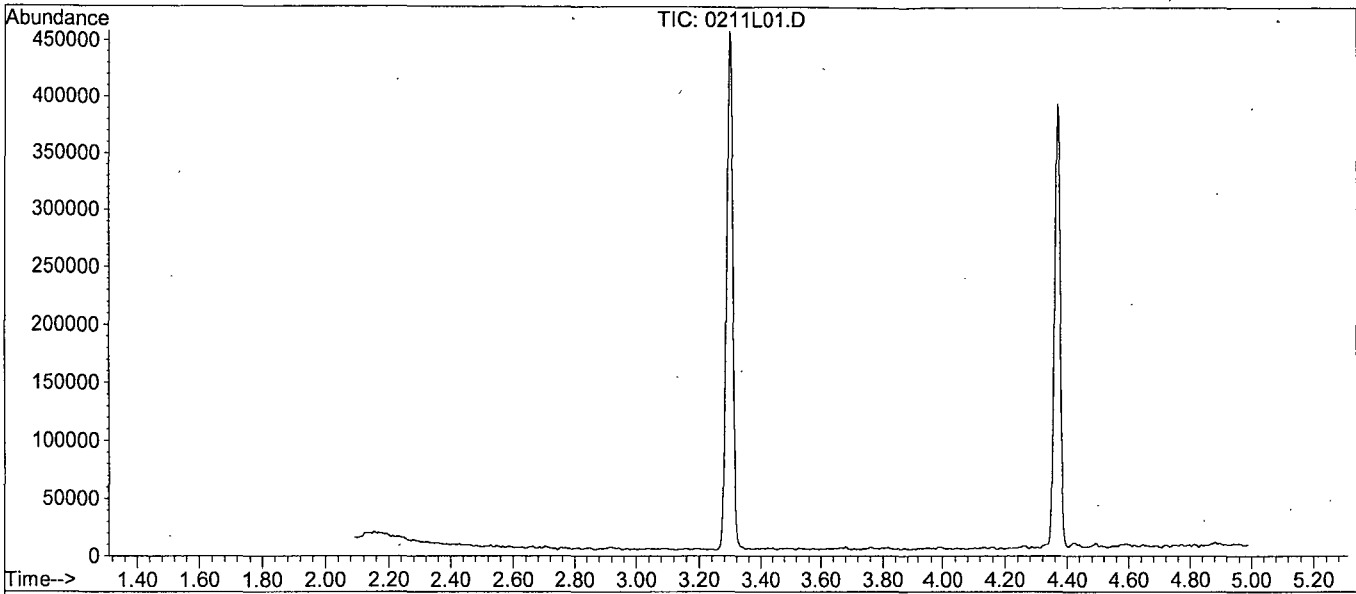
Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Feb 12 13:49:15 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190211\0211L01.D  
 Acq On : 11 Feb 19 7:39  
 Sample : 25ug/L BFB STD 1/18/19  
 Misc : 1ul

Vial: 1  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
 Title : METHOD 8260B



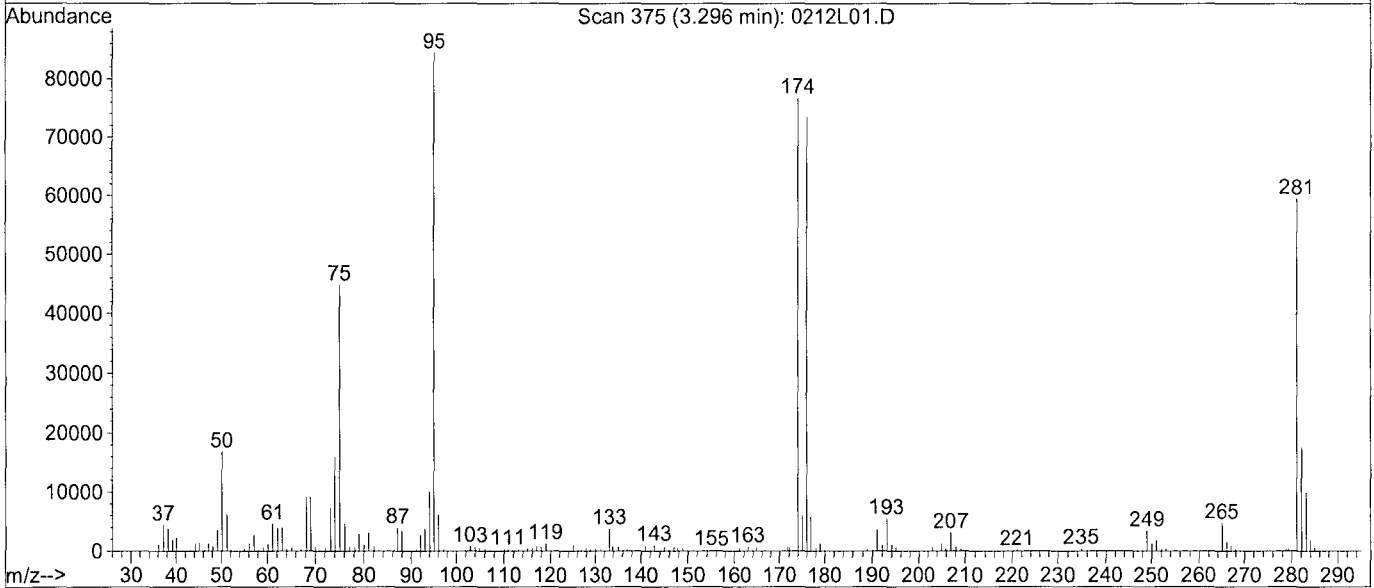
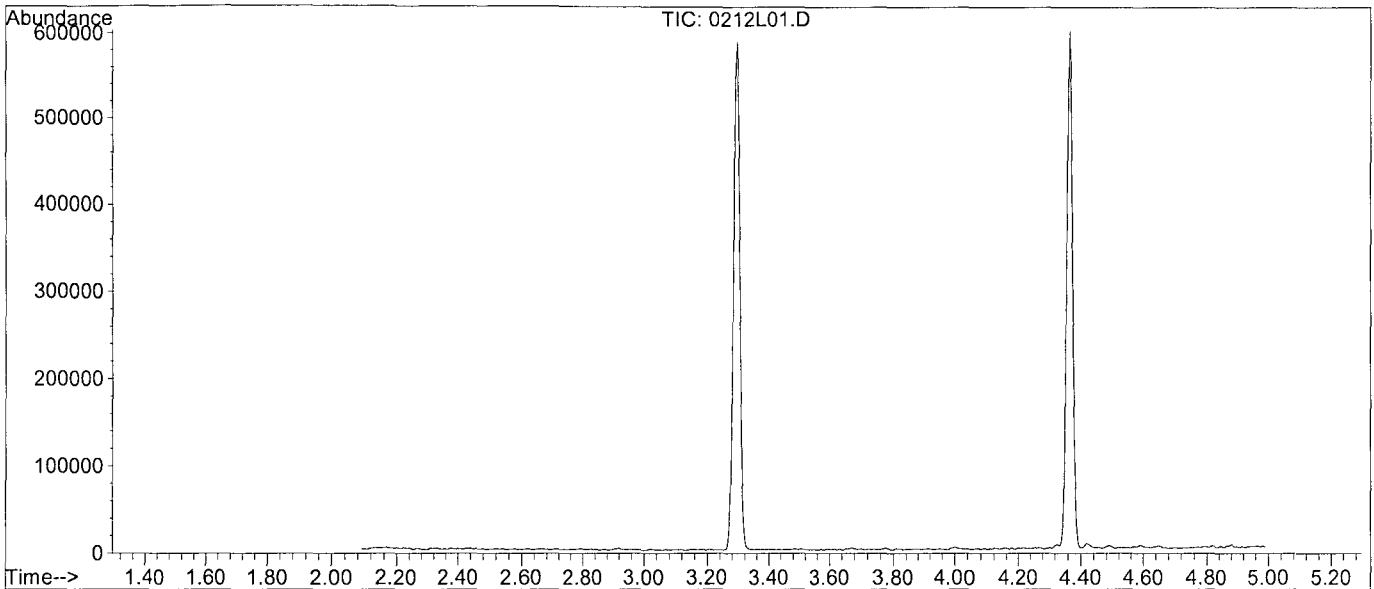
Spectrum Information: Average of 3.299 to 3.318 min.

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	18.7	6769	PASS
75	95	30	60	52.4	18917	PASS
95	95	100	100	100.0	36112	PASS
96	95	5	9	6.4	2327	PASS
173	174	0.00	2	0.0	0	PASS
174	95	50	100	94.9	34269	PASS
175	174	5	9	8.9	3061	PASS
176	174	95	101	97.4	33374	PASS
177	176	5	9	7.3	2438	PASS

Data File : M:\LOKI\DATA\190211\0212L01.D  
 Acq On : 12 Feb 19 7:26  
 Sample : 25ug/L BFB STD 1/18/19  
 Misc : 1ul

Vial: 1  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Method : M:\LOKI\DATA\190211\L0211W.M (RTE Integrator)  
 Title : METHOD 8260B



Spectrum Information: Scan 375

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	19.8	16728	PASS
75	95	30	60	53.0	44744	PASS
95	95	100	100	100.0	84376	PASS
96	95	5	9	7.2	6107	PASS
173	174	0.00	2	0.0	0	PASS
174	95	50	100	90.9	76696	PASS
175	174	5	9	7.8	5981	PASS
176	174	95	101	95.8	73440	PASS
177	176	5	9	7.8	5764	PASS

## Loki 8260 Standard Prep

Loki 8260 Water Calibration Curve										
0.3ug/L										
Prepared By (Initials): <u>PC</u>										
Prepared: 02/11/19										
Expires: 03/13/19										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 9	O2SI	0.3ug/L	5	Prepared 02/08/19	02/01/19	N/A	3uL	50mL	P&T Water	0.3
VOA STD. 10	O2SI		5	Prepared 02/08/19	04/09/19	N/A	3uL			0.3
VOA STD. 12	O2SI		5	Prepared 02/08/19	04/09/19	N/A	3uL			0.3
VOA STD. TBA	Various		250	Prepared 02/08/19	02/01/19	N/A	2uL			10
0.5ug/L										
Prepared: 02/11/19										
Expires: 03/13/19										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 9	O2SI	0.5ug/L	5	Prepared 02/08/19	02/01/19	N/A	5uL	50mL	P&T Water	0.5
VOA STD. 10	O2SI		5	Prepared 02/08/19	04/09/19	N/A	5uL			0.5
VOA STD. 12	O2SI		5	Prepared 02/08/19	04/09/19	N/A	5uL			0.5
VOA STD. TBA	Various		250	Prepared 02/08/19	02/01/19	N/A	5uL			25
1.0ug/L										
Prepared: 02/11/19										
Expires: 03/13/19										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 9	O2SI	1.0ug/L	5	Prepared 02/08/19	02/01/19	N/A	10uL	50mL	P&T Water	1
VOA STD. 10	O2SI		5	Prepared 02/08/19	04/09/19	N/A	10uL			1
VOA STD. 12	O2SI		5	Prepared 02/08/19	04/09/19	N/A	10uL			1
VOA STD. TBA	Various		250	Prepared 02/08/19	02/01/19	N/A	10uL			50
2.0ug/L										
Prepared: 02/11/19										
Expires: 03/13/19										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 9	O2SI	2.0ug/L	5	Prepared 02/08/19	02/01/19	N/A	20uL	50mL	P&T Water	2
VOA STD. 10	O2SI		5	Prepared 02/08/19	04/09/19	N/A	20uL			2
VOA STD. 12	O2SI		5	Prepared 02/08/19	04/09/19	N/A	20uL			2
VOA STD. TBA	Various		250	Prepared 02/08/19	02/01/19	N/A	15uL			75
5ug/L										
Prepared: 02/11/19										
Expires: 03/13/19										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 7	Various	5ug/L	50	Prepared 02/08/19	04/09/19	N/A	5uL	50mL	P&T Water	5
VOA STD. 8	Phenova		50	Prepared 02/08/19	02/01/19	N/A	5uL			5
VOA STD. 1	O2SI		50	Prepared 02/08/19	04/09/19	N/A	5uL			5
VOA STD. 2	O2SI		50	Prepared 02/08/19	04/09/19	N/A	5uL			5
VOA STD. TBA	Various		250	Prepared 02/08/19	02/01/19	N/A	20uL			100
10ug/L										
Prepared: 02/11/19										
Expires: 03/13/19										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 7	Various	10ug/L	50	Prepared 02/08/19	04/09/19	N/A	10uL	50mL	P&T Water	10
VOA STD. 8	Phenova		50	Prepared 02/08/19	02/01/19	N/A	10uL			10
VOA STD. 1	O2SI		50	Prepared 02/08/19	04/09/19	N/A	10uL			10
VOA STD. 2	O2SI		50	Prepared 02/08/19	04/09/19	N/A	10uL			10
VOA STD. TBA	Various		250	Prepared 02/08/19	02/01/19	N/A	25uL			125

20ug/L										
Prepared: 02/11/19										
Expires: 03/13/19										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 7	Various	20ug/L	50	Prepared 02/08/19	04/09/19	N/A	20uL	50mL	P&T Water	20
VOA STD. 8	Phenova		50	Prepared 02/08/19	02/01/19	N/A	20uL			20
VOA STD. 1	O2SI		50	Prepared 02/08/19	04/09/19	N/A	20uL			20
VOA STD. 2	O2SI		50	Prepared 02/08/19	04/09/19	N/A	20uL			20
VOA STD. TBA	Various		250	Prepared 02/08/19	02/01/19	N/A	30uL			150
40ug/L										
Prepared: 02/11/19										
Expires: 03/13/19										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 7	Various	40ug/L	50	Prepared 02/08/19	04/09/19	N/A	40uL	50mL	P&T Water	40
VOA STD. 8	Phenova		50	Prepared 02/08/19	02/01/19	N/A	40uL			40
VOA STD. 1	O2SI		50	Prepared 02/08/19	04/09/19	N/A	40uL			40
VOA STD. 2	O2SI		50	Prepared 02/08/19	04/09/19	N/A	40uL			40
VOA STD. TBA	Various		250	Prepared 02/08/19	02/01/19	N/A	35uL			175
100ug/L										
Prepared: 02/11/19										
Expires: 03/13/19										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 7	Various	100ug/L	50	Prepared 02/08/19	04/09/19	N/A	100uL	50mL	P&T Water	100
VOA STD. 8	Phenova		50	Prepared 02/08/19	02/01/19	N/A	100uL			100
VOA STD. 1	O2SI		50	Prepared 02/08/19	04/09/19	N/A	100uL			100
VOA STD. 2	O2SI		50	Prepared 02/08/19	04/09/19	N/A	100uL			100
VOA STD. TBA	Various		250	Prepared 02/08/19	02/01/19	N/A	40uL			200
Loki 8260 Water Second Source (SS)										
Prepared: 02/11/19										
Expires: 03/13/19										
						Prepared By (Initials): PC				
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 4	Phenova	8260 Water SS	50	Prepared 02/08/19	04/09/19	N/A	10uL	50mL	P&T Water	10
VOA STD. 5	O2SI	8260 Water SS	50	Prepared 02/08/19	04/09/19	N/A	10uL			10
VOA STD. 6	Various	8260 Water SS	50	Prepared 02/08/19	02/13/19	N/A	10uL			10
VOA STD. TBA	Various	8260 Water SS	250	Prepared 02/08/19	02/13/19	N/A	25uL			250
8260 Water Continuing Calibrations (CCV)/ Lab Control Spikes (LCS)										
Prepared: 02/11/19										
Expires: 02/12/19										
						Prepared By (Initials): PC				
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 7	Various	CCV/ LCS	50	Prepared 02/08/19	04/09/19	N/A	10uL	50mL	P&T Water	10
VOA STD. 8	Phenova	CCV/ LCS	50	Prepared 02/08/19	02/01/19	N/A	10uL			10
VOA STD. 1	O2SI	CCV/ LCS	50	Prepared 02/08/19	04/09/19	N/A	10uL			10
VOA STD. 2	O2SI	CCV/ LCS	50	Prepared 02/08/19	04/09/19	N/A	10uL			10
VOA STD. TBA	Various	CCV/ LCS	250	Prepared 02/08/19	02/01/19	N/A	25uL			125
LCS (X4 Ketones)										
Prepared: 02/11/19										
Expires: 02/12/19										
						Prepared By (Initials): PC				
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/L)
VOA STD. 7	Various	LCS X4 Ketones	50	Prepared 02/08/19	04/09/19	N/A	10uL	50mL	P&T Water	10
VOA STD. 8	Phenova	LCS X4 Ketones	50	Prepared 02/08/19	02/01/19	N/A	10uL			10
VOA STD. 1	O2SI	LCS X4 Ketones	50	Prepared 02/08/19	04/09/19	N/A	10uL			10
VOA STD. 2	O2SI	LCS X4 Ketones	50	Prepared 02/08/19	04/09/19	N/A	40uL			40
VOA STD. TBA	Various	LCS X4 Ketones	250	Prepared 02/08/19	02/01/19	N/A	25uL			125



<b>Loki 8260 Water Surrogate</b>											
Prepared: 02/11/19						Prepared By (Initials): PC					
Expires: 07/28/19											
Methanol Lot No: 202404-9077											
Initial Standard Information						Final Standard Information					
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr.)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)	
8260 Surrogate Solution	O2SI	120002-01	2,000	384756-39333	07/28/19	02/10/22	375uL	15mL	Methanol	50	
<b>Loki 8260 Water Internal Standard</b>											
Prepared: 11/08/18						Prepared By (Initials): DG					
Expires: 10/05/19											
Methanol Lot No: 202404-9077											
Initial Standard Information						Final Standard Information					
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr.)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)	
Internal Standard Solution	O2SI	120004-02	2,000	326533-38441	10/05/19	04/27/21	375uL	15mL	Methanol	50	

## Primary and Secondary Working Standards

Primary Standards										
VOA STD 7										
Prepared: 02/08/19 E										
Expires: 04/09/19										
Prepared By (Initials): PC										
Methanol Lot No. 907702-202404										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
VOA Gasses STD	Phenova	ALO-101206	2,000	CL12966	10/31/23	10/31/23	100uL	4mL	Methanol	50
Hexachloroethane	Absolute	70199	1,000	091818-40041	01/17/20	09/18/23	200uL			50
Benzyl Chloride	O2SI	020228-02	1,000	120418-46035	01/17/20	12/04/19	200uL			50
VOA STD 8										
Prepared: 02/08/19 F										
Expires: 02/01/19										
Prepared By (Initials): PC										
Methanol Lot No. 907702-202404										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
VOA Additions STD	Phenova	ALO-130175	2,000	CL12622-40171	01/17/20	06/30/20	100uL	4mL	Methanol	50
502.2 Cal. Std.	Phenova	ALO-101200	2,000	CL12489-39295	01/17/20	05/31/23	100uL			50
Vinyl Acetate	Phenova	ALO-101228	2,000	CL13226	02/01/19	03/06/19	100uL			50
VOA STD TBA										
Prepared: 02/08/19 G										
Expires: 02/01/19										
Prepared By (Initials): PC										
Methanol Lot No. 907702-202404										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
Custom VOC Mix	Phenova	ALO-130176	2,000	CL12542	01/17/20	05/31/20	500uL	4mL	Methanol	250
Acrolein	Phenova	ALO-130549	10,000	CL13254	02/01/19	03/04/19	100uL			250
VOA STD 1										
Prepared: 02/08/19 H										
Expires: 04/09/19										
Prepared By (Initials): PC										
Methanol Lot No. 907702-202404										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
2-CEVE	O2SI	020145-02	2,000	112917-40211	07/10/21	11/29/20	50	2mL	Methanol	50
VOA STD 2										
Prepared: 02/08/19 I										
Expires: 04/09/19										
Prepared By (Initials): PC										
Methanol Lot No. 907702-202404										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
Ketones Std.	Phenova	ALO-109211	2,000	CL10956	01/17/20	08/30/23	100	4mL	Methanol	50
VOA STD 9										
Prepared: 02/08/19 J										
Expires: 02/01/19										
Prepared By (Initials): PC										
Methanol Lot No. 907702-202404										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
VOA STD. 7		VOA STD. 9	50	Prepared 02/08/19	12/04/19	N/A	200uL	2mL	Methanol	5
VOA STD. 8		VOA STD. 9	50	Prepared 02/08/19	02/01/19	N/A	200uL			5
VOA STD. 10										
Prepared: 02/08/19 K										
Expires: 04/09/19										
Prepared By (Initials): PC										
Methanol Lot No. 907702-202404										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
VOA STD. 1		VOA STD. 10	50	Prepared 02/08/19	01/17/20	N/A	200uL	2mL	Methanol	5
VOA STD. 12										
Prepared: 02/08/19 L										
Expires: 04/09/19										
Prepared By (Initials): PC										
Methanol Lot No. 907702-202404										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. (ug/mL)	Reference To APPL Prep Date	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
VOA STD. 2		VOA STD. 12	50	Prepared 02/08/19	01/17/20	N/A	200uL	2mL	Methanol	5

Second Source (SS) Standards										
VOA STD. 3										
Prepared: 02/08/19 M										
Expires: 04/09/19										
Methanol Lot No. 907702-202404										
Prepared By (Initials): PC										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
Ketones Standard	Phenova	ALO-101211	2,000	CL12730-40186	01/17/20	08/31/28	50uL	2mL	Methanol	50
VOA STD. 5										
Prepared: 02/08/19 N										
Expires: 04/09/19										
Methanol Lot No. 907702-202404										
Prepared By (Initials): PC										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
8260 Gases (SS)	Phenova	ALO-101206	2,000	CL12965	10/31/23	10/31/23	50uL	2mL	Methanol	50
2-CEVE (SS)	Absolute	82408	2,000	071018-39808	11/29/20	07/10/21	50uL			50
VOA STD. 6										
Prepared: 02/08/19 O										
Expires: 02/13/19										
Methanol Lot No. 907702-202404										
Prepared By (Initials): PC										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
502.2 Calibration STD. (54-compounds)	Phenova	ALO-101200	2,000	CL12490	01/17/20	05/31/23	50uL	2mL	Methanol	50
Vinyl Acetate	Phenova	ALO-101228	2,000	CL13145-40120	01/17/20	02/13/19	50uL			50
Hexachloroethane	Accustan	AS-E0011	1,000	218051281-39858	01/02/20	05/14/28	100uL			50
Benzyl Chloride	Accustan	M-8010-01	200	214101335-04	01/17/20	10/18/20	500uL			50
VOA STD. TBA										
Prepared: 02/08/19 P										
Expires: 02/13/19										
Methanol Lot No. 907702-202404										
Prepared By (Initials): PC										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
Custom VOA Mix (4-3)	Phenova	ALO-130176	2,000	CL12228-39307	01/17/20	01/31/20	250uL	2mL	Methanol	250
Acrolein	Phenova	ALO-101224	10,000	CL13181-40203	02/13/19	02/13/19	50uL			250
VOA STD. 0										
Prepared: 02/08/19 Q										
Expires: 04/09/19										
Methanol Lot No. 907702-202404										
Prepared By (Initials): PC										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
VOA Addition STD.	Phenova	ALO-130175	2,000	CL12744	01/17/20	08/30/20	50uL	2mL	Methanol	50
BFB Tune										
Prepared: 02/04/19										
Expires: 12/12/19										
Methanol Lot No. 202404-00945										
Prepared By (Initials): DG										
Initial Standard Information						Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier P/N#	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date (1 yr)	Exp. Date (Manufacturers)	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
4-Bromofluorobenzene	O2SI	020135-03	2,500	342387-39075	12/12/19	01/19/21	20uL	2mL	Methanol	25

## Injection Log

Directory: M:\LOK\DATA\190211\

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1	1	0211L01.D	1	25ug/L BFB STD 1/18/19	1ul	11 Feb 19 7:39
2	2	0211L03.D	1	0.3ug/L VOC STD 2/11/19	ISS 1/29/19	11 Feb 19 8:32
3	3	0211L04.D	1	0.5ug/L VOC STD 2/11/19	ISS 1/29/19	11 Feb 19 9:00
4	4	0211L05.D	1	1.0ug/L VOC STD 2/11/19	ISS 1/29/19	11 Feb 19 9:28
5	5	0211L06.D	1	2.0ug/L VOC STD 2/11/19	ISS 1/29/19	11 Feb 19 9:56
6	6	0211L07.D	1	5.0ug/L VOC STD 2/11/19	ISS 1/29/19	11 Feb 19 10:24
7	7	0211L08.D	1	10ug/L VOC STD 2/11/19	ISS 1/29/19	11 Feb 19 10:52
8	8	0211L09.D	1	20ug/L VOC STD 2/11/19	ISS 1/29/19	11 Feb 19 11:20
9	9	0211L10.D	1	40ug/L VOC STD 2/11/19	ISS 1/29/19	11 Feb 19 11:48
10	10	0211L11.D	1	50ug/L VOC STD 2/11/19	ISS 1/29/19	11 Feb 19 12:16
11	11	0211L12.D	1	100ug/L VOC STD 2/11/19	ISS 1/29/19	11 Feb 19 12:44
12	14	0211L15.D	1	(SS) 10ug/L VOC STD 2/11/19	ISS 1/29/19	11 Feb 19 14:09
13	1	0212L01.D	1	25ug/L BFB STD 1/18/19	1ul	12 Feb 19 7:26
14	3	0212L04.D	1	190212A CCV/LCS 10ug/L	ISS 1/29/19	12 Feb 19 8:48
15	4	0212L05.D	1	190212A LCSD 10ug/L	ISS 1/29/19	12 Feb 19 9:15
16	14	0212L15.D	1	190212A BLK	ISS 1/29/19	12 Feb 19 13:56
17	20	0212L21.D	1	AZ86199W01	ISS 1/29/19	12 Feb 19 16:45
18	21	0212L22.D	1	AZ86200W01	ISS 1/29/19	12 Feb 19 17:13
19	25	0212L26.D	1	Ending CCV 10ug/L 02/12/19	ISS 1/29/19	12 Feb 19 19:05

**ORGANICS**  
**Calibration Data**

VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 6  
Initial Calibration

Lab Name: APPL, Inc.  
Case No:  
Matrix: water

SDG No:  
Initial Cal. Date: 02/01/19  
Instrument: Loki

Initials: DG

0201L16.D 0201L17.D 0201L18.D 0201L19.D 0201L20.D 0201L21.D 0201L22.D

	Compound	1	2	3	4	5	6	7			Avg	%RSD	Type	r^2	Q	MRF
1	I Fluorobenzene (IS)															
2	TMHBL Gasoline C6-C10	13.3	5.607	3.065	1.335	0.9075	0.7942	0.7307			3.7	125	TMHBL	1.000		
3	I Chlorobenzene-D5 (IS)															
4	I 1,4-Dichlorobenzene-D (IS)															
5																
6																
7																
8																
9																
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Data File : M:\LOKI\DATA\190201\0201L16.D  
 Acq On : 1 Feb 19 17:57  
 Sample : 20ug/L GAS STD 02/01/19  
 Misc : IS&S 11/8/18

Vial: 15  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 2 10:56 2019

Quant Results File: LGAS0201.RES

Quant Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 10:55:51 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev (Min)
1) Fluorobenzene (IS)	6.50	TIC	570211	25.000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.97	TIC	653665	25.000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.53	TIC	672792	25.000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Gasoline C6-C10	8.37	TIC	6069555m	22.625	ppb	100

(#) = qualifier out of range (m) = manual integration

Quantitation Report

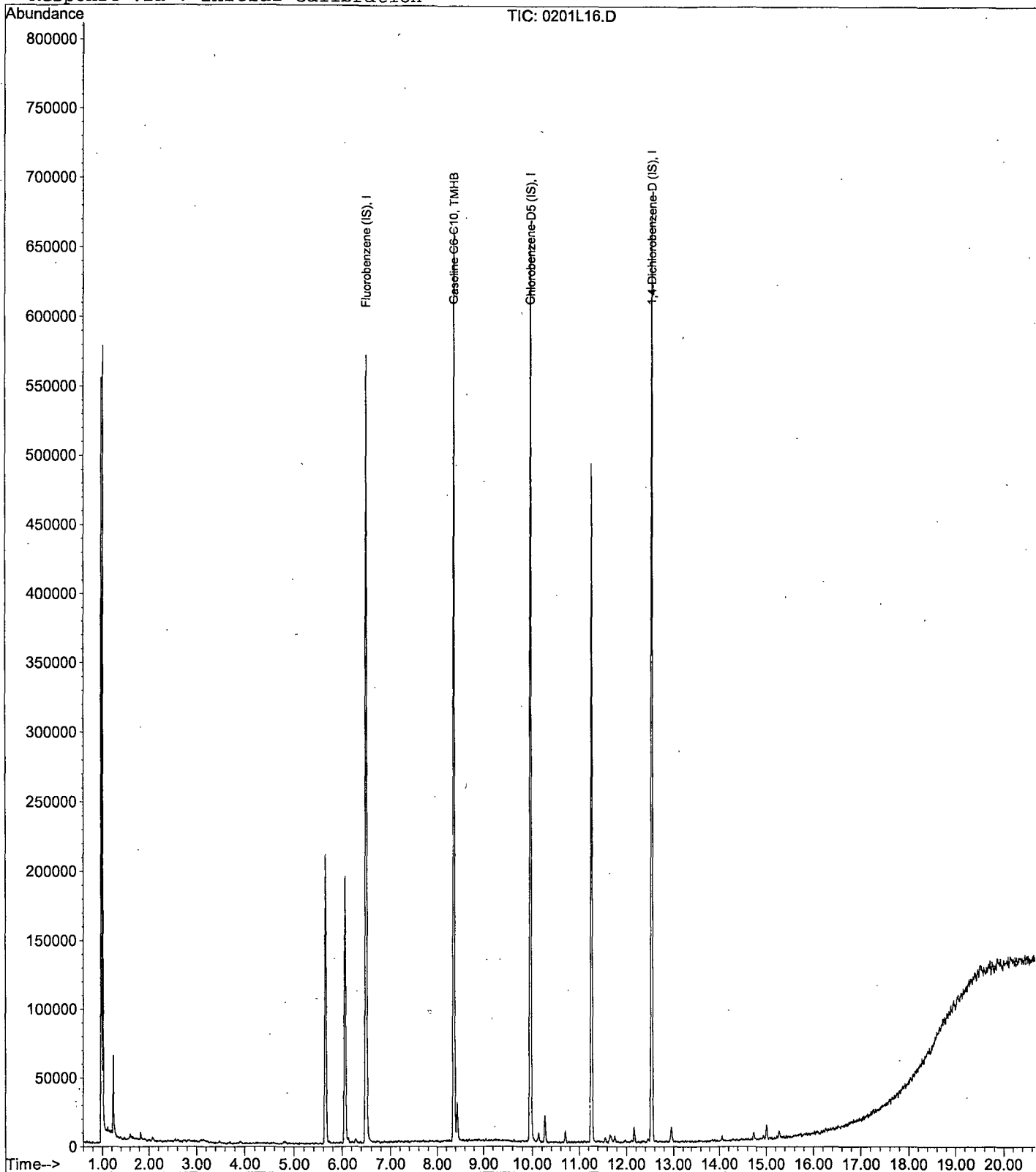
Data File : M:\LOKI\DATA\190201\0201L16.D  
Acq On : 1 Feb 19 17:57  
Sample : 20ug/L GAS STD 02/01/19  
Misc : IS&S 11/8/18

Vial: 15  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 2 10:56 2019

Quant Results File: LGAS0201.RES

Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Sat Feb 02 11:09:59 2019  
Response via : Initial Calibration







Data File : M:\LOKI\DATA\190201\0201L17.D Vial: 16  
 Acq On : 1 Feb 19 18:26 Operator: PM,DG,SV,CMM,KV  
 Sample : 50ug/L GAS STD 02/01/19 Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Feb 2 10:56 2019 Quant Results File: LGAS0201.RES

Quant Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 10:55:51 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	561721	25.000 ppb	0.00
3) Chlorobenzene-D5 (IS)	9.97	TIC	651562	25.000 ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.54	TIC	675591	25.000 ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc Units	Qvalue
2) Gasoline C6-C10	8.37	TIC	6299184m	52.708 ppb	100

(#) = qualifier out of range (m) = manual integration

Quantitation Report

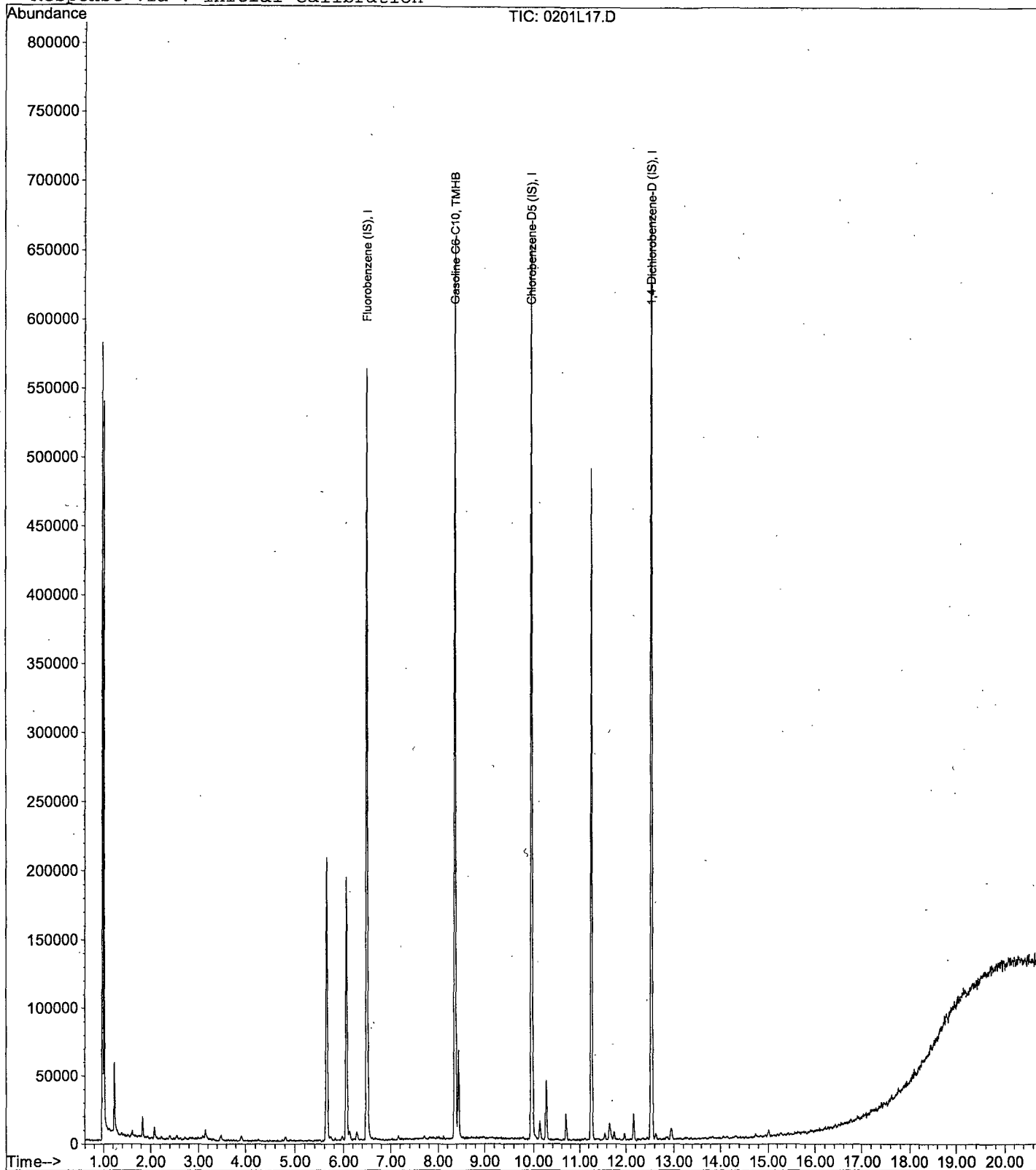
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Acq On : 1 Feb 19 18:26  
Sample : 50ug/L GAS STD 02/01/19  
Misc : IS&S 11/8/18

Vial: 16  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 2 10:56 2019

Quant Results File: LGAS0201.RES

Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Sat Feb 02 11:09:59 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190201\0201L18.D Vial: 17  
 Acq On : 1 Feb 19 18:54 Operator: PM,DG,SV,CMM,KV  
 Sample : 100ug/L GAS STD 02/01/19 Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Feb 2 10:57 2019 Quant Results File: LGAS0201.RES

Quant Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 10:55:51 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	565983	25.000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.96	TIC	639504	25.000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.53	TIC	665181	25.000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Gasoline C6-C10	8.37	TIC	6939763m	108.015	ppb	100

(#) = qualifier out of range (m) = manual integration

Quantitation Report

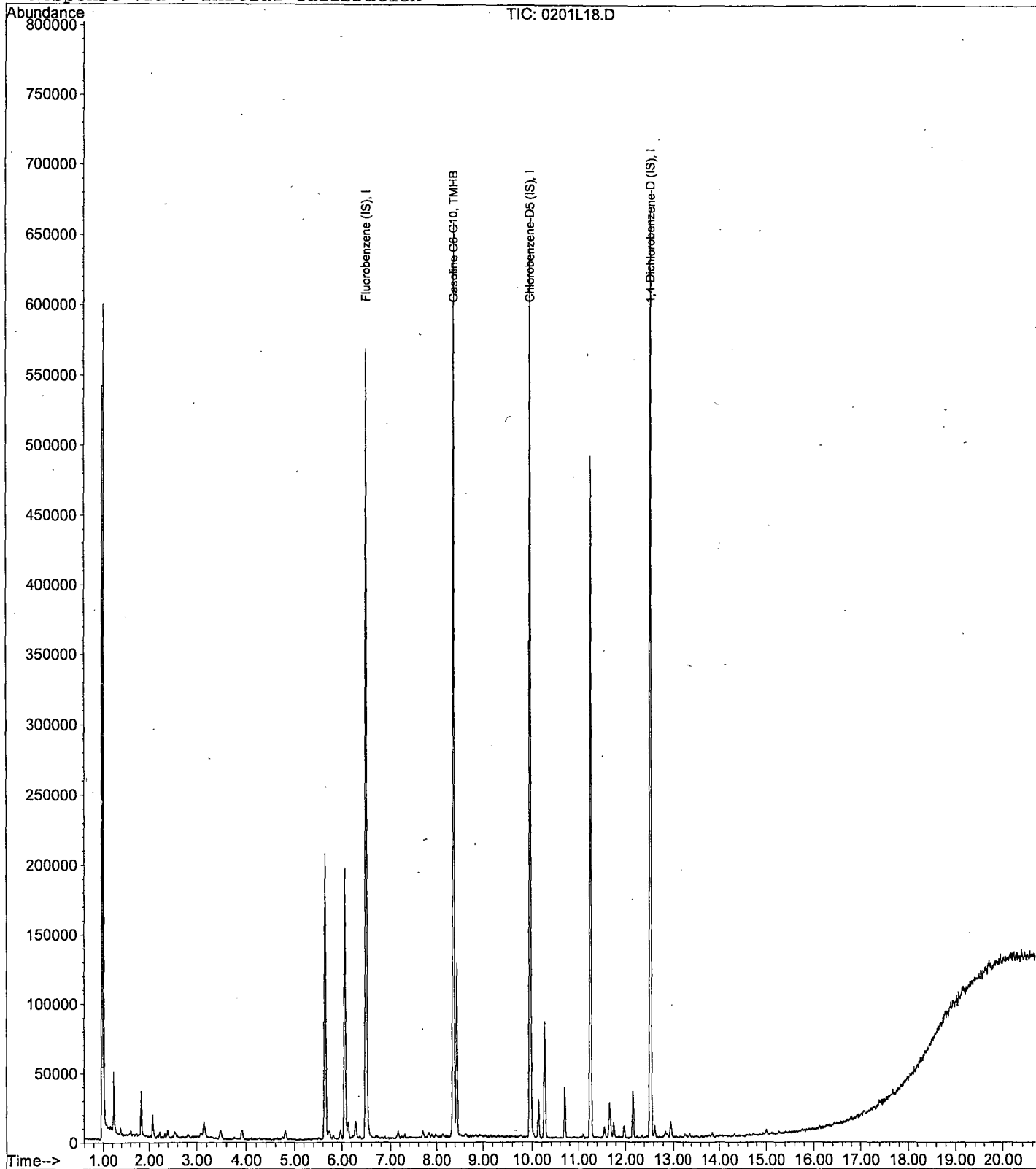
Data File : M:\LOKI\DATA\190201\0201L18.D  
Acq On : 1 Feb 19 18:54  
Sample : 100ug/L GAS STD 02/01/19  
Misc : IS&S 11/8/18

Vial: 17  
Operator: PM, DG, SV, CMM, KV  
Inst : Løki  
Multiplr: 1.00

Quant Time: Feb 2 10:57 2019

Quant Results File: LGAS0201.RES

Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Sat Feb 02 11:09:59 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190201\0201L19.D Vial: 18  
 Acq On : 1 Feb 19 19:23 Operator: PM,DG,SV,CMM,KV  
 Sample : 300ug/L GAS STD 02/01/19 Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Feb 2 10:57 2019 Quant Results File: LGAS0201.RES

Quant Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 10:55:51 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	567147	25.000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.97	TIC	665268	25.000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.53	TIC	695296	25.000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Gasoline C6-C10	8.37	TIC	9085826m	306.502	ppb	100

(#) = qualifier out of range (m) = manual integration

Quantitation Report

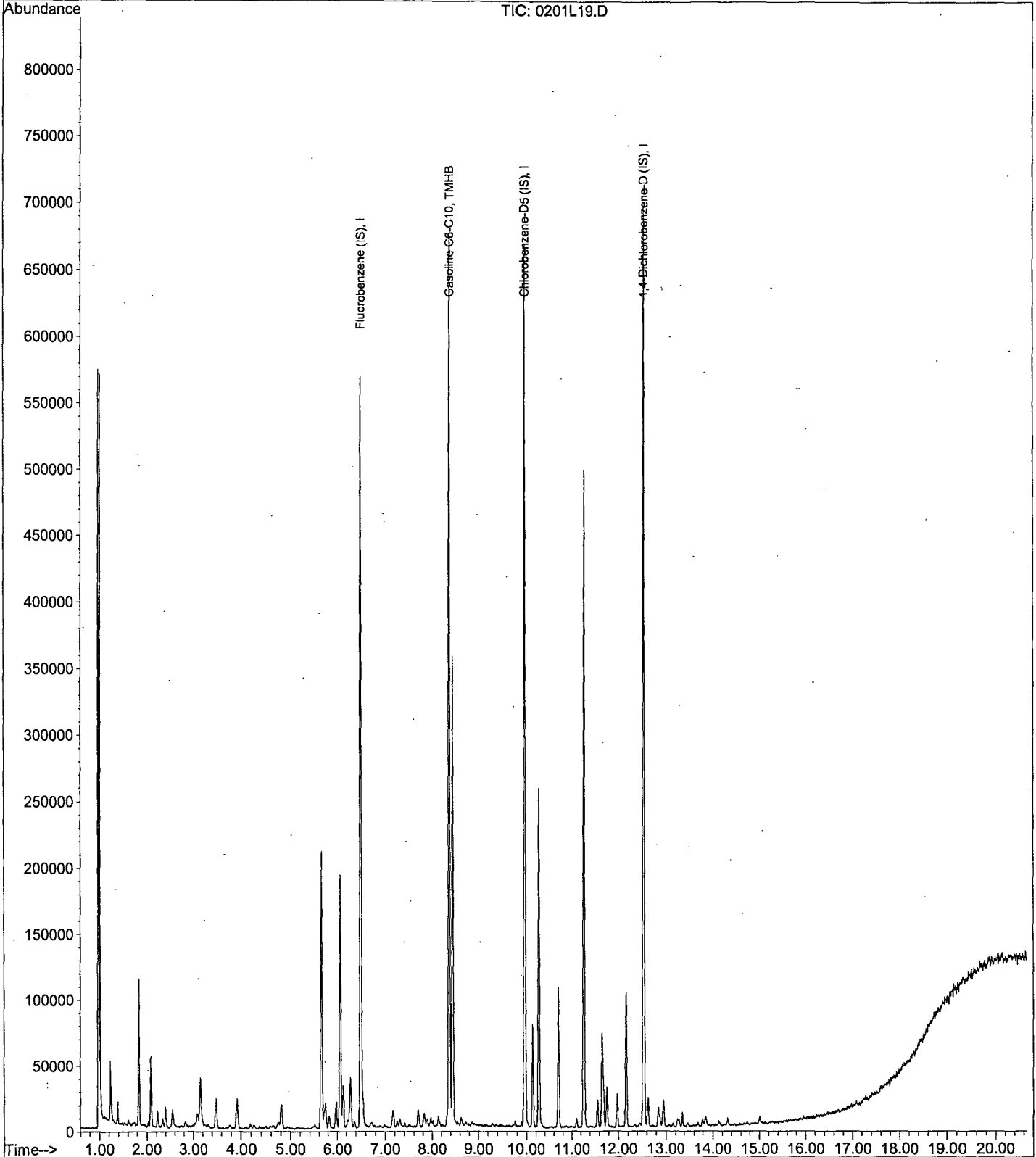
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Acq On : 1 Feb 19 19:23  
Sample : 300ug/L GAS STD 02/01/19  
Misc : IS&S 11/8/18

Vial: 18  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 2 10:57 2019

Quant Results File: LGAS0201.RES

Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Sat Feb 02 11:09:59 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190201\0201L20.D Vial: 19  
 Acq On : 1 Feb 19 19:52 Operator: PM,DG,SV,CMM,KV  
 Sample : 600ug/L GAS STD 02/01/19 Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Feb 2 10:57 2019 Quant Results File: LGAS0201.RES

Quant Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 10:55:51 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	556384	25.000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.97	TIC	668866	25.000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.54	TIC	706273	25.000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Gasoline C6-C10	8.44	TIC	12118221m	610.669	ppb	100

(#) = qualifier out of range (m) = manual integration



Quantitation Report

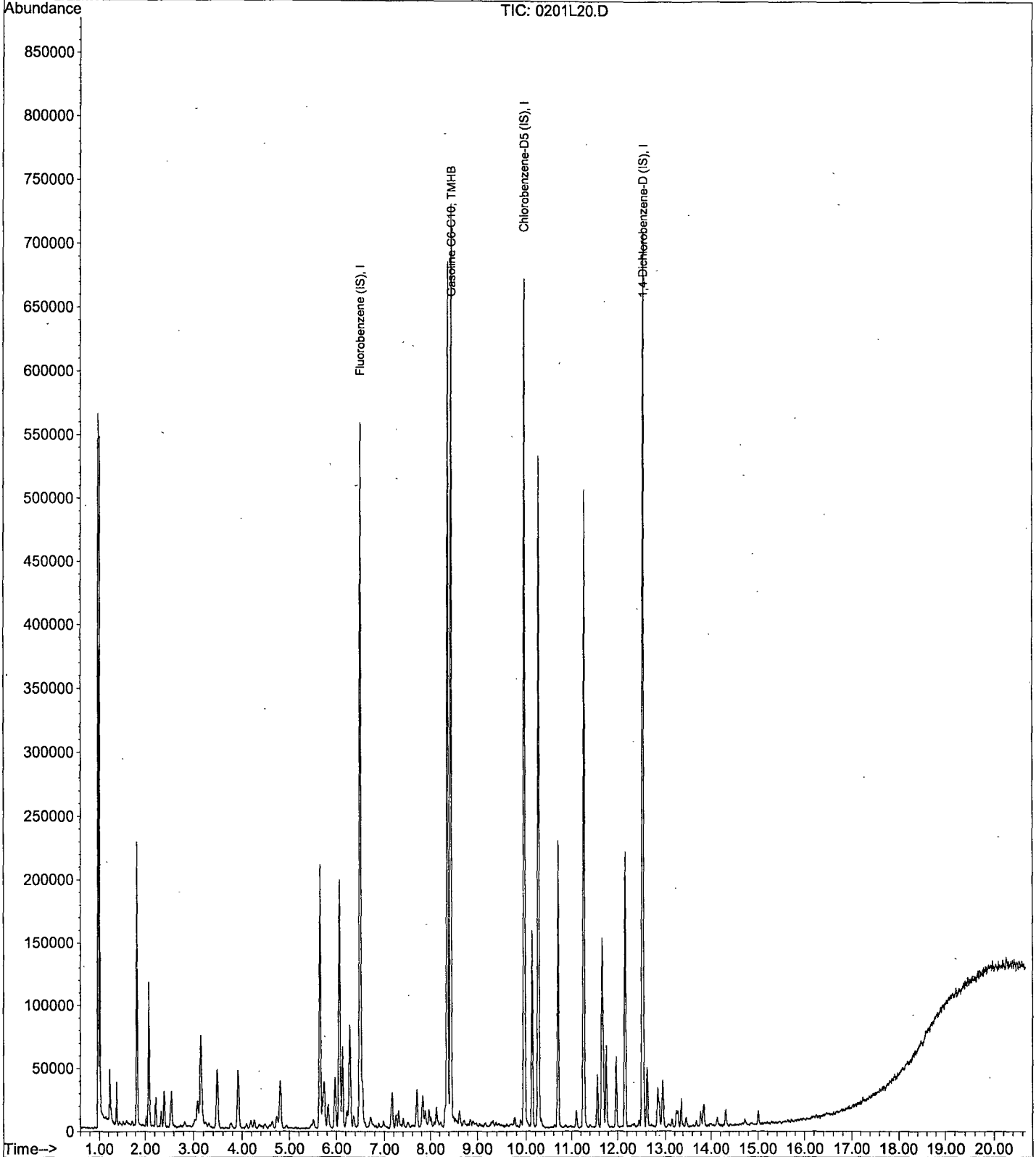
Data File : M:\LOKI\DATA\190201\0201L20.D  
Acq On : 1 Feb 19 19:52  
Sample : 600ug/L GAS STD 02/01/19  
Misc : IS&S 11/8/18

Vial: 19  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 2 10:57 2019

Quant Results File: LGAS0201.RES

Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Sat Feb 02 11:09:59 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190201\0201L21.D Vial: 20  
 Acq On : 1 Feb 19 20:20 Operator: PM,DG,SV,CMM,KV  
 Sample : 800ug/L GAS STD 02/01/19 Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Feb 2 11:07 2019 Quant Results File: LGAS0201.RES

Quant Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 10:55:51 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	565388	25.000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.97	TIC	658761	25.000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.53	TIC	700332	25.000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Gasoline C6-C10	8.44	TIC	14369636m	802.630	ppb	100

Quantitation Report

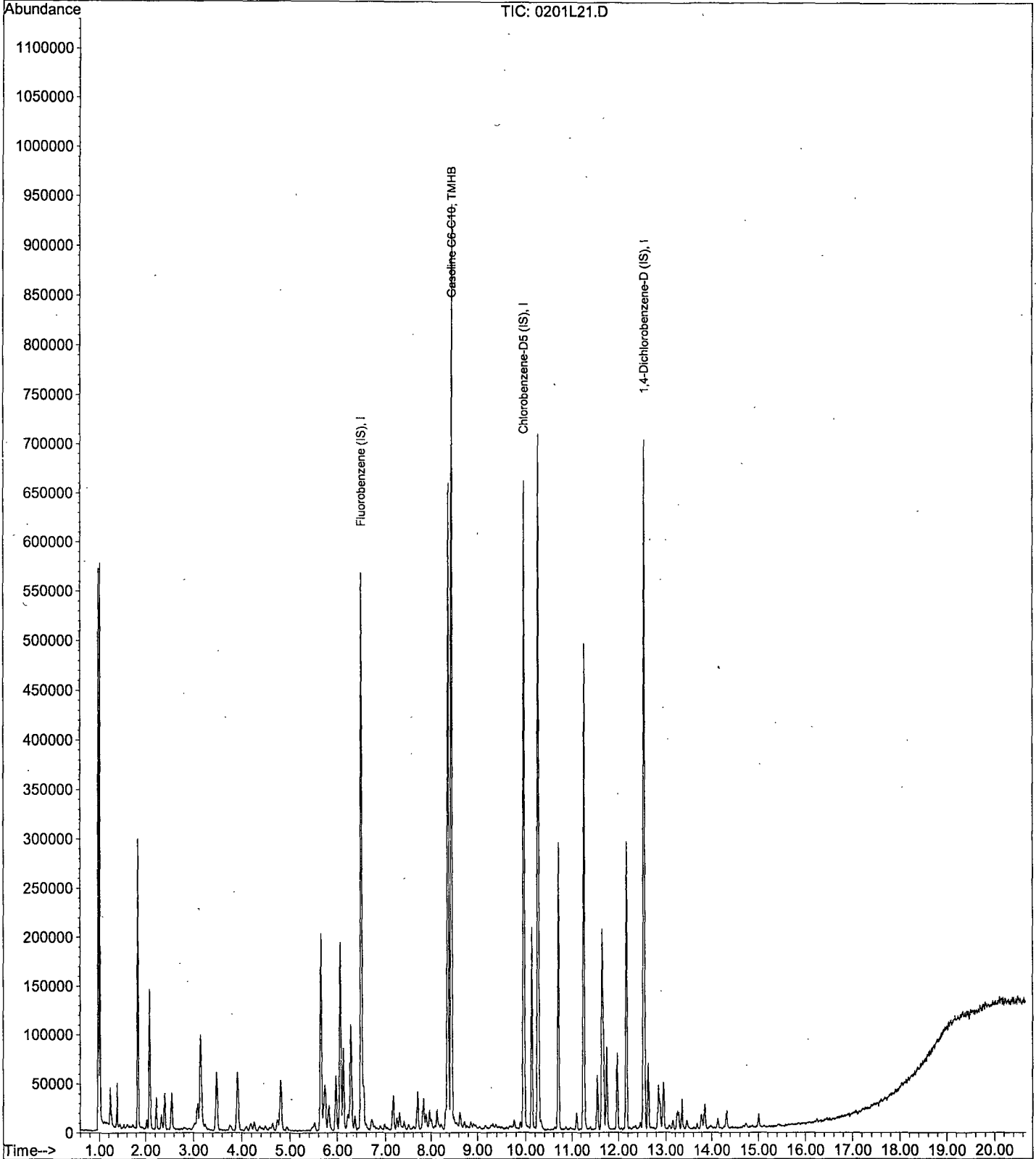
Data File : M:\LOKI\DATA\190201\0201L21.D  
Acq On : 1 Feb 19 20:20  
Sample : 800ug/L GAS STD 02/01/19  
Misc : IS&S 11/8/18

Vial: 20  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 2 11:07 2019

Quant Results File: LGAS0201.RES

Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Sat Feb 02 11:09:59 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190201\0201L22.D Vial: 21  
 Acq On : 1 Feb 19 20:49 Operator: PM,DG,SV,CMM,KV  
 Sample : 1000ug/L GAS STD 02/01/19 Inst : Loki  
 Misc : IS&S 11/8/18 Multiplr: 1.00

Quant Time: Feb 2 11:08 2019 Quant Results File: LGAS0201.RES

Quant Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 10:55:51 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	557825	25.000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.97	TIC	645545	25.000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.53	TIC	696028	25.000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Gasoline C6-C10	8.44	TIC	16304248m	1003.965	ppb	100

Quantitation Report

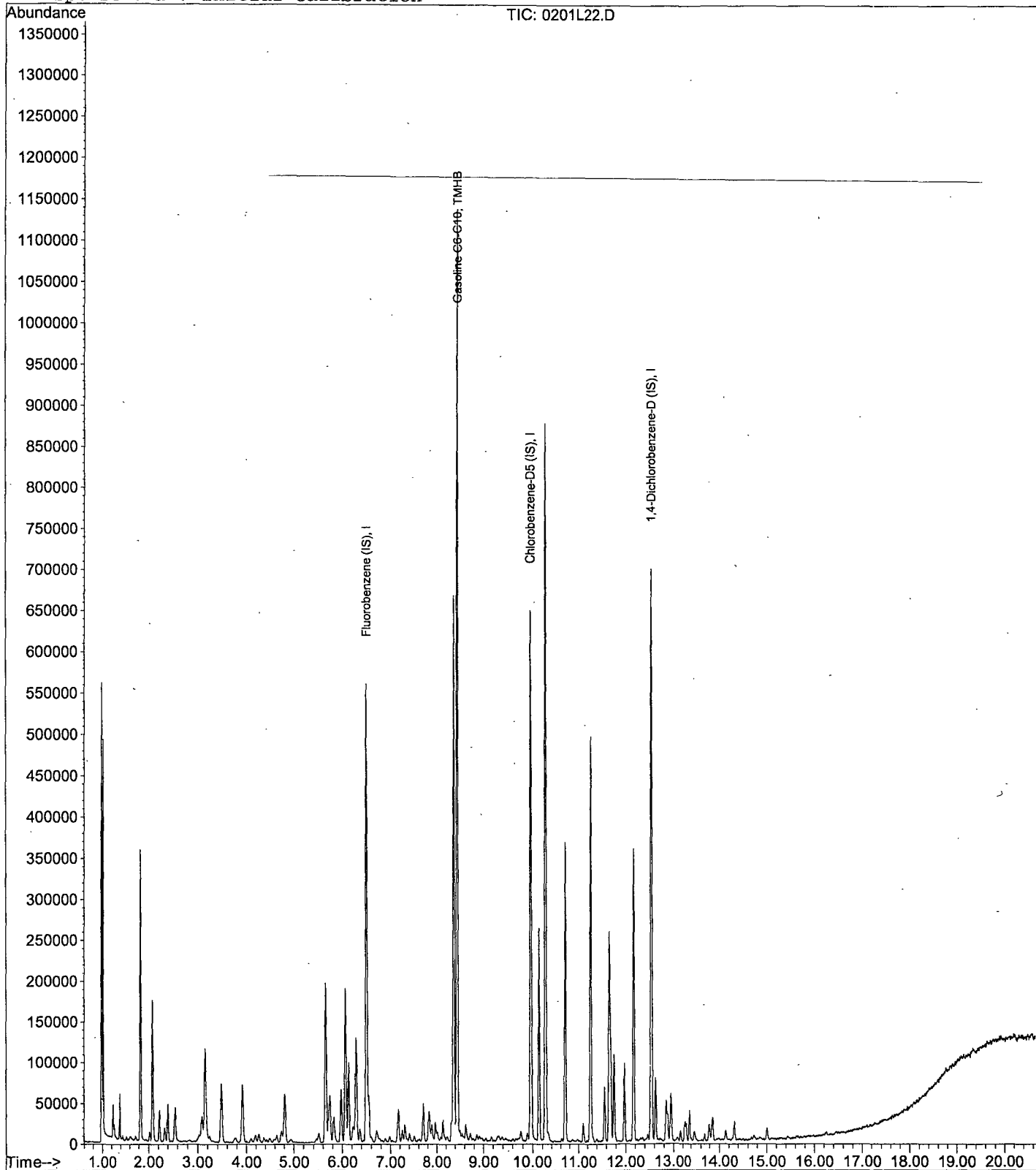
Data File : M:\LOKI\DATA\190201\0201L22.D  
Acq On : 1 Feb 19 20:49  
Sample : 1000ug/L GAS STD 02/01/19  
Misc : IS&S 11/8/18

Vial: 21  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 2 11:08 2019

Quant Results File: LGAS0201.RES

Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Sat Feb 02 11:09:59 2019  
Response via : Initial Calibration



VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 7

Second Source Calibration

Lab Name: APPL, Inc.

SDG No: \_\_\_\_\_

Case No: \_\_\_\_\_

Date Analyzed: 1 Feb 19 21:46

Matrix: water

Instrument: Loki

Initial Cal. Date: 02/01/19

Data File: 0201L24.D

	Compound	MEAN	CCRF	%D	%Drift
1	TMHB Gasoline C6-C10	3.678	1.345	63	TMHBL 2.4
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
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21					
22					
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24					
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40	Average			63.0	

Data File : M:\LOKI\DATA\190201\0201L24.D  
 Acq On : 1 Feb 19 21:46  
 Sample : (SS)300ug/L GAS STD 02/01/19  
 Misc : IS&S 11/8/18

Vial: 23  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 2 11:14 2019

Quant Results File: LGAS0201.RES

Quant Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 11:09:59 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	540691	25.000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.97	TIC	643055	25.000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.53	TIC	663804	25.000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Gasoline C6-C10	9.97	TIC	8723813m	307.259	ppb	100

(#) = qualifier out of range (m) = manual integration

Quantitation Report

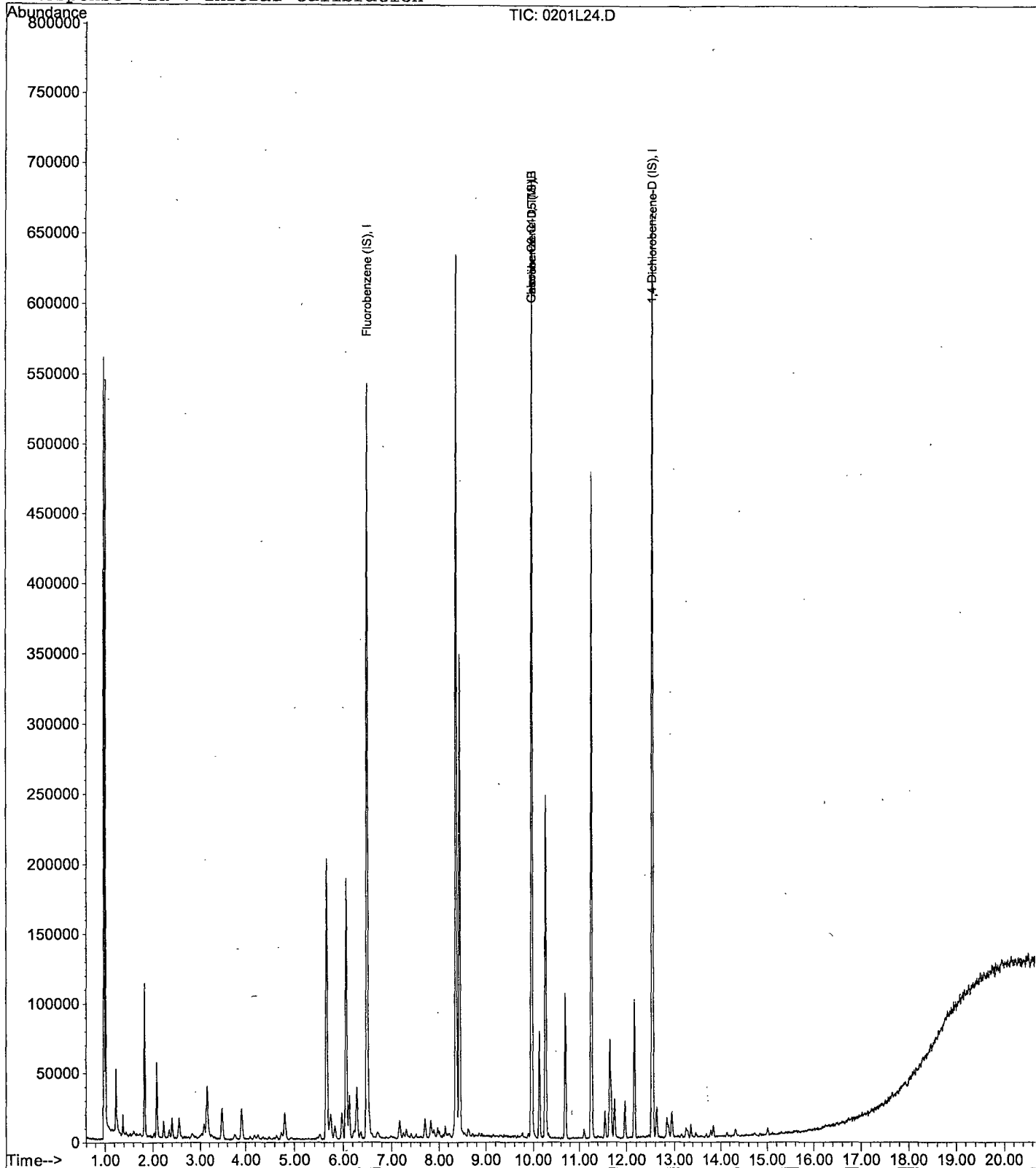
Data File : M:\LOKI\DATA\190201\0201L24.D  
Acq On : 1 Feb 19 21:46  
Sample : (SS)300ug/L GAS STD 02/01/19  
Misc : IS&S 11/8/18

Vial: 23  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 2 11:14 2019

Quant Results File: LGAS0201.RES

Method : M:\LOKI\DATA\190201\LGAS0201.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Sat Feb 02 11:09:59 2019  
Response via : Initial Calibration





VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 6  
Initial Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: water

SDG No: \_\_\_\_\_  
Initial Cal. Date: 02/11/19  
Instrument: Loki

Initials: DG

0211L03.D 0211L04.D 0211L05.D 0211L06.D 0211L07.D 0211L08.D 0211L09.D 0211L10.D 0211L12.D 0211L11.D

	Compound	1	2	3	4	5	6	7	8	9	.8A	Avg	%RSD	Type	r^2	Q	MRF
1	I Fluorobenzene (IS)																
2	SQ Dibromofluoromethane(S)	0.3607	0.5529	0.4249	0.3553	0.4609	0.4698	0.4429	0.3866		0.3288	0.42	17	SQ	0.994		
3	S 1,2-DCA-D4(S)	0.4179	0.6055	0.4741	0.4160	0.5258	0.5579	0.5127	0.4394	0.5038	0.3749	0.48	15	S			
4	I Chlorobenzene-D5 (IS)																
5	S Toluene-D8(S)	1.828	2.520	1.979	1.715	2.089	2.247	2.130	1.868	2.165	1.603	2.0	14	S			
6	S 4-Bromofluorobenzene(S)	0.7804	0.9806	0.7332	0.6368	0.7638	0.8373	0.7810	0.6939	0.7837	0.5948	0.76	14	S			
7	I 1,4-Dichlorobenzene-D (IS)																
8																	
9																	
10																	
11																	
12																	
13																	
14																	
15																	
16																	
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35																	

Data File : M:\LOKI\DATA\190211\0211L03.D Vial: 2  
 Acq On : 11 Feb 19 8:32 Operator: PM, DG, SV, CMM, KV  
 Sample : 0.3ug/L VOC STD 2/11/19 Inst : Loki  
 Misc : ISS 1/29/19 Multiplr: 1.00

Quant Time: Feb 12 12:50 2019 Quant Results File: LSUR211W.RES

Quant Method : M:\LOKI\DATA\190211\LSUR211W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Feb 12 09:25:44 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev (Min)
1) Fluorobenzene (IS)	6.50	96	390976	25.000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.96	117	291712	25.000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.53	152	144256	25.000	ppb	0.00
<b>System Monitoring Compounds</b>						
2) Dibromofluoromethane(S)	5.64	111	28205	4.670	ppb	0.00
Spiked Amount				25.000		
			Recovery	=		18.680%
3) 1,2-DCA-D4(S)	6.06	65	32679	4.328	ppb	0.00
Spiked Amount				25.000		
			Recovery	=		17.312%
5) Toluene-D8(S)	8.36	98	106678	4.539	ppb	0.00
Spiked Amount				25.000		
			Recovery	=		18.156%
6) 4-Bromofluorobenzene(S)	11.26	95	45529	5.144	ppb	0.00
Spiked Amount				25.000		
			Recovery	=		20.576%
<b>Target Compounds</b>						<b>Qvalue</b>

Quantitation Report

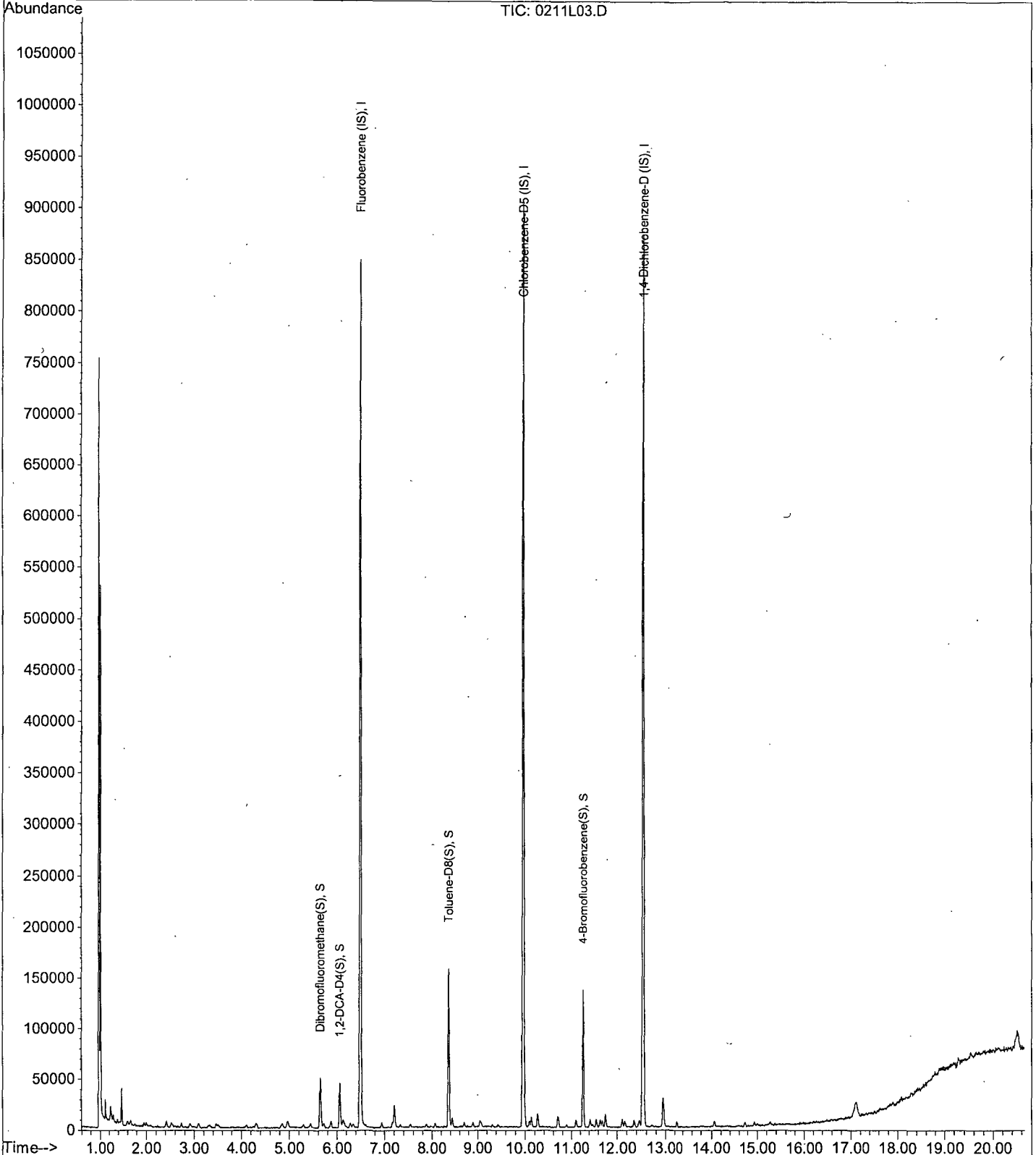
Data File : M:\LOKI\DATA\190211\0211L03.D  
Acq On : 11 Feb 19 8:32  
Sample : 0.3ug/L VOC STD 2/11/19  
Misc : ISS 1/29/19

Vial: 2  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 12 12:50 2019

Quant Results File: LSUR211W.RES

Method : M:\LOKI\DATA\190211\LSUR211W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Feb 12 09:25:44 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190211\0211L04.D Vial: 3  
 Acq On : 11 Feb 19 9:00 Operator: PM,DG,SV,CMM,KV  
 Sample : 0.5ug/L VOC STD 2/11/19 Inst : Loki  
 Misc : ISS 1/29/19 Multiplr: 1.00

Quant Time: Feb 12 12:50 2019 Quant Results File: LSUR211W.RES

Quant Method : M:\LOKI\DATA\190211\LSUR211W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Feb 12 09:25:44 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	253440	25.000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.96	117	196992	25.000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.53	152	90248	25.000	ppb	0.00
System Monitoring Compounds						
2) Dibromofluoromethane(S)	5.65	111	28023	6.584	ppb	0.00
Spiked Amount				25.000		
			Recovery	=	26.336%	
3) 1,2-DCA-D4(S)	6.06	65	30690	6.270	ppb	0.00
Spiked Amount				25.000		
			Recovery	=	25.080%	
5) Toluene-D8(S)	8.36	98	99274	6.254	ppb	0.00
Spiked Amount				25.000		
			Recovery	=	25.016%	
6) 4-Bromofluorobenzene(S)	11.26	95	38636	6.464	ppb	0.00
Spiked Amount				25.000		
			Recovery	=	25.856%	

Target Compounds Qvalue

Quantitation Report

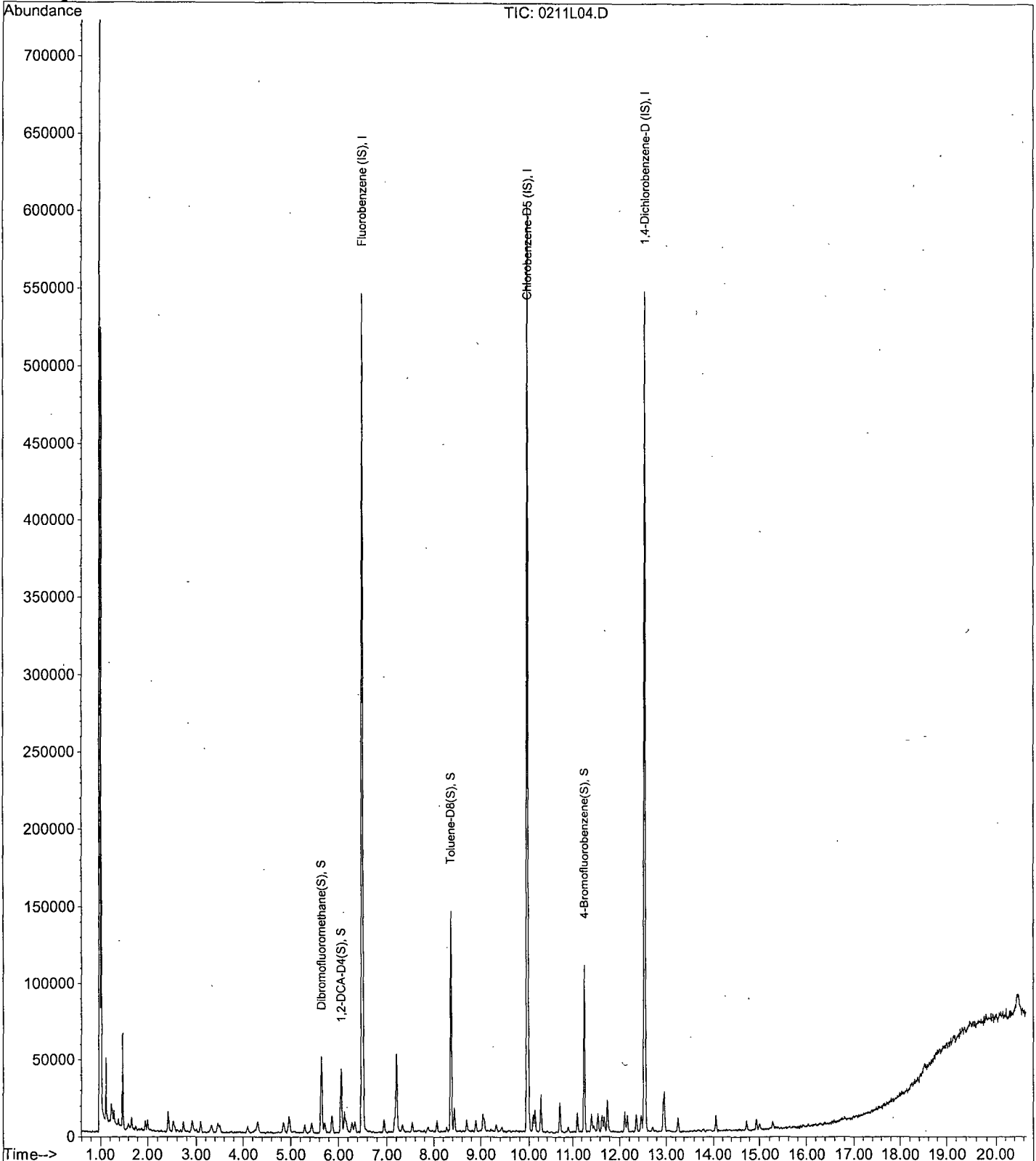
Data File : M:\LOKI\DATA\190211\0211L04.D  
Acq On : 11 Feb 19 9:00  
Sample : 0.5ug/L VOC STD 2/11/19  
Misc : ISS 1/29/19

Vial: 3  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 12 12:50 2019

Quant Results File: LSUR211W.RES

Method : M:\LOKI\DATA\190211\LSUR211W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Feb 12 09:25:44 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190211\0211L05.D Vial: 4  
 Acq On : 11 Feb 19 9:28 Operator: PM,DG,SV,CMM,KV  
 Sample : 1.0ug/L VOC STD 2/11/19 Inst : Loki  
 Misc : ISS 1/29/19 Multiplr: 1.00

Quant Time: Feb 12 12:50 2019 Quant Results File: LSUR211W.RES

Quant Method : M:\LOKI\DATA\190211\LSUR211W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Feb 12 09:25:44 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	269376	25.000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.96	117	203328	25.000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.53	152	96888	25.000	ppb	0.00
<b>System Monitoring Compounds</b>						
2) Dibromofluoromethane(S)	5.64	111	45784	9.597	ppb	0.00
Spiked Amount				25.000		
					Recovery = 38.388%	
3) 1,2-DCA-D4(S)	6.06	65	51080	9.819	ppb	0.00
Spiked Amount				25.000		
					Recovery = 39.276%	
5) Toluene-D8(S)	8.36	98	160985	9.826	ppb	0.00
Spiked Amount				25.000		
					Recovery = 39.304%	
6) 4-Bromofluorobenzene(S)	11.26	95	59629	9.665	ppb	0.00
Spiked Amount				25.000		
					Recovery = 38.660%	

Target Compounds Qvalue

Quantitation Report

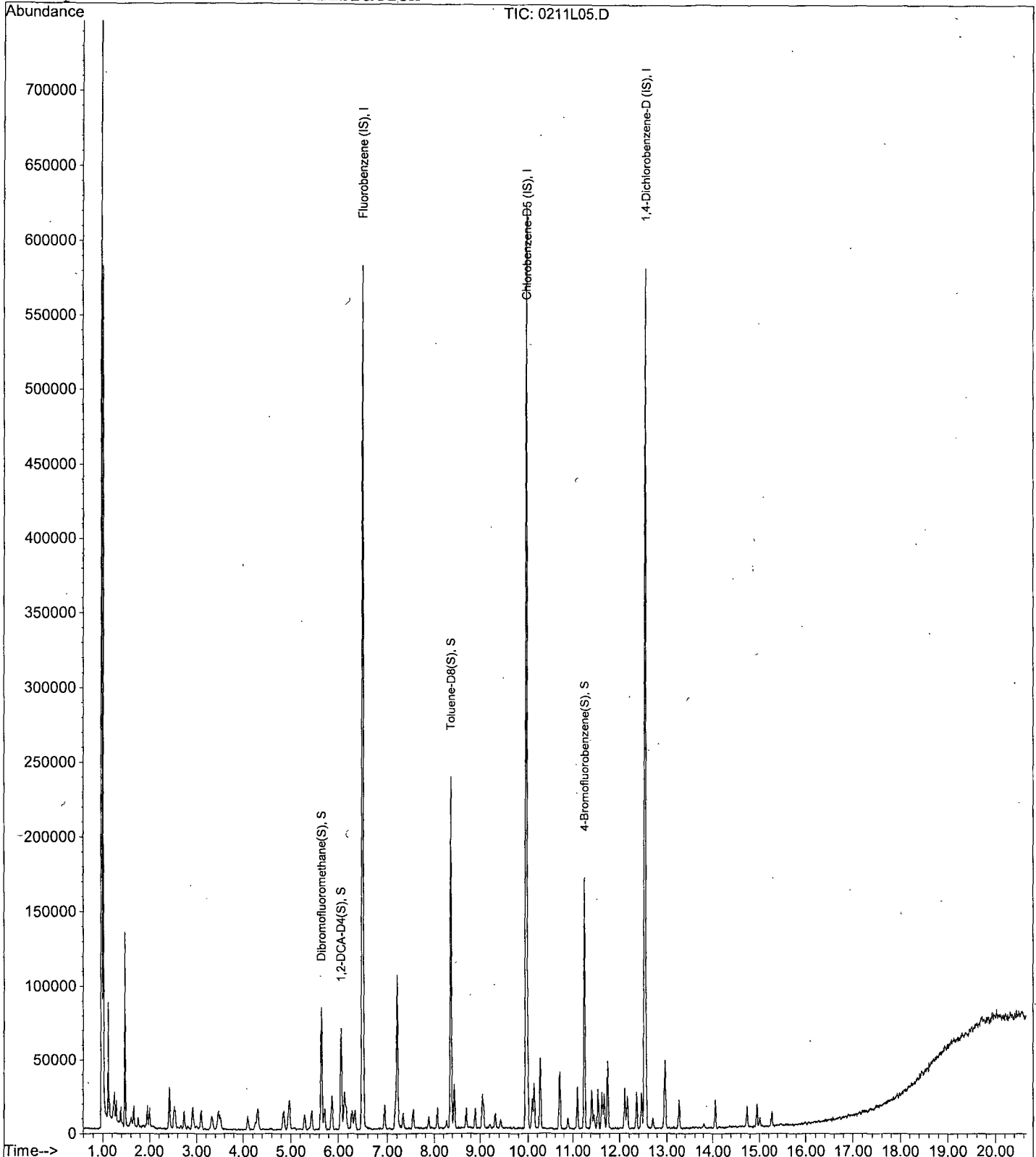
Data File : M:\LOKI\DATA\190211\0211L05.D  
Acq On : 11 Feb 19 9:28  
Sample : 1.0ug/L VOC STD 2/11/19  
Misc : ISS 1/29/19

Vial: 4  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 12 12:50 2019

Quant Results File: LSUR211W.RES

Method : M:\LOKI\DATA\190211\LSUR211W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Feb 12 09:25:44 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190211\0211L06.D  
 Acq On : 11 Feb 19 9:56  
 Sample : 2.0ug/L VOC STD 2/11/19  
 Misc : ISS 1/29/19

Vial: 5  
 Operator: PM, DG, SV, CMM, KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 12 12:50 2019

Quant Results File: LSUR211W.RES

Quant Method : M:\LOKI\DATA\190211\LSUR211W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Feb 12 09:25:44 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	315456	25.000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.96	117	234112	25.000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.54	152	115144	25.000	ppb	0.00
System Monitoring Compounds						
2) Dibromofluoromethane(S)	5.65	111	44829	8.175	ppb	0.00
Spiked Amount	25.000		Recovery	=	32.700%	
3) 1,2-DCA-D4(S)	6.06	65	52490	8.616	ppb	0.00
Spiked Amount	25.000		Recovery	=	34.464%	
5) Toluene-D8(S)	8.36	98	160555	8.511	ppb	0.00
Spiked Amount	25.000		Recovery	=	34.044%	
6) 4-Bromofluorobenzene(S)	11.26	95	59637	8.395	ppb	0.00
Spiked Amount	25.000		Recovery	=	33.580%	

Target Compounds

Qvalue



Quantitation Report

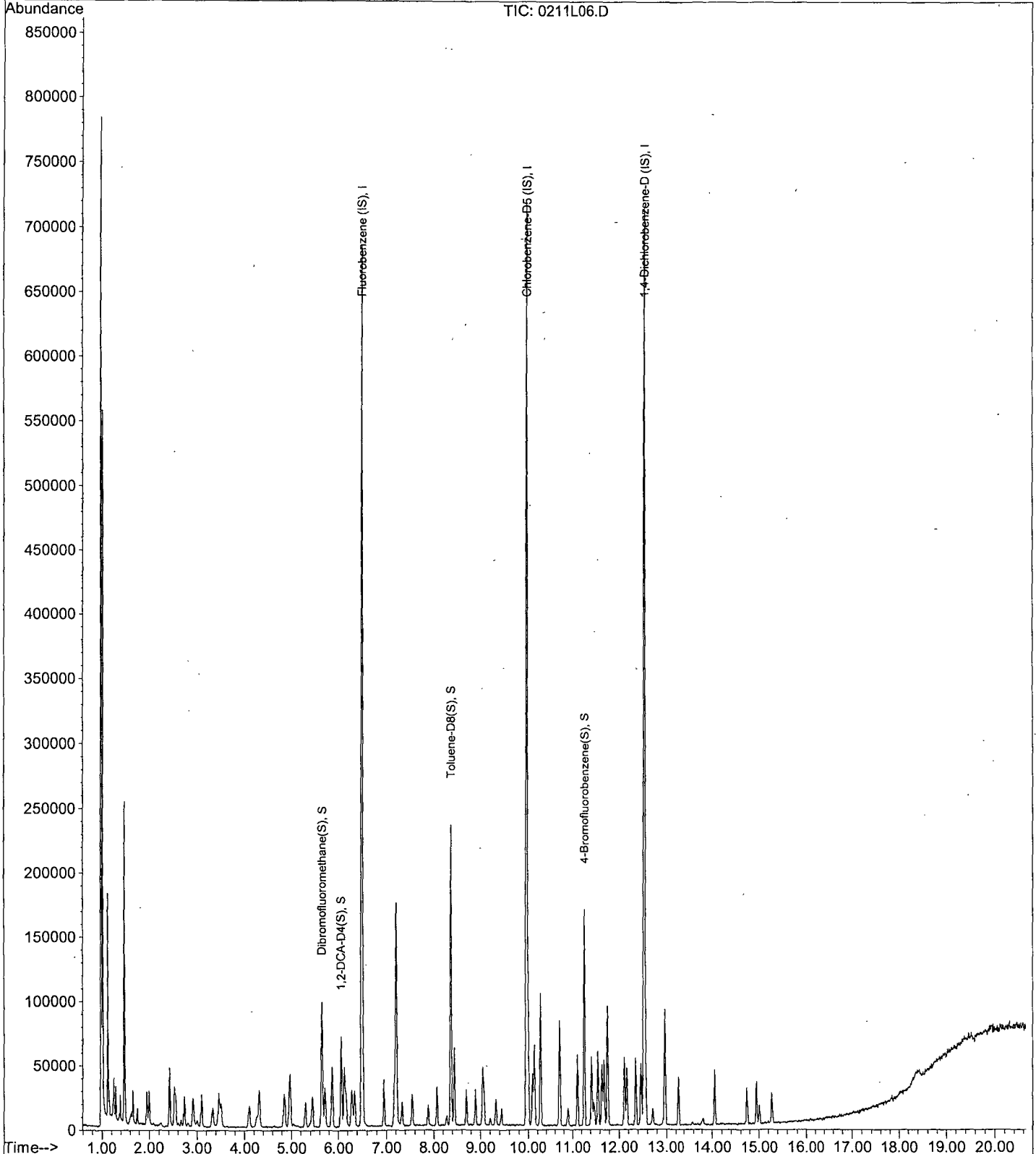
Data File : M:\LOKI\DATA\190211\0211L06.D  
Acq On : 11 Feb 19 9:56  
Sample : 2.0ug/L VOC STD 2/11/19  
Misc : ISS 1/29/19

Vial: 5  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 12 12:50 2019

Quant Results File: LSUR211W.RES

Method : M:\LOKI\DATA\190211\LSUR211W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Feb 12 09:25:44 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190211\0211L07.D Vial: 6  
 Acq On : 11 Feb 19 10:24 Operator: PM,DG,SV,CMM,KV  
 Sample : 5.0ug/L VOC STD 2/11/19 Inst : Loki  
 Misc : ISS 1/29/19 Multiplr: 1.00

Quant Time: Feb 12 12:50 2019 Quant Results File: LSUR211W.RES

Quant Method : M:\LOKI\DATA\190211\LSUR211W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Feb 12 09:25:44 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	263424	25.000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.96	117	207488	25.000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.53	152	106008	25.000	ppb	0.00
System Monitoring Compounds						
2) Dibromofluoromethane(S)	5.65	111	121402	25.509	ppb	0.00
Spiked Amount	25.000		Recovery	=	102.036%	
3) 1,2-DCA-D4(S)	6.06	65	138512	27.227	ppb	0.00
Spiked Amount	25.000		Recovery	=	108.908%	
5) Toluene-D8(S)	8.36	98	433365	25.921	ppb	0.00
Spiked Amount	25.000		Recovery	=	103.684%	
6) 4-Bromofluorobenzene(S)	11.26	95	158480	25.173	ppb	0.00
Spiked Amount	25.000		Recovery	=	100.692%	

Target Compounds Qvalue

Quantitation Report

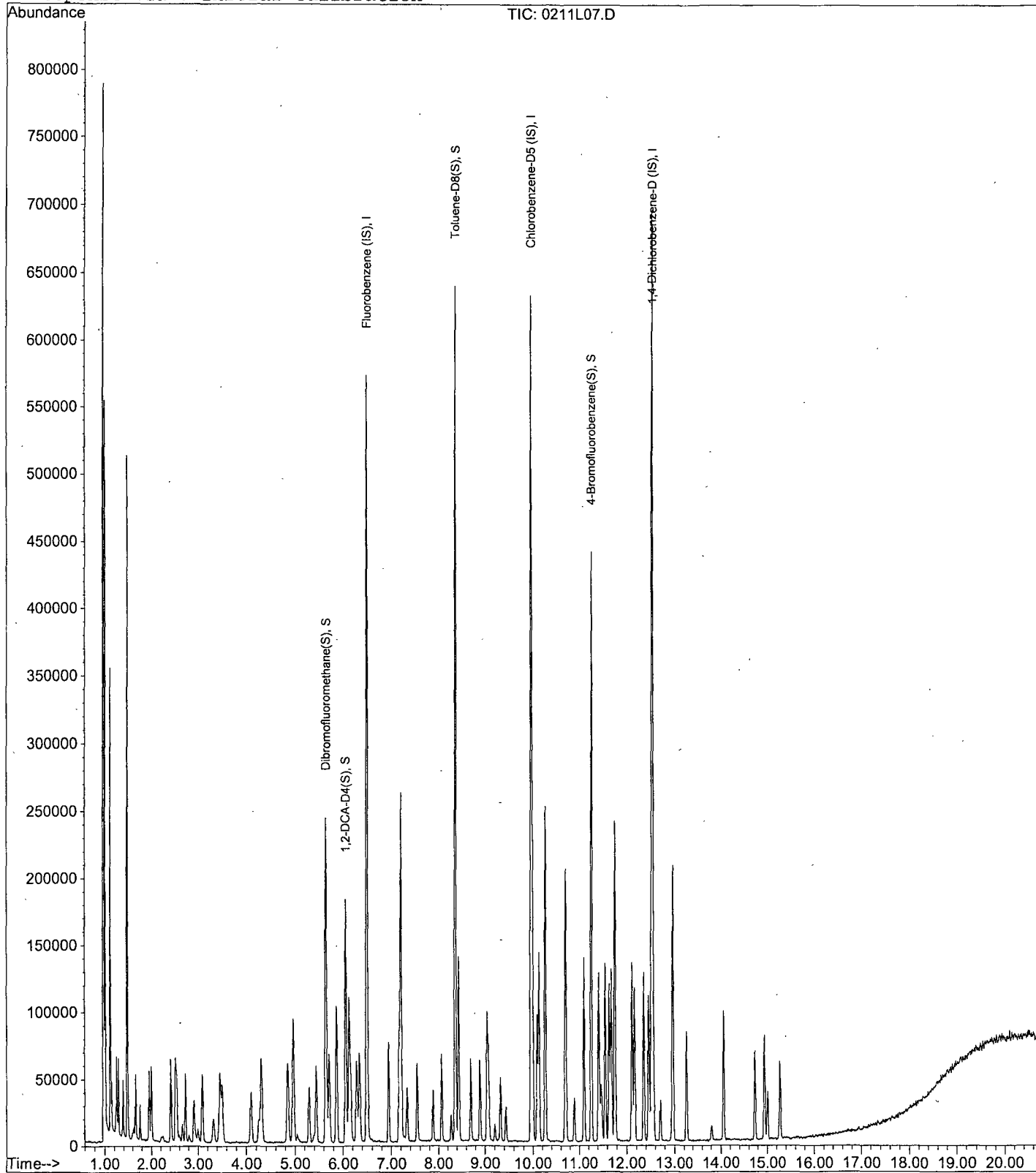
Data File : M:\LOKI\DATA\190211\0211L07.D  
Acq On : 11 Feb 19 10:24  
Sample : 5.0ug/L VOC STD 2/11/19  
Misc : ISS 1/29/19

Vial: 6  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 12 12:50 2019

Quant Results File: LSUR211W.RES

Method : M:\LOKI\DATA\190211\LSUR211W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Feb 12 09:25:44 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190211\0211L08.D Vial: 7  
 Acq On : 11 Feb 19 10:52 Operator: PM,DG,SV,CMM,KV  
 Sample : 10ug/L VOC STD 2/11/19 Inst : Loki  
 Misc : ISS 1/29/19 Multiplr: 1.00

Quant Time: Feb 12 12:50 2019 Quant Results File: LSUR211W.RES

Quant Method : M:\LOKI\DATA\190211\LSUR211W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Feb 12 09:25:44 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	248256	25.000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.96	117	187584	25.000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.53	152	101024	25.000	ppb	0.00
<b>System Monitoring Compounds</b>						
2) Dibromofluoromethane(S)	5.64	111	116635	26.035	ppb	0.00
Spiked Amount	25.000					
					Recovery = 104.140%	
3) 1,2-DCA-D4 (S)	6.06	65	138507	28.890	ppb	0.00
Spiked Amount	25.000					
					Recovery = 115.560%	
5) Toluene-D8(S)	8.36	98	421523	27.888	ppb	0.00
Spiked Amount	25.000					
					Recovery = 111.552%	
6) 4-Bromofluorobenzene(S)	11.26	95	157058	27.594	ppb	0.00
Spiked Amount	25.000					
					Recovery = 110.376%	

Target Compounds Qvalue

(#) = qualifier out of range (m) = manual integration

Quantitation Report

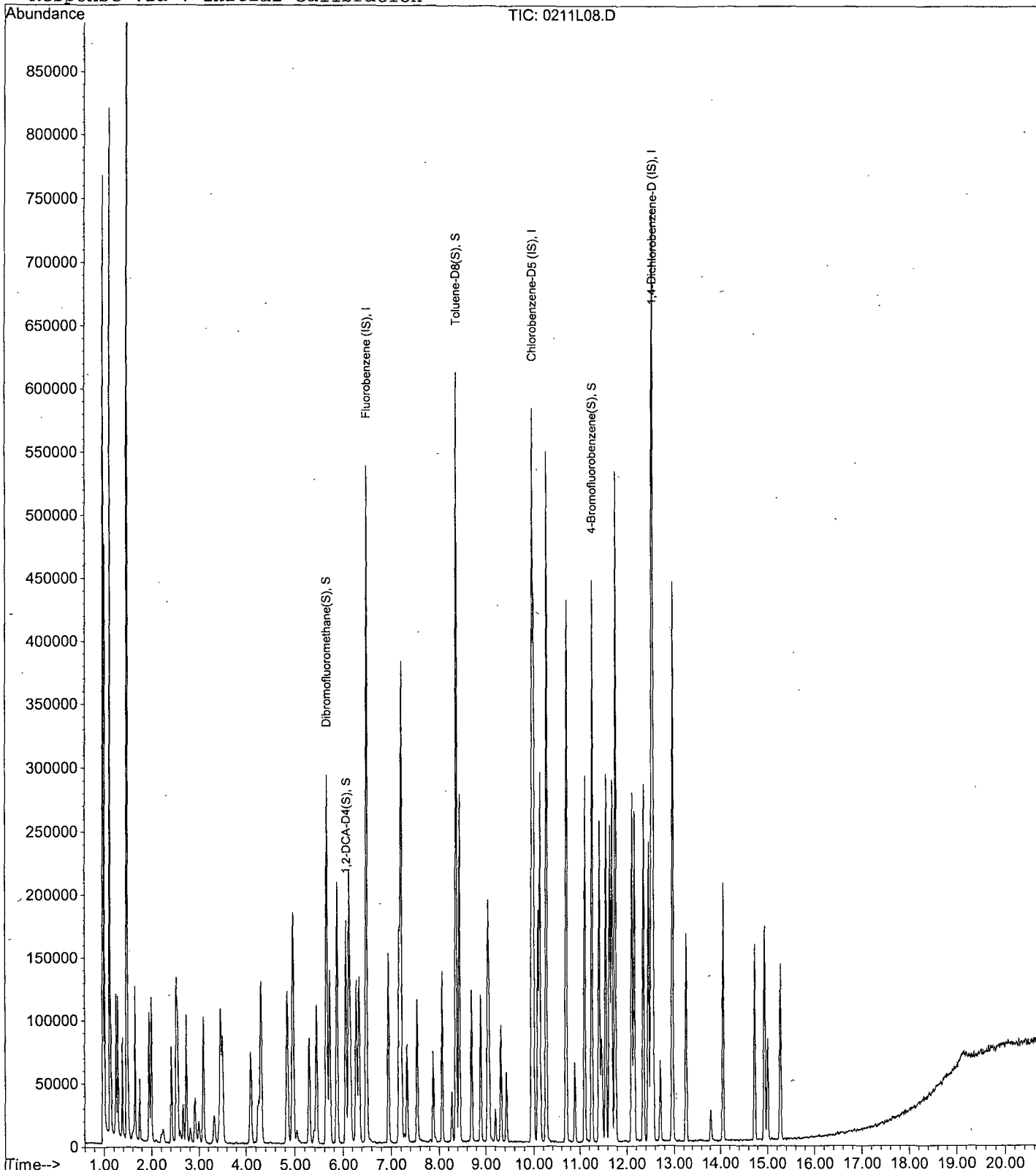
Data File : M:\LOKI\DATA\190211\0211L08.D  
Acq On : 11 Feb 19 10:52  
Sample : 10ug/L VOC STD 2/11/19  
Misc : ISS 1/29/19

Vial: 7  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 12 12:50 2019

Quant Results File: LSUR211W.RES

Method : M:\LOKI\DATA\190211\LSUR211W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Feb 12 09:25:44 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190211\0211L09.D Vial: 8  
 Acq On : 11 Feb 19 11:20 Operator: PM,DG,SV,CMM,KV  
 Sample : 20ug/L VOC STD 2/11/19 Inst : Loki  
 Misc : ISS 1/29/19 Multiplr: 1.00

Quant Time: Feb 12 12:50 2019 Quant Results File: LSUR211W.RES

Quant Method : M:\LOKI\DATA\190211\LSUR211W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Feb 12 09:25:44 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	266496	25.000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.96	117	213632	25.000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.53	152	114808	25.000	ppb	0.00
<b>System Monitoring Compounds</b>						
2) Dibromofluoromethane(S)	5.65	111	236073	53.969	ppb	0.00
Spiked Amount	25.000					
					Recovery = 215.876%	
3) 1,2-DCA-D4(S)	6.06	65	273282	53.100	ppb	0.00
Spiked Amount	25.000					
					Recovery = 212.400%	
5) Toluene-D8(S)	8.36	98	910086	52.871	ppb	0.00
Spiked Amount	25.000					
					Recovery = 211.484%	
6) 4-Bromofluorobenzene(S)	11.26	95	333710	51.482	ppb	0.00
Spiked Amount	25.000					
					Recovery = 205.928%	

Target Compounds Qvalue

Quantitation Report

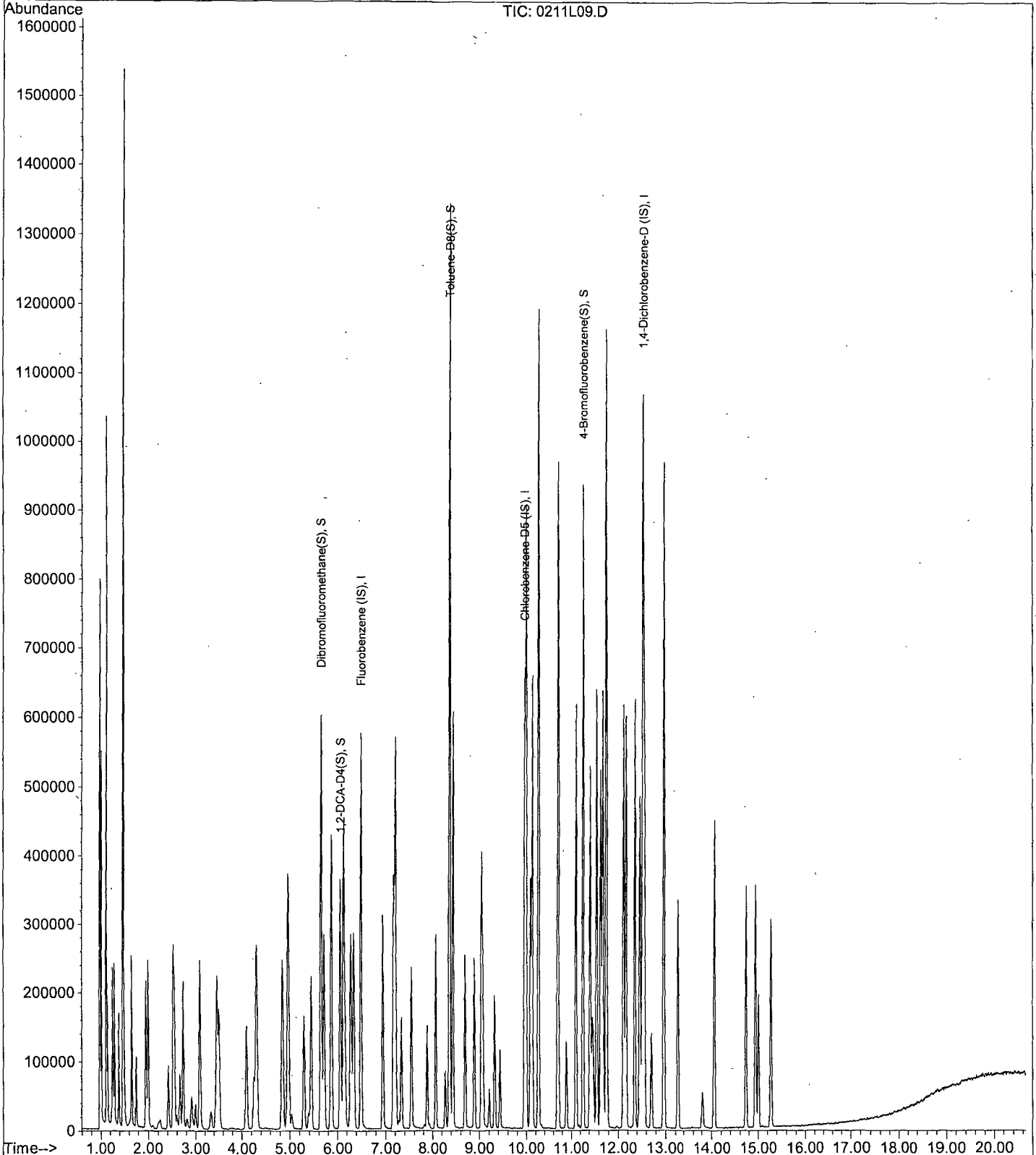
Data File : M:\LOKI\DATA\190211\0211L09.D  
Acq On : 11 Feb 19 11:20  
Sample : 20ug/L VOC STD 2/11/19  
Misc : ISS 1/29/19

Vial: 8  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 12 12:50 2019

Quant Results File: LSUR211W.RES

Method : M:\LOKI\DATA\190211\LSUR211W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Feb 12 09:25:44 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190211\0211L10.D Vial: 9  
 Acq On : 11 Feb 19 11:48 Operator: PM,DG,SV,CMM,KV  
 Sample : 40ug/L VOC STD 2/11/19 Inst : Loki  
 Misc : ISS 1/29/19 Multiplr: 1.00

Quant Time: Feb 12 12:50 2019 Quant Results File: LSUR211W.RES

Quant Method : M:\LOKI\DATA\190211\LSUR211W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Feb 12 09:25:44 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	317824	25.000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.96	117	248320	25.000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.53	152	132864	25.000	ppb	0.00
System Monitoring Compounds						
2) Dibromofluoromethane(S)	5.65	111	245711	45.567	ppb	0.00
Spiked Amount	25.000					
					Recovery = 182.268%	
3) 1,2-DCA-D4(S)	6.06	65	279296	45.504	ppb	0.00
Spiked Amount	25.000					
					Recovery = 182.016%	
5) Toluene-D8(S)	8.36	98	927589	46.360	ppb	0.00
Spiked Amount	25.000					
					Recovery = 185.440%	
6) 4-Bromofluorobenzene(S)	11.26	95	344642	45.741	ppb	0.00
Spiked Amount	25.000					
					Recovery = 182.964%	

Target Compounds Qvalue



Quantitation Report

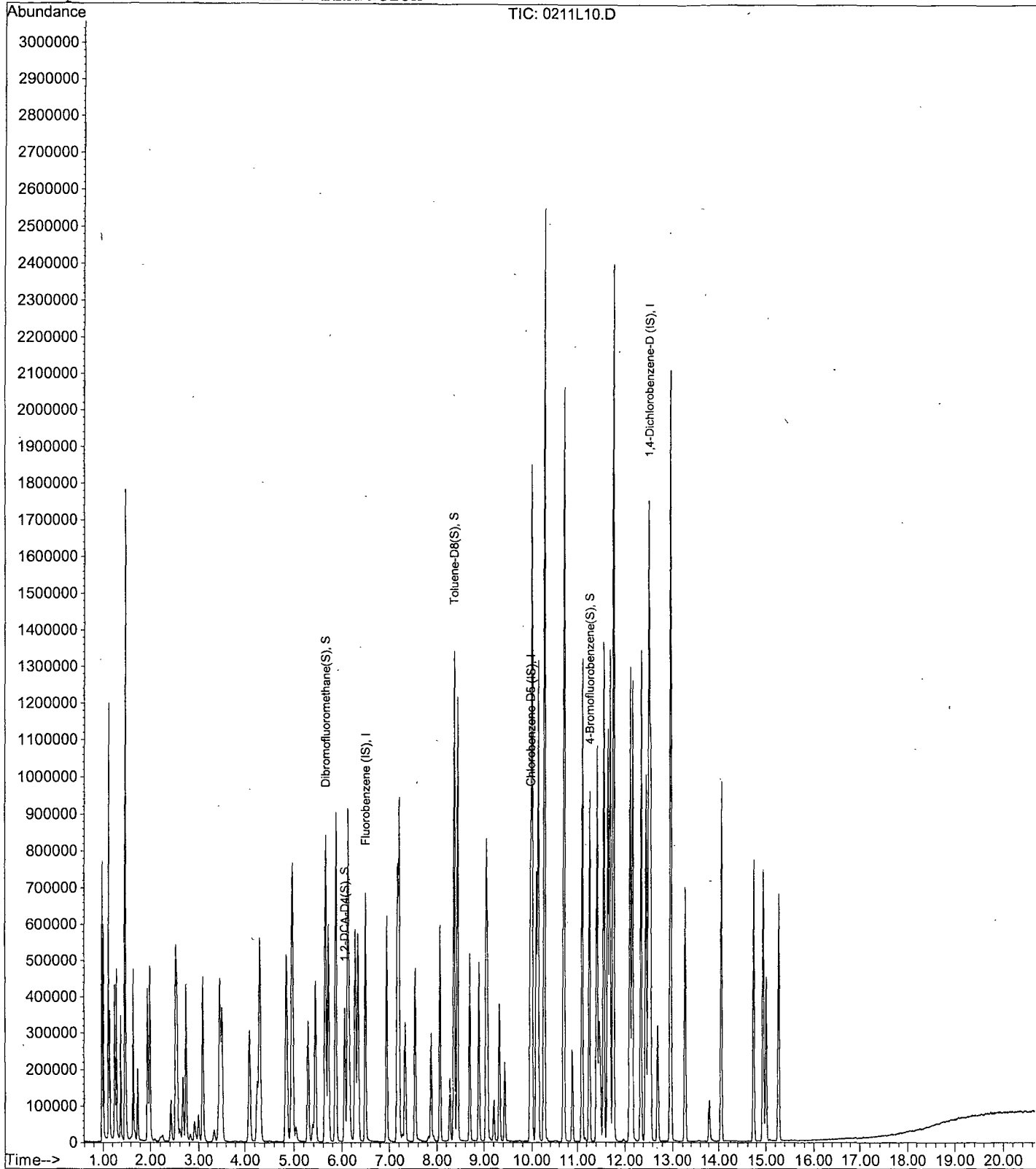
Data File : M:\LOKI\DATA\190211\0211L10.D  
Acq On : 11 Feb 19 11:48  
Sample : 40ug/L VOC STD 2/11/19  
Misc : ISS 1/29/19

Vial: 9  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1:00

Quant Time: Feb 12 12:50 2019

Quant Results File: LSUR211W.RES

Method : M:\LOKI\DATA\190211\LSUR211W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Feb 12 09:25:44 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190211\0211L11.D Vial: 10  
 Acq On : 11 Feb 19 12:16 Operator: PM,DG,SV,CMM,KV  
 Sample : 50ug/L VOC STD 2/11/19 Inst : Loki  
 Misc : ISS 1/29/19 Multiplr: 1.00

Quant Time: Feb 12 12:50 2019 Quant Results File: LSUR211W.RES

Quant Method : M:\LOKI\DATA\190211\LSUR211W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Feb 12 09:25:44 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	345280	25.000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.96	117	276032	25.000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.53	152	148992	25.000	ppb	0.00
<b>System Monitoring Compounds</b>						
2) Dibromofluoromethane(S)	5.65	111	454164	100.162	ppb	0.00
Spiked Amount	25.000					
					Recovery = 400.648%	
3) 1,2-DCA-D4(S)	6.06	65	517762	77.648	ppb	0.00
Spiked Amount	25.000					
					Recovery = 310.592%	
5) Toluene-D8(S)	8.36	98	1770113	79.587	ppb	0.00
Spiked Amount	25.000					
					Recovery = 318.348%	
6) 4-Bromofluorobenzene(S)	11.26	95	656711	78.409	ppb	0.00
Spiked Amount	25.000					
					Recovery = 313.636%	

Target Compounds Qvalue

Quantitation Report

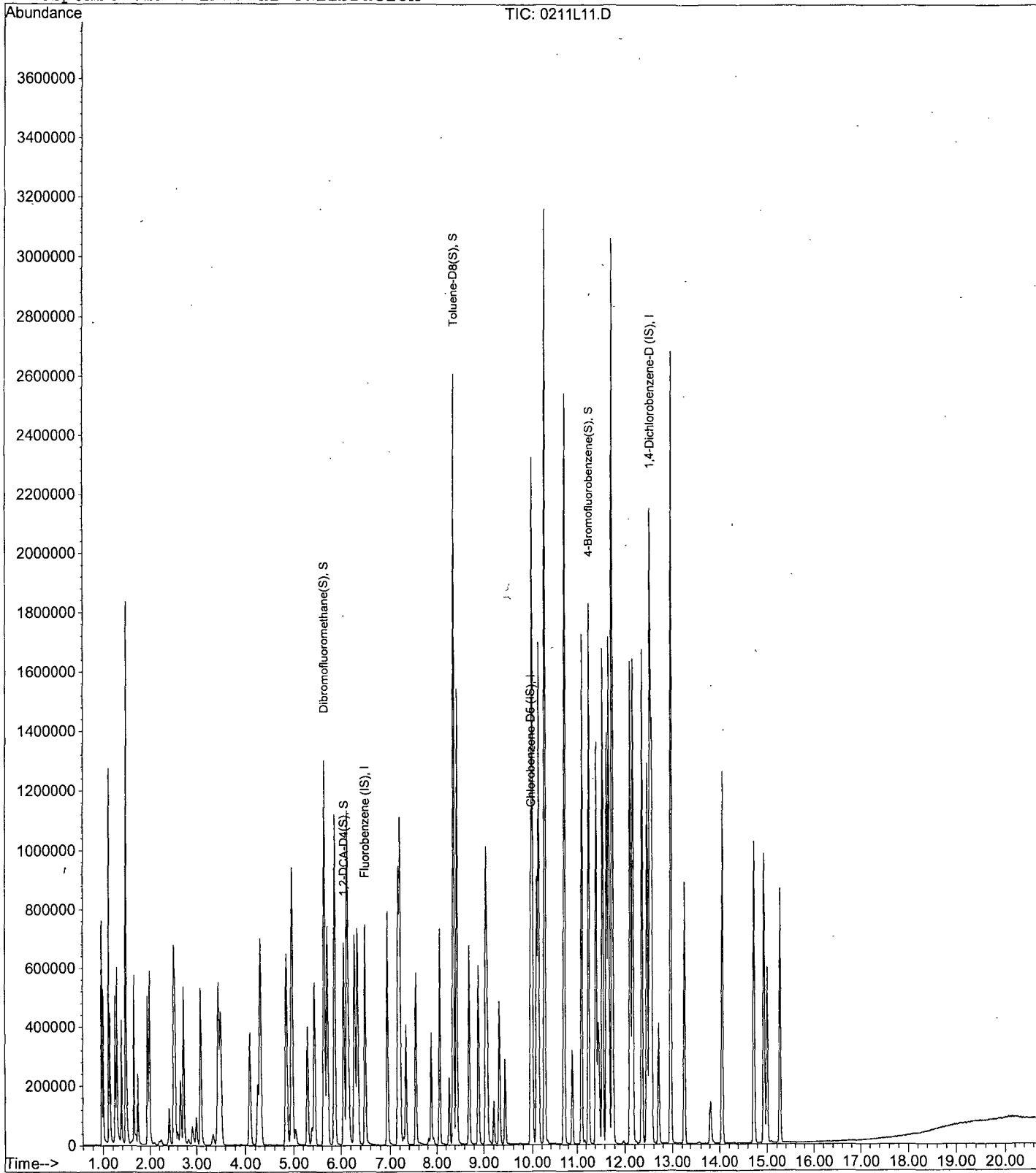
Data File : M:\LOKI\DATA\190211\0211L11.D  
Acq On : 11 Feb 19 12:16  
Sample : 50ug/L VOC STD 2/11/19  
Misc : ISS 1/29/19

Vial: 10  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 12 12:50 2019

Quant Results File: LSUR211W.RES

Method : M:\LOKI\DATA\190211\LSUR211W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Feb 12 09:25:44 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190211\0211L12.D  
 Acq On : 11 Feb 19 12:44  
 Sample : 100ug/L VOC STD 2/11/19  
 Misc : ISS 1/29/19

Vial: 11  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 12 12:50 2019

Quant Results File: LSUR211W.RES

Quant Method : M:\LOKI\DATA\190211\LSUR211W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Feb 12 09:25:44 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	269312	25.000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.97	117	214400	25.000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.53	152	124576	25.000	ppb	0.00
System Monitoring Compounds						
2) Dibromofluoromethane(S)	5.65	111	482133	-25.000	ppb	0.00
Spiked Amount	25.000					
					Recovery = -100.000%	
3) 1,2-DCA-D4(S)	6.06	65	542735	104.353	ppb	0.00
Spiked Amount	25.000					
					Recovery = 417.412%	
5) Toluene-D8(S)	8.36	98	1856690	107.477	ppb	0.00
Spiked Amount	25.000					
					Recovery = 429.908%	
6) 4-Bromofluorobenzene(S)	11.26	95	672110	103.316	ppb	0.00
Spiked Amount	25.000					
					Recovery = 413.264%	

Target Compounds

Qvalue

Quantitation Report

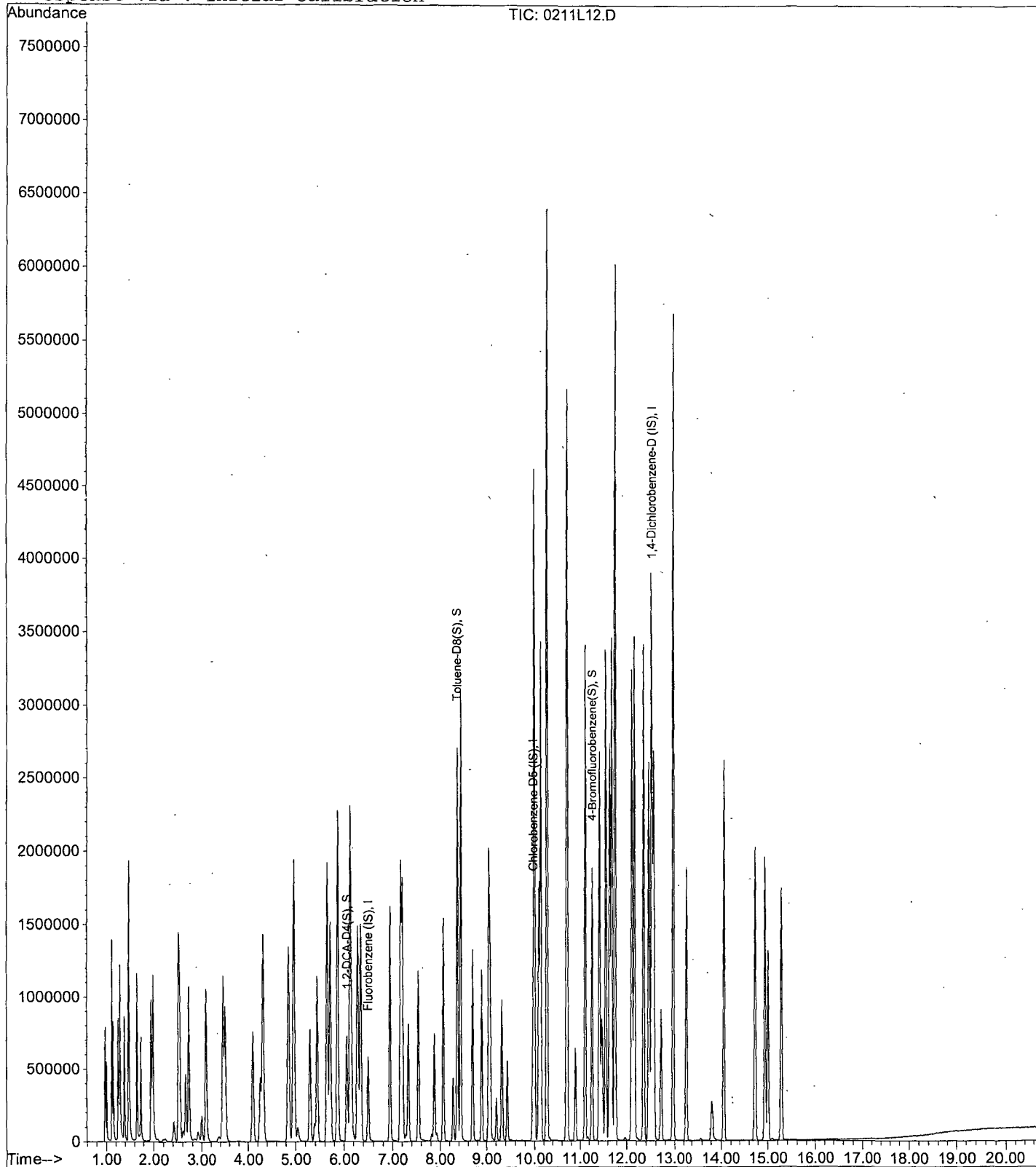
Data File : M:\LOKI\DATA\190211\0211L12.D  
Acq On : 11 Feb 19 12:44  
Sample : 100ug/L VOC STD 2/11/19  
Misc : ISS 1/29/19

Vial: 11  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 12 12:50 2019

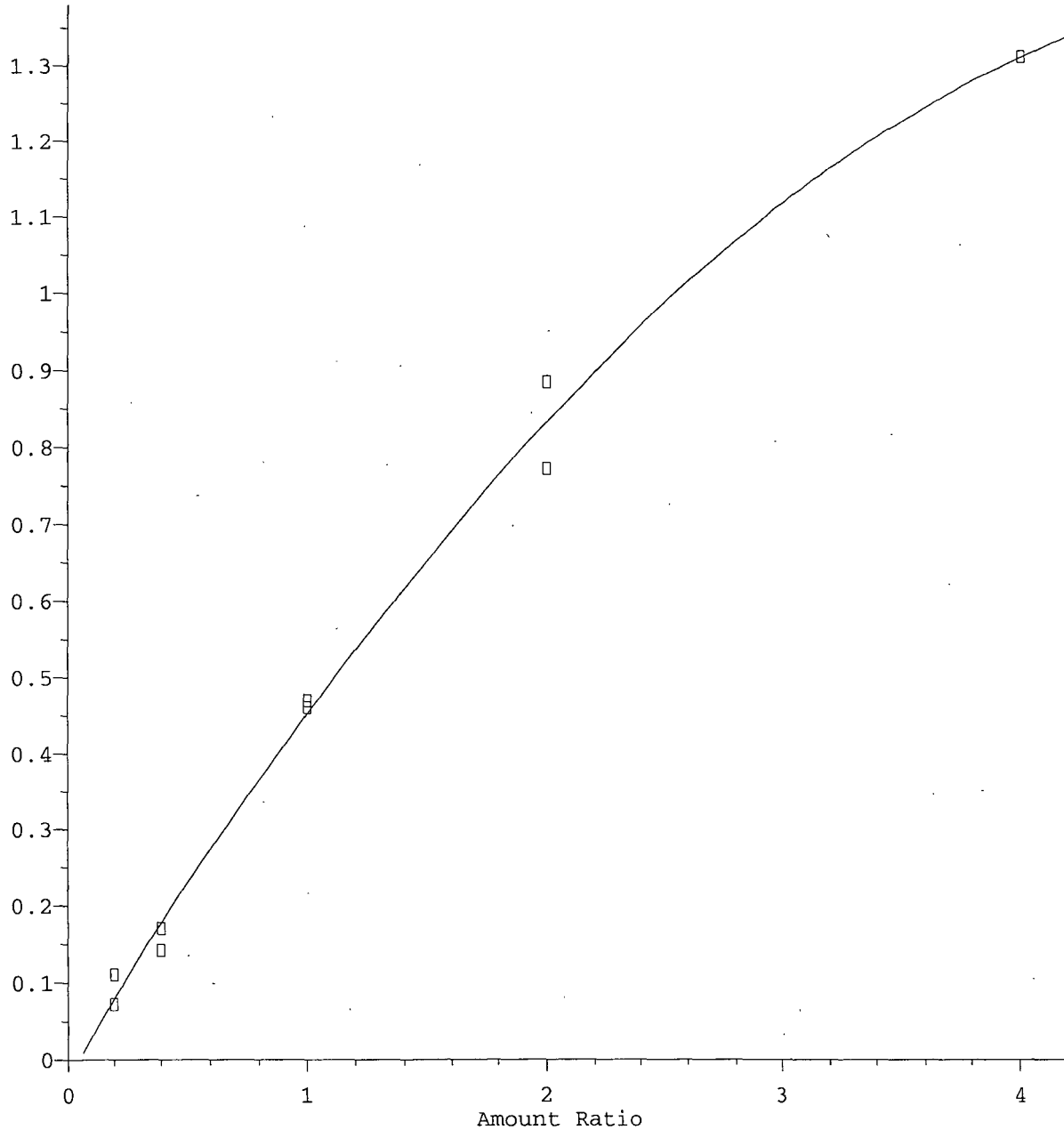
Quant Results File: LSUR211W.RES

Method : M:\LOKI\DATA\190211\LSUR211W.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Tue Feb 12 09:25:44 2019  
Response via : Initial Calibration



Dibromofluoromethane (S)

Response Ratio



$R = -4.72e-002 A^2 + 5.23e-001 A - 2.40e-002$   
Curve Fit: Quadratic

Method Name: M:\LOKI\DATA\190211\LSUR211W.M  
Calibration Table Last Updated: Tue Feb 12 09:25:44 2019

VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 7

Continuing Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: water

SDG No: \_\_\_\_\_  
Date Analyzed: 02/12/19  
Instrument: Loki  
Initial Cal. Date: 02/11/19  
Data File: 0212L09.D

	Compound	MEAN	CCRF	%D	%Drift
1	I Fluorobenzene (IS)	ISTD			I
2	TMHB Gasoline C6-C10	3.678	1.691	54	TMHBL 75*
3	I Chlorobenzene-D5 (IS)	ISTD			I
4	I 1,4-Dichlorobenzene-D (IS)	ISTD			I
5					
6					
7					
8					
9					
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32					
33					
34					
35					
36					
37					
38					
39					
40	Average			54.0	

VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 7

Continuing Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: water

SDG No: \_\_\_\_\_  
Date Analyzed: 02/12/19  
Instrument: Loki  
Initial Cal. Date: 02/11/19  
Data File: 0212L09.D

	Compound	MEAN	CCRF	%D	%Drift
1	I Fluorobenzene (IS)	ISTD			I
2	SQ Dibromofluoromethane(S)	0.4203	0.4676	11	SQ 3.6
3	S 1,2-DCA-D4(S)	0.4828	0.5233	8.4	S
4	I Chlorobenzene-D5 (IS)	ISTD			I
5	S Toluene-D8(S)	2.014	2.133	5.9	S
6	S 4-Bromofluorobenzene(S)	0.7586	0.7419	2.2	S
7	I 1,4-Dichlorobenzene-D (IS)	ISTD			I
8					
9					
10					
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36					
37					
38					
39					
40	Average			6.9	



Data File : M:\LOKI\DATA\190211\0212L09.D Vial: 8  
 Acq On : 12 Feb 19 11:08 Operator: PM,DG,SV,CMM,KV  
 Sample : 190212A CCV 300ug/L Inst : Loki  
 Misc : ISS 1/29/19 Multiplr: 1.00

Quant Time: Feb 13 11:16 2019 Quant Results File: LGAS0201.RES

Quant Method : M:\LOKI\DATA\190211\LGAS0201.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 11:09:59 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev (Min)
1) Fluorobenzene (IS)	6.50	TIC	525349	25.000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.96	TIC	590320	25.000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.53	TIC	553947	25.000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Gasoline C6-C10	8.36	TIC	10657618m	526.473	ppb	100

Data File : M:\LOKI\DATA\190211\0212L09.D Vial: 8  
 Acq On : 12 Feb 19 11:08 Operator: PM,DG,SV,CMM,KV  
 Sample : 190212A CCV 300ug/L Inst : Loki  
 Misc : ISS 1/29/19 Multiplr: 1.00

Quant Time: Feb 13 11:28 2019 Quant Results File: LSUR211W.RES

Quant Method : M:\LOKI\DATA\190211\LSUR211W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Feb 12 09:25:44 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	244864	25.000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.96	117	198784	25.000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.53	152	96160	25.000	ppb	0.00
System Monitoring Compounds						
2) Dibromofluoromethane(S)	5.65	111	114500	25.905	ppb	0.00
Spiked Amount				25.000		
				Recovery	=	103.620%
3) 1,2-DCA-D4(S)	6.06	65	128138	27.097	ppb	0.00
Spiked Amount				25.000		
				Recovery	=	108.388%
5) Toluene-D8(S)	8.36	98	424087	26.477	ppb	0.00
Spiked Amount				25.000		
				Recovery	=	105.908%
6) 4-Bromofluorobenzene(S)	11.26	95	147473	24.450	ppb	0.00
Spiked Amount				25.000		
				Recovery	=	97.800%

Target Compounds Qvalue

(#) = qualifier out of range (m) = manual integration

Quantitation Report

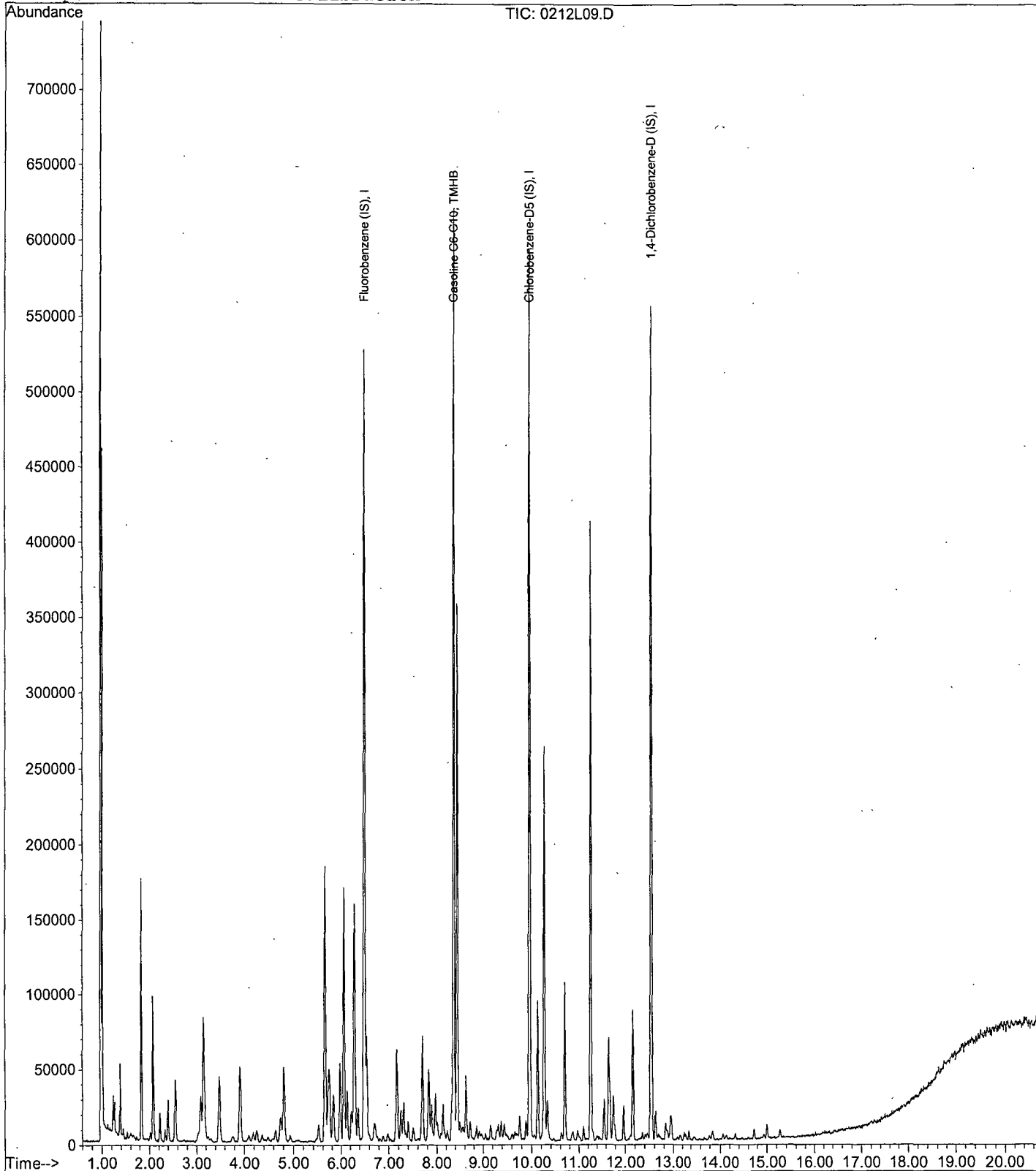
Data File : M:\LOKI\DATA\190211\0212L09.D  
Acq On : 12 Feb 19 11:08  
Sample : 190212A CCV 300ug/L  
Misc : ISS 1/29/19

Vial: 8  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 13 11:16 2019

Quant Results File: LGAS0201.RES

Method : M:\LOKI\DATA\190211\LGAS0201.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Sat Feb 02 11:09:59 2019  
Response via : Initial Calibration



VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 7

Ending Continuing Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: water

SDG No: \_\_\_\_\_  
Date Analyzed: 02/12/19  
Instrument: Loki  
Initial Cal. Date: 02/11/19  
Data File: 0212L27.D

	Compound	MEAN	CCRF	%D	%Drift
1	I Fluorobenzene (IS)	ISTD			I
2	TMHB Gasoline C6-C10	3.678	1.656	55	TMHBL 68*
3	I Chlorobenzene-D5 (IS)	ISTD			I
4	I 1,4-Dichlorobenzene-D (IS)	ISTD			I
5					
6					
7					
8					
9					
10					
11					
12					
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32					
33					
34					
35					
36					
37					
38					
39					
40	Average			55.0	

VOLATILE ORGANIC ANALYSIS  
VOLATILE ORGANIC COMPOUNDS

Form 7

Ending Continuing Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: water

SDG No: \_\_\_\_\_  
Date Analyzed: 02/12/19  
Instrument: Loki  
Initial Cal. Date: 02/11/19  
Data File: 0212L27.D

	Compound	MEAN	CCRF	%D	%Drift
1	I Fluorobenzene (IS)	ISTD			I
2	SQ Dibromofluoromethane(S)	0.4203	0.4745	13	SQ 5.2
3	S 1,2-DCA-D4(S)	0.4828	0.5389	12	S
4	I Chlorobenzene-D5 (IS)	ISTD			I
5	S Toluene-D8(S)	2.014	2.220	10	S
6	S 4-Bromofluorobenzene(S)	0.7586	0.7685	1.3	S
7	I 1,4-Dichlorobenzene-D (IS)	ISTD			I
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
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25					
26					
27					
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30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40	Average			9.1	

Data File : M:\LOKI\DATA\190211\0212L27.D  
 Acq On : 12 Feb 19 19:34  
 Sample : Ending CCV 300ug/L 02/12/19  
 Misc : ISS 1/29/19

Vial: 26  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 13 11:14 2019

Quant Results File: LGAS0201.RES

Quant Method : M:\LOKI\DATA\190211\LGAS0201.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 11:09:59 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	503103	25.000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.96	TIC	565300	25.000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.53	TIC	536041	25.000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Gasoline C6-C10	8.36	TIC	9995889m	504.390	ppb	100

(#) = qualifier out of range (m) = manual integration

Data File : M:\LOKI\DATA\190211\0212L27.D Vial: 26  
 Acq On : 12 Feb 19 19:34 Operator: PM,DG,SV,CMM,KV  
 Sample : Ending CCV 300ug/L 02/12/19 Inst : Loki  
 Misc : ISS 1/29/19 Multiplr: 1.00

Quant Time: Feb 13 11:28 2019 Quant Results File: LSUR211W.RES

Quant Method : M:\LOKI\DATA\190211\LSUR211W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Feb 12 09:25:44 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	235520	25.000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.96	117	188800	25.000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.53	152	93272	25.000	ppb	0.00

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Dibromofluoromethane(S)	5.65	111	111753	26.310	ppb	0.00
Spiked Amount				25.000		
				Recovery	=	105.240%
3) 1,2-DCA-D4(S)	6.06	65	126919	27.904	ppb	0.00
Spiked Amount				25.000		
				Recovery	=	111.616%
5) Toluene-D8(S)	8.36	98	419196	27.556	ppb	0.00
Spiked Amount				25.000		
				Recovery	=	110.224%
6) 4-Bromofluorobenzene(S)	11.26	95	145085	25.326	ppb	0.00
Spiked Amount				25.000		
				Recovery	=	101.304%

Target Compounds Qvalue

Quantitation Report

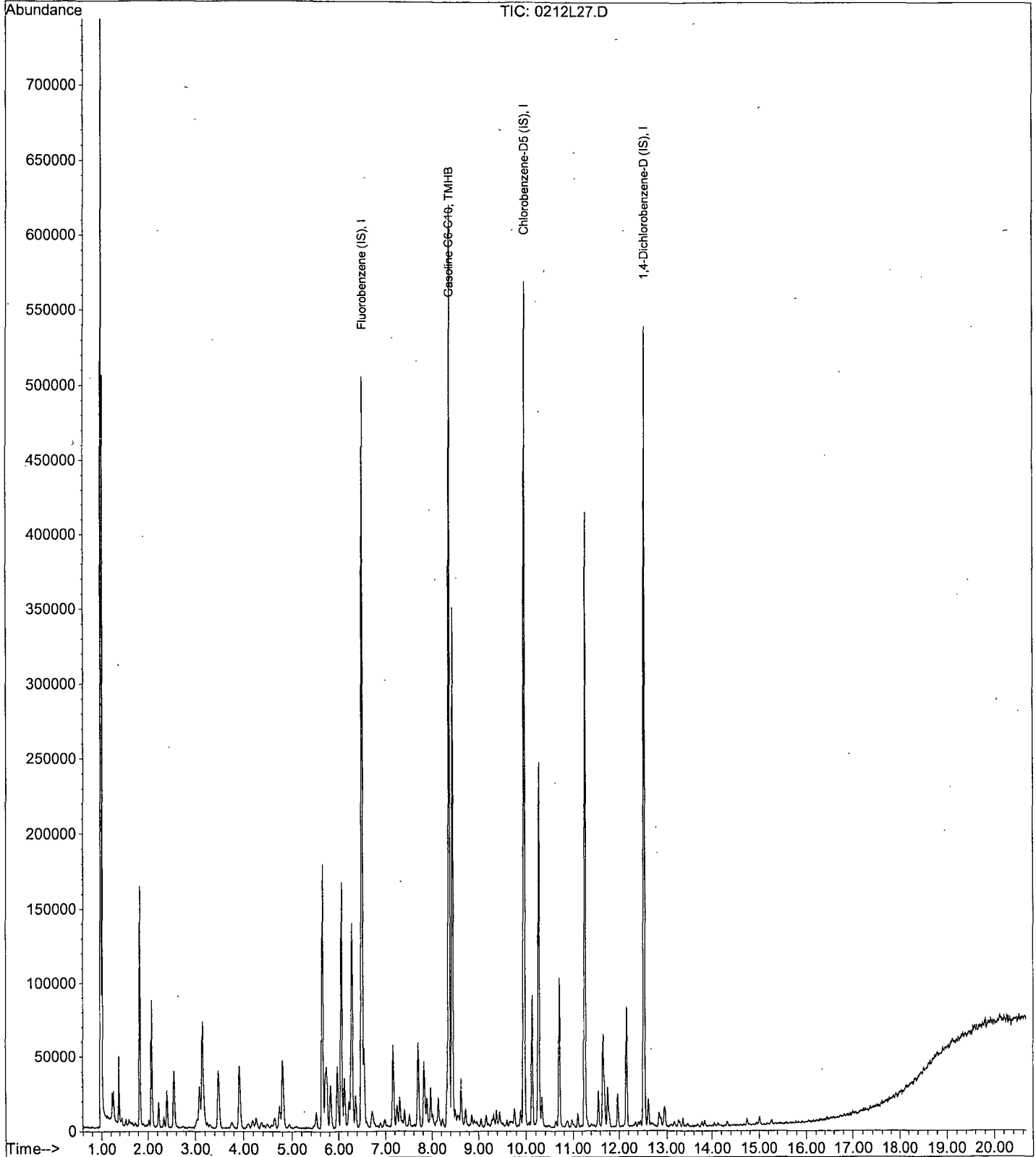
Data File : M:\LOKI\DATA\190211\0212L27.D  
Acq On : 12 Feb 19 19:34  
Sample : Ending CCV 300ug/L 02/12/19  
Misc : ISS 1/29/19

Vial: 26  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 13 11:14 2019

Quant Results File: LGAS0201.RES

Method : M:\LOKI\DATA\190211\LGAS0201.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Sat Feb 02 11:09:59 2019  
Response via : Initial Calibration





**ORGANICS**  
**Raw Data**

Data File : M:\LOKI\DATA\190211\0212L21.D  
 Acq On : 12 Feb 19 16:45  
 Sample : AZ86199W01  
 Misc : ISS 1/29/19

Vial: 20  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 22 10:11 2019

Quant Results File: LGAS0201.RES

Quant Method : M:\LOKI\DATA\190211\LGAS0201.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 11:09:59 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	533424	25.000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.96	TIC	589095	25.000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.53	TIC	550857	25.000	ppb	0.00

System Monitoring Compounds

Target Compounds

Qvalue

(#) = qualifier out of range (m) = manual integration

Data File : M:\LOKI\DATA\190211\0212L21.D  
 Acq On : 12 Feb 19 16:45  
 Sample : AZ86199W01  
 Misc : ISS 1/29/19

Vial: 20  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 22 10:18 2019

Quant Results File: LSUR211W.RES

Quant Method : M:\LOKI\DATA\190211\LSUR211W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Feb 12 09:25:44 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	246272	25.000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.96	117	197504	25.000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.53	152	93784	25.000	ppb	0.00

System Monitoring Compounds

2) Dibromofluoromethane(S)	5.65	111	111703	25.083	ppb	0.00
Spiked Amount				25.000		
				Recovery	=	100.332%
3) 1,2-DCA-D4(S)	6.06	65	126923	26.687	ppb	0.00
Spiked Amount				25.000		
				Recovery	=	106.748%
5) Toluene-D8(S)	8.36	98	396425	24.911	ppb	0.00
Spiked Amount				25.000		
				Recovery	=	99.644%
6) 4-Bromofluorobenzene(S)	11.26	95	138129	23.049	ppb	0.00
Spiked Amount				25.000		
				Recovery	=	92.196%

Target Compounds

Qvalue

Quantitation Report

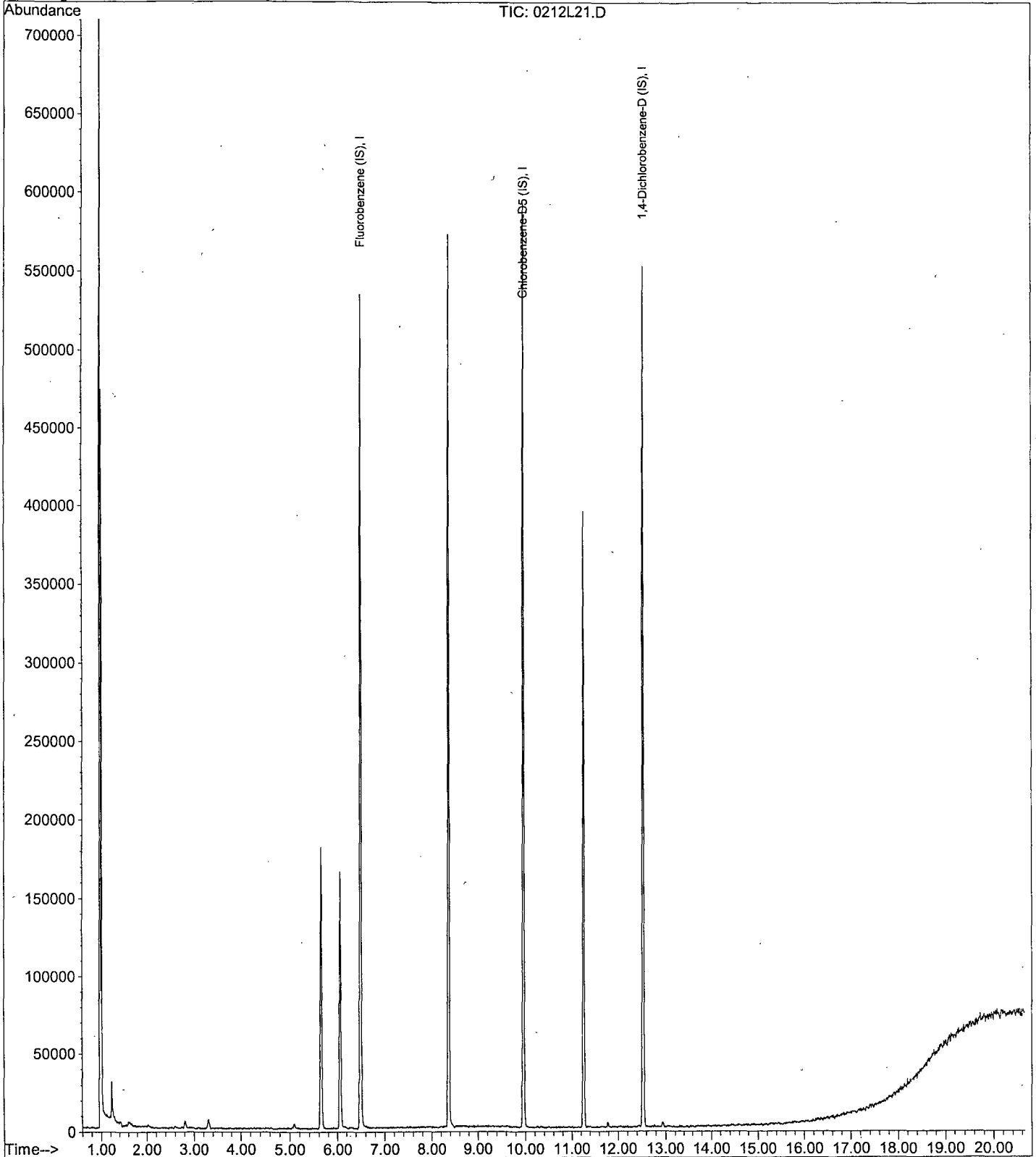
Data File : M:\LOKI\DATA\190211\0212L21.D  
Acq On : 12 Feb 19 16:45  
Sample : AZ86199W01  
Misc : ISS 1/29/19

Vial: 20  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 22 10:11 2019

Quant Results File: LGAS0201.RES

Method : M:\LOKI\DATA\190211\LGAS0201.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Sat Feb 02 11:09:59 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190211\0212L22.D Vial: 21  
 Acq On : 12 Feb 19 17:13 Operator: PM,DG,SV,CMM,KV  
 Sample : AZ86200W01 Inst : Loki  
 Misc : ISS 1/29/19 Multiplr: 1.00

Quant Time: Feb 22 10:11 2019 Quant Results File: LGAS0201.RES

Quant Method : M:\LOKI\DATA\190211\LGAS0201.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 11:09:59 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	488137	25.000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.96	TIC	555449	25.000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.53	TIC	515563	25.000	ppb	0.00

System Monitoring Compounds

Target Compounds Qvalue

Data File : M:\LOKI\DATA\190211\0212L22.D  
 Acq On : 12 Feb 19 17:13  
 Sample : AZ86200W01  
 Misc : ISS 1/29/19

Vial: 21  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 22 10:18 2019

Quant Results File: LSUR211W.RES

Quant Method : M:\LOKI\DATA\190211\LSUR211W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Feb 12 09:25:44 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	228096	25.000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.96	117	185088	25.000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.53	152	85576	25.000	ppb	0.00

System Monitoring Compounds

2) Dibromofluoromethane(S)	5.65	111	110488	26.895	ppb	0.00
Spiked Amount				25.000		
				Recovery	=	107.580%
3) 1,2-DCA-D4(S)	6.06	65	126131	28.634	ppb	0.00
Spiked Amount				25.000		
				Recovery	=	114.536%
5) Toluene-D8(S)	8.36	98	394226	26.434	ppb	0.00
Spiked Amount				25.000		
				Recovery	=	105.736%
6) 4-Bromofluorobenzene(S)	11.26	95	137034	24.401	ppb	0.00
Spiked Amount				25.000		
				Recovery	=	97.604%

Target Compounds

Qvalue

Quantitation Report

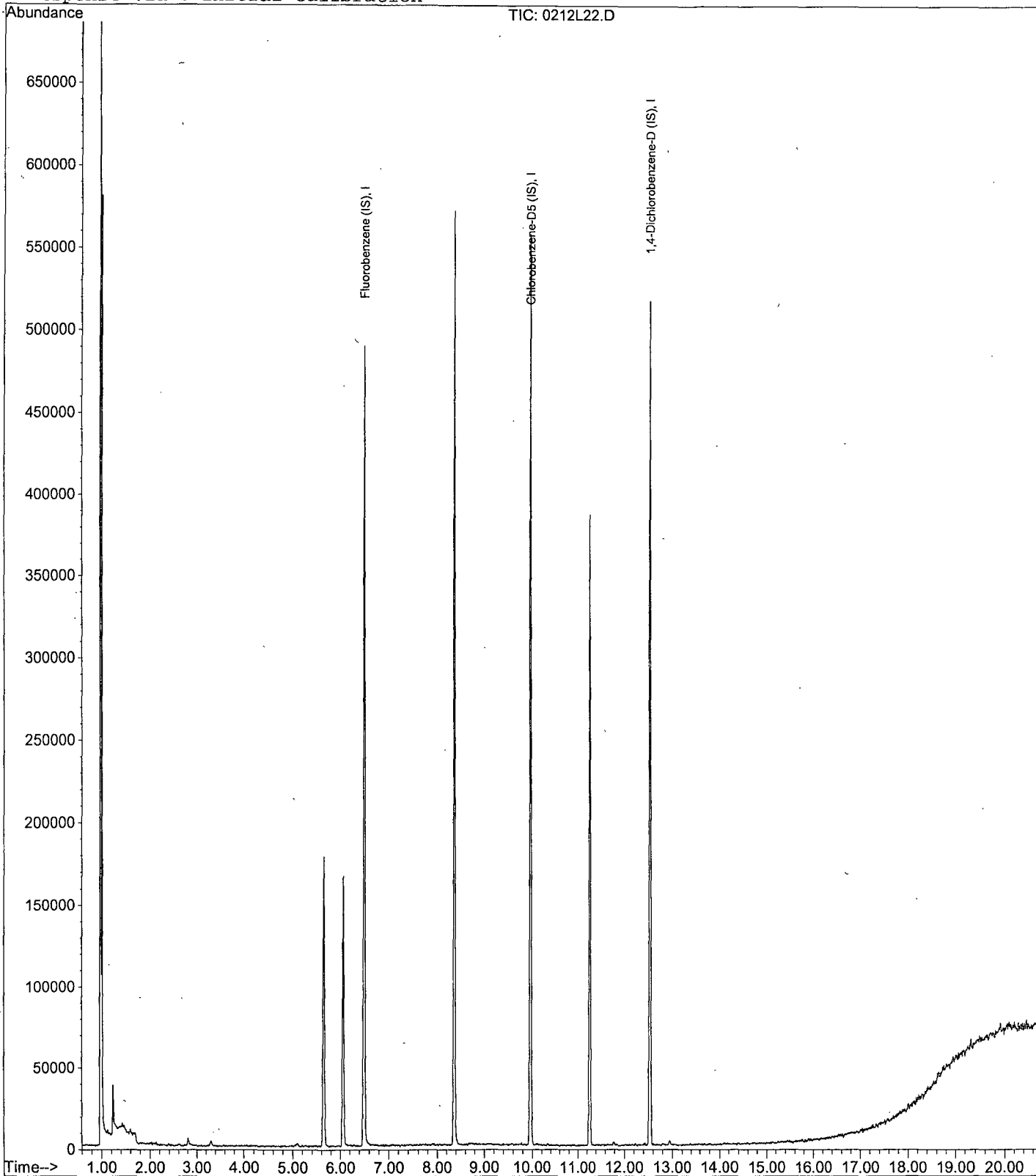
Data File : M:\LOKI\DATA\190211\0212L22.D  
Acq On : 12 Feb 19 17:13  
Sample : AZ86200W01  
Misc : ISS 1/29/19

Vial: 21  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 22 10:11 2019

Quant Results File: LGAS0201.RES

Method : M:\LOKI\DATA\190211\LGAS0201.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Sat Feb 02 11:09:59 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190211\0212L15.D  
 Acq On : 12 Feb 19 13:56  
 Sample : 190212A BLK  
 Misc : ISS 1/29/19

Vial: 14  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 22 10:07 2019

Quant Results File: LGAS0201.RES

Quant Method : M:\LOKI\DATA\190211\LGAS0201.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 11:09:59 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	514679	25.000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.96	TIC	551632	25.000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.53	TIC	534625	25.000	ppb	0.00

System Monitoring Compounds

Target Compounds Qvalue

(#) = qualifier out of range (m) = manual integration



Data File : M:\LOKI\DATA\190211\0212L15.D  
 Acq On : 12 Feb 19 13:56  
 Sample : 190212A BLK  
 Misc : ISS 1/29/19

Vial: 14  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 22 10:23 2019

Quant Results File: LSUR211W.RES

Quant Method : M:\LOKI\DATA\190211\LSUR211W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Feb 12 09:25:44 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	242368	25.000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.96	117	181568	25.000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.53	152	90616	25.000	ppb	0.00

System Monitoring Compounds

2) Dibromofluoromethane(S)	5.64	111	108197	24.666	ppb	0.00
Spiked Amount				25.000		
			Recovery	=	98.664%	
3) 1,2-DCA-D4(S)	6.06	65	128786	27.515	ppb	0.00
Spiked Amount				25.000		
			Recovery	=	110.060%	
5) Toluene-D8(S)	8.36	98	399158	27.284	ppb	0.00
Spiked Amount				25.000		
			Recovery	=	109.136%	
6) 4-Bromofluorobenzene(S)	11.26	95	136575	24.790	ppb	0.00
Spiked Amount				25.000		
			Recovery	=	99.160%	

Target Compounds

Qvalue

Quantitation Report

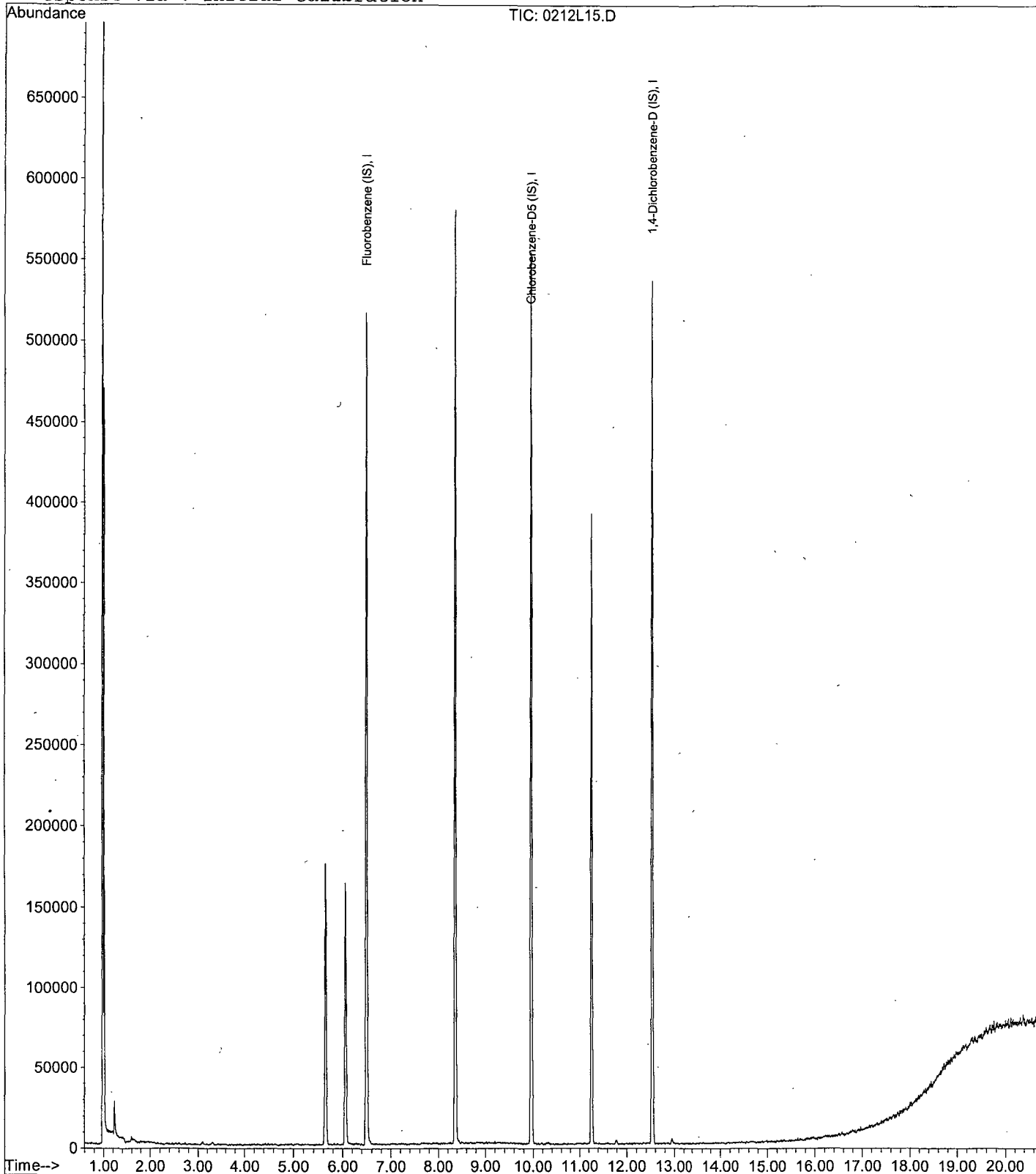
Data File : M:\LOKI\DATA\190211\0212L15.D  
Acq On : 12 Feb 19 13:56  
Sample : 190212A BLK  
Misc : ISS 1/29/19

Vial: 14  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 22 10:07 2019

Quant Results File: LGAS0201.RES

Method : M:\LOKI\DATA\190211\LGAS0201.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Sat Feb 02 11:09:59 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190211\0212L10.D  
Acq On : 12 Feb 19 11:36  
Sample : 190212A LCS 300ug/L  
Misc : ISS 1/29/19

Vial: 9  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 22 10:25 2019

Quant Results File: LGAS0201.RES

Quant Method : M:\LOKI\DATA\190211\LGAS0201.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Sat Feb 02 11:09:59 2019  
Response via : Initial Calibration  
DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	571848	25.000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.96	TIC	646595	25.000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.53	TIC	622147	25.000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Gasoline C6-C10	9.96	TIC	10636323m	437.417	ppb	100

(#) = qualifier out of range (m) = manual integration

Data File : M:\LOKI\DATA\190211\0212L10.D  
 Acq On : 12 Feb 19 11:36  
 Sample : 190212A LCS 300ug/L  
 Misc : ISS 1/29/19

Vial: 9  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 22 10:18 2019

Quant Results File: LSUR211W.RES

Quant Method : M:\LOKI\DATA\190211\LSUR211W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Feb 12 09:25:44 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	269248	25.000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.96	117	216512	25.000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.53	152	107480	25.000	ppb	0.00

System Monitoring Compounds

2) Dibromofluoromethane(S)	5.65	111	113074	23.139	ppb	0.00
Spiked Amount				25.000		
			Recovery			= 92.556%
3) 1,2-DCA-D4(S)	6.06	65	130309	25.061	ppb	0.00
Spiked Amount				25.000		
			Recovery			= 100.244%
5) Toluene-D8(S)	8.36	98	416409	23.869	ppb	0.00
Spiked Amount				25.000		
			Recovery			= 95.476%
6) 4-Bromofluorobenzene(S)	11.26	95	147165	22.401	ppb	0.00
Spiked Amount				25.000		
			Recovery			= 89.604%

Target Compounds

Qvalue

(#) = qualifier out of range (m) = manual integration

Quantitation Report

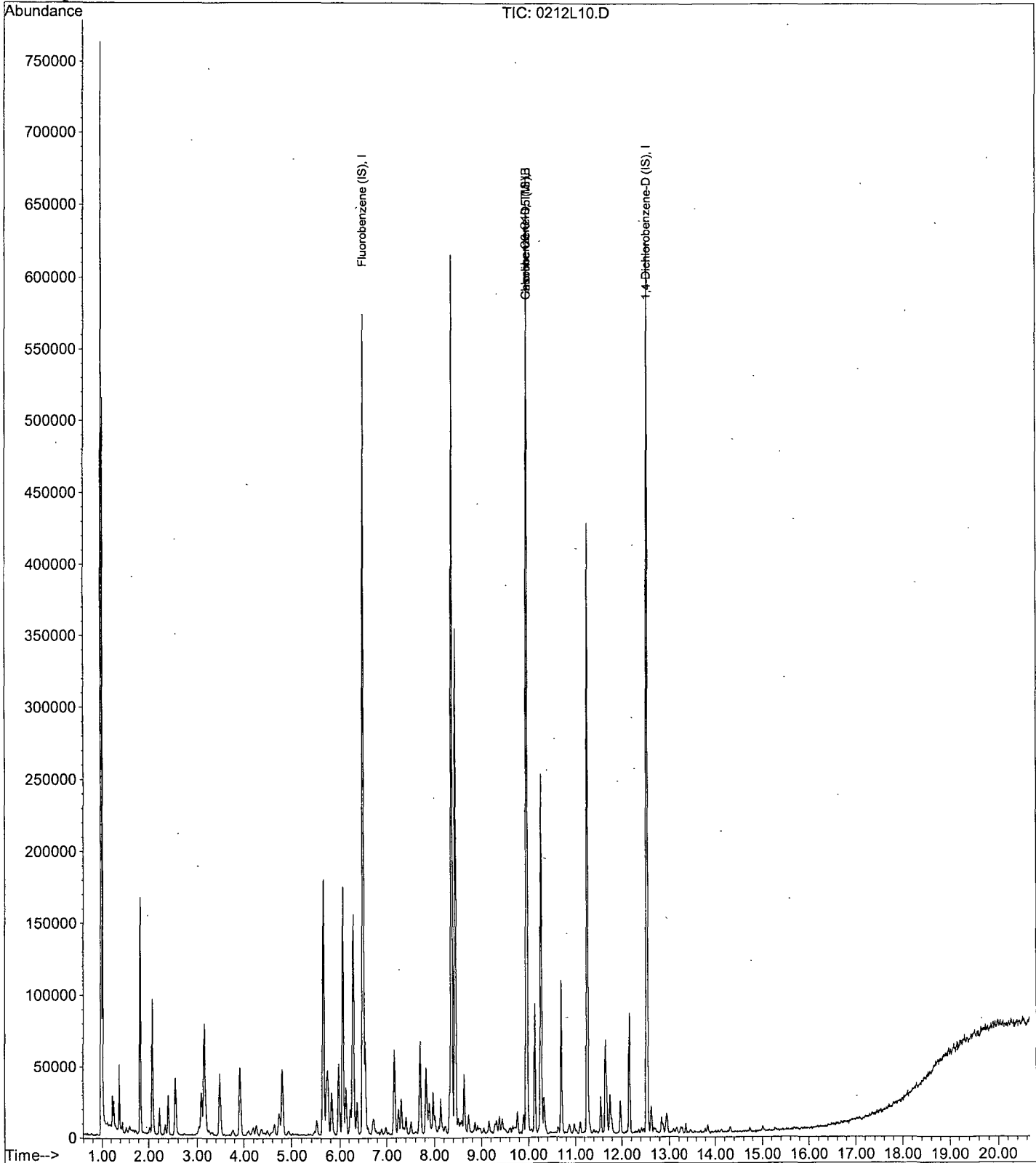
Data File : M:\LOKI\DATA\190211\0212L10.D  
Acq On : 12 Feb 19 11:36  
Sample : 190212A LCS 300ug/L  
Misc : ISS 1/29/19

Vial: 9  
Operator: PM, DG, SV, CMM, KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 22 10:25 2019

Quant Results File: LGAS0201.RES

Method : M:\LOKI\DATA\190211\LGAS0201.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Sat Feb 02 11:09:59 2019  
Response via : Initial Calibration



Data File : M:\LOKI\DATA\190211\0212L11.D Vial: 10  
 Acq On : 12 Feb 19 12:04 Operator: PM, DG, SV, CMM, KV  
 Sample : 190212A LCSD 300ug/L Inst : Loki  
 Misc : ISS 1/29/19 Multiplr: 1.00

Quant Time: Feb 22 10:26 2019 Quant Results File: LGAS0201.RES

Quant Method : M:\LOKI\DATA\190211\LGAS0201.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Sat Feb 02 11:09:59 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	TIC	694714	25.000	ppb	0.00
3) Chlorobenzene-D5 (IS)	9.96	TIC	787437	25.000	ppb	0.00
4) 1,4-Dichlorobenzene-D (IS)	12.53	TIC	761243	25.000	ppb	0.00

System Monitoring Compounds

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Gasoline C6-C10	9.96	TIC	10698078m	268.438	ppb	100

(#) = qualifier out of range (m) = manual integration

Data File : M:\LOKI\DATA\190211\0212L11.D  
 Acq On : 12 Feb 19 12:04  
 Sample : 190212A LCSD 300ug/L  
 Misc : ISS 1/29/19

Vial: 10  
 Operator: PM,DG,SV,CMM,KV  
 Inst : Loki  
 Multiplr: 1.00

Quant Time: Feb 22 10:18 2019

Quant Results File: LSUR211W.RES

Quant Method : M:\LOKI\DATA\190211\LSUR211W.M (RTE Integrator)  
 Title : METHOD 8260B  
 Last Update : Tue Feb 12 09:25:44 2019  
 Response via : Initial Calibration  
 DataAcq Meth : L8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene (IS)	6.50	96	326592	25.000	ppb	0.00
4) Chlorobenzene-D5 (IS)	9.96	117	262336	25.000	ppb	0.00
7) 1,4-Dichlorobenzene-D (IS)	12.53	152	129600	25.000	ppb	0.00

System Monitoring Compounds

2) Dibromofluoromethane(S)	5.65	111	110186	18.497	ppb	0.00
Spiked Amount	25.000		Recovery	=	73.988%	
3) 1,2-DCA-D4(S)	6.06	65	127655	20.240	ppb	0.00
Spiked Amount	25.000		Recovery	=	80.960%	
5) Toluene-D8(S)	8.36	98	408849	19.342	ppb	0.00
Spiked Amount	25.000		Recovery	=	77.368%	
6) 4-Bromofluorobenzene(S)	11.26	95	146446	18.398	ppb	0.00
Spiked Amount	25.000		Recovery	=	73.592%	

Target Compounds

Qvalue

(#) = qualifier out of range (m) = manual integration

Quantitation Report

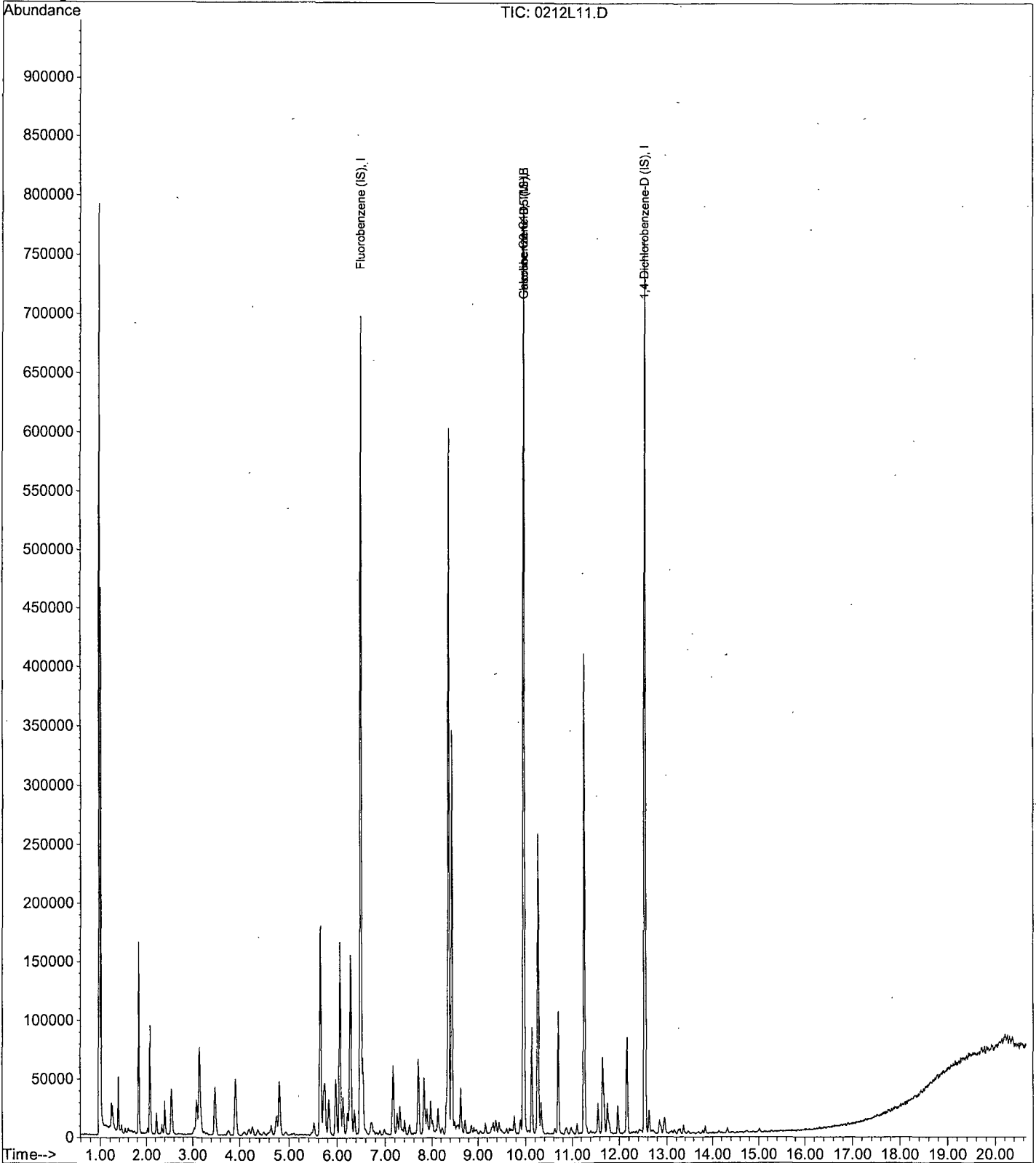
Data File : M:\LOKI\DATA\190211\0212L11.D  
Acq On : 12 Feb 19 12:04  
Sample : 190212A LCSD 300ug/L  
Misc : ISS 1/29/19

Vial: 10  
Operator: PM,DG,SV,CMM,KV  
Inst : Loki  
Multiplr: 1.00

Quant Time: Feb 22 10:26 2019

Quant Results File: LGAS0201.RES

Method : M:\LOKI\DATA\190211\LGAS0201.M (RTE Integrator)  
Title : METHOD 8260B  
Last Update : Sat Feb 02 11:09:59 2019  
Response via : Initial Calibration





## Injection Log

Directory: M:\LOK\DATA\190201\

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1	15	0201L16.D	1	20ug/L GAS STD 02/01/19	IS&S 11/8/18	1 Feb 19 17:57
2	16	0201L17.D	1	50ug/L GAS STD 02/01/19	IS&S 11/8/18	1 Feb 19 18:26
3	17	0201L18.D	1	100ug/L GAS STD 02/01/19	IS&S 11/8/18	1 Feb 19 18:54
4	18	0201L19.D	1	300ug/L GAS STD 02/01/19	IS&S 11/8/18	1 Feb 19 19:23
5	19	0201L20.D	1	600ug/L GAS STD 02/01/19	IS&S 11/8/18	1 Feb 19 19:52
6	20	0201L21.D	1	800ug/L GAS STD 02/01/19	IS&S 11/8/18	1 Feb 19 20:20
7	21	0201L22.D	1	1000ug/L GAS STD 02/01/19	IS&S 11/8/18	1 Feb 19 20:49
8	23	0201L24.D	1	(SS)300ug/L GAS STD 02/01/19	IS&S 11/8/18	1 Feb 19 21:46
9	2	0211L03.D	1	0.3ug/L VOC STD 2/11/19	ISS 1/29/19	11 Feb 19 8:32
10	3	0211L04.D	1	0.5ug/L VOC STD 2/11/19	ISS 1/29/19	11 Feb 19 9:00
11	4	0211L05.D	1	1.0ug/L VOC STD 2/11/19	ISS 1/29/19	11 Feb 19 9:28
12	5	0211L06.D	1	2.0ug/L VOC STD 2/11/19	ISS 1/29/19	11 Feb 19 9:56
13	6	0211L07.D	1	5.0ug/L VOC STD 2/11/19	ISS 1/29/19	11 Feb 19 10:24
14	7	0211L08.D	1	10ug/L VOC STD 2/11/19	ISS 1/29/19	11 Feb 19 10:52
15	8	0211L09.D	1	20ug/L VOC STD 2/11/19	ISS 1/29/19	11 Feb 19 11:20
16	9	0211L10.D	1	40ug/L VOC STD 2/11/19	ISS 1/29/19	11 Feb 19 11:48
17	10	0211L11.D	1	50ug/L VOC STD 2/11/19	ISS 1/29/19	11 Feb 19 12:16
18	11	0211L12.D	1	100ug/L VOC STD 2/11/19	ISS 1/29/19	11 Feb 19 12:44
19	8	0212L09.D	1	190212A CCV 300ug/L	ISS 1/29/19	12 Feb 19 11:08
20	9	0212L10.D	1	190212A LCS 300ug/L	ISS 1/29/19	12 Feb 19 11:36
21	10	0212L11.D	1	190212A LCSD 300ug/L	ISS 1/29/19	12 Feb 19 12:04
22	14	0212L15.D	1	190212A BLK	ISS 1/29/19	12 Feb 19 13:56
23	20	0212L21.D	1	AZ86199W01	ISS 1/29/19	12 Feb 19 16:45
24	21	0212L22.D	1	AZ86200W01	ISS 1/29/19	12 Feb 19 17:13
25	26	0212L27.D	1	Ending CCV 300ug/L 02/12/19	ISS 1/29/19	12 Feb 19 19:34

**ORGANICS**  
**Calibration Data**

**Form 6**  
**Initial Calibration**

Lab Name: APPL, Inc.

SDG No: \_\_\_\_\_

Case No: \_\_\_\_\_

Initial Cal. Date: 01/20/19

Matrix: \_\_\_\_\_

Instrument: 7890

Initials: \_\_\_\_\_

19012000.D    19012001.D    19012002.D    19012003.D    19012005.D    19012007.D    19012008.D

	Compound	1	2	3	4	5	6	7				Avg	%RSD	Type	r <sup>2</sup>	Q
1	ATML Methane	31727	15184	9929	15034	12111	11418	8746				14878	52	ATM	0.994	
2	ATML Ethane	25078	13064	8590	12630	9815	9659	7285				12303	49	ATM	0.994	
3	ATML Ethene	22488	11903	7914	11685	9157	8919	6685				11250	47	ATM	0.993	
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4.239405

Data File : G:\ROCKY\DATA\190120RS\19012000.D Vial: 1  
 Acq On : 20 Jan 19 11:58 Operator: cmm  
 Sample : RSK Std 1 01/20/19 Inst : 7890  
 Misc : 125uL from RSK Std 3 Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Jan 20 12:35 2019 Quant Results File: RSK0120.RES

Method : G:\ROCKY\DATA\190120RS\RSK0120.M (Chemstation Integrator)  
 Title : RSK 175  
 Last Update : Sun Jan 20 12:34:55 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 0.500 mL  
 Signal Phase : CARBOPACK  
 Signal Info :

Compound	R.T.	Response	Conc	Units
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Target Compounds

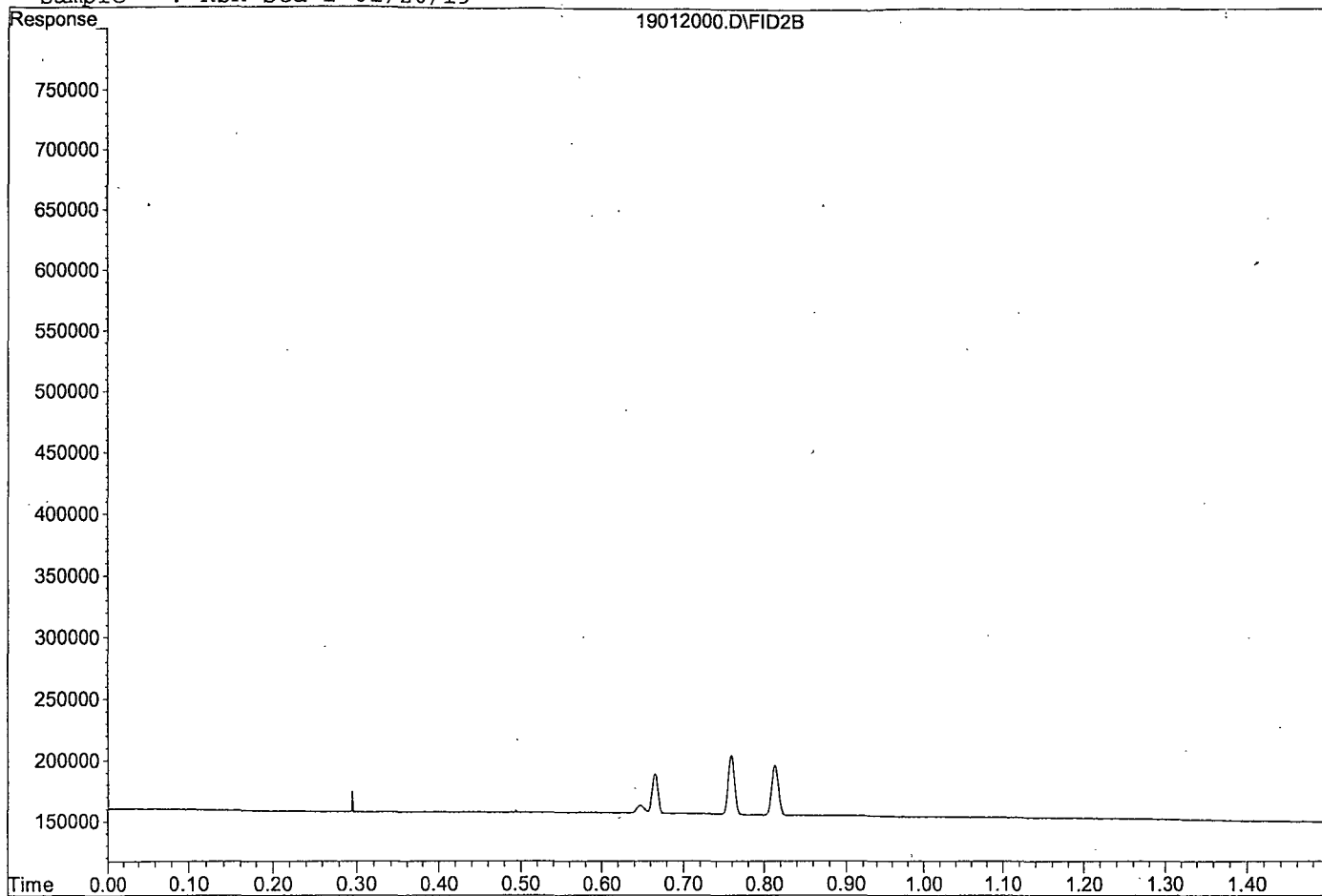
Target Compounds

1) ATM Methane	0.67	32996	N.D.	ppb
2) ATM Ethane	0.76	49028	N.D.	ppb
3) ATM Ethene	0.81	41040	N.D.	ppb

Quantitation Report

Data File: G:\ROCKY\DATA\190120RS\19012000.D

Sample : RSK Std 1 01/20/19



Data File : G:\ROCKY\DATA\190120RS\19012001.D Vial: 2  
 Acq On : 20 Jan 19 12:02 Operator: cmm  
 Sample : RSK Std 2 01/20/19 Inst : 7890  
 Misc : 250uL from RSK Std 3 Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Jan 20 12:35 2019 Quant Results File: RSK0120.RES

Method : G:\ROCKY\DATA\190120RS\RSK0120.M (Chemstation Integrator)  
 Title : RSK 175  
 Last Update : Sun Jan 20 12:35:30 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 0.500 mL  
 Signal Phase : CARBOPACK  
 Signal Info :

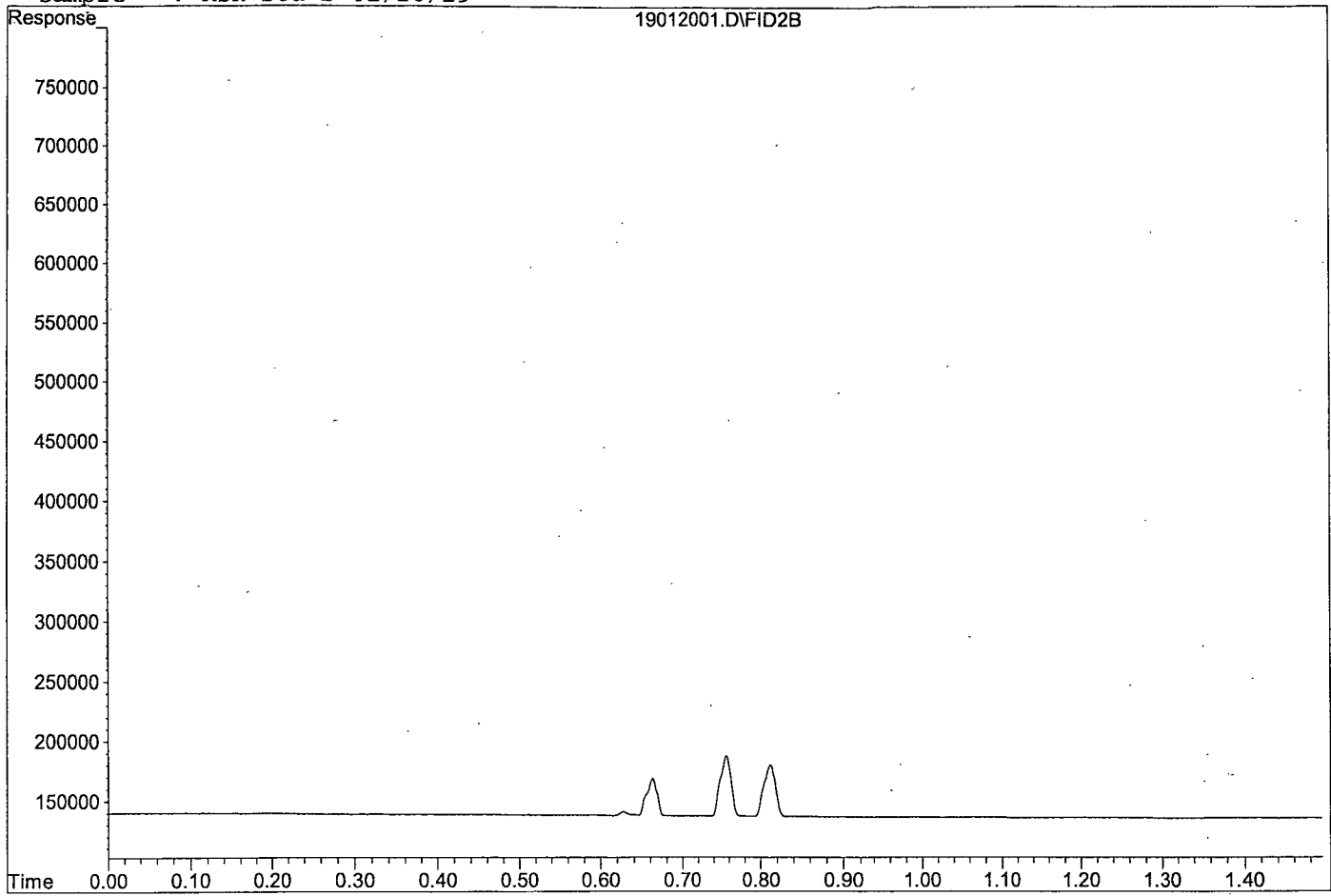
Compound	R.T.	Response	Conc Units
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Target Compounds

Target Compounds	R.T.	Response	Conc Units
1) ATM Methane	0.66	31584	N.D. ppb
2) ATM Ethane	0.76	51016	N.D. ppb
3) ATM Ethene	0.81	43446	N.D. ppb

Quantitation Report

Data File: G:\ROCKY\DATA\190120RS\19012001.D  
Sample : RSK Std 2 01/20/19



Data File : G:\ROCKY\DATA\190120RS\19012002.D Vial: 3  
 Acq On : 20 Jan 19 12:04 Operator: cmm  
 Sample : RSK Std 3 01/20/19 Inst : 7890  
 Misc : Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Jan 20 12:36 2019 Quant Results File: RSK0120.RES

Method : G:\ROCKY\DATA\190120RS\RSK0120.M (Chemstation Integrator)  
 Title : RSK 175  
 Last Update : Sun Jan 20 12:36:01 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 0.500 mL  
 Signal Phase : CARBOPACK  
 Signal Info :

Compound	R.T.	Response	Conc Units
----------	------	----------	------------

Target Compounds

Target Compounds

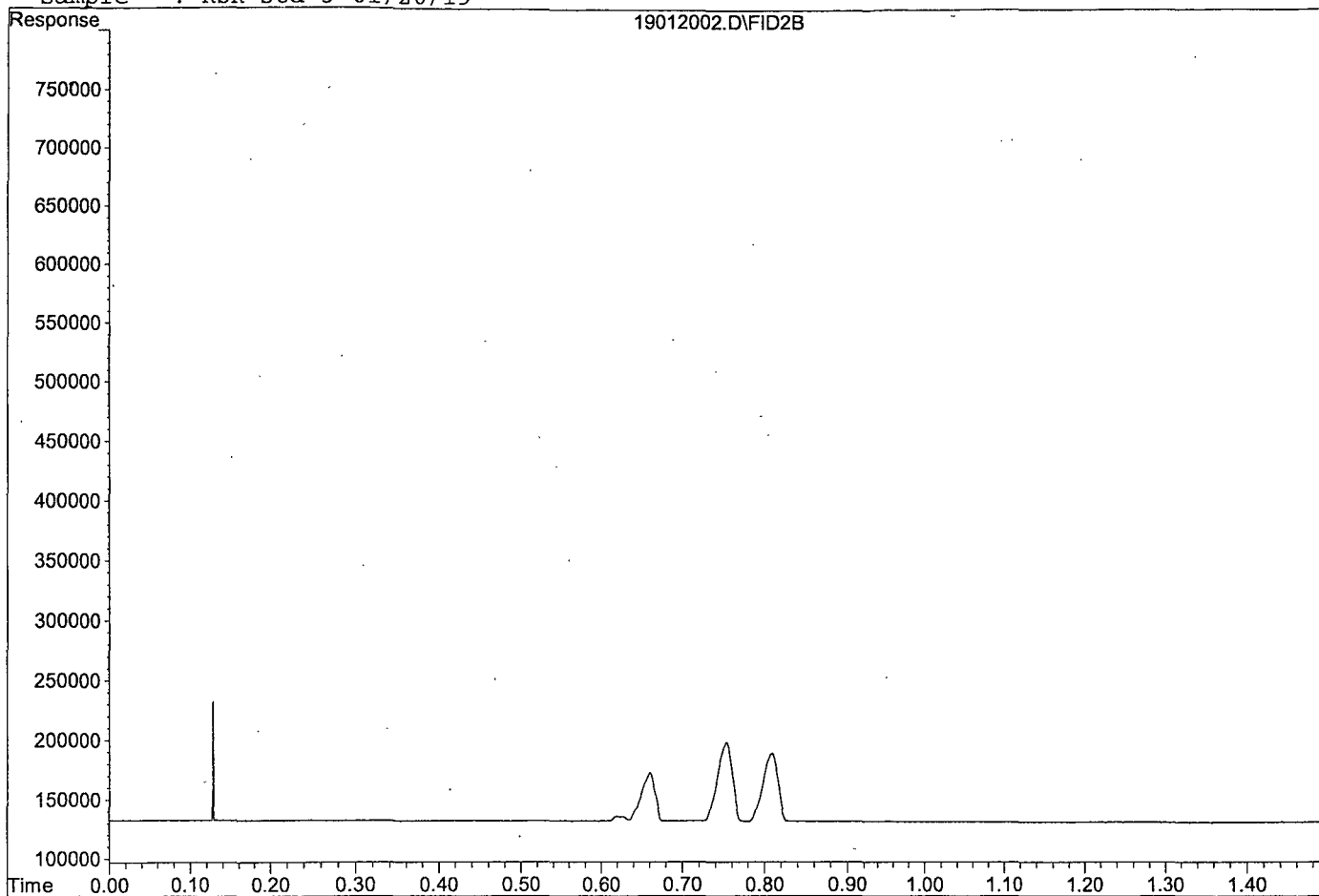
1) ATM Methane	0.66	41402	N.D. ppb
2) ATM Ethane	0.75	66998	N.D. ppb
3) ATM Ethene	0.81	57770	N.D. ppb



Quantitation Report

Data File: G:\ROCKY\DATA\190120RS\19012002.D

Sample : RSK Std 3 01/20/19



Data File : G:\ROCKY\DATA\190120RS\19012003.D Vial: 4  
 Acq On : 20 Jan 19 12:07 Operator: cmm  
 Sample : RSK Std 4 01/20/19 Inst : 7890  
 Misc : Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Jan 20 12:36 2019 Quant Results File: RSK0120.RES

Method : G:\ROCKY\DATA\190120RS\RSK0120.M (Chemstation Integrator)  
 Title : RSK 175  
 Last Update : Sun Jan 20 12:36:29 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 0.500 mL  
 Signal Phase : CARBOPACK  
 Signal Info :

Compound	R.T.	Response	Conc Units
-----			
Target Compounds			
1) ATM Methane	0.66	156731	17.650 ppb
2) ATM Ethane	0.75	246852	33.403 ppb
3) ATM Ethene	0.81	213014	30.693 ppb

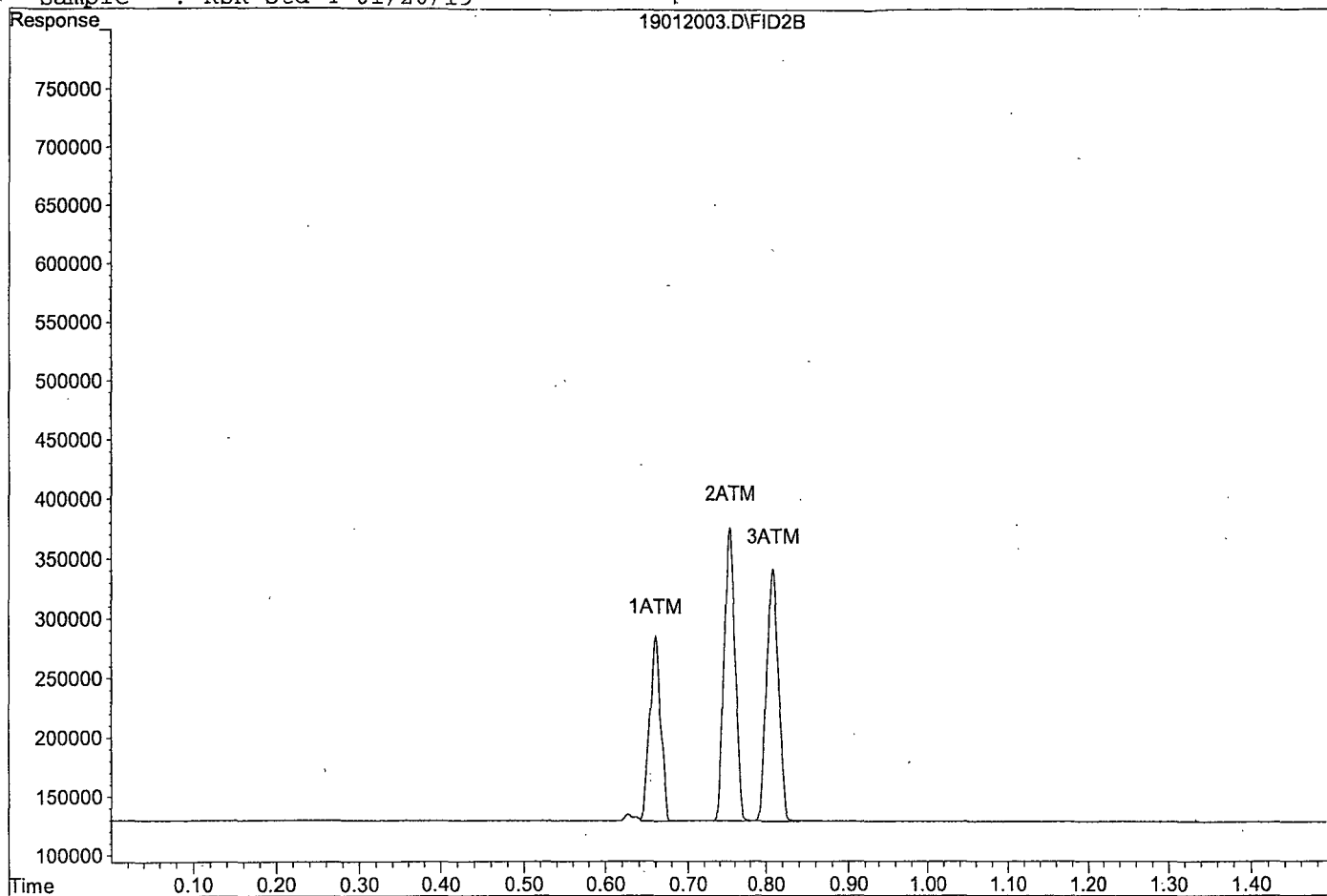
Target Compounds

Quantitation Report

Data File: G:\ROCKY\DATA\190120RS\19012003.D

Sample : RSK Std 4 01/20/19

19012003.D\FID2B



Quantitation Report (Not Reviewed)

Data File : G:\ROCKY\DATA\190120RS\19012005.D Vial: 6  
 Acq On : 20 Jan 19 12:12 Operator: cmm  
 Sample : RSK Std 5 01/20/19 Inst : 7890  
 Misc : Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Jan 20 12:37 2019 Quant Results File: RSK0120.RES

Method : G:\ROCKY\DATA\190120RS\RSK0120.M (Chemstation Integrator)  
 Title : RSK 175  
 Last Update : Sun Jan 20 12:36:58 2019  
 Response via : Multiple Level Calibration

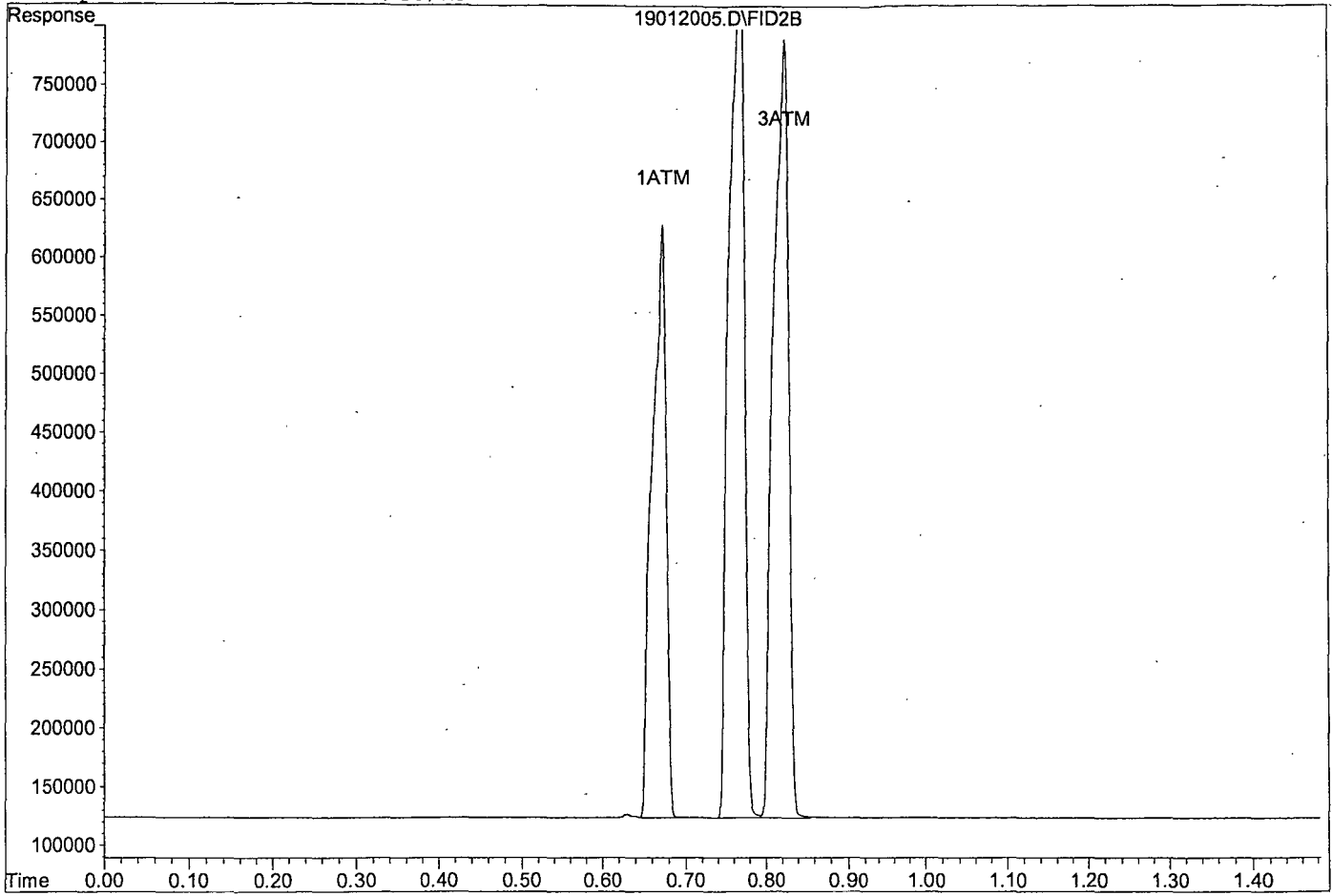
Volume Inj. : 0.500 mL  
 Signal Phase : CARBOPACK  
 Signal Info :

Compound	R.T.	Response	Conc Units
-----			
Target Compounds			
1) ATM Methane	0.67	505025	97.832 ppb
2) ATM Ethane	0.77	767300	177.156 ppb
3) ATM Ethene	0.82	667740	167.580 ppb

Target Compounds

Quantitation Report

Data File: G:\ROCKY\DATA\190120RS\19012005.D  
Sample : RSK Std 5 01/20/19



Data File : G:\ROCKY\DATA\190120RS\19012007.D Vial: 8  
 Acq On : 20 Jan 19 12:17 Operator: cmm  
 Sample : RSK Std 6 01/20/19 Inst : 7890  
 Misc : Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Jan 20 12:37 2019 Quant Results File: RSK0120.RES

Method : G:\ROCKY\DATA\190120RS\RSK0120.M (Chemstation Integrator)  
 Title : RSK 175  
 Last Update : Sun Jan 20 12:37:36 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 0.500 mL  
 Signal Phase : CARBOPACK  
 Signal Info :

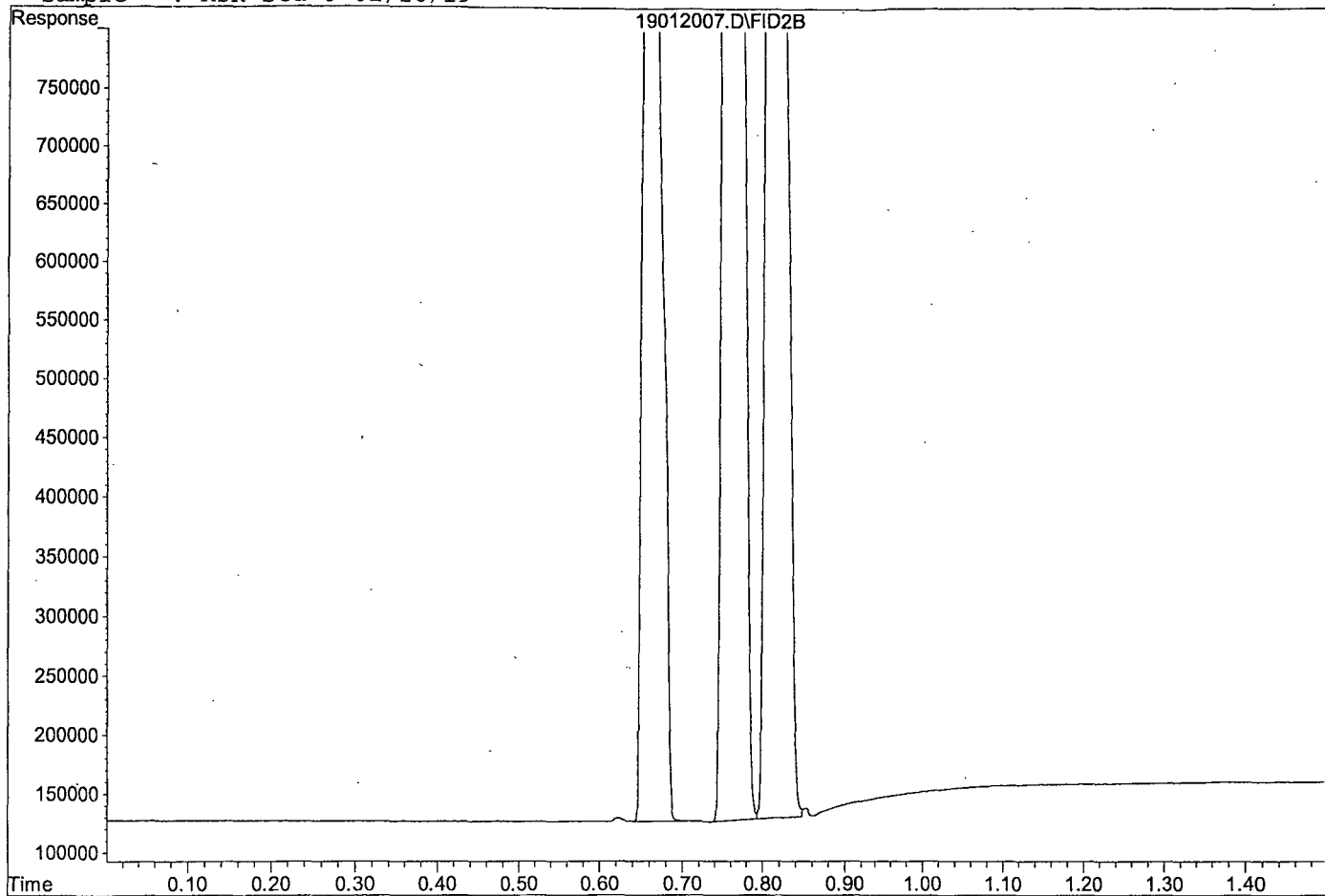
Compound	R.T.	Response	Conc Units
-----			
Target Compounds			
1) ATM Methane	0.67	1190356	255.605 ppb
2) ATM Ethane	0.77	1887834	486.657 ppb
3) ATM Ethene	0.82	1625935	456.029 ppb

Target Compounds

Quantitation Report

Data File: G:\ROCKY\DATA\190120RS\19012007.D

Sample : RSK Std 6 01/20/19



Data File : G:\ROCKY\DATA\190120RS\19012008.D Vial: 9  
 Acq On : 20 Jan 19 12:20 Operator: cmm  
 Sample : RSK Std 7 01/20/19 Inst : 7890  
 Misc : Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Jan 20 12:38 2019 Quant Results File: RSK0120.RES

Method : G:\ROCKY\DATA\190120RS\RSK0120.M (Chemstation Integrator)  
 Title : RSK 175  
 Last Update : Sun Jan 20 12:38:08 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 0.500 mL  
 Signal Phase : CARBOPACK  
 Signal Info :

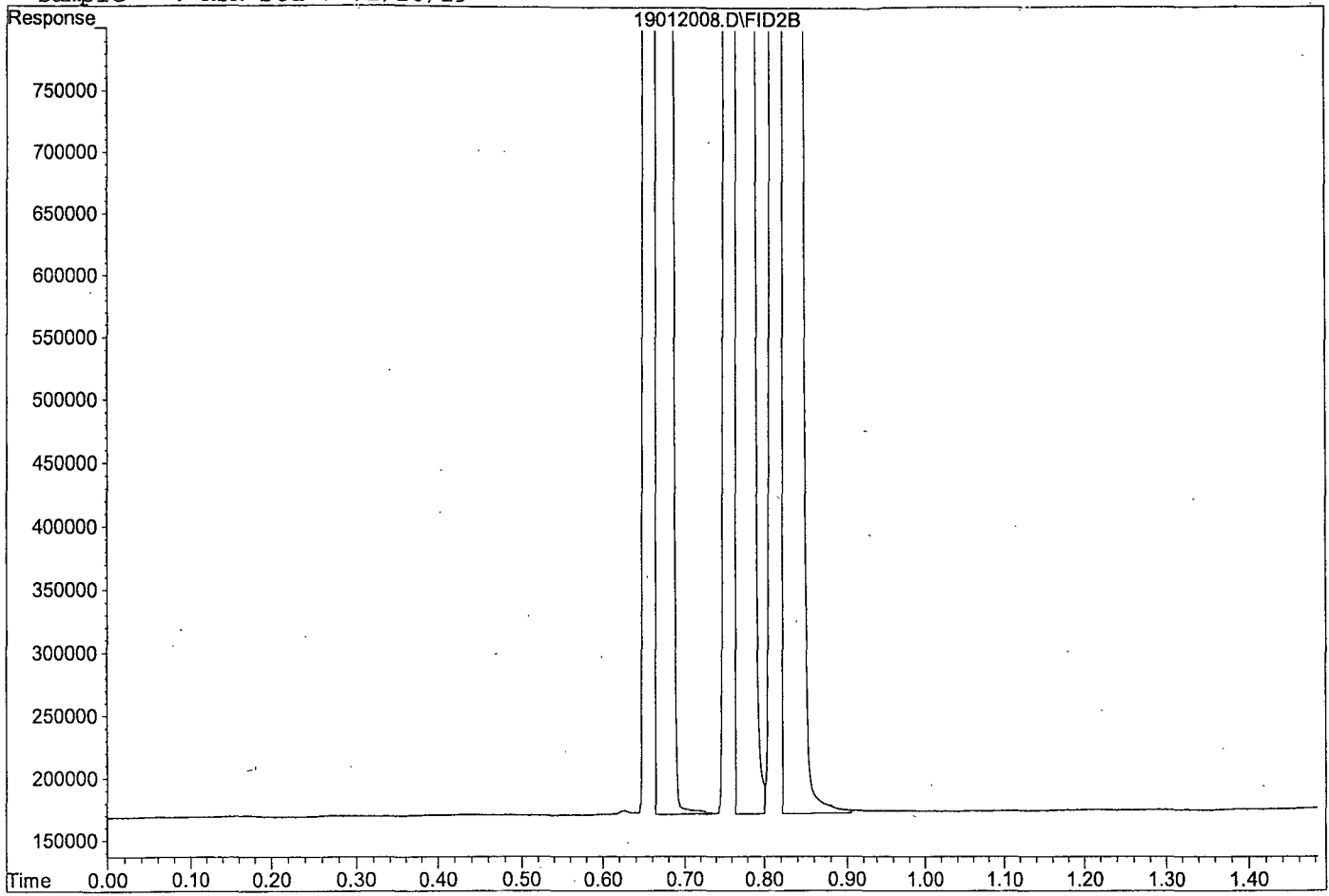
Compound	R.T.	Response	Conc Units
-----			
Target Compounds			
1) ATM Methane	0.67	3646926	821.142 ppb
2) ATM Ethane	0.77	5694692	1538.144 ppb
3) ATM Ethene	0.83	4874710	1434.020 ppb

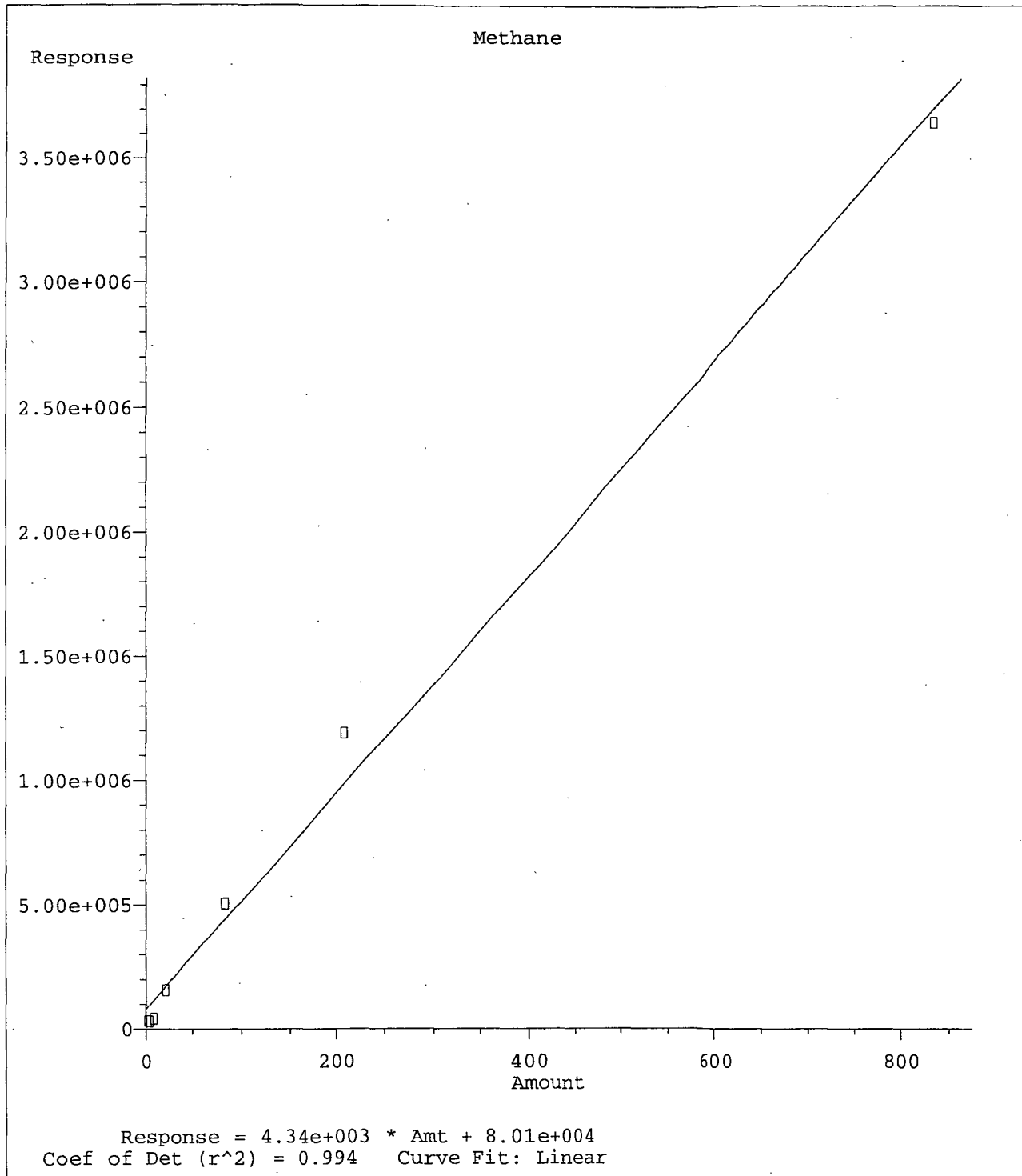
Target Compounds



Quantitation Report

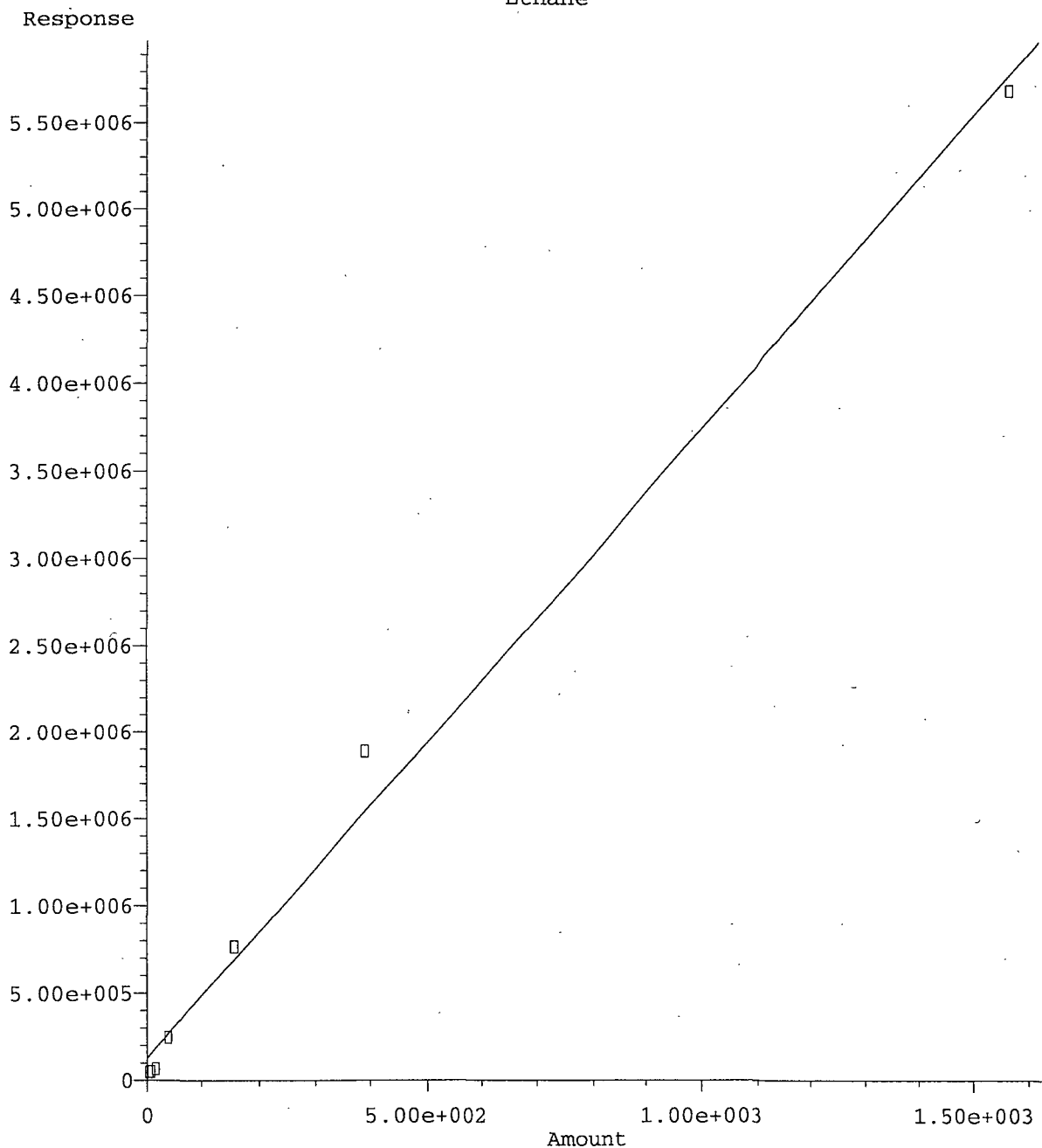
Data File: G:\ROCKY\DATA\190120RS\19012008.D  
Sample : RSK Std 7 01/20/19





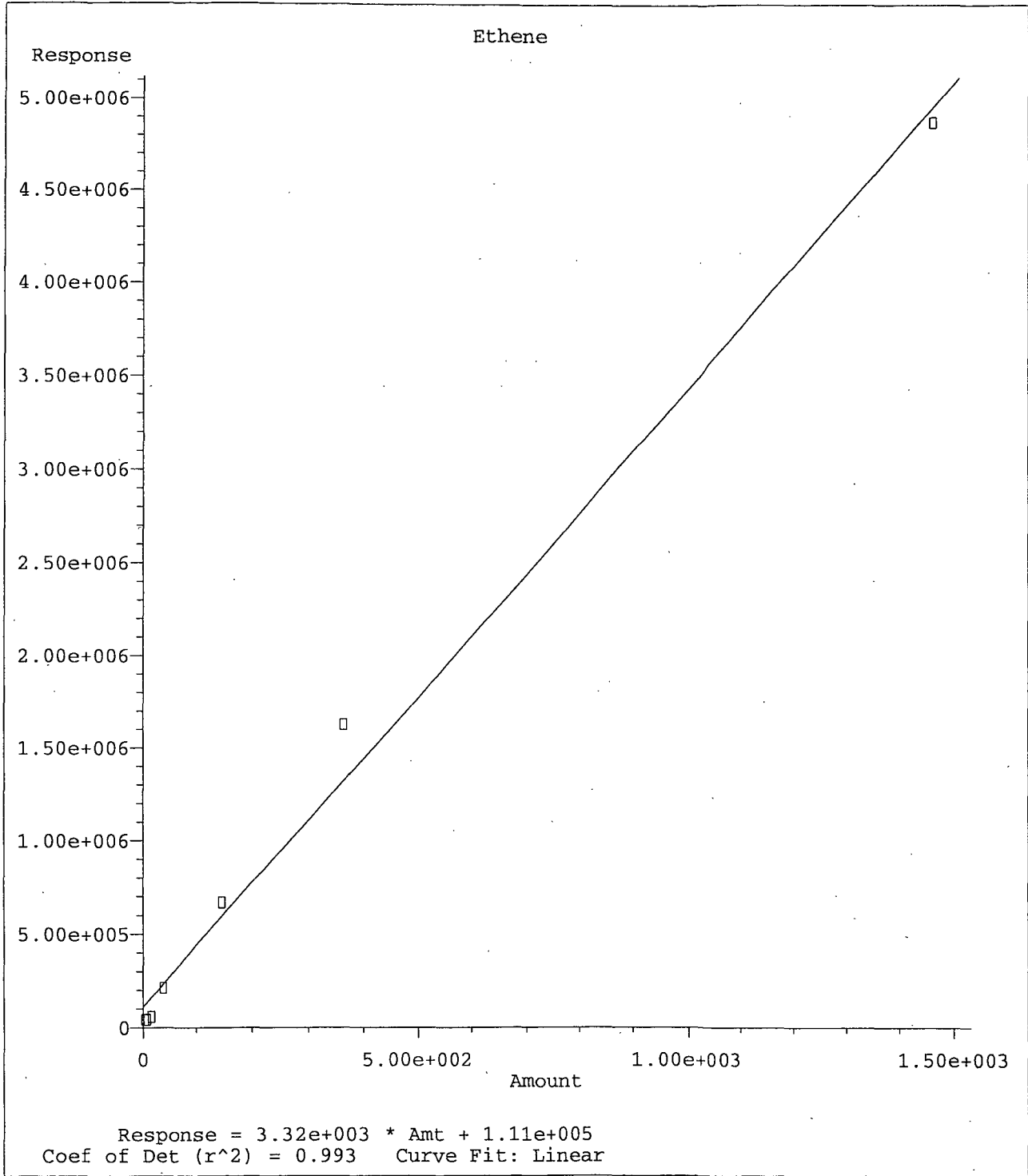
Method Name: G:\ROCKY\DATA\190120RS\RSK0120.M  
Calibration Table Last Updated: Sun Jan 20 12:32:56 2019

Ethane



Response =  $3.62 \times 10^3 \cdot \text{Amt} + 1.26 \times 10^5$   
Coef of Det ( $r^2$ ) = 0.993    Curve Fit: Linear

Method Name: G:\ROCKY\DATA\190120RS\RSK0120.M  
Calibration Table Last Updated: Sun Jan 20 12:32:56 2019



Method Name: G:\ROCKY\DATA\190120RS\RSK0120.M  
Calibration Table Last Updated: Sun Jan 20 12:33:08 2019

RSK 175

RSK 175

Form 7

### Second Source Calibration

Lab Name: APPL, Inc.

SDG No: \_\_\_\_\_

Case No: \_\_\_\_\_

Date Analyzed: 01/20/19

Matrix: \_\_\_\_\_

Instrument: 7890

Initial Cal. Date: 01/20/19

Data File: 19012010.D

		Compound	MEAN	CCRF	%D	%Drift	
1	ATML	Methane	14878	10667	28	ATML	0.69
2	ATML	Ethane	12303	9330	24	ATML	6.6
3	ATML	Ethene	11250	8592	24	ATML	6.4
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
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33							
34							
35							
36							
37							
38							
39							
40							

Average

25.3

Data File : G:\ROCKY\DATA\190120RS\19012010.D Vial: 11  
 Acq On : 20 Jan 19 12:39 Operator: cmm  
 Sample : SS RSK Std 5 01/20/19 Inst : 7890  
 Misc : Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Jan 20 12:42 2019 Quant Results File: RSK0120.RES

Method : G:\ROCKY\DATA\190120RS\RSK0120.M (Chemstation Integrator)  
 Title : RSK 175  
 Last Update : Sun Jan 20 12:42:01 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 0.500 mL  
 Signal Phase : CARBOPACK  
 Signal Info :

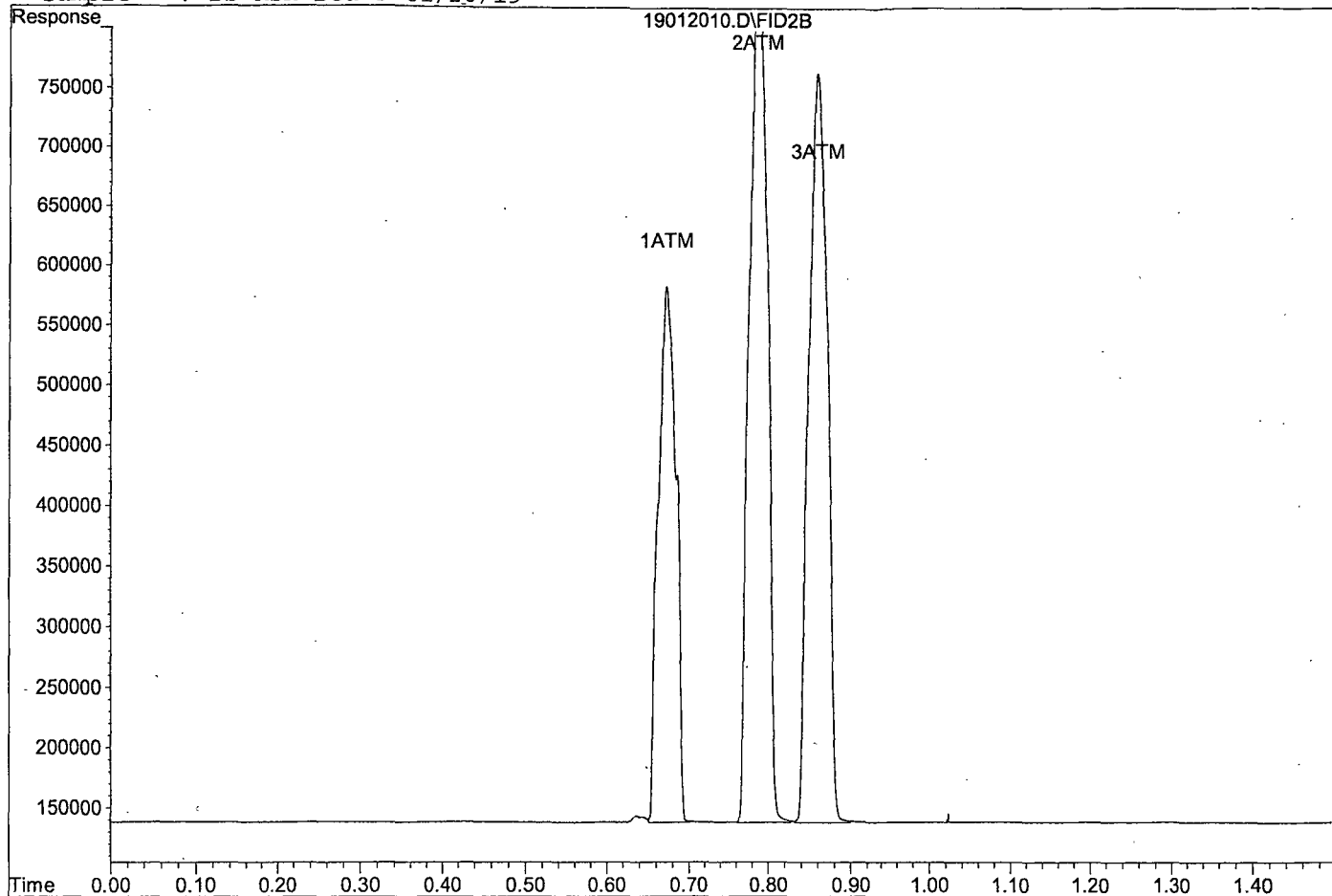
Compound	R.T.	Response	Conc Units
-----			
Target Compounds			
1) ATM Methane	0.67	444826	83.973 ppb
2) ATM Ethane	0.79	729370	166.679 ppb
3) ATM Ethene	0.86	626499	155.165 ppb

Target Compounds

Quantitation Report

Data File: G:\ROCKY\DATA\190120RS\19012010.D

Sample : SS RSK Std 5 01/20/19



### Algorithm Check for Linear Regression

Data file: 19012010.D

Analyte: Methane

Area of target analyte:	444826
Area of internal standard:	1
concentration of internal standard:	1
multiplier:	1
amt:	80100
response ratio:	4340

$$\frac{((\text{Area pk/area IS}) - \text{constant term}) * (\text{conc IS} * \text{multiplier})}{\text{slope}} =$$

84.04



RSK 175  
RSK 175

Form 7

### Continuing Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: \_\_\_\_\_

SDG No: \_\_\_\_\_  
Date Analyzed: 02/13/19  
Instrument: 7890  
Initial Cal. Date: 01/20/19  
Data File: 19021300.D

		Compound	MEAN	CCRF	%D		%Drift
1	ATML	Methane	14878	11572	22	ATML	11
2	ATML	Ethane	12303	9833	20	ATML	14
3	ATML	Ethene	11250	8980	20	ATML	12
4							
5							
6							
7							
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36							
37							
38							
39							
40							

Average

20.7

Data File : G:\ROCKY\DATA\190120RS\19021300.D Vial: 1  
 Acq On : 13 Feb 19 9:27 Operator: cmm  
 Sample : 190213A LCS/CCV RSK Std 5 Inst : 7890  
 Misc : Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Feb 13 9:31 2019 Quant Results File: RSK0120.RES

Method : G:\ROCKY\DATA\190120RS\RSK0120.M (Chemstation Integrator)  
 Title : RSK 175  
 Last Update : Wed Feb 13 09:31:13 2019  
 Response via : Multiple Level Calibration

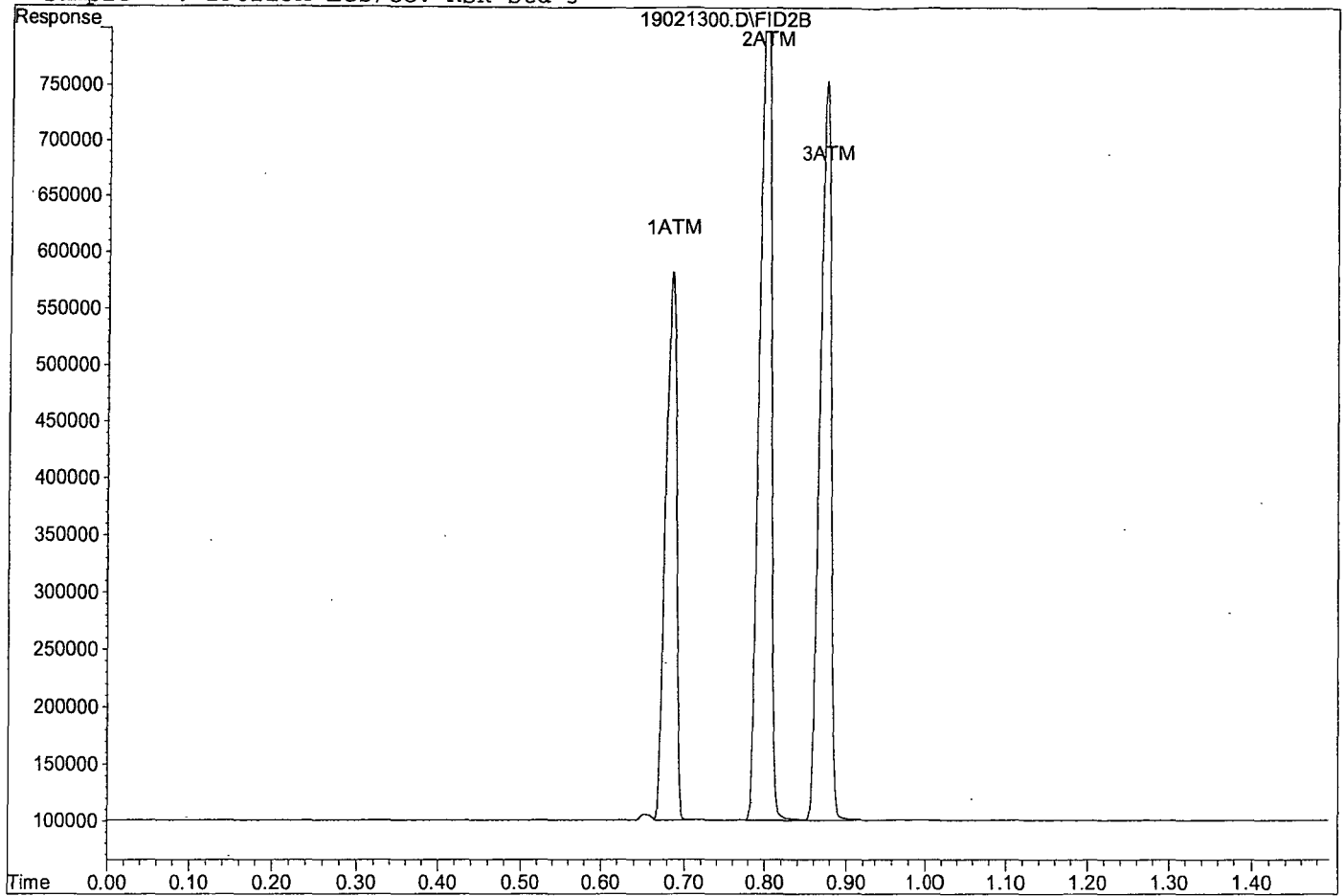
Volume Inj. : 0.500 mL  
 Signal Phase : CARBOPACK  
 Signal Info :

Compound	R.T.	Response	Conc Units
-----			
Target Compounds			
1) ATM Methane	0.69	482530	92.653 ppb
2) ATM Ethane	0.80	768712	177.545 ppb
3) ATM Ethene	0.87	654803	163.686 ppb

Target Compounds

Quantitation Report

Data File: G:\ROCKY\DATA\190120RS\19021300.D  
Sample : 190213A LCS/CCV RSK Std 5



RSK 175  
RSK 175

Form 7  
Ending Calibration

Lab Name: APPL, Inc.  
Case No: \_\_\_\_\_  
Matrix: \_\_\_\_\_

SDG No: \_\_\_\_\_  
Date Analyzed: 02/13/19  
Instrument: 7890  
Initial Cal. Date: 01/20/19  
Data File: 19021315.D

		Compound	MEAN	CCRF	%D		%Drift
1	ATML	Methane	14878	11379	24	ATML	8.9
2	ATML	Ethane	12303	9304	24	ATML	6.2
3	ATML	Ethene	11250	8221	27	ATML	0.82
4							
5							
6							
7							
8							
9							
10							
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31							
32							
33							
34							
35							
36							
37							
38							
39							
40							

Average

25.0

Data File : G:\ROCKY\DATA\190120RS\19021315.D Vial: 16  
 Acq On : 13 Feb 19 10:05 Operator: cmm  
 Sample : Ending CCV RSK Std 5 02/13/19 Inst: 7890  
 Misc : Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Feb 13 10:07 2019 Quant Results File: RSK0120.RES

Method : G:\ROCKY\DATA\190120RS\RSK0120.M (Chemstation Integrator)  
 Title : RSK 175  
 Last Update : Wed Feb 13 10:07:50 2019  
 Response via : Multiple Level Calibration

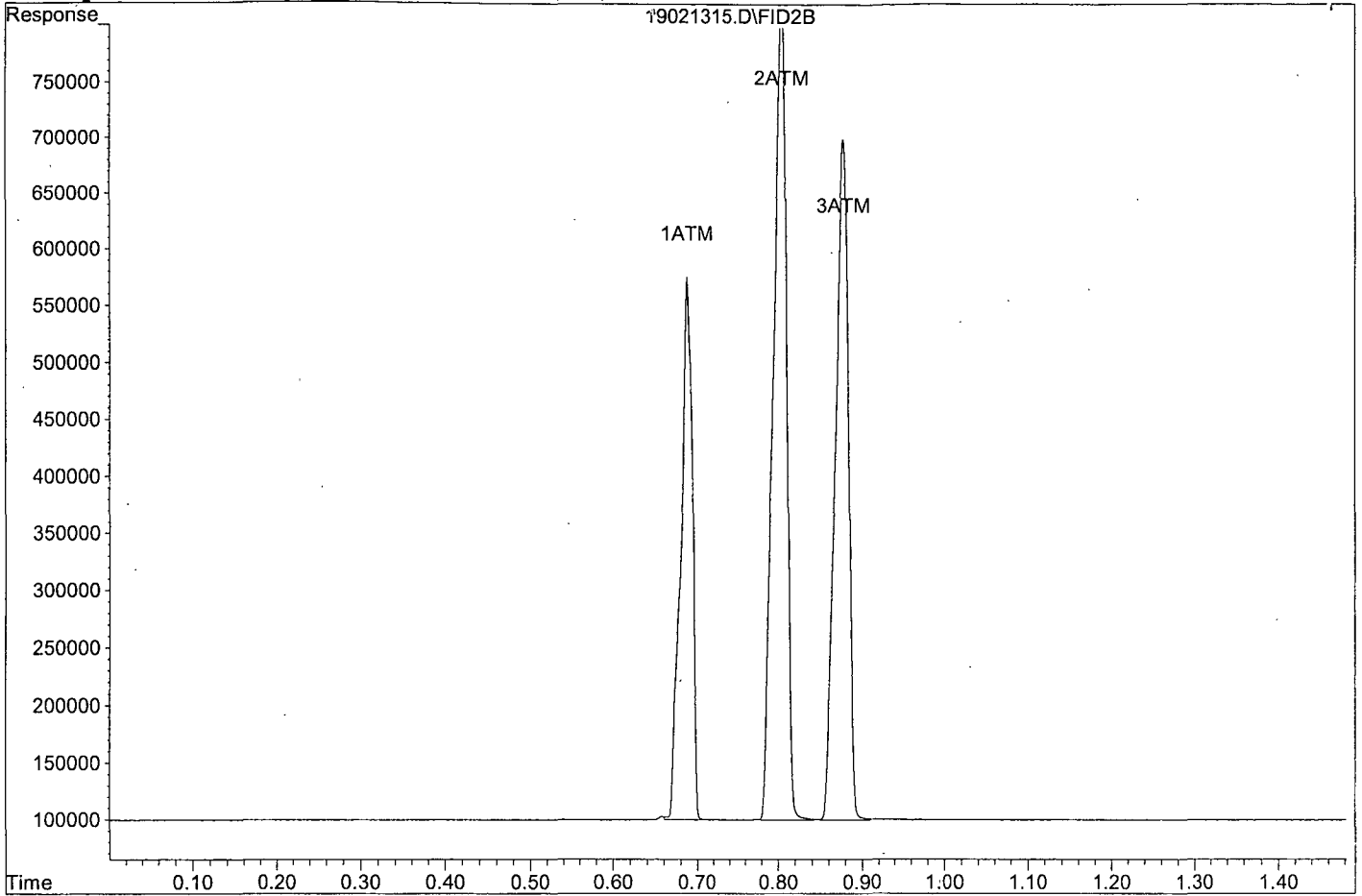
Volume Inj. : 0.500 mL  
 Signal Phase : CARBOPACK  
 Signal Info :

Compound	R.T.	Response	Conc Units
-----			
Target Compounds			
1) ATM Methane	0.69	474483	90.801 ppb
2) ATM Ethane	0.80	727327	166.115 ppb
3) ATM Ethene	0.88	599492	147.035 ppb

Target Compounds

Quantitation Report

Data File: G:\ROCKY\DATA\190120RS\19021315.D  
Sample : Ending CCV RSK Std 5 02/13/19



**ORGANICS**  
**Raw Data**

Data File : G:\ROCKY\DATA\190120RS\19021305.D Vial: 6  
 Acq On : 13 Feb 19 9:42 Operator: cmm  
 Sample : AZ86199W03 Inst : 7890  
 Misc : Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Feb 13 9:45 2019 Quant Results File: RSK0120.RES

Method : G:\ROCKY\DATA\190120RS\RSK0120.M (Chemstation Integrator)  
 Title : RSK 175  
 Last Update : Wed Feb 13 09:31:13 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 0.500 mL  
 Signal Phase : CARBOPACK  
 Signal Info :

Compound	R.T.	Response	Conc	Units
----------	------	----------	------	-------

Target Compounds

Target Compounds

1) ATM Methane	0.00	0	N.D.	ppb d
2) ATM Ethane	0.00	0	N.D.	ppb d
3) ATM Ethene	0.00	0	N.D.	ppb d

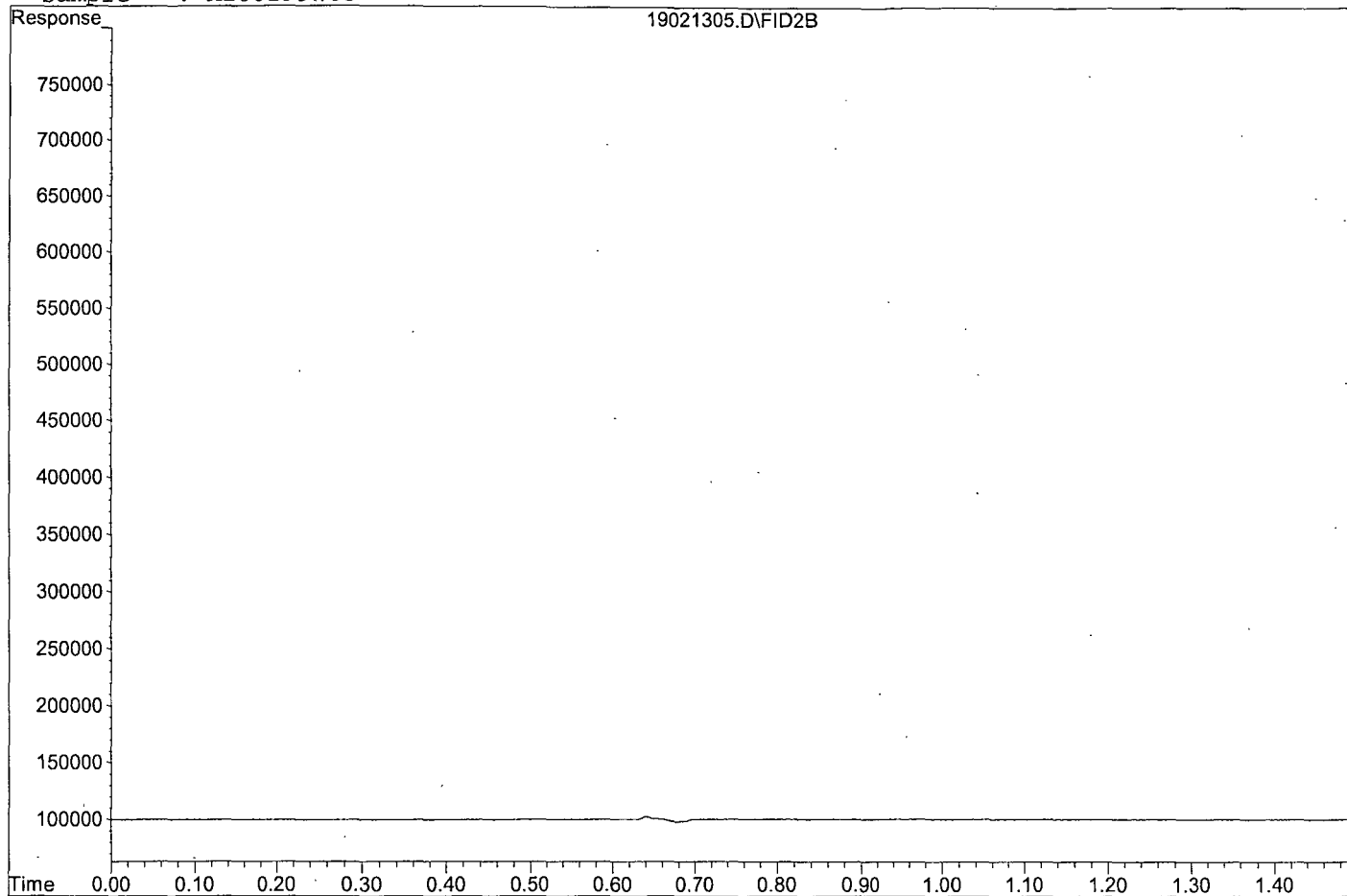


Quantitation Report

Data File: G:\ROCKY\DATA\190120RS\19021305.D

Sample : AZ86199W03

19021305.D\FID2B



Data File : G:\ROCKY\DATA\190120RS\19021306.D Vial: 7  
 Acq On : 13 Feb 19 9:44 Operator: cmm  
 Sample : AZ86200W03 Inst : 7890  
 Misc : Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Feb 13 9:47 2019 Quant Results File: RSK0120.RES

Method : G:\ROCKY\DATA\190120RS\RSK0120.M (Chemstation Integrator)  
 Title : RSK 175  
 Last Update : Wed Feb 13 09:31:13 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 0.500 mL  
 Signal Phase : CARBOPACK  
 Signal Info :

Compound	R.T.	Response	Conc	Units
----------	------	----------	------	-------

Target Compounds

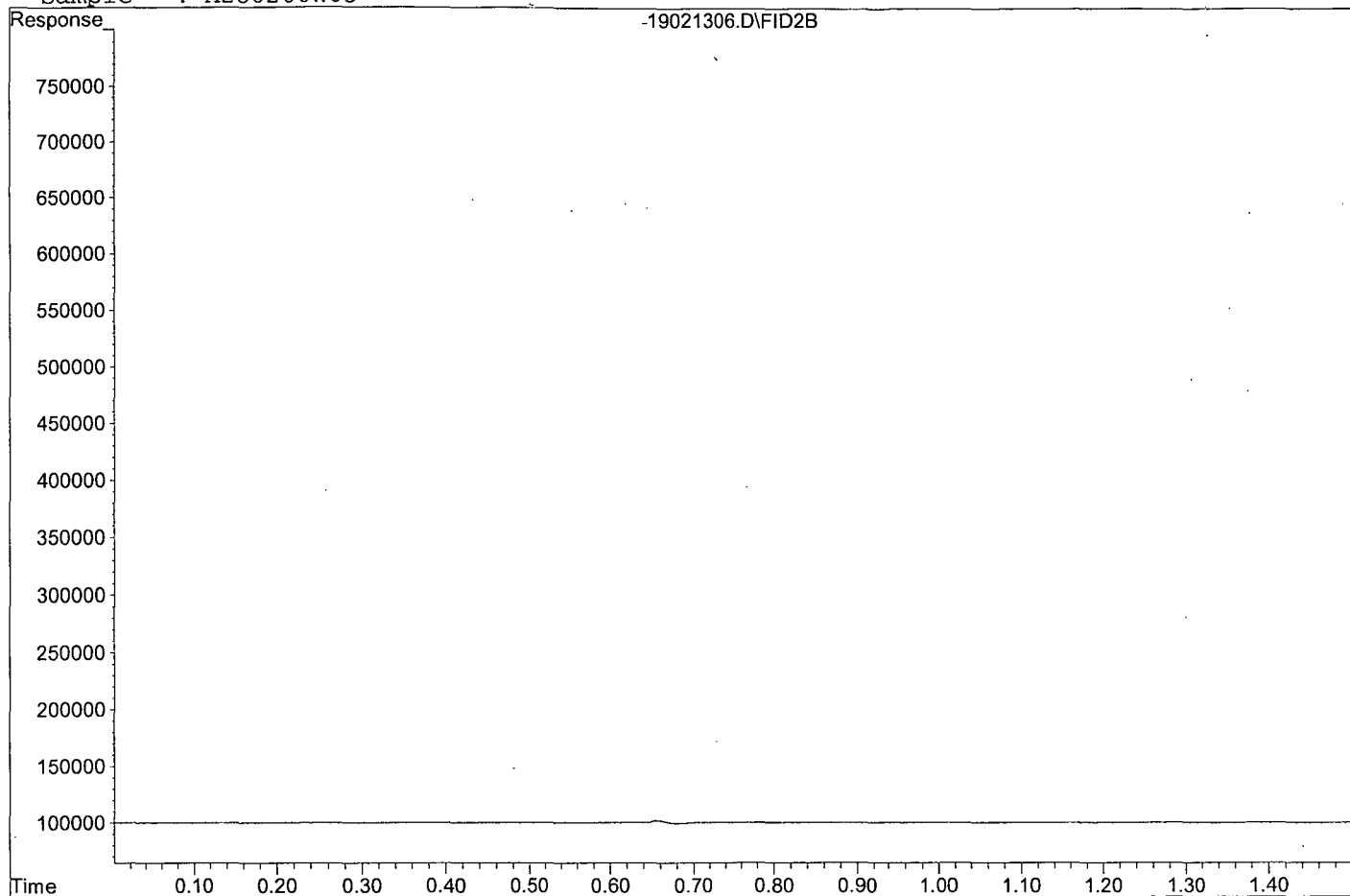
Target Compounds

1) ATM Methane	0.00	0	N.D.	ppb d
2) ATM Ethane	0.00	0	N.D.	ppb d
3) ATM Ethene	0.00	0	N.D.	ppb d

Quantitation Report

Data File: G:\ROCKY\DATA\190120RS\19021306.D

Sample : AZ86200W03



Data File : G:\ROCKY\DATA\190120RS\19021304.D Vial: 5  
 Acq On : 13 Feb 19 9:40 Operator: cmm  
 Sample : 190213A Blk Inst : 7890  
 Misc : Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Feb 13 9:42 2019 Quant Results File: RSK0120.RES

Method : G:\ROCKY\DATA\190120RS\RSK0120.M (Chemstation Integrator)  
 Title : RSK 175  
 Last Update : Wed Feb 13 09:31:13 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 0.500 mL  
 Signal Phase : CARBOPACK  
 Signal Info :

Compound	R.T.	Response	Conc	Units
----------	------	----------	------	-------

Target Compounds

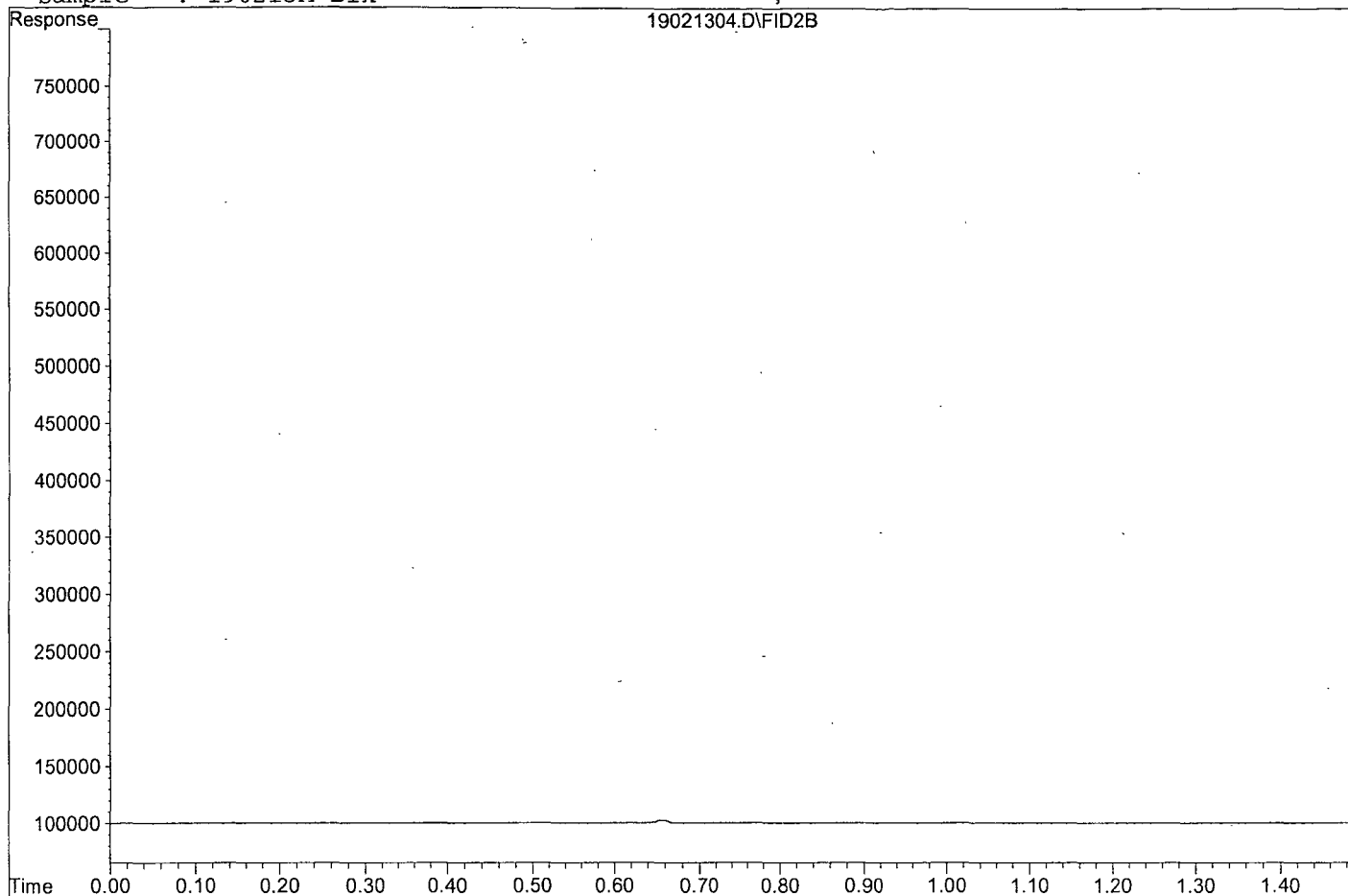
Target Compounds	R.T.	Response	Conc	Units
1) ATM Methane	0.00	0	N.D.	ppb d
2) ATM Ethane	0.00	0	N.D.	ppb d
3) ATM Ethene	0.00	0	N.D.	ppb d

Quantitation Report

Data File: G:\ROCKY\DATA\190120RS\19021304.D

Sample : 190213A Blk

19021304.D\FID2B



Data File : G:\ROCKY\DATA\190120RS\19021300.D Vial: 1  
 Acq On : 13 Feb 19 9:27 Operator: cmm  
 Sample : 190213A LCS/CCV RSK Std 5 Inst : 7890  
 Misc : Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Feb 13 9:31 2019 Quant Results File: RSK0120.RES

Method : G:\ROCKY\DATA\190120RS\RSK0120.M (Chemstation Integrator)  
 Title : RSK 175  
 Last Update : Wed Feb 13 09:31:13 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 0.500 mL  
 Signal Phase : CARBOPACK  
 Signal Info :

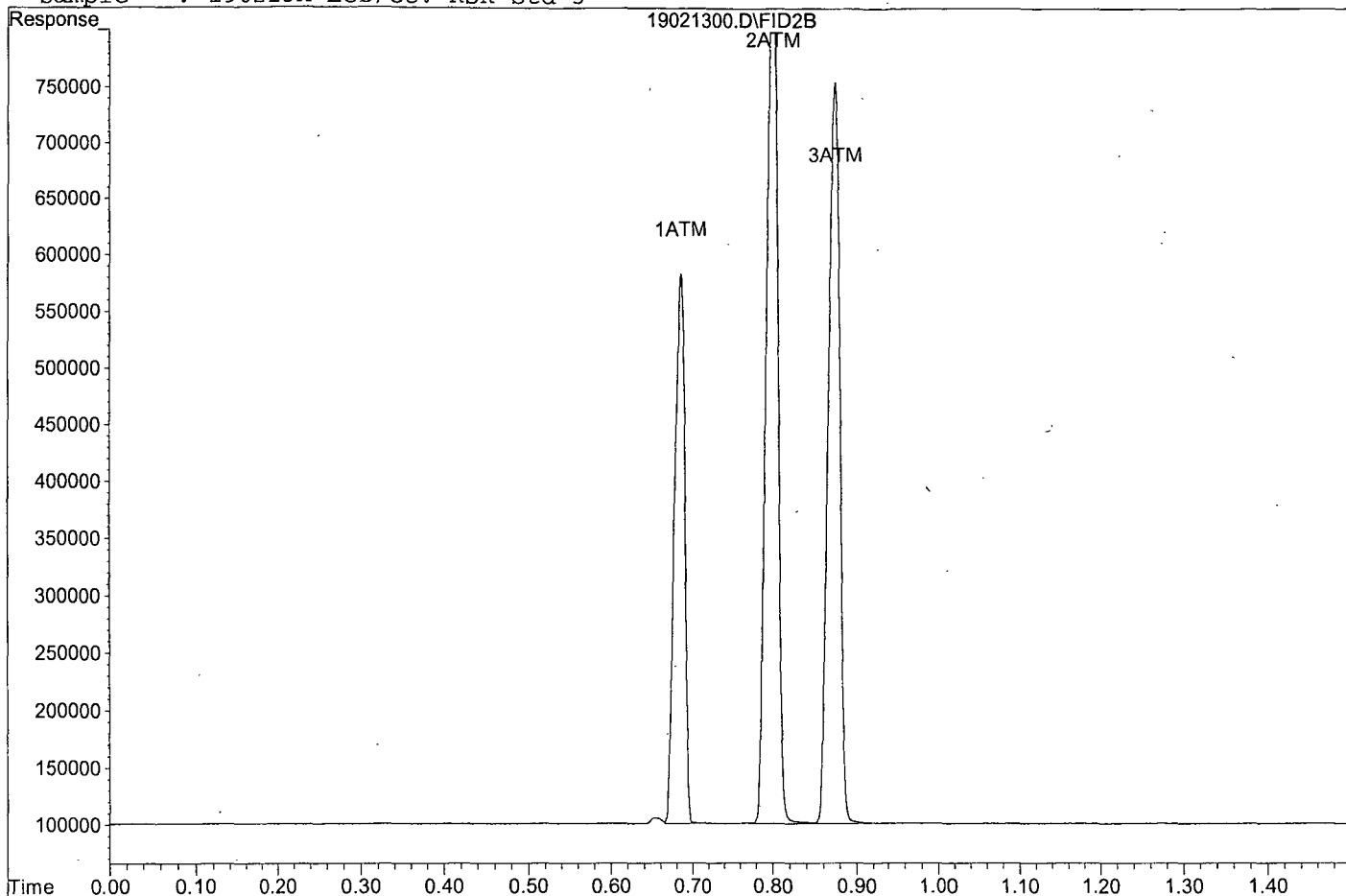
Compound	R.T.	Response	Conc Units
-----			
Target Compounds			
1) ATM Methane	0.69	482530	92.653 ppb
2) ATM Ethane	0.80	768712	177.545 ppb
3) ATM Ethene	0.87	654803	163.686 ppb

Target Compounds

Quantitation Report

Data File: G:\ROCKY\DATA\190120RS\19021300.D

Sample : 190213A LCS/CCV RSK Std 5



Data File : G:\ROCKY\DATA\190120RS\19021303.D Vial: 4  
 Acq On : 13 Feb 19 9:36 Operator: cmm  
 Sample : 190213A LCSD RSK Std 5 Inst : 7890  
 Misc : Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Feb 13 9:38 2019 Quant Results File: RSK0120.RES

Method : G:\ROCKY\DATA\190120RS\RSK0120.M (Chemstation Integrator)  
 Title : RSK 175  
 Last Update : Wed Feb 13 09:31:13 2019  
 Response via : Multiple Level Calibration

Volume Inj. : 0.500 mL  
 Signal Phase : CARBOPACK  
 Signal Info :

Compound	R.T.	Response	Conc Units
-----			
Target Compounds			
1) ATM Methane	0.68	411266	76.247 ppb
2) ATM Ethane	0.80	665340	148.993 ppb
3) ATM Ethene	0.87	561985	135.744 ppb

Target Compounds

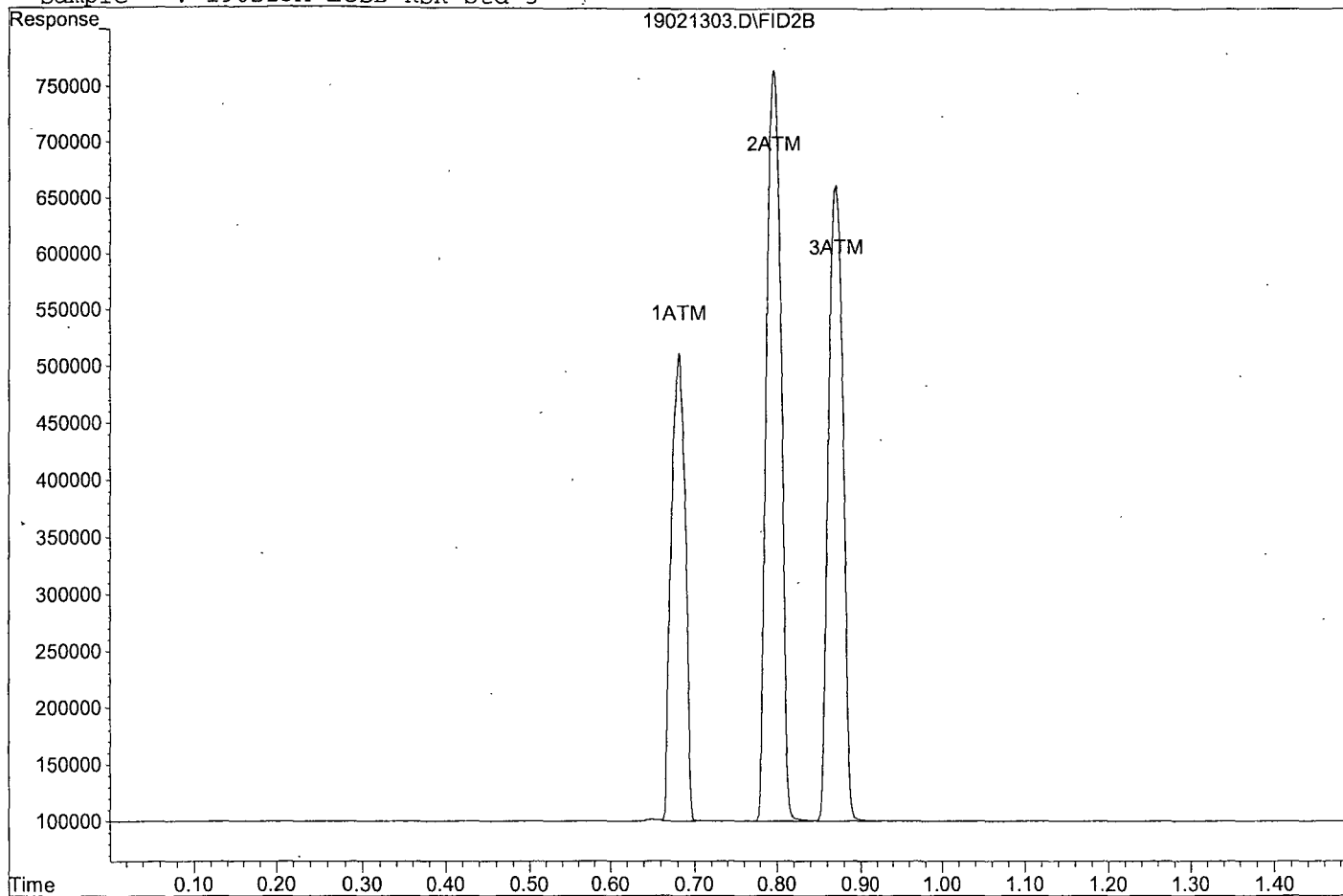


Quantitation Report.

Data File: G:\ROCKY\DATA\190120RS\19021303.D

Sample : 190213A LCSD RSK Std 5

19021303.D\FID2B



**Primary Source Stock Standard 10,000ppmV**

Manufacturer Exp Date 9-21-21

RSK Gas Mix (Scott Specialty Gas) Cat.# 0104E40028`4, Lot # 160-401303031-39773

1% Gas Concentration Moles = 10,000ppmV Methane, Ethane, Ethene

**RSK Calibration Curve (prepared in 1.0 L Tedlar Bags at room temp)****Expires 02/20/19****CMM 01/20/19**

Analyte	Conc Std 1 (1/2 = LOD) (ug/L)	Conc Std 2 (LOQ Chk) (ug/L)	Conc Std 3 (ug/L)	Conc Std 4 (ug/L)	Conc Std 5 (ug/L)	Conc Std 6 (ug/L)	Conc Std 7 (ug/L)
Methane (MW 16.04)	2.08	4.16	8.34	20.85	83.40	208.5	834.0
Ethane (MW 30.07)	3.91	7.81	15.6	39.09	156.35	390.9	1563.5
Ethene (MW 28.05)	3.65	7.30	14.6	36.46	145.84	364.6	1458.4
Stock Source	RSK Tank Lot #170PLU5SPC0 6L-35410	RSK Tank Lot #170PLU5SPC0 6L-35410	RSK Tank Lot #170PLU5SPC0 6L-35410	RSK Tank Lot #170PLU5SPC0 6L-35410	RSK Tank Lot #170PLU5SPC 06L-35410	RSK Tank Lot #170PLU5SPC0 6L-35410	RSK Tank Lot #170PLU5SPC0 6L-35410
Stock Conc (ppmv)	10,000 ppmV	10,000 ppmV	10,000 ppmV	10,000 ppmV	10,000 ppmV	10,000 ppmV	10,000 ppmV
Stock Aliquot (mL)	0.010	0.020	0.040	0.100	0.400	1.00	4.00
Final Volume P&T Water	32 mL	32 mL	32 mL	32 mL	32 mL	32 mL	32 mL

**Second Source Stock Standard 10,000ppmV**

Manufacturer Exp date 9-21-2021

RSK Gas Mix (Scott Specialty Gas) Cat.# 23452, Lot # 160-401303032-1-39774

1% Gas Concentration Moles = 10,000ppmV Methane, Ethane, Ethene

**Second Source****Expires 01/21/19****CMM 01/20/19**

2.0mL of SS from tank into 980 mL Nitrogen

final conc: 13.3ug/L Methane, 25.0 ug/L Ethane, and 23.3 ug/L Ethene

**CCV/LCS/LCSD****CMM 02/13/19**

Spike 0.400mL of 10,000ppmV into 32mL DI water, with 8mL Nitrogen headspace

final conc: 83.40ug/L Methane, 156.35ug/L Ethane, and 145.84ug/L Ethene

## Injection Log

Directory: G:\ROCKY\DATA\190120RS\

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1	1	19012000.D	1	RSK Std 1 01/20/19	125uL from RSK Std 3	20 Jan 19 11:58
2	2	19012001.D	1	RSK Std 2 01/20/19	250uL from RSK Std 3	20 Jan 19 12:02
3	3	19012002.D	1	RSK Std 3 01/20/19		20 Jan 19 12:04
4	4	19012003.D	1	RSK Std 4 01/20/19		20 Jan 19 12:07
5	6	19012005.D	1	RSK Std 5 01/20/19		20 Jan 19 12:12
6	8	19012007.D	1	RSK Std 6 01/20/19		20 Jan 19 12:17
7	9	19012008.D	1	RSK Std 7 01/20/19		20 Jan 19 12:20
8	11	19012010.D	1	SS RSK Std 5 01/20/19		20 Jan 19 12:39
9	1	19021300.D	1	190213A LCS/CCV RSK Std 5		13 Feb 19 9:27
10	4	19021303.D	1	190213A LCSD RSK Std 5		13 Feb 19 9:36
11	5	19021304.D	1	190213A Blk		13 Feb 19 9:40
12	6	19021305.D	1	AZ86199W03		13 Feb 19 9:42
13	7	19021306.D	1	AZ86200W03		13 Feb 19 9:44
14	16	19021315.D	1	Ending CCV RSK Std 5 02/13/19		13 Feb 19 10:05

**INORGANIC ANALYSIS**  
**Calibration Data**

**APPL, INC.**

A.P.P.L. INC.

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: A.P.P.L. INC. Contract: CH2M / Jacobs

ARF No: 88059 SDG: 88059

Initial Calibration Source: CPI

Continuing Calibration Source: Environmental Express

Analysis Date: 06/15/18

Analyte	Calibration Verification									M
	True ICV	Found 12:31	%R(1)	True CCV1	Found 8:39	%R(1)	True CCV1	Found 8:58	%R(1)	
Ferrous Iron	3	3.15693	105	4	3.89681	97.4	4	3.88681	97.2	

(1) Control Limits: 90-110

ILM02.0

A.P.P.L. INC.

3

BLANKS

Lab Name: A.P.P.L. INC.

Contract: CH2M / Jacobs

ARF No.: 88059

SDG: 88059

Preparation Blank Matrix (soil/water): water

Preparation Blank Concentration Units (ug/L or mg/kg): mg/L

Analyte	Calibration Blanks									M	
	ICB 06/15/18 12:32	C	CCB 02/08/19 08:40	C	CCB 02/08/19 08:58	C		C			C
Ferrous Iron	1.000	U	1.000	U	1.000	U					

A.P.P.L. INC.  
2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: A.P.P.L. INC. Contract: \_\_\_\_\_

ARF No: \_\_\_\_\_ SDG: \_\_\_\_\_

Initial Calibration Source: CPI

Continuing Calibration Source: Environmental Express

Analysis Date: 01/24/19

Analyte	Calibration Verification									M
	True ICV	Found 13:12	%R(1)	True ICV	Found 13:20	%R(1)	True	Found	%R(1)	
bromide	12.5	12.8349	103	12.5	12.8652	103				
chloride	25	24.9773	99.9	25	25.0366	100				
fluoride	5	5.0197	100	5	4.9943	99.9				
Nitrate(NO3)	22.1	21.9822	99.5	22.1	22.0247	99.7				
Nitrate(NO3)-N	5	4.9637	99.3	5	4.9733	99.5				
Nitrite(NO2)	9.98	10.2443	103	9.98	10.2551	103				
Nitrite(NO2)-N	3.04	3.1189	103	3.04	3.1222	103				
phosphate	30.7	28.2065	91.9	30.7	28.7373	93.6				
phosphate-p	10	9.2043	92.0	10	9.3775	93.8				
sulfate	25	24.8282	99.3	25	24.8792	99.5				

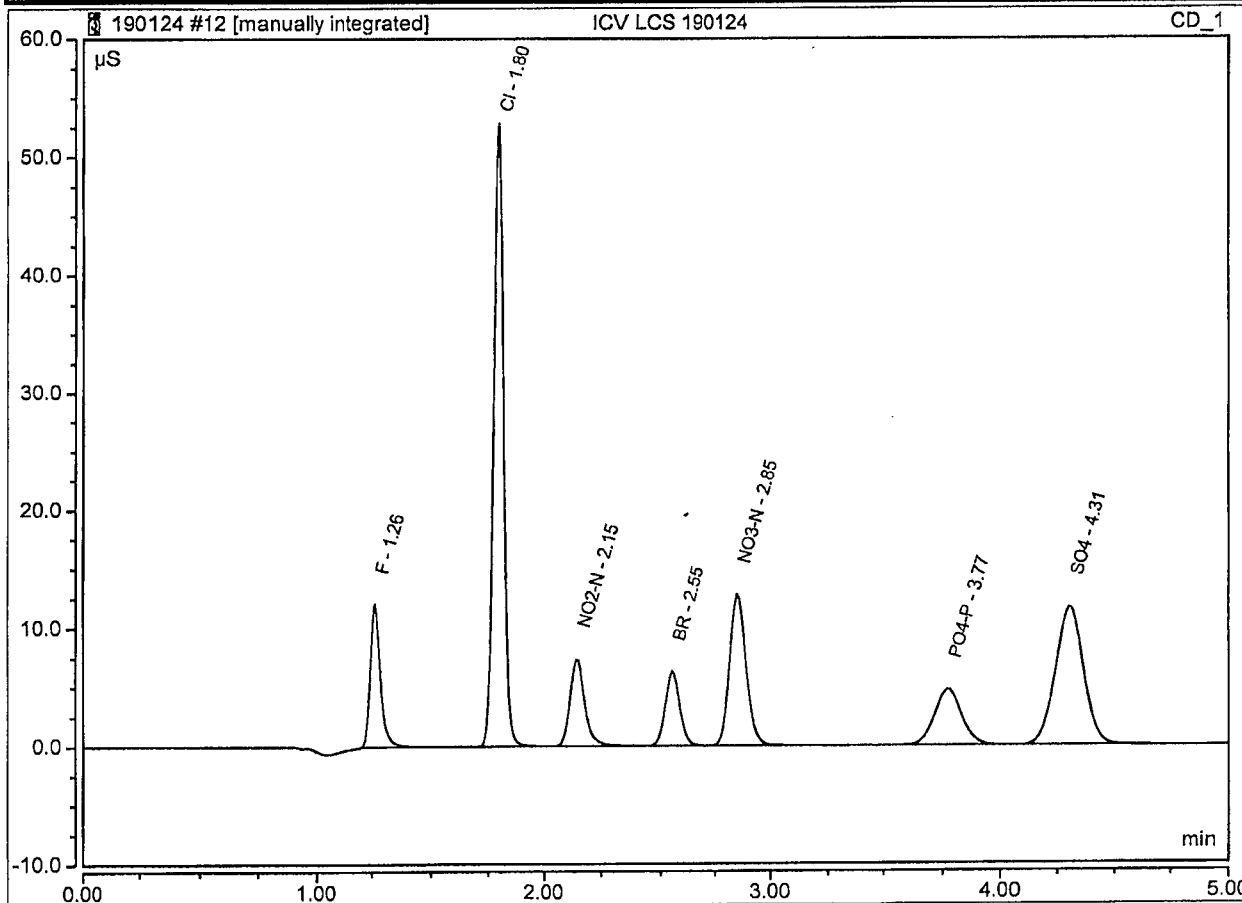
(1) Control Limits: 90-110

ILM02.0

**Peak Integration Report**

Sample Name:	ICV LCS 190124	Inj. Vol.:	25.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 13:12	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.26	F	BMB*	0.626	12.036	5.0197
2	1.80	Cl	BMB	2.660	52.786	24.9773
3	2.15	NO2-N	BMB	0.552	7.368	3.1189
4	2.55	BR	BMB	0.467	6.249	12.8349
5	2.85	NO3-N	BMB	1.088	12.728	4.9637
6	3.77	PO4-P	BMB	0.642	4.687	9.2043
7	4.31	SO4	BMB	1.650	11.613	24.8282



F mi1 HH 190128 MM

Algorithm Check:

y = Peak Area

x = mg/L S04

$$y = 0.0664 \quad x + \quad 0.0000$$

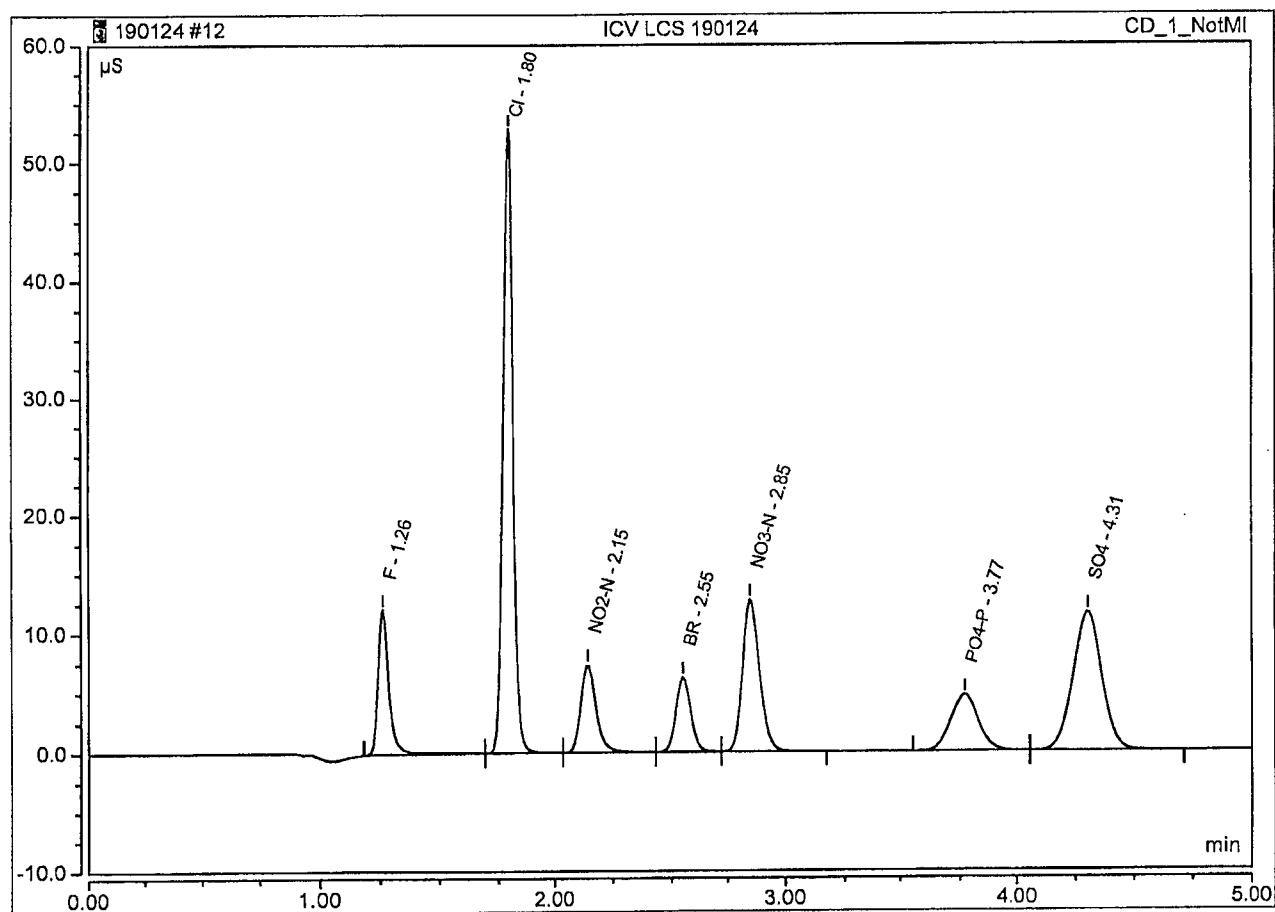
$$y = 1.6497 \quad \text{therefor } x = 24.85 \text{ HH 190129}$$



### Not Manipulated Peak Integration Report

Sample Name:	ICV LCS 190124	Inj. Vol.:	25.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 13:12	Run Time:	5.00

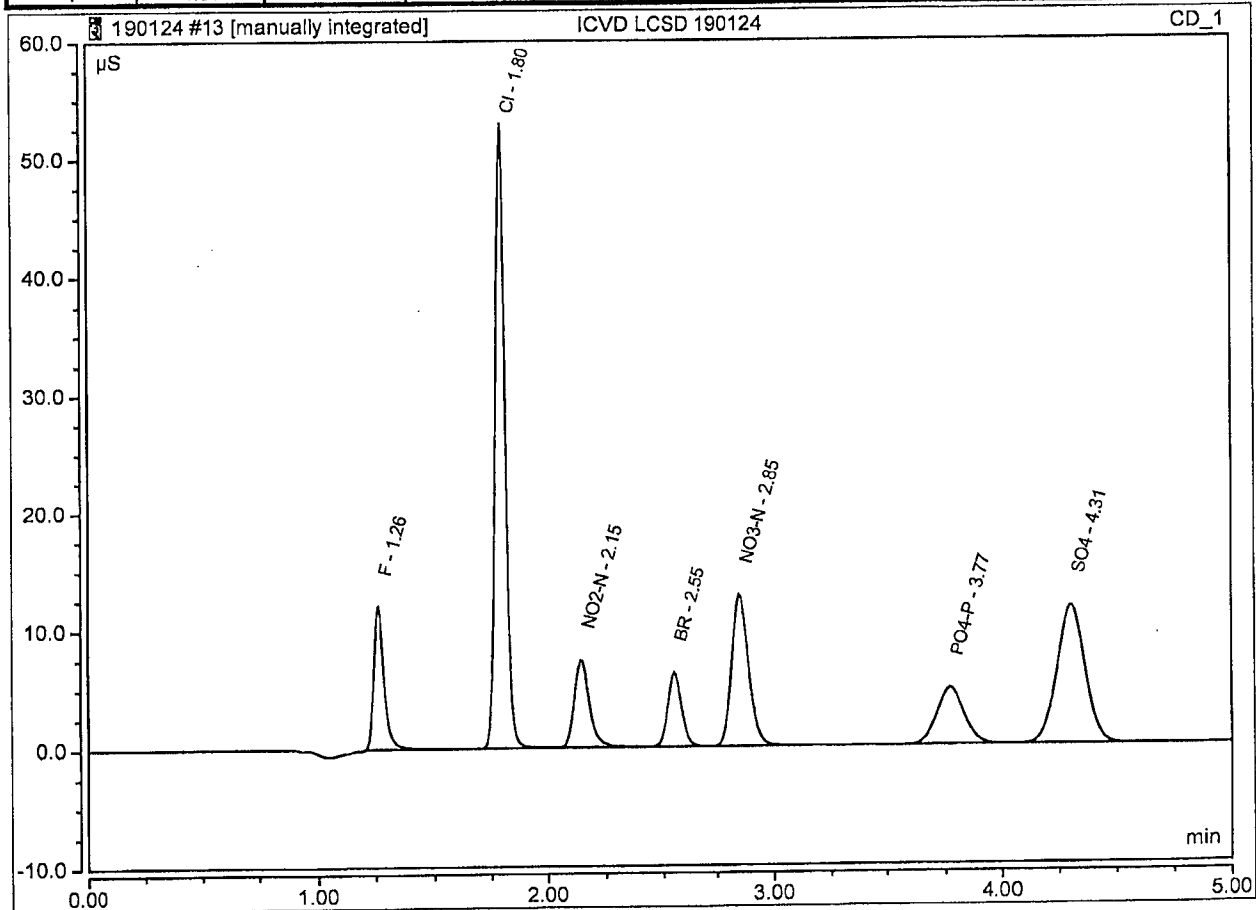
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height $\mu\text{S}$	Area $\mu\text{S}\cdot\text{min}$
1	1.26	F	BMB*	0.653	12.130	4.9830
2	1.80	Cl	BMB	2.660	52.786	24.9773
3	2.15	NO2-N	BMB	0.552	7.368	3.1189
4	2.55	BR	BMB	0.467	6.249	12.8349
5	2.85	NO3-N	BMB	1.088	12.728	4.9637
6	3.77	PO4-P	BMB	0.642	4.687	9.2043
7	4.31	SO4	BMB	1.650	11.613	24.8282



### Peak Integration Report

Sample Name:	ICVD LCSD 190124	Inj. Vol.:	25.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 13:20	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.26	F	BMB*	0.623	12.051	4.9943
2	1.80	Cl	BMB	2.666	52.924	25.0366
3	2.15	NO2-N	BMB	0.552	7.375	3.1222
4	2.55	BR	BMB	0.468	6.262	12.8652
5	2.85	NO3-N	BMB	1.090	12.755	4.9733
6	3.77	PO4-P	BMB	0.654	4.778	9.3775
7	4.31	SO4	BMB	1.653	11.628	24.8792

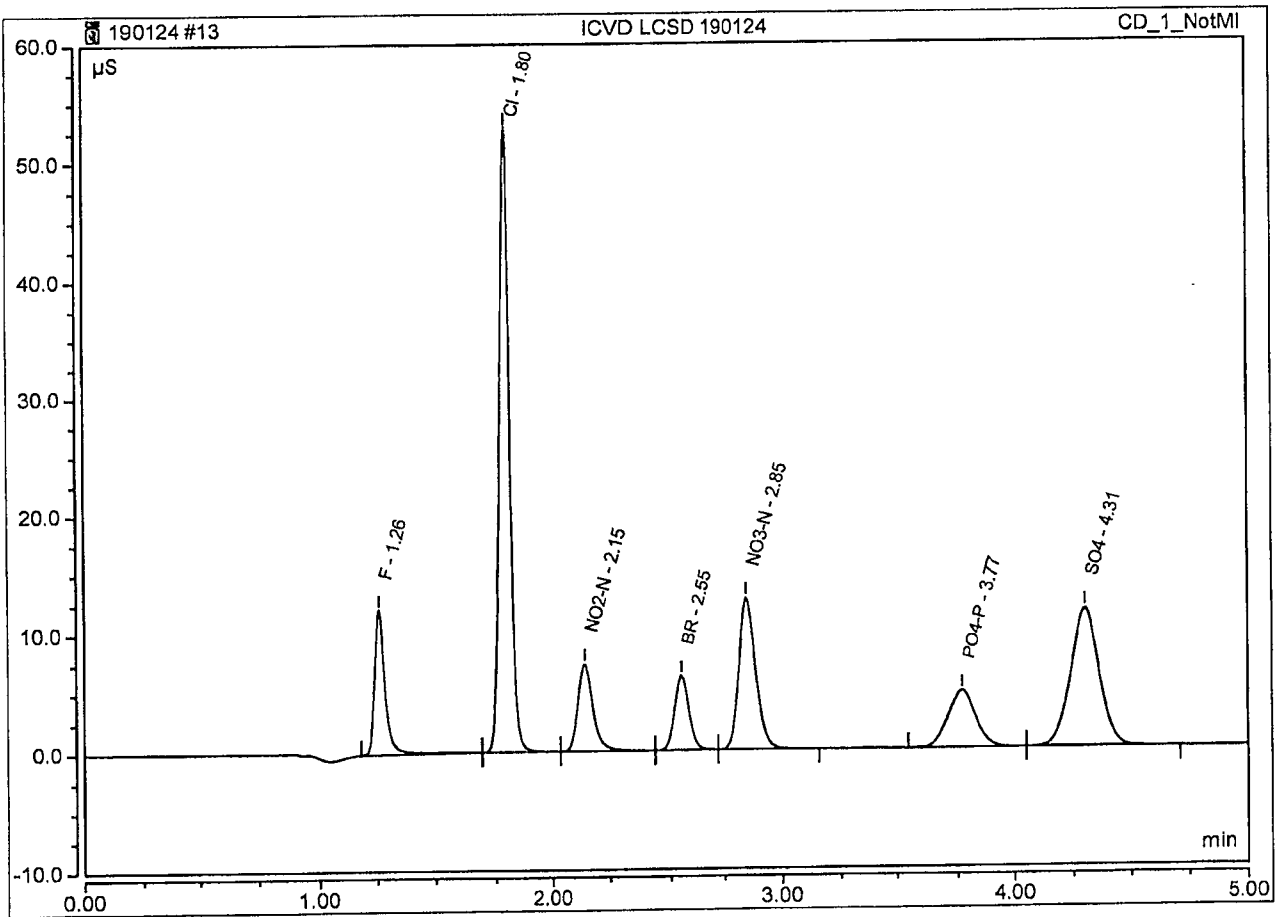


F mi1 HH 190128 MM

### Not Manipulated Peak Integration Report

Sample Name:	ICVD LCSD 190124	Inj. Vol.:	25.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 13:20	Run Time:	5.00

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height $\mu\text{S}$	Area $\mu\text{S} \cdot \text{min}$
1	1.26	F	BMB*	0.653	12.160	4.9894
2	1.80	Cl	BMB	2.666	52.924	25.0366
3	2.15	NO <sub>2</sub> -N	BMB	0.552	7.375	3.1222
4	2.55	BR	BMB	0.468	6.262	12.8652
5	2.85	NO <sub>3</sub> -N	BMB	1.090	12.755	4.9733
6	3.77	PO <sub>4</sub> -P	BMB	0.654	4.778	9.3775
7	4.31	SO <sub>4</sub>	BMB	1.653	11.628	24.8792



A.P.P.L. INC.

3

BLANKS

Lab Name: A.P.P.L. INC.

Contract: \_\_\_\_\_

ARF No.: \_\_\_\_\_

SDG: \_\_\_\_\_

Preparation Blank Matrix (soil/water): water

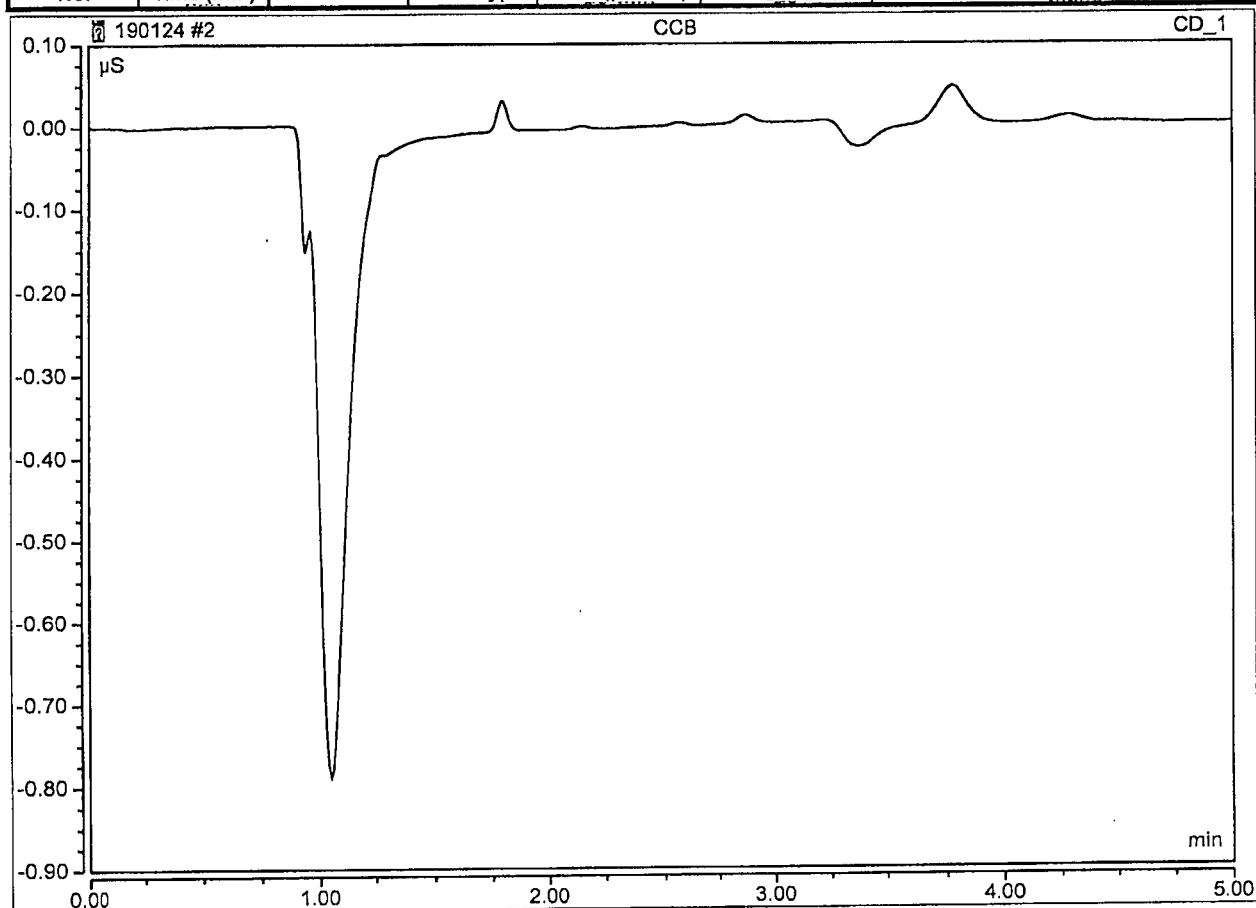
Preparation Blank Concentration Units (ug/L or mg/kg): mg/L

Analyte	Calibration Blanks										M
	CCB 01/24/19 11:58	C	CCB 01/24/19 13:05	C		C		C		C	
bromide	.500	U	.500	U							
chloride	1.000	U	1.000	U							
fluoride	.100	U	.100	U							
Nitrate(NO3)	.500	U	.500	U							
Nitrate(NO3)-N	.200	U	.200	U							
Nitrite(NO2)	.300	U	.300	U							
Nitrite(NO2)-N	.100	U	.100	U							
phosphate	.600	U	.316	J							
phosphate-p	.200	U	.103	J							
sulfate	1.000	U	1.000	U							

### Peak Integration Report

Sample Name:	CCB	Inj. Vol.:	25.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Anion APM 190109	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 11:58	Run Time:	5.00

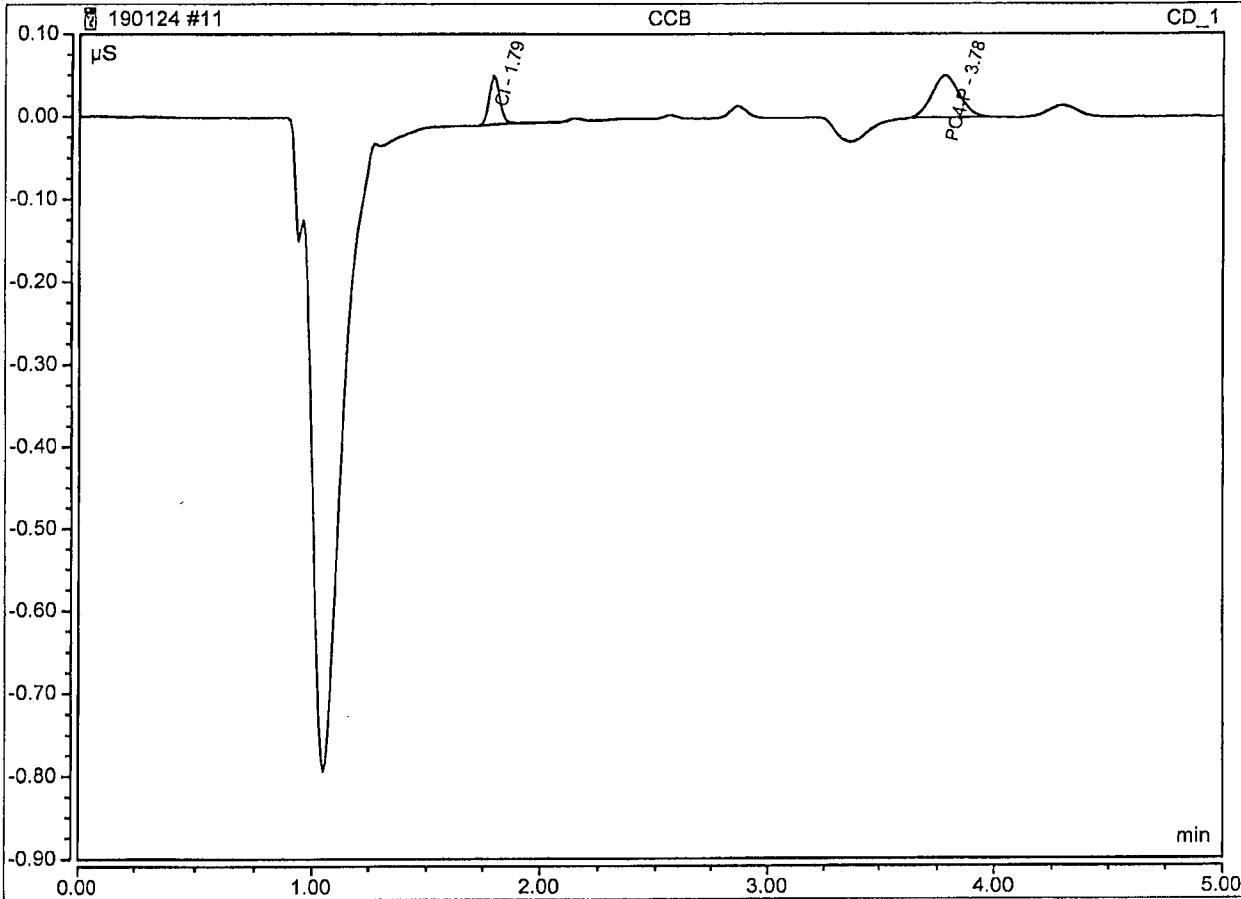
No.	Time (min)	Peak Name	Peak Type	Area ( $\mu\text{S}\cdot\text{min}$ )	Height ( $\mu\text{S}$ )	Amount (mg/L)
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**Peak Integration Report**

Sample Name:	CCB	Inj. Vol.:	25.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 13:05	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.79	Cl	BMB	0.003	0.059	0.0294
2	3.78	PO4-P	BMB	0.007	0.051	0.1030



INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: A.P.P.L. INC. Contract: AECOM

ARF No: 88062 SDG: 88062

Initial Calibration Source: CPI

Continuing Calibration Source: Environmental Express

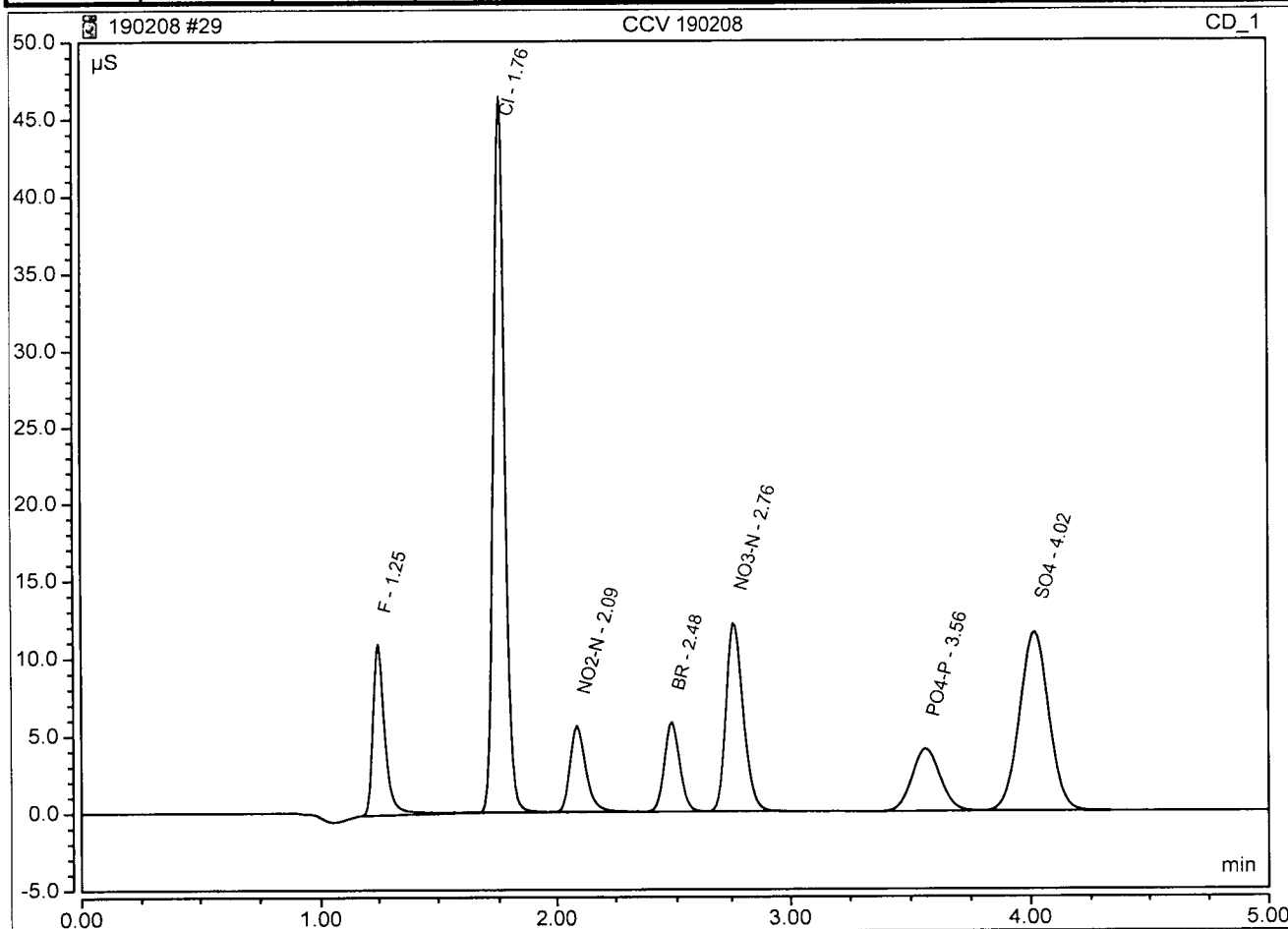
Analysis Date: 02/08/19

Analyte	Calibration Verification									M
	True CCV1	Found 13:27	%R(1)	True CCV1	Found 14:24	%R(1)	True	Found	%R(1)	
Nitrate(NO3)	22.1	21.5411	97.5	22.1	21.5455	97.5				
sulfate	25	24.362	97.4	25	24.3544	97.4				

### Peak Integration Report

Sample Name:	CCV 190208	Inj. Vol.:	25.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	08-Feb-2019 / 13:27	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.25	F	BMB	0.676	11.039	5.4201
2	1.76	Cl	BMB	2.548	46.387	23.9304
3	2.09	NO2-N	BMB	0.441	5.562	2.4909
4	2.48	BR	BMB	0.451	5.798	12.4041
5	2.76	NO3-N	BMB	1.066	12.180	4.8641
6	3.56	PO4-P	BMB	0.555	4.061	7.9590
7	4.02	SO4	BMB	1.619	11.539	24.3620

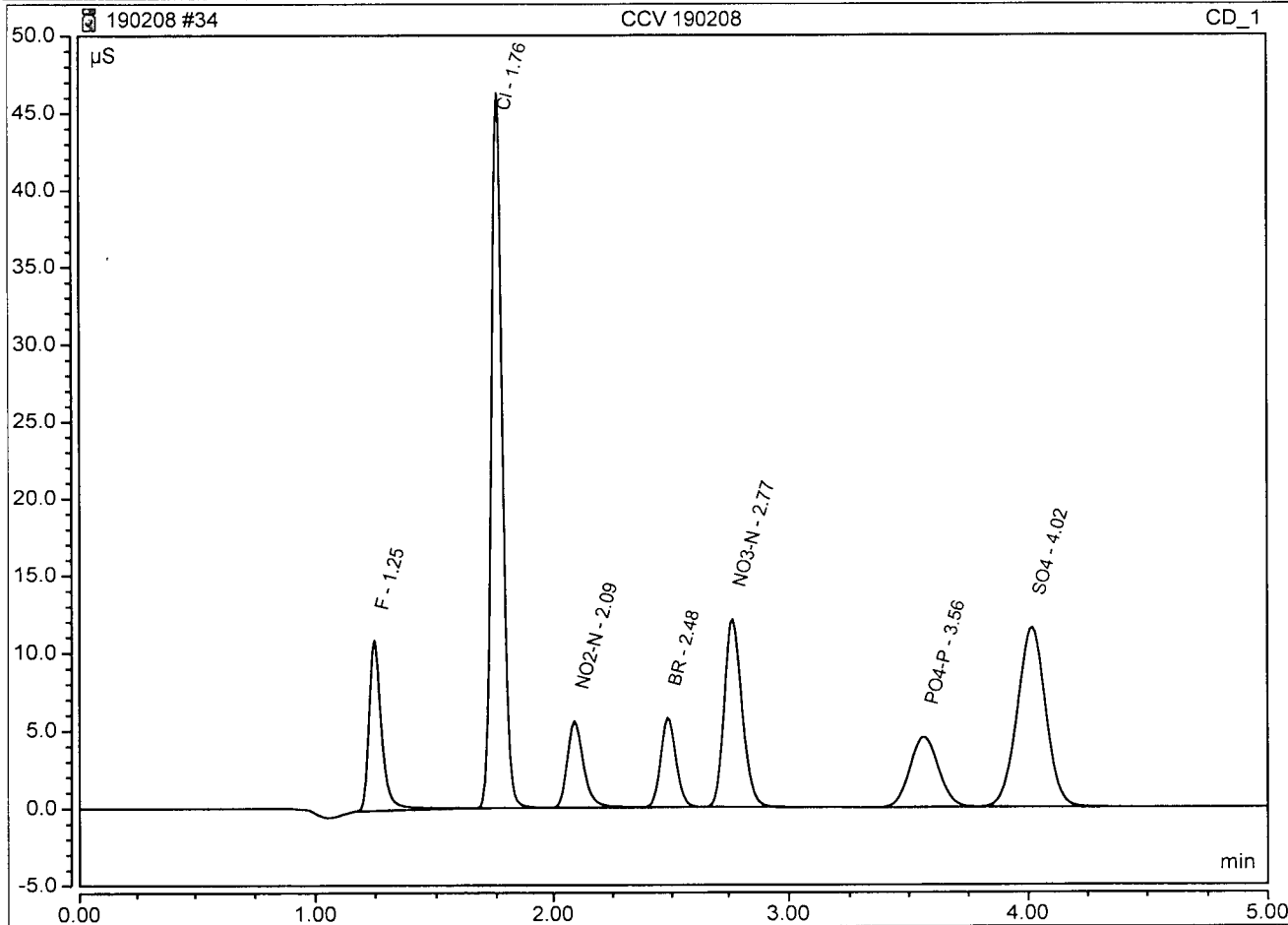




### Peak Integration Report

Sample Name:	CCV 190208	Inj. Vol.:	25.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	08-Feb-2019 / 14:24	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.25	F	BMB	0.670	10.943	5.3707
2	1.76	Cl	BMB	2.549	46.291	23.9409
3	2.09	NO2-N	BMB	0.442	5.565	2.5013
4	2.48	BR	BMB	0.452	5.780	12.4133
5	2.77	NO3-N	BMB	1.067	12.126	4.8651
6	3.56	PO4-P	BMB	0.619	4.537	8.8769
7	4.02	SO4	BMB	1.618	11.557	24.3544



A.P.P.L. INC.

3

BLANKS

Lab Name: A.P.P.L. INC.

Contract: AECOM

ARF No.: 88062

SDG: 88062

Preparation Blank Matrix (soil/water): water

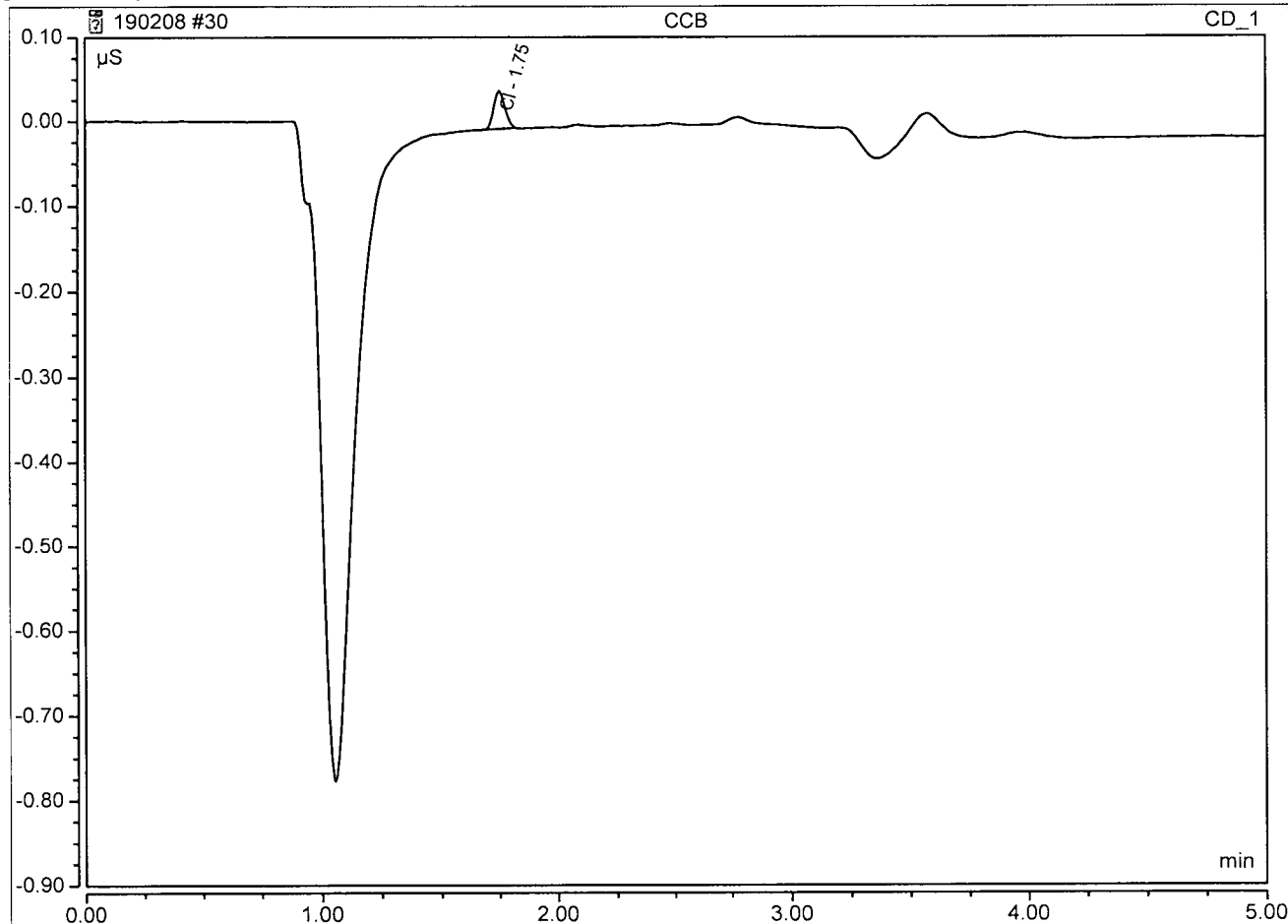
Preparation Blank Concentration Units (ug/L or mg/kg): mg/L

Analyte	Calibration Blanks										M
	CCB 02/08/19 13:55	C	CCB 02/08/19 14:32	C		C		C		C	
Nitrate(NO3)	.500	U	.500	U							
sulfate	1.000	U	1.000	U							

### Peak Integration Report

Sample Name:	CCB	Inj. Vol.:	25.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	08-Feb-2019 / 13:55	Run Time:	5.00

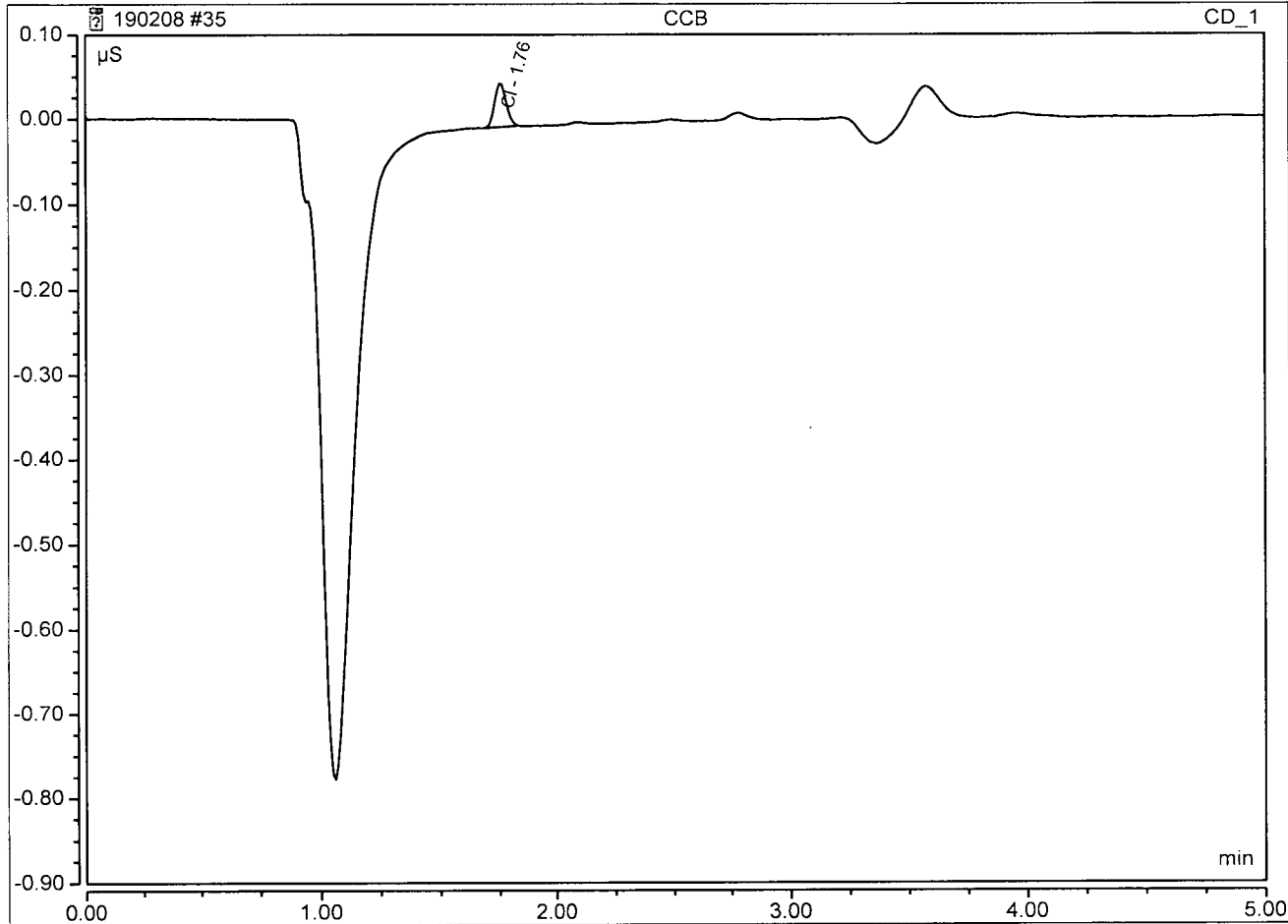
No.	Time (min)	Peak Name	Peak Type	Area ( $\mu\text{S}\cdot\text{min}$ )	Height ( $\mu\text{S}$ )	Amount (mg/L)
1	1.75	Cl	BMB	0.003	0.045	0.0238



### Peak Integration Report

Sample Name:	CCB	Inj. Vol.:	25.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	08-Feb-2019 / 14:32	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area ( $\mu\text{S}\cdot\text{min}$ )	Height ( $\mu\text{S}$ )	Amount (mg/L)
1	1.76	Cl	BMB	0.003	0.052	0.0281



INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: A.P.P.L. INC. Contract: AECOM

ARF No: 88062 SDG: 88062

Initial Calibration Source: CPI

Continuing Calibration Source: Environmental Express

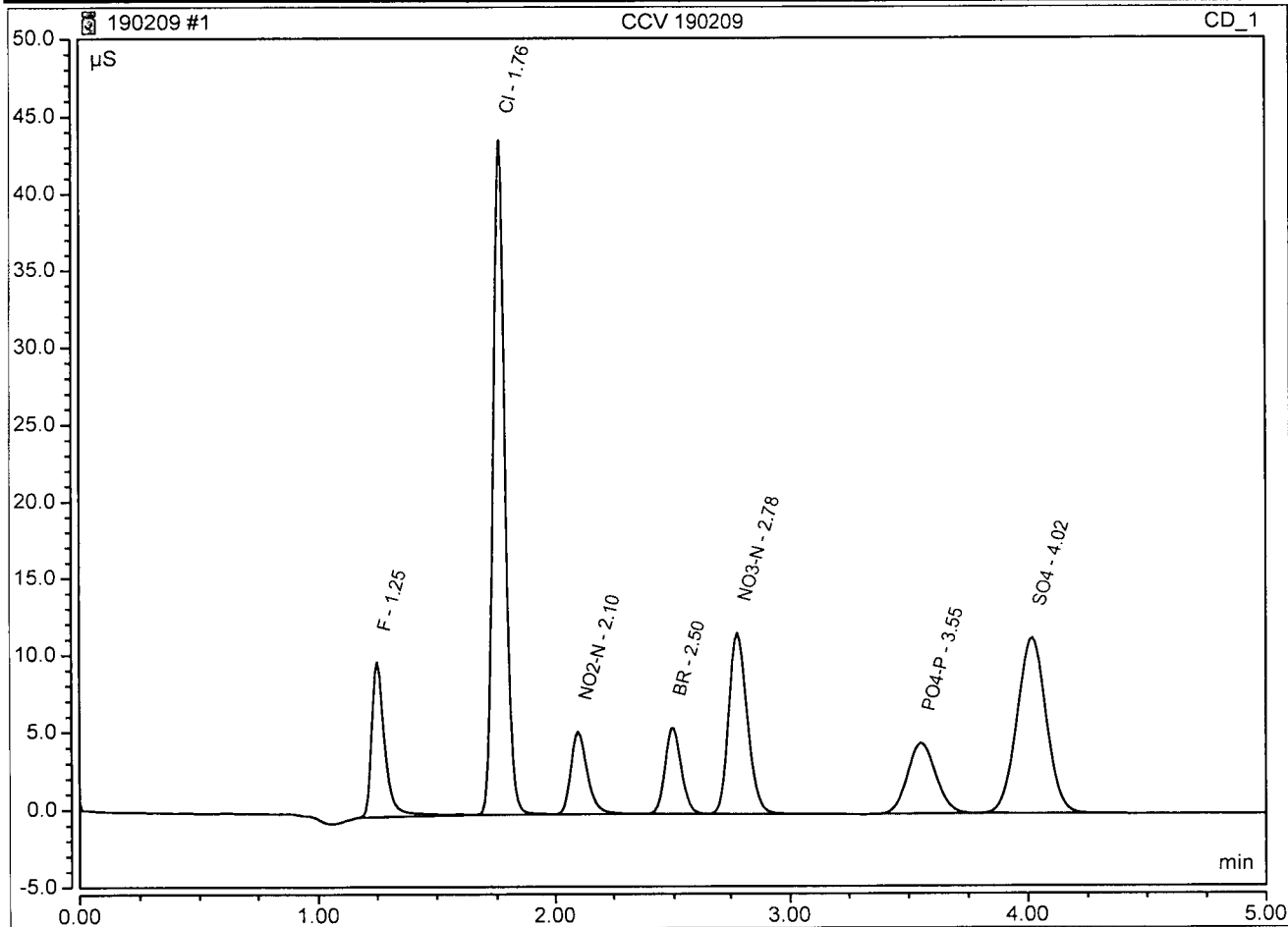
Analysis Date: 02/09/19

Analyte	Calibration Verification									M
	True CCV1	Found 8:09	%R(1)	True CCV1	Found 13:01	%R(1)	True CCV1	Found 14:00	%R(1)	
chloride	25	23.7229	94.9	25	23.9857	95.9	25	24.036	96.1	

### Peak Integration Report

Sample Name:	CCV 190209	Inj. Vol.:	25.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	09-Feb-2019 / 08:09	Run Time:	5.00

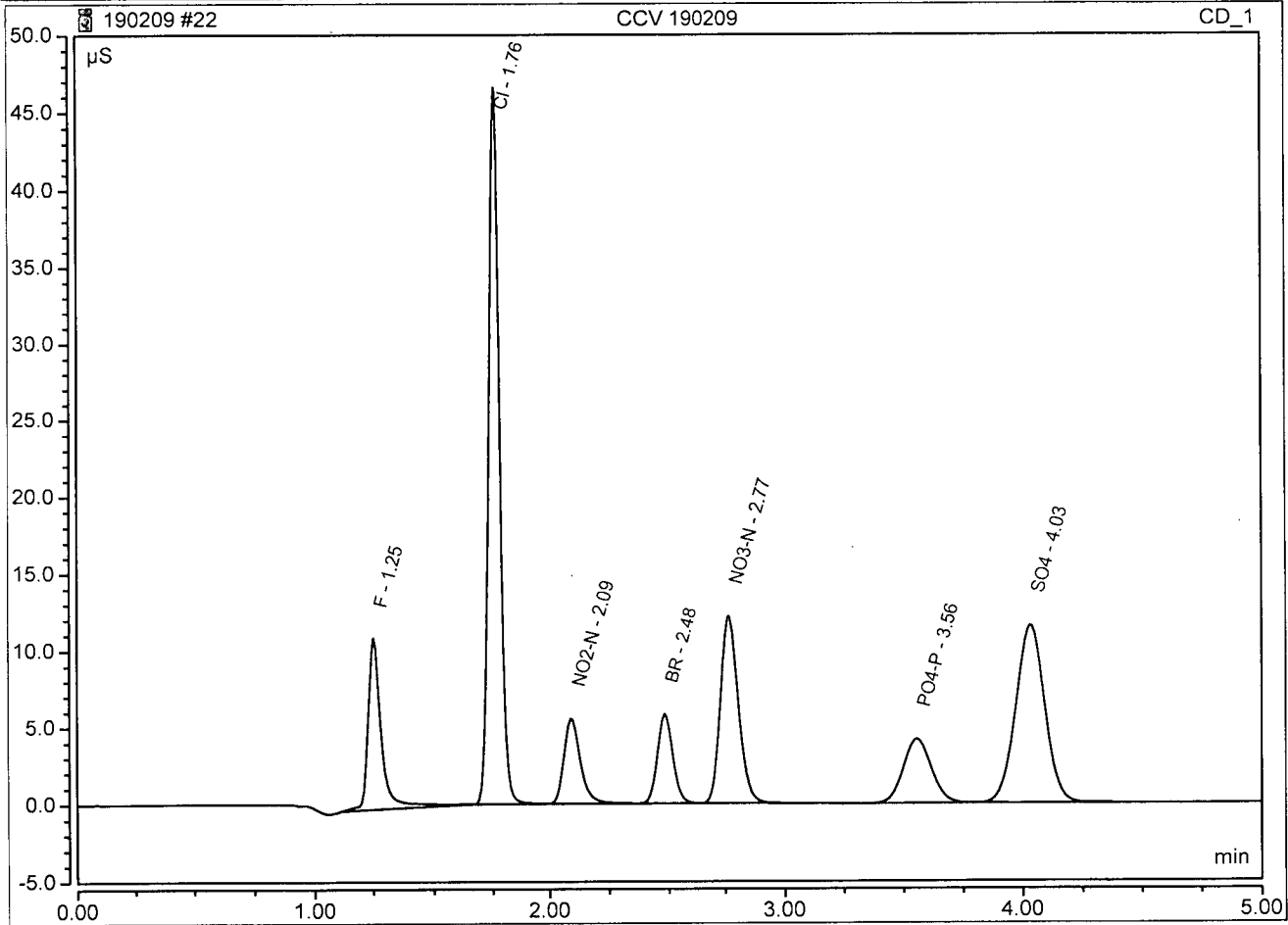
No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.25	F	BMB	0.656	10.004	5.2573
2	1.76	Cl	BMB	2.526	43.788	23.7229
3	2.10	NO2-N	BMB	0.439	5.306	2.4799
4	2.50	BR	BMB	0.452	5.580	12.4202
5	2.78	NO3-N	BMB	1.064	11.706	4.8516
6	3.55	PO4-P	BMB	0.634	4.571	9.0971
7	4.02	SO4	BMB	1.617	11.376	24.3324



### Peak Integration Report

Sample Name:	CCV 190209	Inj. Vol.:	25.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	09-Feb-2019 / 13:01	Run Time:	5.00

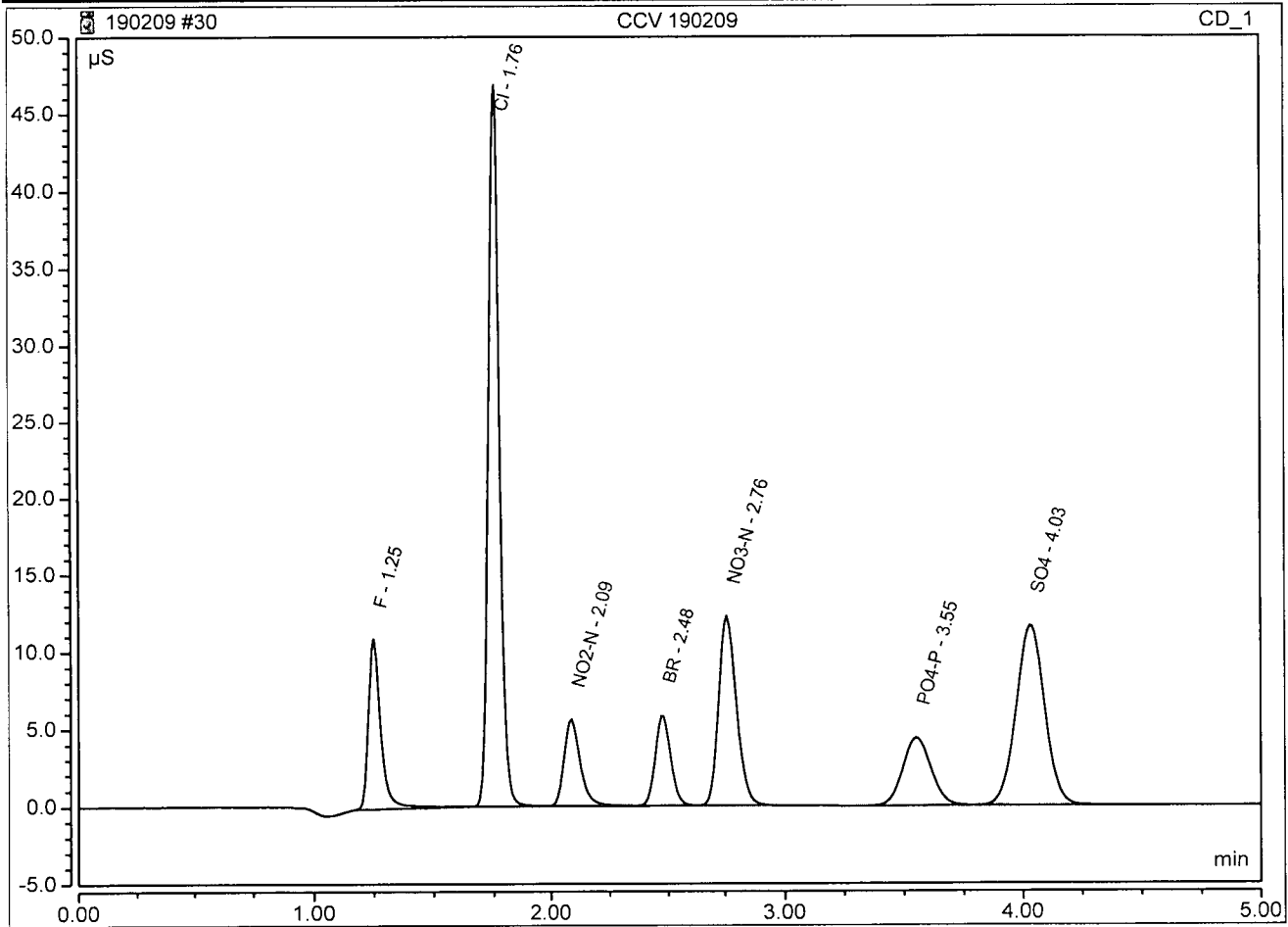
No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.25	F	BMB	0.726	11.143	5.8141
2	1.76	Cl	BMB	2.554	46.586	23.9857
3	2.09	NO2-N	BMB	0.442	5.574	2.4972
4	2.48	BR	BMB	0.453	5.814	12.4413
5	2.77	NO3-N	BMB	1.068	12.190	4.8740
6	3.56	PO4-P	BMB	0.574	4.197	8.2278
7	4.03	SO4	BMB	1.625	11.585	24.4512



### Peak Integration Report

Sample Name:	CCV 190209	Inj. Vol.:	25.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	09-Feb-2019 / 14:00	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.25	F	BMB	0.673	11.007	5.3917
2	1.76	Cl	BMB	2.559	46.861	24.0360
3	2.09	NO2-N	BMB	0.442	5.604	2.5015
4	2.48	BR	BMB	0.453	5.848	12.4620
5	2.76	NO3-N	BMB	1.071	12.256	4.8877
6	3.55	PO4-P	BMB	0.599	4.398	8.5902
7	4.03	SO4	BMB	1.627	11.633	24.4906





A.P.P.L. INC.

3

BLANKS

Lab Name: A.P.P.L. INC.

Contract: AECOM

ARF No.: 88062

SDG: 88062

Preparation Blank Matrix (soil/water): water

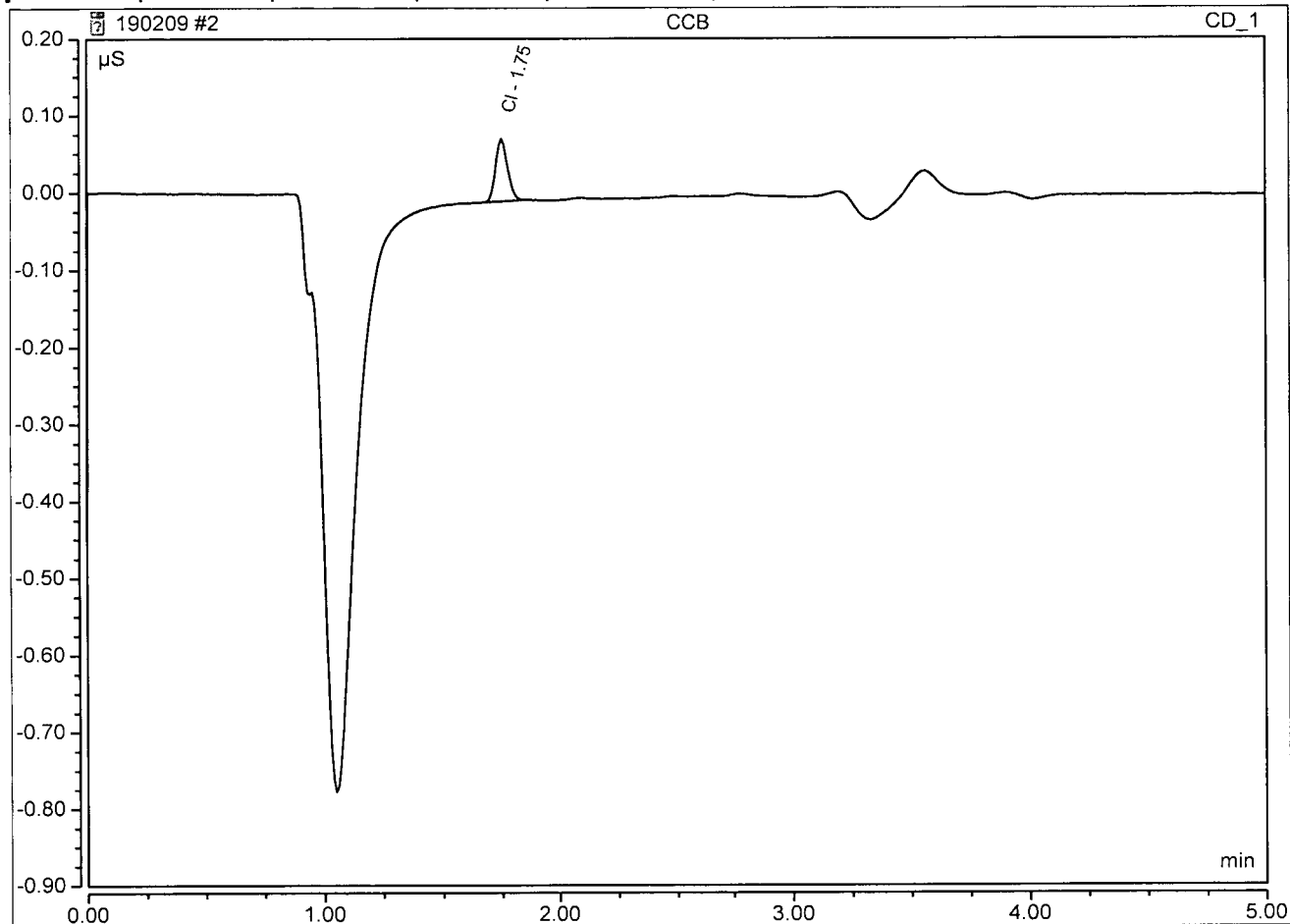
Preparation Blank Concentration Units (ug/L or mg/kg): mg/L

Analyte	Calibration Blanks										M
	CCB 02/09/19 08:17	C	CCB 02/09/19 13:08	C	CCB 02/09/19 14:07	C		C		C	
chloride	1.000	U	1.000	U	1.000	U					

### Peak Integration Report

Sample Name:	CCB	Inj. Vol.:	25.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	09-Feb-2019 / 08:17	Run Time:	5.00

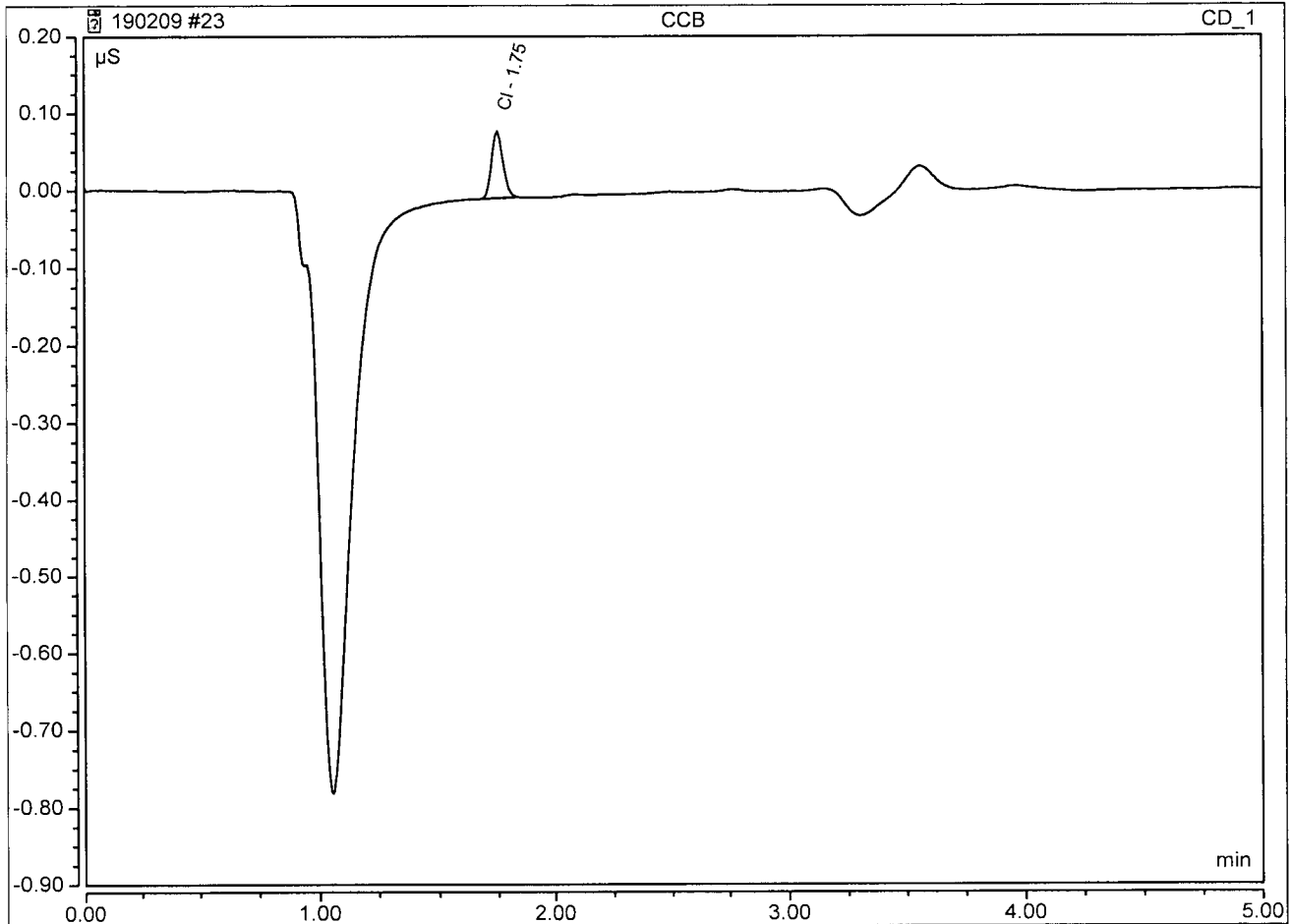
No.	Time (min)	Peak Name	Peak Type	Area ( $\mu\text{S}\cdot\text{min}$ )	Height ( $\mu\text{S}$ )	Amount (mg/L)
1	1.75	Cl	BMB	0.005	0.081	0.0454



### Peak Integration Report

Sample Name:	CCB	Inj. Vol.:	25.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	09-Feb-2019 / 13:08	Run Time:	5.00

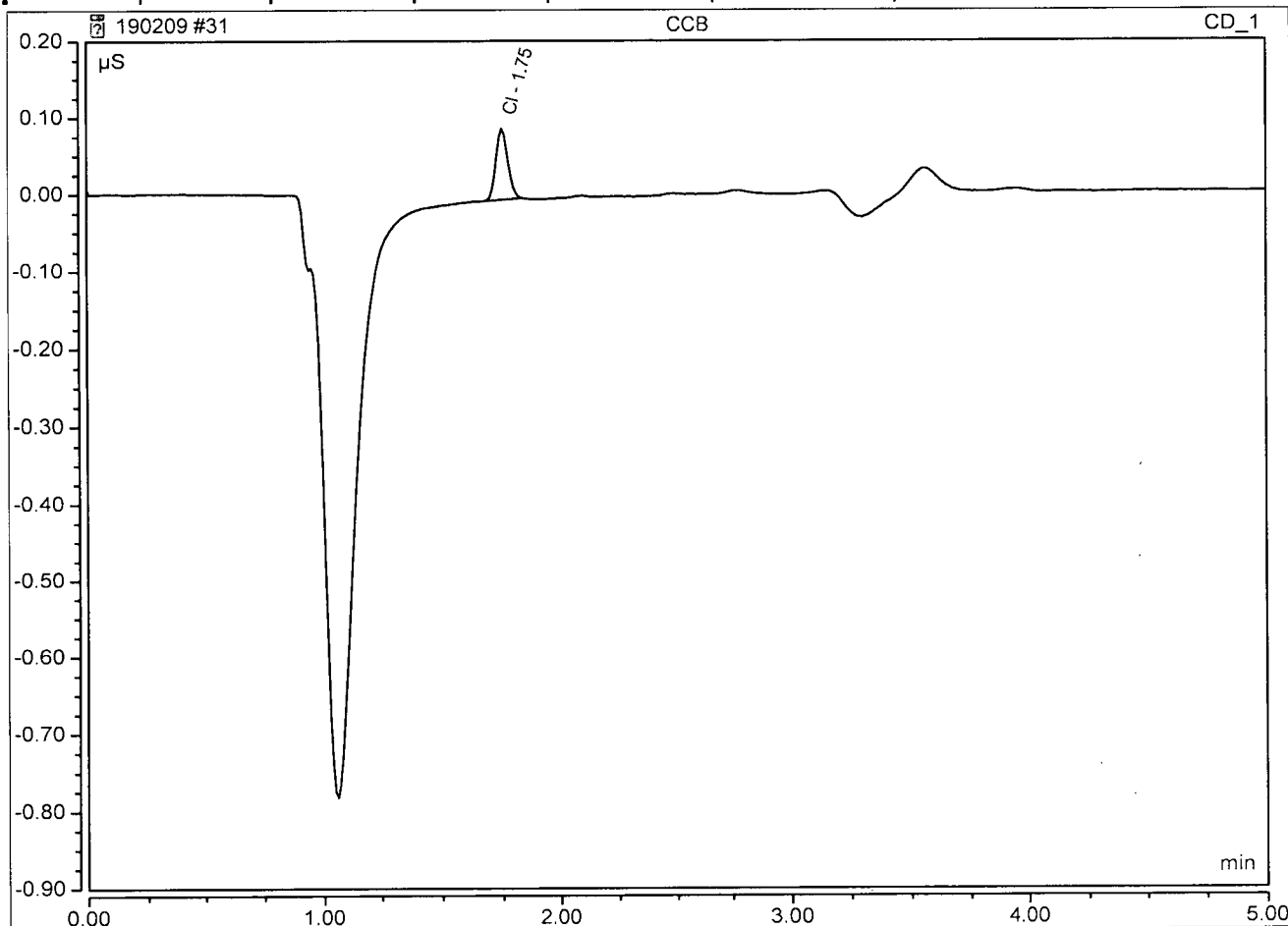
No.	Time (min)	Peak Name	Peak Type	Area ( $\mu\text{S}\cdot\text{min}$ )	Height ( $\mu\text{S}$ )	Amount (mg/L)
1	1.75	Cl	BMB	0.005	0.087	0.0473



### Peak Integration Report

Sample Name:	CCB	Inj. Vol.:	25.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	09-Feb-2019 / 14:07	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area ( $\mu\text{S}\cdot\text{min}$ )	Height ( $\mu\text{S}$ )	Amount (mg/L)
1	1.75	Cl	BMB	0.005	0.092	0.0504



A.P.P.L. INC.  
2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: A.P.P.L. INC. Contract: AECOM

ARF No: 88062 SDG: 88062

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: O2Si

Analysis Date: 02/13/19

Analyte	Calibration Verification									M
	True CCV1	Found 14:48	%R(1)	True ICV	Found 14:52	%R(1)	True CCV1	Found 15:02	%R(1)	
TOXN	3	2.9328	97.8	3	3.1098	104	3	3.0536	102	

A.P.P.L. INC.

3

BLANKS

Lab Name: A.P.P.L. INC.

Contract: AECOM

ARF No.: 88062

SDG: 88062

Preparation Blank Matrix (soil/water): water

Preparation Blank Concentration Units (ug/L or mg/kg): mg/L

Analyte	Calibration Blanks										M
	CCB 02/13/19 14:50	C	ICB 02/13/19 14:54	C	CCB 02/13/19 15:03	C		C		C	
TOXN	.100	U	.100	U	.100	U					

**APPL Inc**  
**2A**  
**Initial and Continuing Calibration Verification**

**Lab Name:** APPL Inc  
**ARF No:**  
**ICAL Source:**  
**CCV Source:**  
**Analysis Date:** 02/11/19

**Contract:**  
**SDG:**

Analyte	Calibration Verification									M
	True ICV	Found 20:02	%R (1)	True CCV	Found	%R (2)	True CCV	Found	%R (3)	
TOC	2.50	2.696	107.8							

APPL Inc  
3  
Blanks

Lab Name: APPL Inc  
 ARF No:  
 Prep Blank Matrix: water  
 Prep BlankUnits: mg/L

Contract:  
 SDG:

	Calibration Blanks												M	
	Analyte	ICB 2/11/19 19:31	C											
TOC	0.16	J												



**APPL Inc**  
**2A**  
**Initial and Continuing Calibration Verification**

**Lab Name:** APPL Inc  
**ARF No:** 88062  
**ICAL Source:**  
**CCV Source:**  
**Analysis Date:** 02/13/19

**Contract:** AECOM  
**SDG:** 88062

Analyte	Calibration Verification									M
	True CCV	Found 08:48	%R (1)	True CCV	Found 21:23	%R (2)	True CCV	Found 03:55	%R (3)	
TOC	2.50	2.658	106.3	2.50	2.704	108.2	2.50	2.555	102.2	

**APPL Inc**  
**3**  
**Blanks**

**Lab Name:** APPL Inc  
**ARF No:** 88062  
**Prep Blank Matrix:** water  
**Prep BlankUnits:** mg/L

**Contract:** AECOM  
**SDG:** 88062

	Calibration Blanks											M
	CCB 2/13/19 09:23		CCB 2/13/19 21:58		CCB 2/14/19 04:31							
Analyte	C	C	C									
TOC	0.31	J	0.28	J	0.93	U						

### Calibration Batch Report

<b>Sequence:</b>	<b>190124</b>	<b>Injection Volume:</b>	<b>25.00</b>
<b>Instrument Method:</b>	<b>Anlons IM</b>	<b>Operator:</b>	<b>chemist_wetlab</b>
<b>Inj. Date / Time:</b>	<b>24-Jan-2019 / 12:57</b>	<b>Run Time:</b>	<b>5</b>

Calibration Summary							
Peak Name	Eval.Type	Cal.Type	Points	Offset (C0)	Slope (C1)	Curve (C2)	Coeff.Det. %
F	Area	Lin, WithOffset, 1/A	8.000	-0.006	0.126	0.000	99.6784
Cl	Area	Lin	8.000	0.000	0.106	0.000	99.5874
NO2-N	Area	Lin	8.000	0.000	0.177	0.000	99.9482
BR	Area	Lin	8.000	0.000	0.036	0.000	99.8938
NO3-N	Area	Lin	8.000	0.000	0.219	0.000	99.7197
PO4-P	Area	Lin	8.000	0.000	0.070	0.000	99.1895
SO4	Area	Lin	8.000	0.000	0.066	0.000	99.7785

Injection Name	Ret.Time min	Area $\mu\text{S} \cdot \text{min}$	Height $\mu\text{S}$	Amount mg/L
	CD 1	CD 1	CD 1	CD 1
	F	F	F	F
i cal 1	1.258	0.0078	0.177	0.110
i cal 2	1.263	0.0331	0.551	0.311
i cal 3	1.263	0.0600	1.273	0.525
i cal 4	1.260	0.1319	2.702	1.096
i cal 5	1.258	0.2788	5.622	2.263
i cal 6	1.267	0.7668	14.736	6.141
i cal 7	1.270	1.1062	20.788	8.837
i cal 8	1.272	1.6227	29.189	12.941

Injection Name	Ret.Time min CD 1	Area $\mu\text{S}^*\text{min}$ CD 1	Height $\mu\text{S}$ CD 1	Amount mg/L CD 1
	Cl	Cl	Cl	Cl
i cal 1	1.790	0.0388	0.720	0.364
i cal 2	1.790	0.1261	2.353	1.184
i cal 3	1.795	0.1988	3.728	1.867
i cal 4	1.792	0.4159	7.930	3.906
i cal 5	1.792	0.8761	17.063	8.228
i cal 6	1.798	2.4846	49.285	23.333
i cal 7	1.803	3.6782	72.562	34.542
i cal 8	1.807	5.4995	106.635	51.646

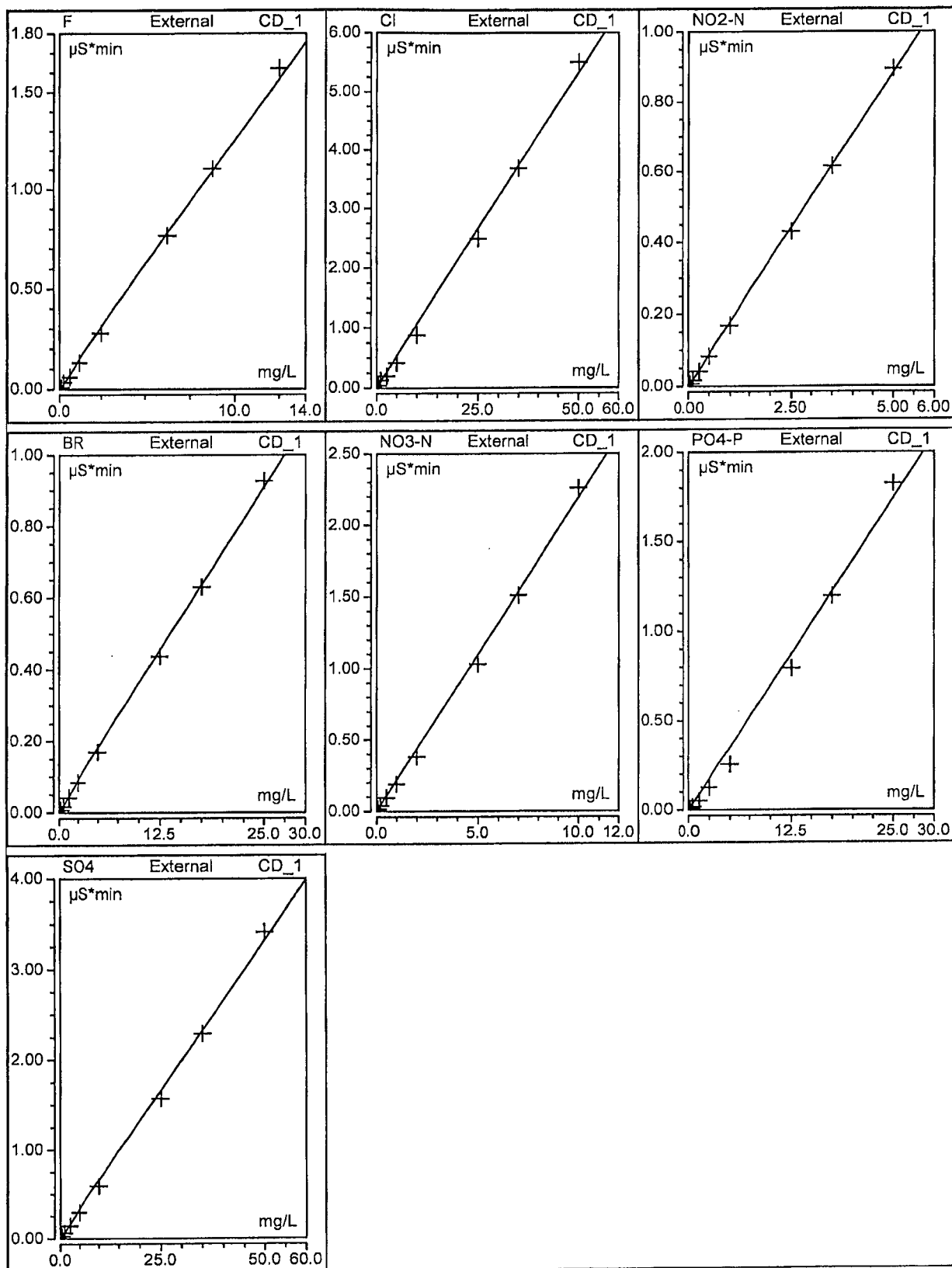
Injection Name	Ret.Time min CD 1	Area $\mu\text{S}^*\text{min}$ CD 1	Height $\mu\text{S}$ CD 1	Amount mg/L CD 1
	NO2-N	NO2-N	NO2-N	NO2-N
i cal 1	2.143	0.0068	0.093	0.038
i cal 2	2.143	0.0168	0.228	0.095
i cal 3	2.148	0.0409	0.554	0.231
i cal 4	2.143	0.0830	1.119	0.469
i cal 5	2.143	0.1677	2.261	0.948
i cal 6	2.147	0.4302	5.768	2.433
i cal 7	2.150	0.6156	8.211	3.481
i cal 8	2.152	0.8951	11.797	5.061

Injection Name	Ret.Time min CD 1	Area $\mu\text{S}^*\text{min}$ CD 1	Height $\mu\text{S}$ CD 1	Amount mg/L CD 1
	BR	BR	BR	BR
i cal 1	2.558	0.0071	0.093	0.195
i cal 2	2.558	0.0171	0.224	0.470
i cal 3	2.562	0.0416	0.544	1.144
i cal 4	2.557	0.0838	1.099	2.304
i cal 5	2.555	0.1691	2.232	4.648
i cal 6	2.557	0.4375	5.850	12.024
i cal 7	2.557	0.6299	8.490	17.311
i cal 8	2.553	0.9266	12.598	25.466

Injection Name	Ret.Time min CD 1	Area $\mu\text{S}^*\text{min}$ CD 1	Height $\mu\text{S}$ CD 1	Amount mg/L CD 1
	NO3-N	NO3-N	NO3-N	NO3-N
i cal 1	2.867	0.0162	0.183	0.074
i cal 2	2.867	0.0392	0.446	0.179
i cal 3	2.868	0.0936	1.062	0.427
i cal 4	2.863	0.1896	2.162	0.865
i cal 5	2.858	0.3821	4.442	1.743
i cal 6	2.857	1.0311	12.086	4.704
i cal 7	2.855	1.5088	17.791	6.883
i cal 8	2.850	2.2578	26.658	10.299

Injection Name	Ret.Time min CD 1	Area $\mu\text{S} \cdot \text{min}$ CD 1	Height $\mu\text{S}$ CD 1	Amount mg/L CD 1
	PO4-P	PO4-P	PO4-P	PO4-P
i cal 1	3.775	0.0077	0.055	0.111
i cal 2	3.773	0.0176	0.121	0.252
i cal 3	3.778	0.0508	0.355	0.729
i cal 4	3.773	0.1246	0.850	1.788
i cal 5	3.772	0.2545	1.894	3.651
i cal 6	3.772	0.7954	5.814	11.410
i cal 7	3.772	1.1958	8.858	17.153
i cal 8	3.770	1.8237	13.683	26.161

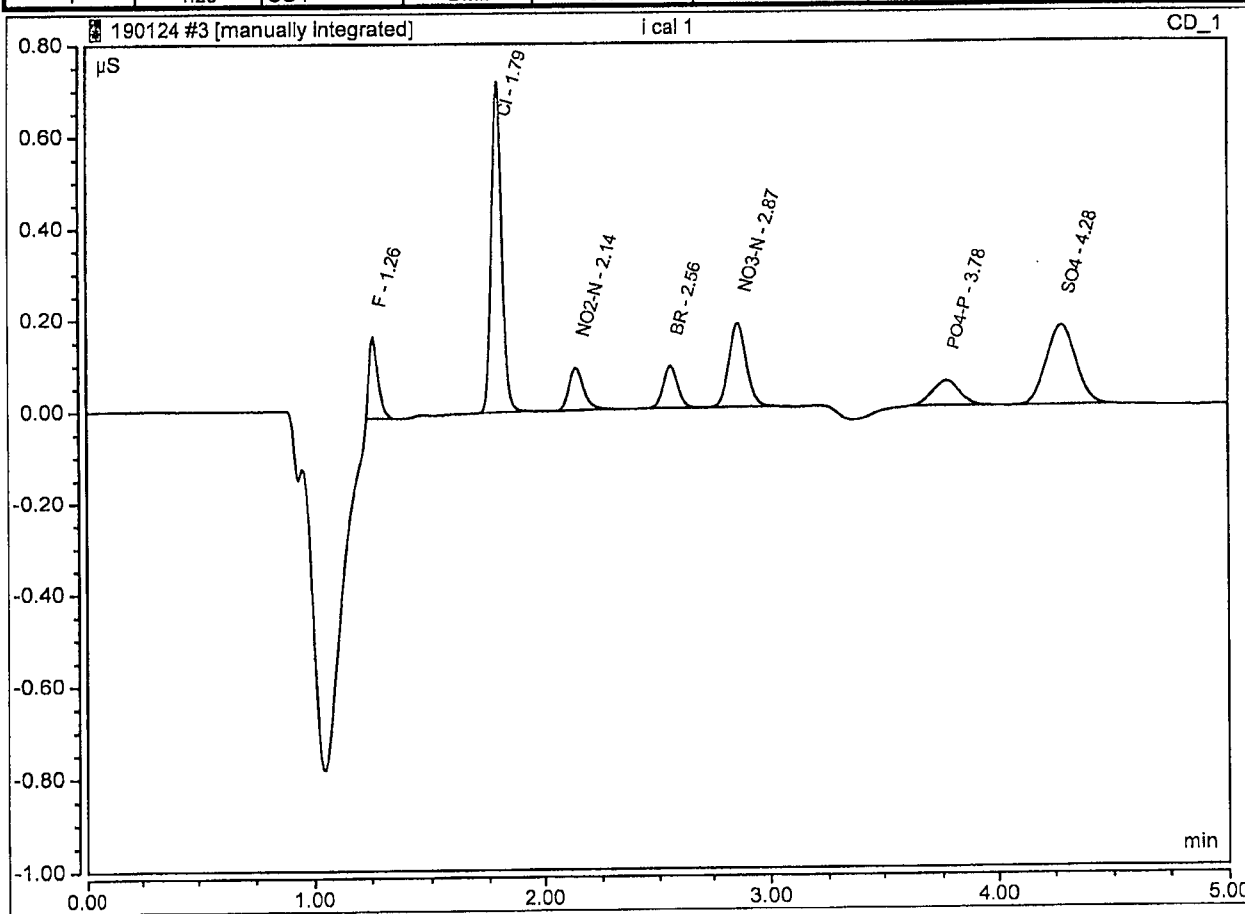
Injection Name	Ret.Time min CD 1	Area $\mu\text{S} \cdot \text{min}$ CD 1	Height $\mu\text{S}$ CD 1	Amount mg/L CD 1
	SO4	SO4	SO4	SO4
i cal 1	4.282	0.0258	0.174	0.388
i cal 2	4.283	0.0616	0.417	0.927
i cal 3	4.288	0.1444	0.976	2.174
i cal 4	4.288	0.2937	1.996	4.421
i cal 5	4.290	0.5930	4.065	8.925
i cal 6	4.300	1.5710	10.997	23.643
i cal 7	4.308	2.2902	16.201	34.468
i cal 8	4.315	3.4113	24.358	51.341



### Peak Integration Report

Sample Name:	I cal 1	Inj. Vol.:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 12:06	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.26	F	BMB*	0.008	0.177	0.1105
2	1.79	Cl	BMB	0.039	0.720	0.3640
3	2.14	NO2-N	BMB	0.007	0.093	0.0383
4	2.56	BR	BMB	0.007	0.093	0.1945
5	2.87	NO3-N	BMB	0.016	0.183	0.0739
6	3.78	PO4-P	BMB	0.008	0.055	0.1109
7	4.28	SO4	BMB	0.026	0.174	0.3876

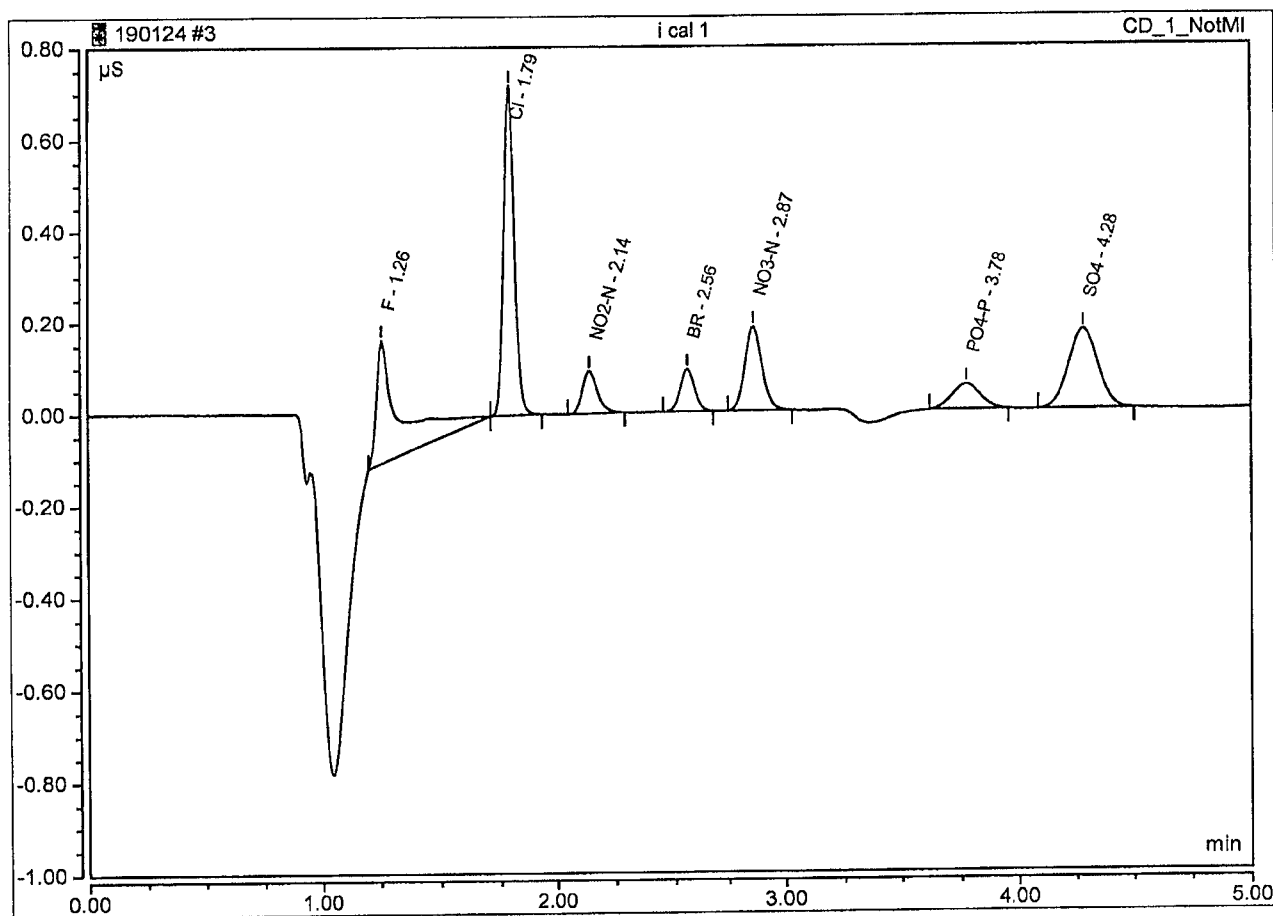


F mi1 HH 190128 MM

### Not Manipulated Peak Integration Report

Sample Name:	i cal 1	Inj. Vol.:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 12:06	Run Time:	5.00

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height $\mu\text{S}$	Area $\mu\text{S} \cdot \text{min}$
1	1.26	F	BMB*	0.032	0.269	0.0900
2	1.79	Cl	BMB	0.039	0.720	0.3640
3	2.14	NO2-N	BMB	0.007	0.093	0.0383
4	2.56	BR	BMB	0.007	0.093	0.1945
5	2.87	NO3-N	BMB	0.016	0.183	0.0739
6	3.78	PO4-P	BMB	0.008	0.055	0.1109
7	4.28	SO4	BMB	0.026	0.174	0.3876

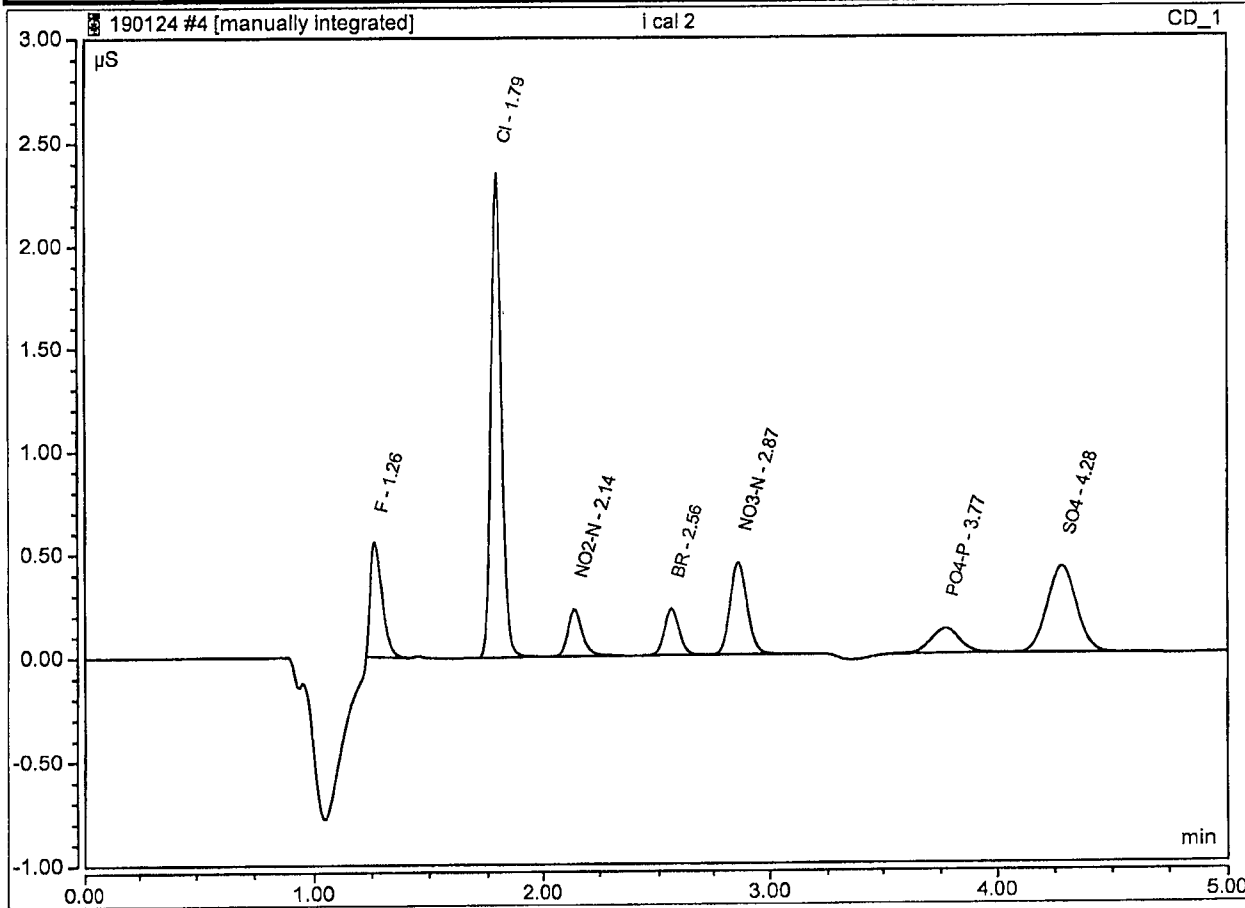




### Peak Integration Report

Sample Name:	i cal 2	Inj. Vol.:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 12:13	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.26	F	BMB*	0.033	0.551	0.3114
2	1.79	Cl	BMB	0.126	2.353	1.1844
3	2.14	NO2-N	BMB	0.017	0.228	0.0951
4	2.56	BR	BMB	0.017	0.224	0.4697
5	2.87	NO3-N	BMB	0.039	0.446	0.1790
6	3.77	PO4-P	BMB	0.018	0.121	0.2519
7	4.28	SO4	BMB	0.062	0.417	0.9266

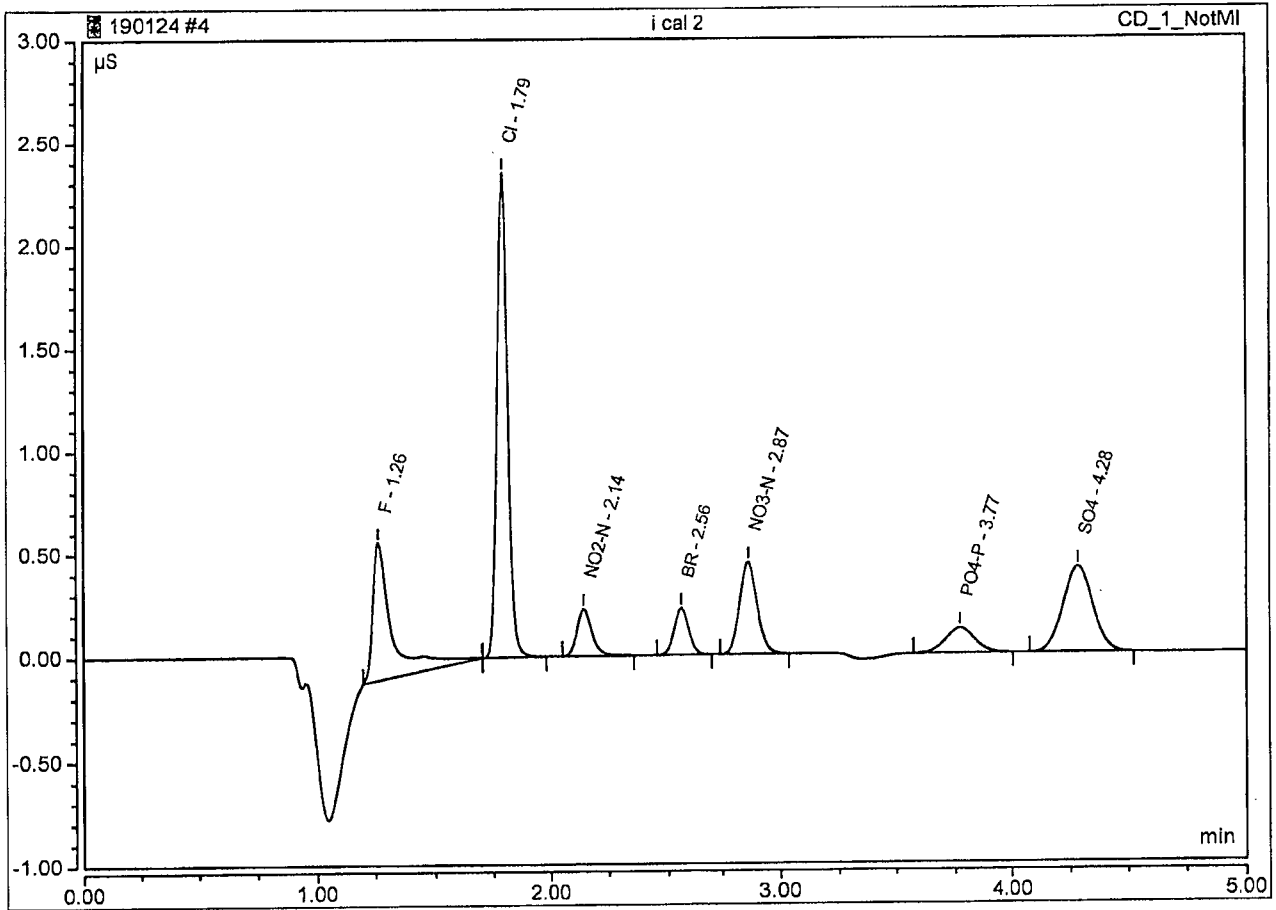


F mi1 HH 190128 MM

### Not Manipulated Peak Integration Report

Sample Name:	i cal 2	Inj. Vol.:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 12:13	Run Time:	5.00

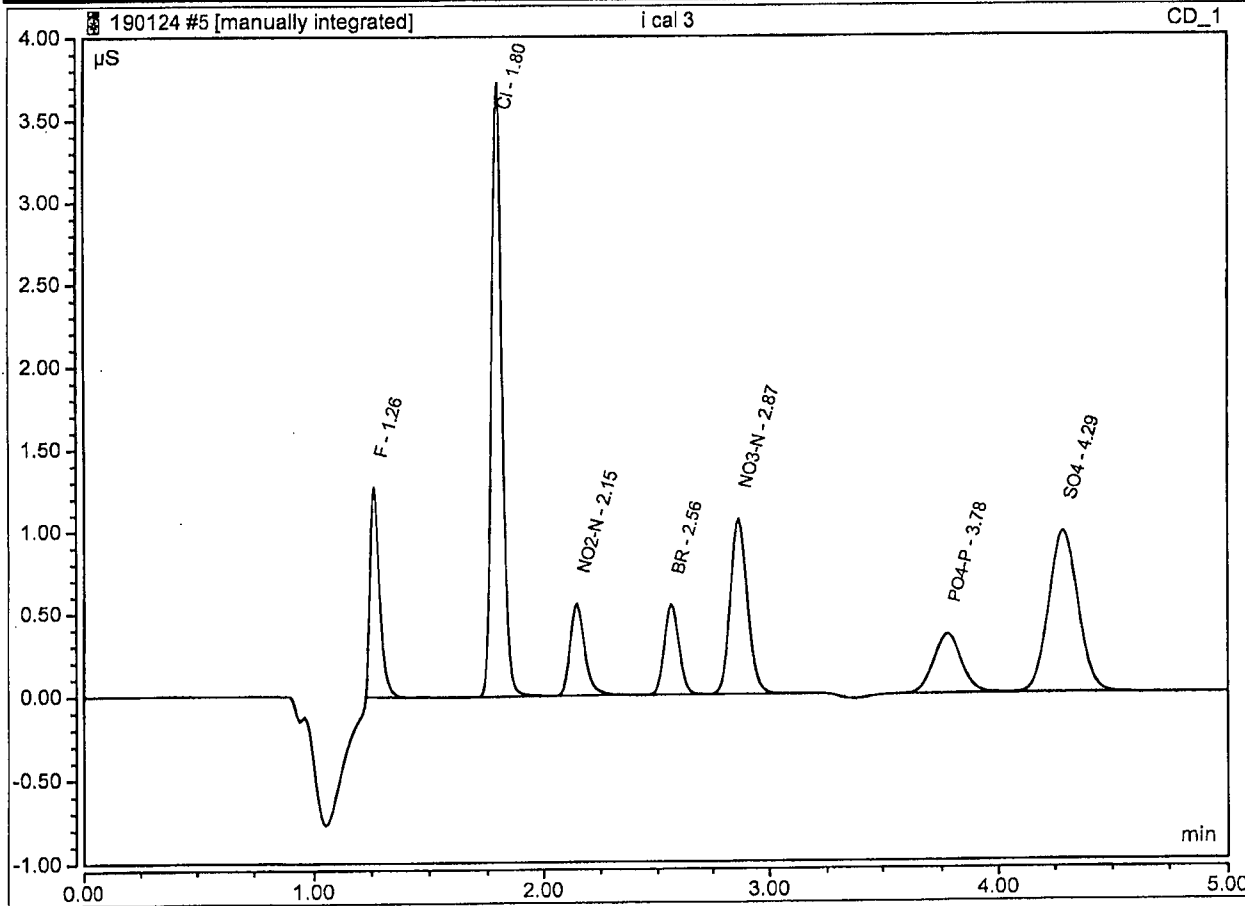
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height $\mu\text{S}$	Area $\mu\text{S} \cdot \text{min}$
1	1.26	F	BMB*	0.064	0.668	0.3399
2	1.79	Cl	BMB	0.126	2.353	1.1844
3	2.14	NO <sub>2</sub> -N	BMB	0.017	0.228	0.0951
4	2.56	BR	BMB	0.017	0.224	0.4697
5	2.87	NO <sub>3</sub> -N	BMB	0.039	0.446	0.1790
6	3.77	PO <sub>4</sub> -P	BMB	0.018	0.121	0.2519
7	4.28	SO <sub>4</sub>	BMB	0.062	0.417	0.9266



**Peak Integration Report**

Sample Name:	i cal 3	Inj. Vol.:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 12:20	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.26	F	BMB*	0.060	1.273	0.5246
2	1.80	Cl	BMB	0.199	3.728	1.8672
3	2.15	NO2-N	BMB	0.041	0.554	0.2311
4	2.56	BR	BMB	0.042	0.544	1.1439
5	2.87	NO3-N	BMB	0.094	1.062	0.4271
6	3.78	PO4-P	BMB	0.051	0.355	0.7288
7	4.29	SO4	BMB	0.144	0.976	2.1737

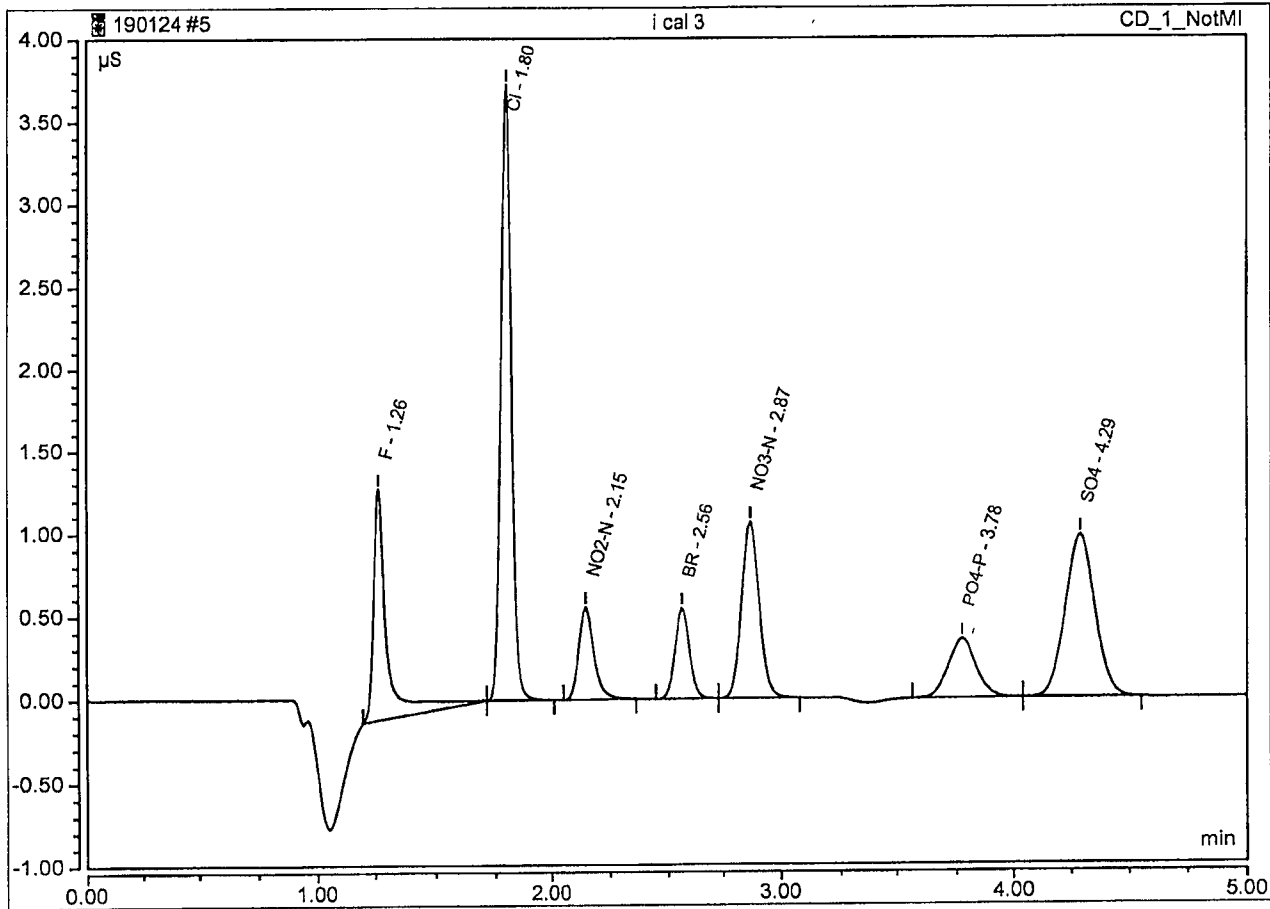


F mi1 HH 190128 MM

### Not Manipulated Peak Integration Report

Sample Name:	I cal 3	Inj. Vol.:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Anlon APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 12:20	Run Time:	5.00

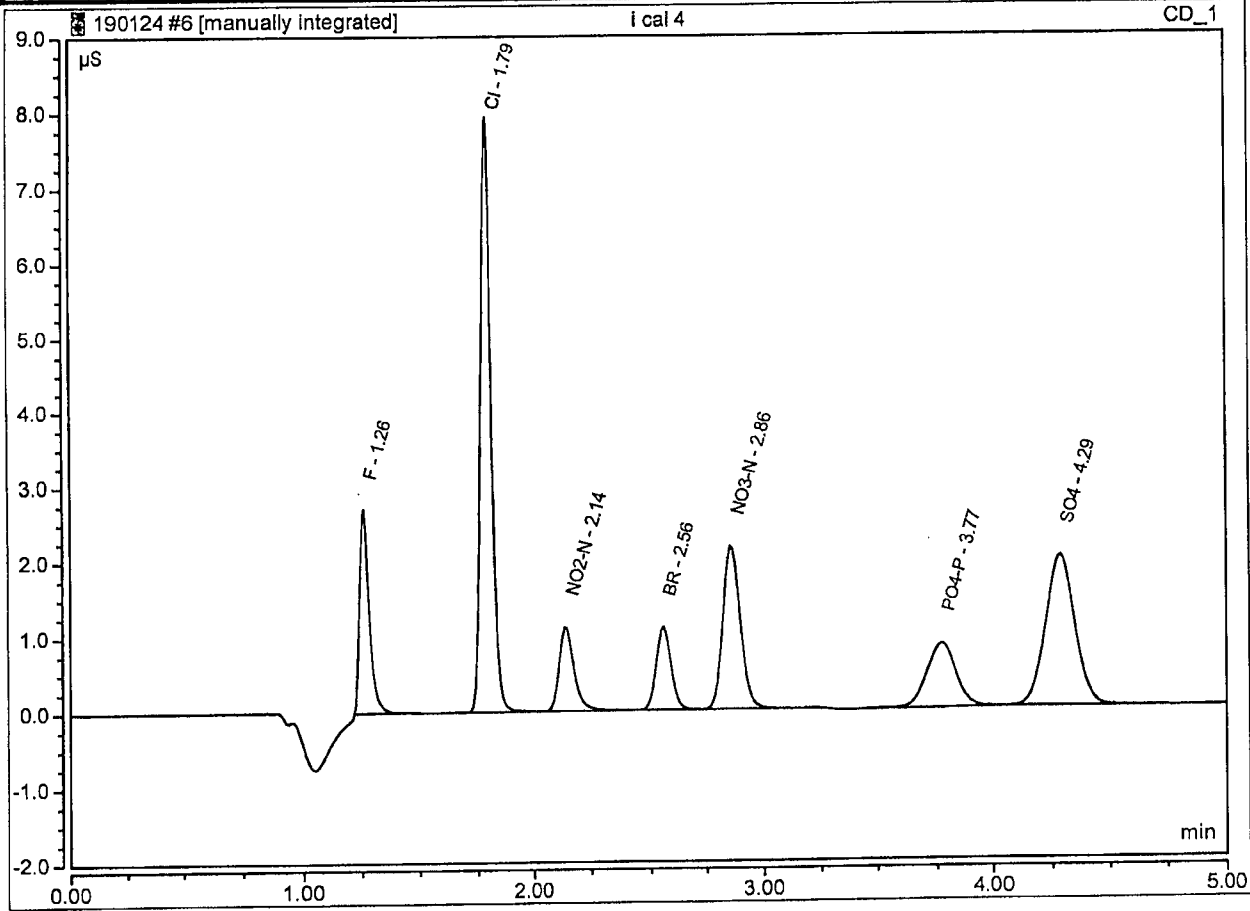
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}^*\text{min}$	Height $\mu\text{S}$	Area $\mu\text{S}^*\text{min}$
1	1.26	F	BMB*	0.091	1.392	0.5597
2	1.80	Cl	BMB	0.199	3.728	1.8672
3	2.15	NO2-N	BMB	0.041	0.554	0.2311
4	2.56	BR	BMB	0.042	0.544	1.1439
5	2.87	NO3-N	BMB	0.094	1.062	0.4271
6	3.78	PO4-P	BMB	0.051	0.355	0.7288
7	4.29	SO4	BMB	0.144	0.976	2.1737



**Peak Integration Report**

Sample Name:	i cal 4	Inj. Vol.:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 12:28	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.26	F	BMB*	0.132	2.702	1.0962
2	1.79	Cl	BMB	0.416	7.930	3.9059
3	2.14	NO2-N	BMB	0.083	1.119	0.4691
4	2.56	BR	BMB	0.084	1.099	2.3038
5	2.86	NO3-N	BMB	0.190	2.162	0.8648
6	3.77	PO4-P	BMB	0.125	0.850	1.7878
7	4.29	SO4	BMB	0.294	1.996	4.4209

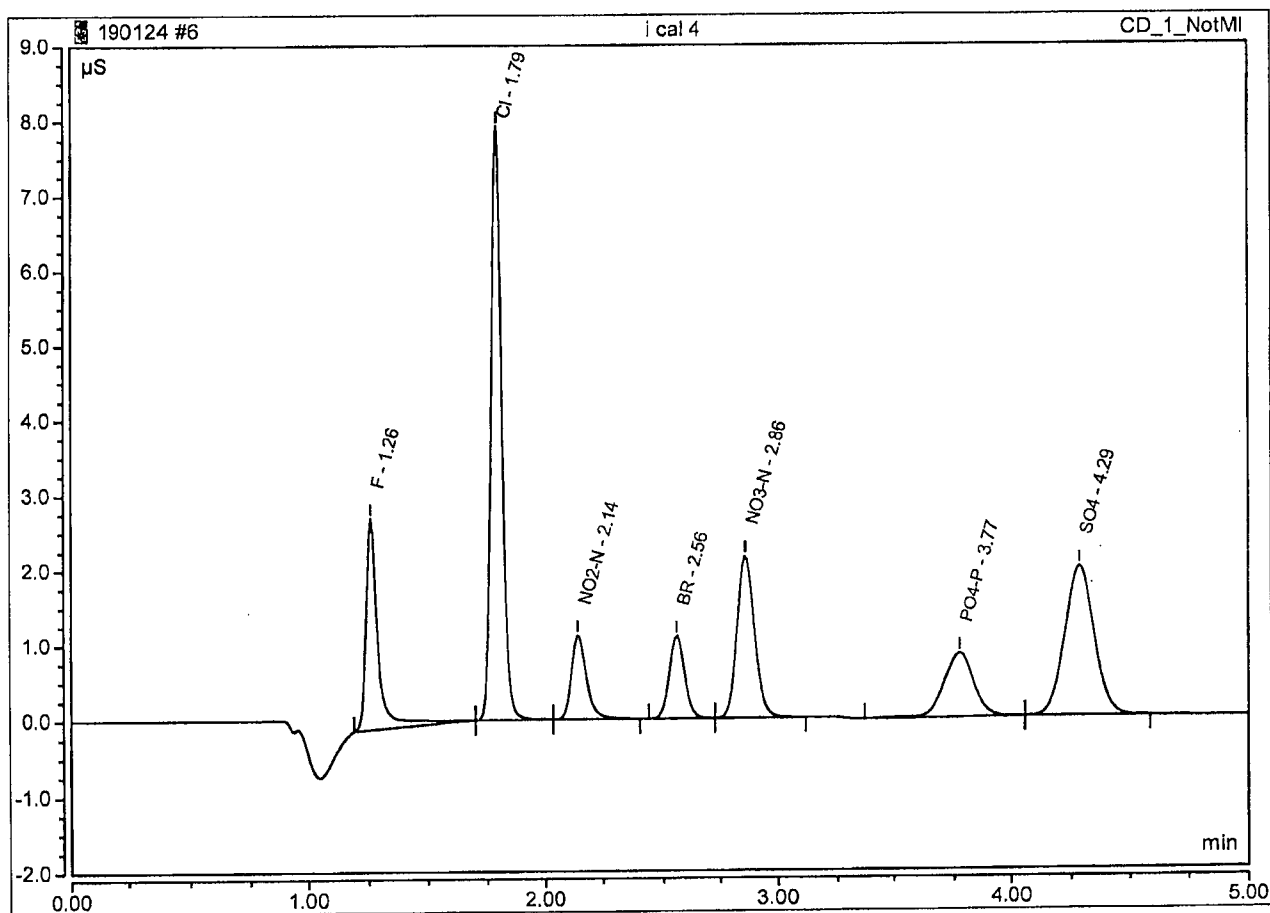


F mi1 HH 190128 MM

### Not Manipulated Peak Integration Report

Sample Name:	I cal 4	Inj. Vol.:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 12:28	Run Time:	5.00

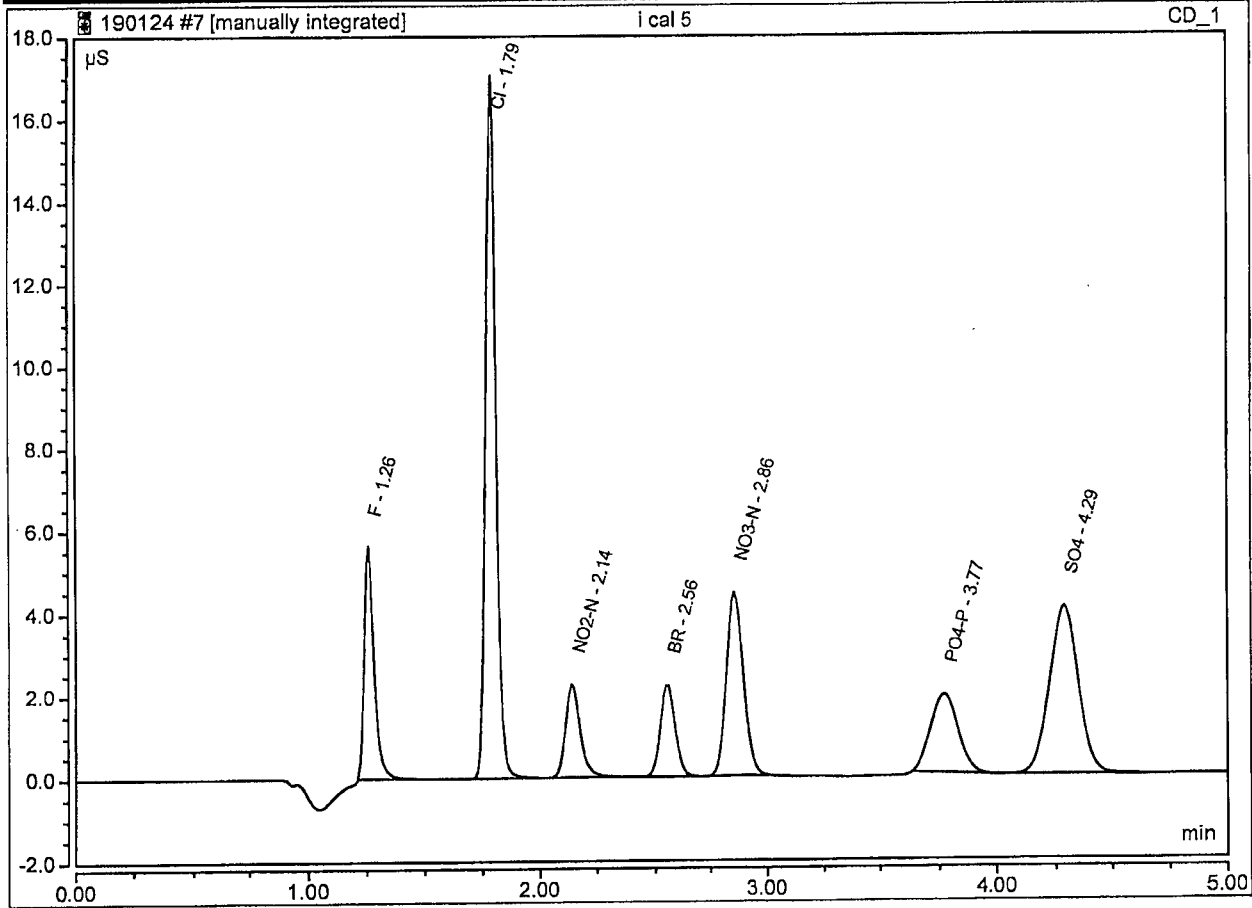
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height $\mu\text{S}$	Area $\mu\text{S} \cdot \text{min}$
1	1.26	F	BMB*	0.164	2.815	1.1319
2	1.79	Cl	BMB	0.416	7.930	3.9059
3	2.14	NO <sub>2</sub> -N	BMB	0.083	1.119	0.4691
4	2.56	BR	BMB	0.084	1.099	2.3038
5	2.86	NO <sub>3</sub> -N	BMB	0.190	2.162	0.8648
6	3.77	PO <sub>4</sub> -P	BMB	0.125	0.850	1.7878
7	4.29	SO <sub>4</sub>	BMB	0.294	1.996	4.4209



**Peak Integration Report**

Sample Name:	i cal 5	Inj. Vol.:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Anlon APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 12:35	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.26	F	BMB*	0.279	5.622	2.2633
2	1.79	Cl	BMB	0.876	17.063	8.2279
3	2.14	NO2-N	BMB	0.168	2.261	0.9484
4	2.56	BR	BMB	0.169	2.232	4.6484
5	2.86	NO3-N	BMB	0.382	4.442	1.7432
6	3.77	PO4-P	BMB	0.255	1.894	3.6510
7	4.29	SO4	BMB	0.593	4.065	8.9251

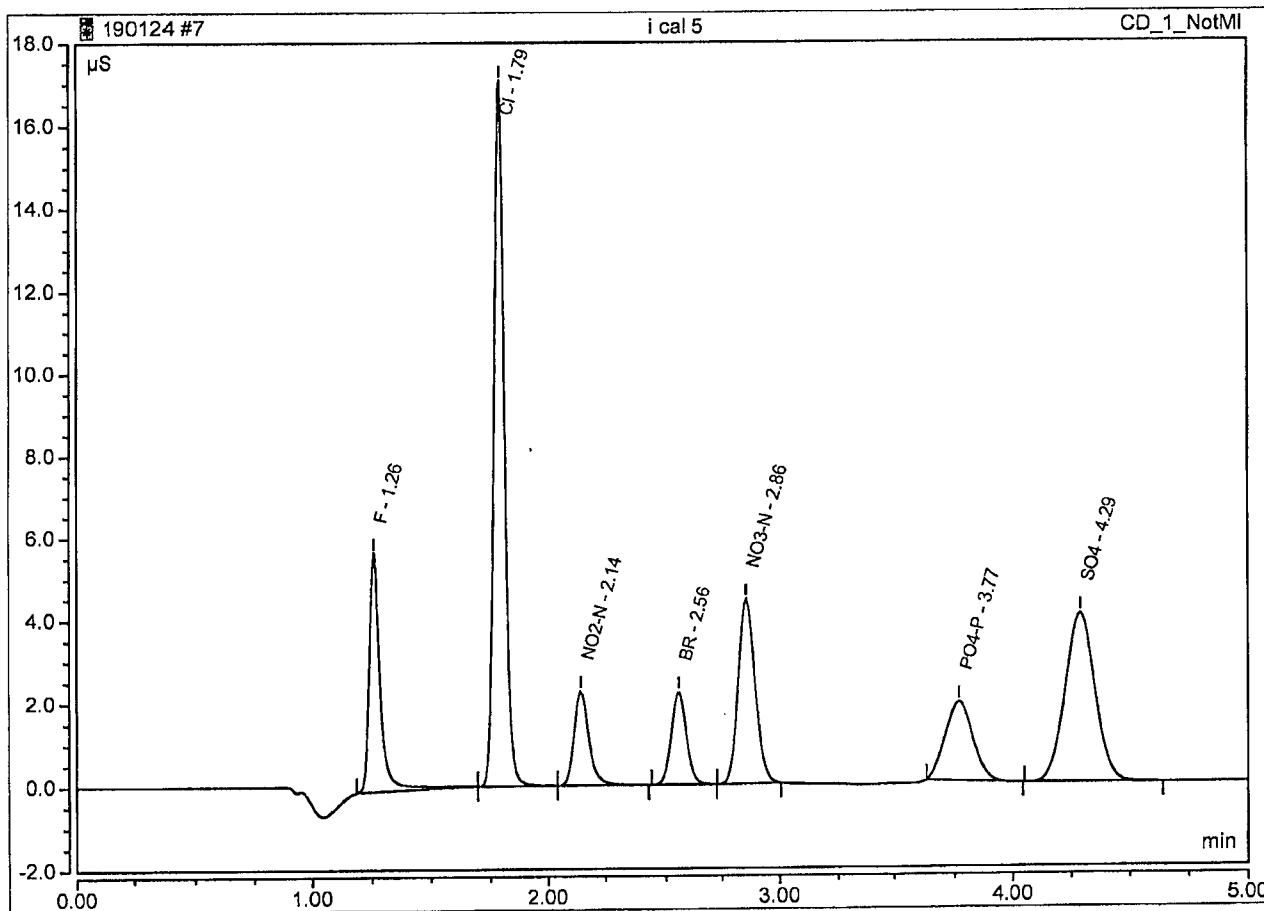


F mi1 HH 190128 MM

### Not Manipulated Peak Integration Report

Sample Name:	i cal 5	Inj. Vol.:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 12:35	Run Time:	5.00

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height $\mu\text{S}$	Area $\mu\text{S}\cdot\text{min}$
1	1.26	F	BMB*	0.313	5.748	2.3094
2	1.79	Cl	BMB	0.876	17.063	8.2279
3	2.14	NO <sub>2</sub> -N	BMB	0.168	2.261	0.9484
4	2.56	BR	BMB	0.169	2.232	4.6484
5	2.86	NO <sub>3</sub> -N	BMB	0.382	4.442	1.7432
6	3.77	PO <sub>4</sub> -P	BMB	0.255	1.894	3.6510
7	4.29	SO <sub>4</sub>	BMB	0.593	4.065	8.9251

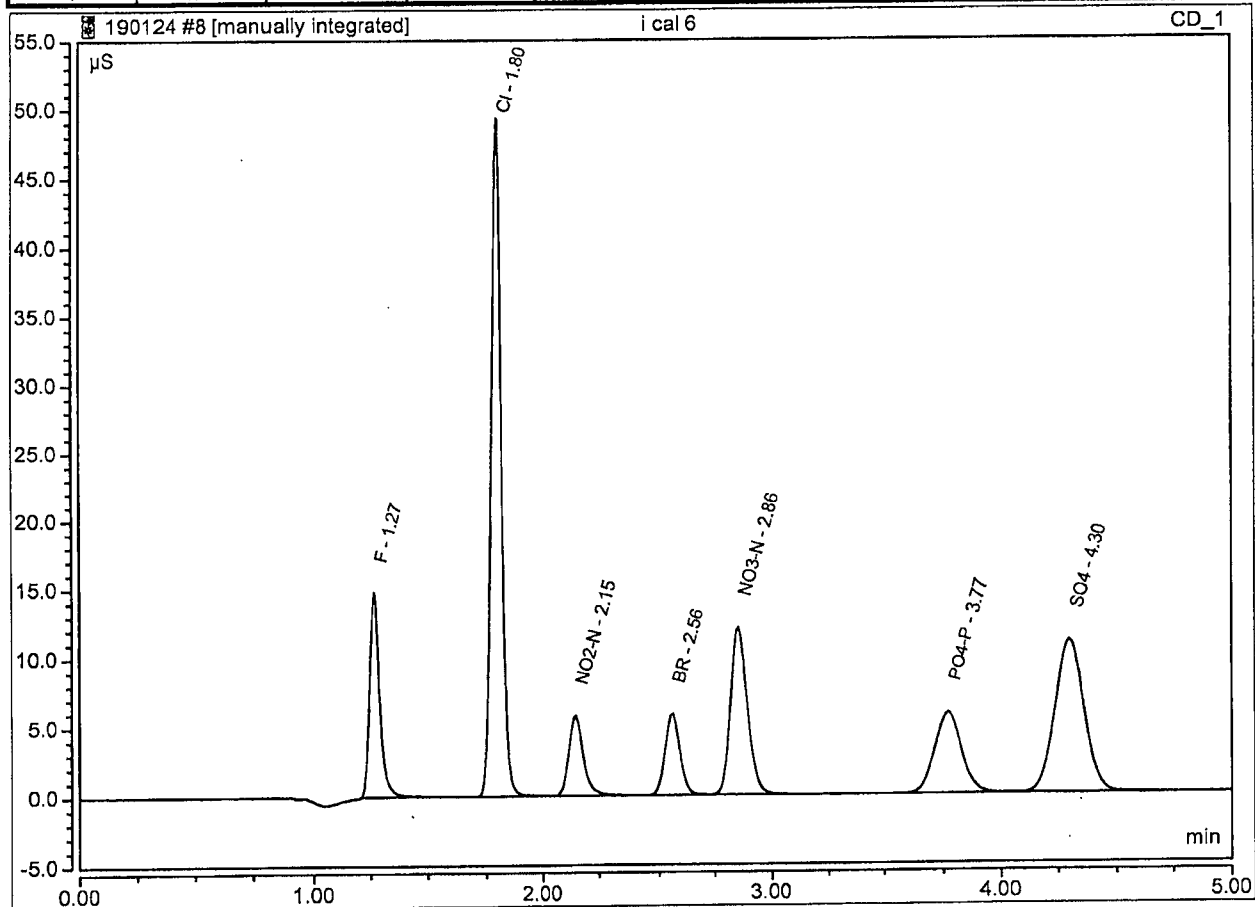




### Peak Integration Report

Sample Name:	i cal 6	Inj. Vol.:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 12:43	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.27	F	BMB*	0.767	14.736	6.1409
2	1.80	Cl	BMB	2.485	49.285	23.3335
3	2.15	NO2-N	BMB	0.430	5.768	2.4325
4	2.56	BR	BMB	0.437	5.850	12.0236
5	2.86	NO3-N	BMB	1.031	12.086	4.7035
6	3.77	PO4-P	BMB	0.795	5.814	11.4097
7	4.30	SO4	BMB	1.571	10.997	23.6433

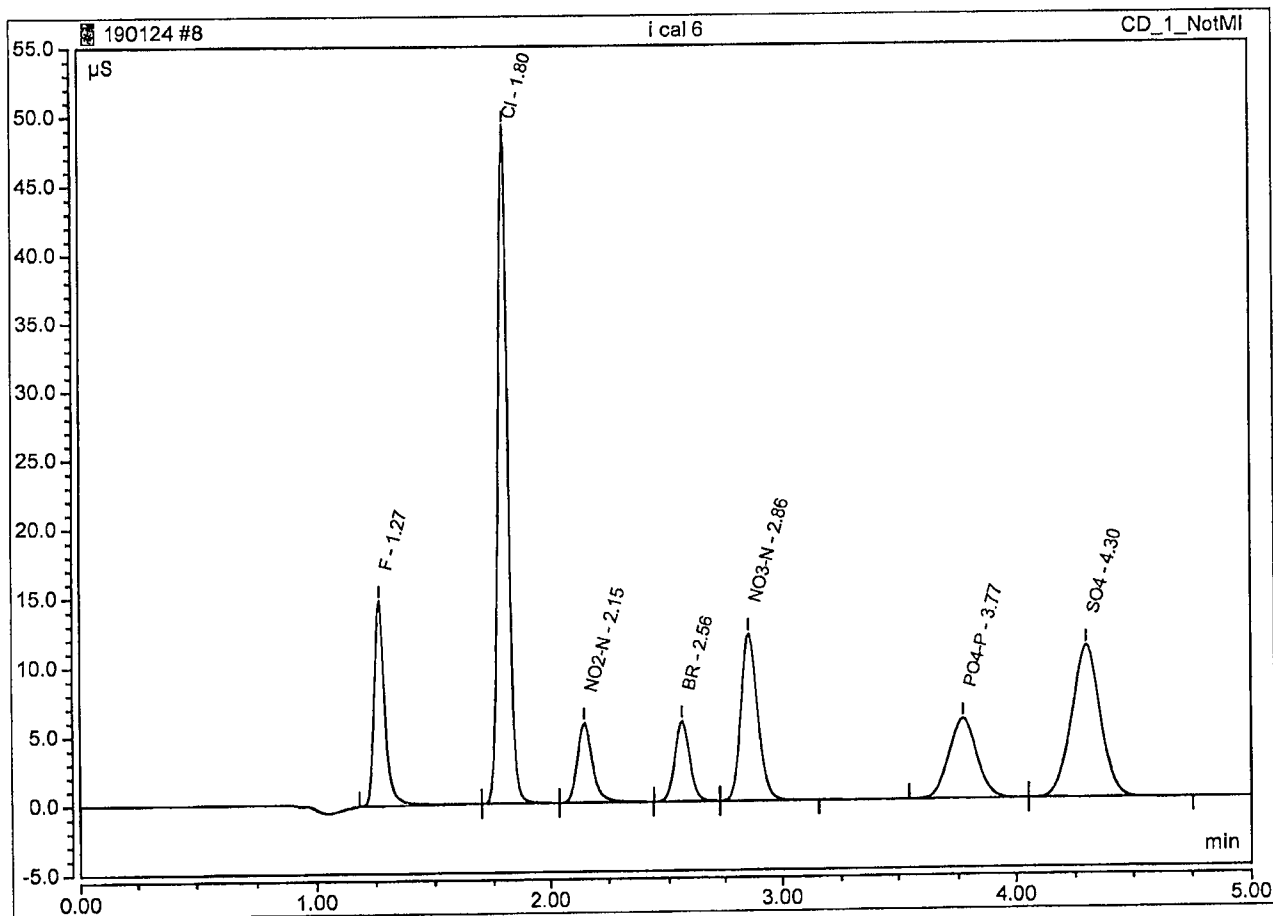


F mi1 HH 190128 MM

### Not Manipulated Peak Integration Report

Sample Name:	i cal 6	Inj. Vol.:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 12:43	Run Time:	5.00

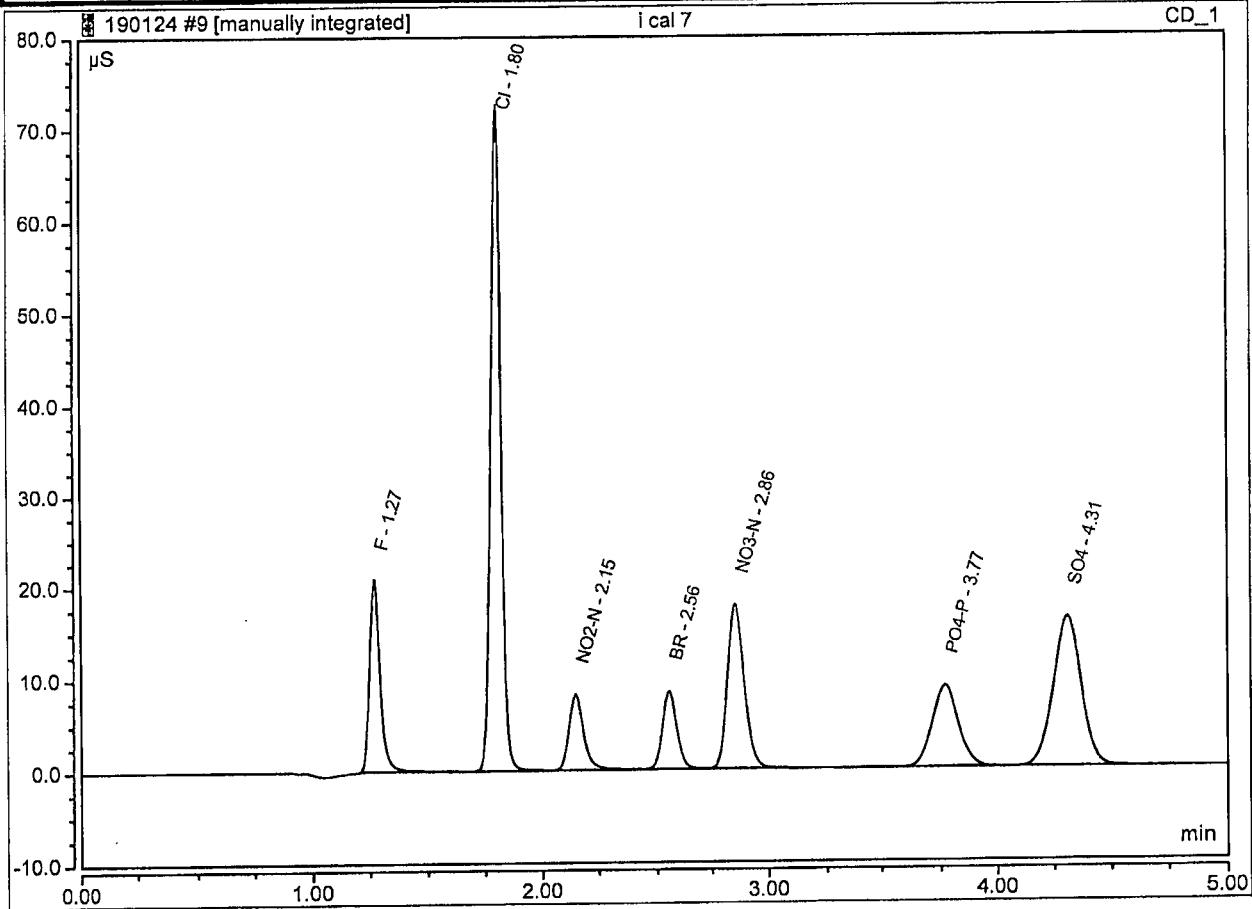
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}\cdot\text{min}$	Height $\mu\text{S}$	Area $\mu\text{S}\cdot\text{min}$
1	1.27	F	BMB*	0.797	14.841	6.1203
2	1.80	Cl	BMB	2.485	49.285	23.3335
3	2.15	NO <sub>2</sub> -N	BMB	0.430	5.768	2.4325
4	2.56	BR	BMB	0.437	5.850	12.0236
5	2.86	NO <sub>3</sub> -N	BMB	1.031	12.086	4.7035
6	3.77	PO <sub>4</sub> -P	BMB	0.795	5.814	11.4097
7	4.30	SO <sub>4</sub>	BMB	1.571	10.997	23.6433



Peak Integration Report

Sample Name:	i cal 7	Inj. Vol.:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 12:50	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.27	F	BMB*	1.106	20.788	8.8373
2	1.80	Cl	BMB	3.678	72.562	34.5418
3	2.15	NO2-N	BMB	0.616	8.211	3.4811
4	2.56	BR	BMB	0.630	8.490	17.3110
5	2.86	NO3-N	BMB	1.509	17.791	6.8826
6	3.77	PO4-P	BMB	1.196	8.858	17.1532
7	4.31	SO4	BMB	2.290	16.201	34.4680

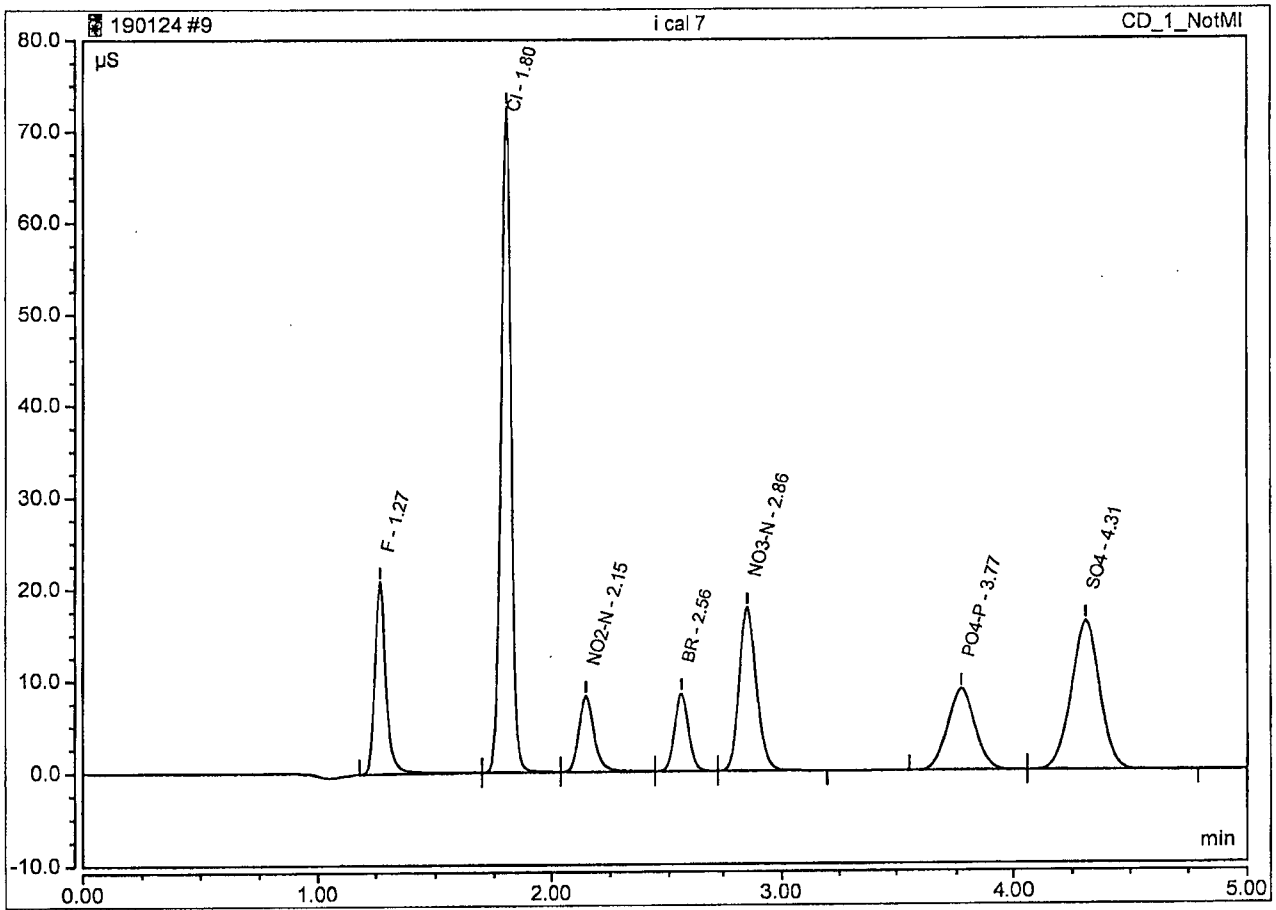


F mi1 HH 190128 MM

### Not Manipulated Peak Integration Report

Sample Name:	i cal 7	Inj. Vol.:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 12:50	Run Time:	5.00

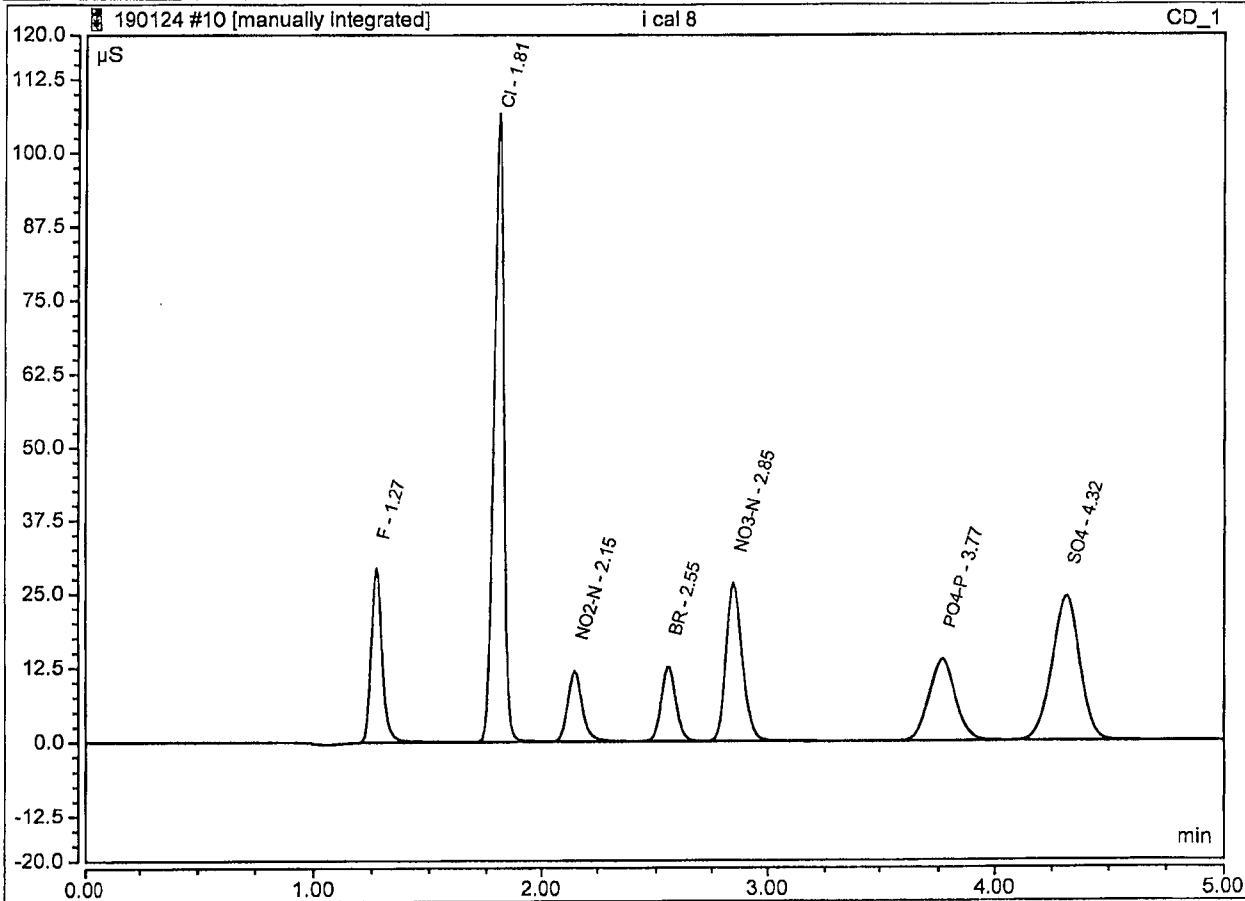
No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height $\mu\text{S}$	Area $\mu\text{S} \cdot \text{min}$
1	1.27	F	BMB*	1.139	20.900	8.8150
2	1.80	Cl	BMB	3.678	72.562	34.5418
3	2.15	NO2-N	BMB	0.616	8.211	3.4811
4	2.56	BR	BMB	0.630	8.490	17.3110
5	2.86	NO3-N	BMB	1.509	17.791	6.8826
6	3.77	PO4-P	BMB	1.196	8.858	17.1532
7	4.31	SO4	BMB	2.290	16.201	34.4680



### Peak Integration Report

Sample Name:	i cal 8	Inj. Vol.:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 12:57	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.27	F	BMB*	1.623	29.189	12.9407
2	1.81	Cl	BMB	5.499	106.635	51.6461
3	2.15	NO2-N	BMB	0.895	11.797	5.0614
4	2.55	BR	BMB	0.927	12.598	25.4664
5	2.85	NO3-N	BMB	2.258	26.658	10.2994
6	3.77	PO4-P	BMB	1.824	13.683	26.1607
7	4.32	SO4	BMB	3.411	24.358	51.3415

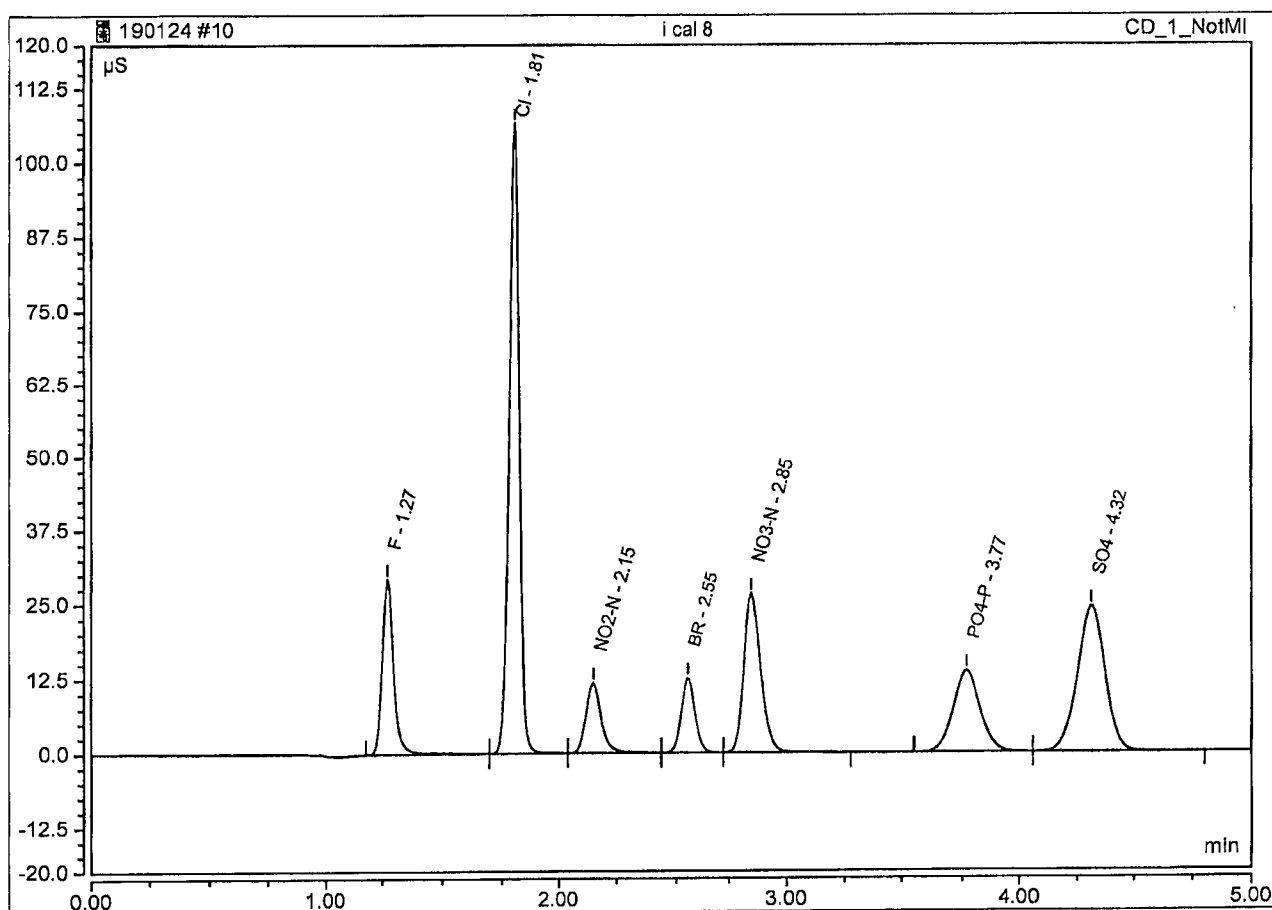


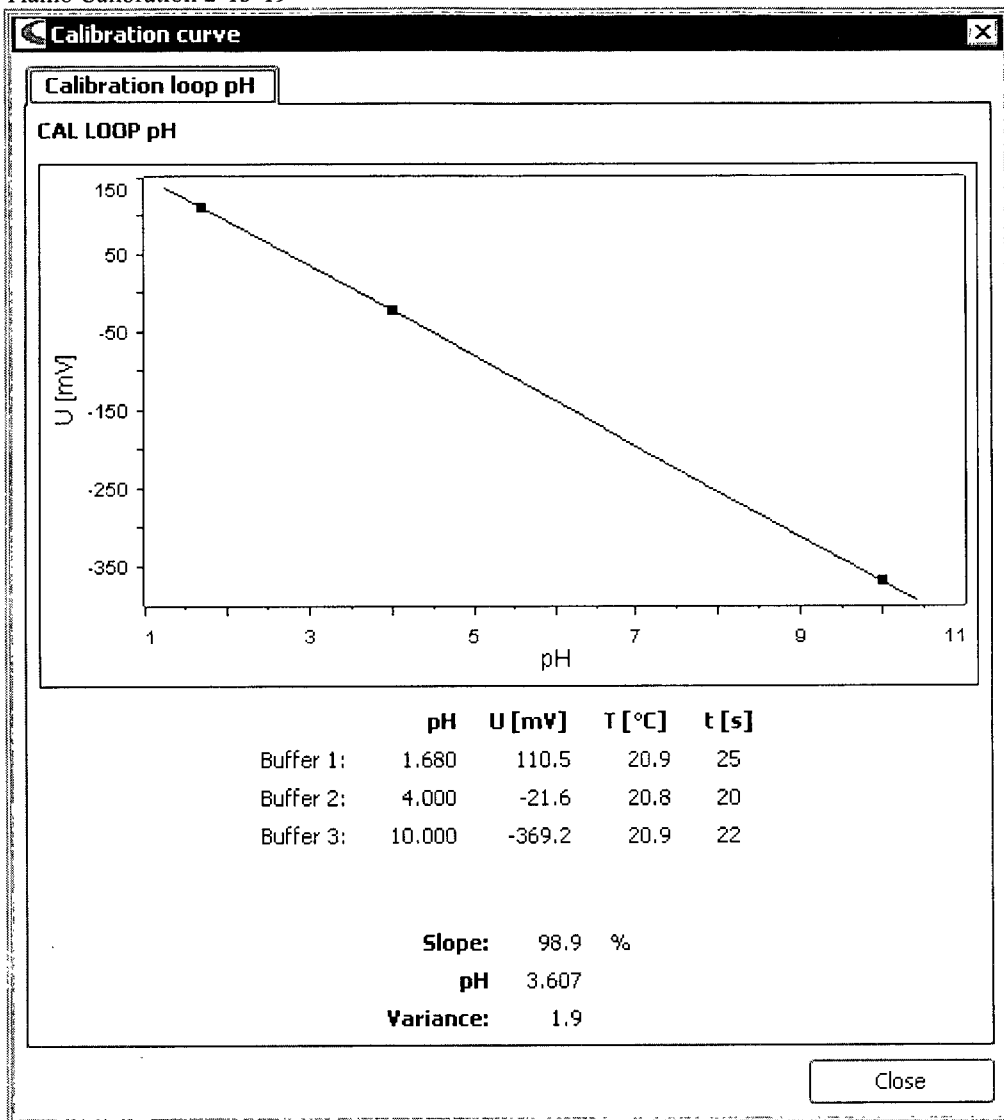
F mi1 HH 190128 MM

### Not Manipulated Peak Integration Report

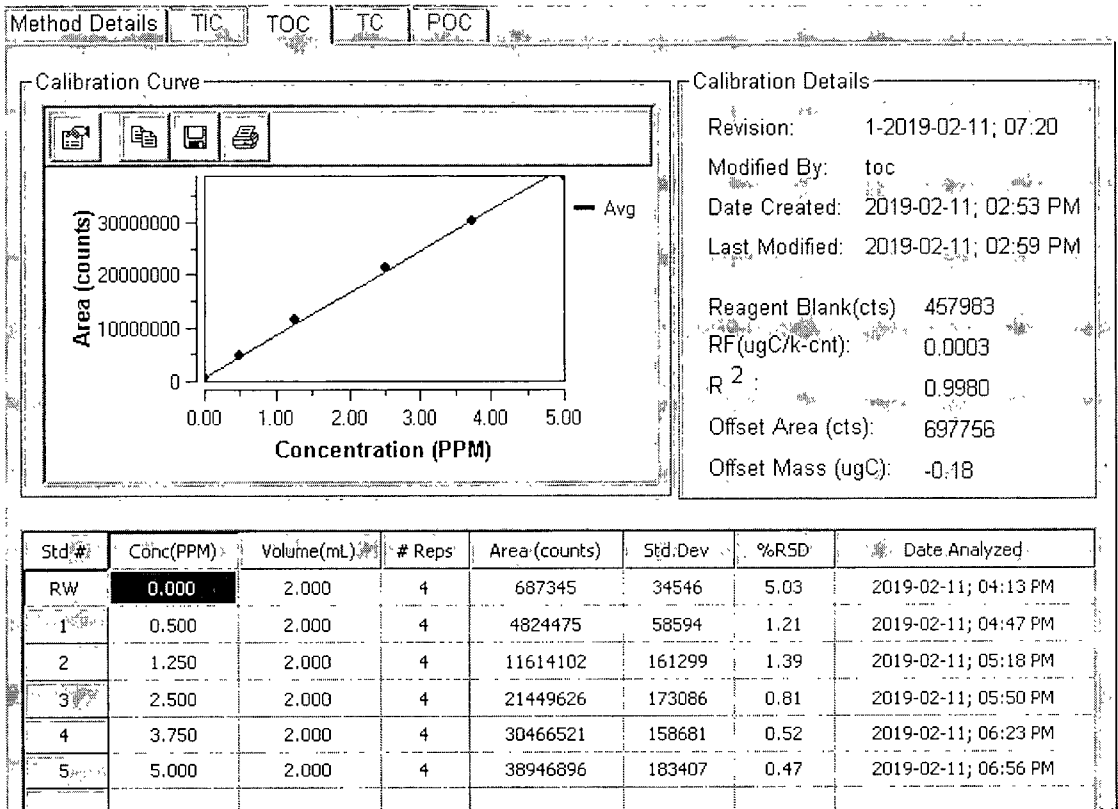
Sample Name:	I cal 8	Inj. Vol.:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	24-Jan-2019 / 12:57	Run Time:	5.00

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S} \cdot \text{min}$	Height $\mu\text{S}$	Area $\mu\text{S} \cdot \text{min}$
1	1.27	F	BMB*	1.652	29.287	12.8588
2	1.81	Cl	BMB	5.499	106.635	51.6461
3	2.15	NO <sub>2</sub> -N	BMB	0.895	11.797	5.0614
4	2.55	BR	BMB	0.927	12.598	25.4664
5	2.85	NO <sub>3</sub> -N	BMB	2.258	26.658	10.2994
6	3.77	PO <sub>4</sub> -P	BMB	1.824	13.683	26.1607
7	4.32	SO <sub>4</sub>	BMB	3.411	24.358	51.3415





TicToc Calibration Curve 190211A







Appl.Inc  
 908 N Temperance Ave  
 Clovis, Ca  
 93611  
 USA

Date Prepared: 02/18/2019 By:

TOC

Date Approved: By:

Sample Results Summary

Spl #	Vial #	Sample ID	Num Rep	Act Rep	Method	Type	Dil	Customer ID	Mode	Avg. Area (cts)	Avg. Mass (ug)	Avg. Conc (PPM)	Std. Dev	% RSD	Notes
2	1	TOC-RW	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	Standard	1 : 1	00000000	TOC	687,345	0.000	0.000	34,546	5.03	
3	2	TOC-Std#1-0.500 PPM	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	Standard	1 : 1	00000000	TOC	4,824,475	1.000	0.500	58,594	1.21	
4	3	TOC-Std#2-1.250 PPM	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	Standard	1 : 1	00000000	TOC	11,614,102	2.500	1.250	161,299	1.39	
5	4	TOC-Std#3-2.500 PPM	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	Standard	1 : 1	00000000	TOC	21,449,626	5.000	2.500	173,086	0.81	
6	5	TOC-Std#4-3.750 PPM	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	Standard	1 : 1	00000000	TOC	30,466,521	7.500	3.750	158,681	0.52	
7	6	TOC-Std#5-5.000 PPM	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	Standard	1 : 1	00000000	TOC	38,946,896	10.000	5.000	183,407	0.47	
8	7	ICB	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	Sample	1 : 1	00000000	TOC	1,717,970	0.316	0.158	31,138	1.81	Pass
9	8	ICV Sugar	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	Check_Stan	1 : 1	00000000	TOC	22,163,151	5.392	2.696	109,699	0.49	





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 Clovis, Ca  
 93611  
 USA

Date Prepared: 02/18/2019 By:

TOC

Date Approved: By:

Sample Results

Spl #: 2 Sample ID: TOC-RW Type: Standard Date: 02/11/2019 Status: Passed  
 Vial #: 1 Method: NPOC - Feb 11, 2019; 02-54-31 Dilution: 1 : 1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	4:13 pm	-	-	-	668,867	0.000	0.000
2	4:21 pm	-	-	-	739,036	0.000	0.000
3	4:28 pm	-	-	-	667,973	0.000	0.000
4	4:36 pm	-	-	-	673,502	0.000	0.000
Avg.		-	-	-	687,345	0.000	0.000
Std.Dev.							
% RSD.					5.03		

Spl #: 3 Sample ID: TOC-Std#1-0.500 PPM Type: Standard Date: 02/11/2019 Status: Passed  
 Vial #: 2 Method: NPOC - Feb 11, 2019; 02-54-31 Dilution: 1 : 1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	4:47 pm	-	-	-	4,799,949	1.000	0.500
2	4:54 pm	-	-	-	4,769,063	1.000	0.500
3	5:02 pm	-	-	-	4,823,015	1.000	0.500
4	5:10 pm	-	-	-	4,905,872	1.000	0.500
Avg.		-	-	-	4,824,475	1.000	0.500
Std.Dev.							
% RSD.					1.21		



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Date Prepared: 02/18/2019 By: TOC  
 Date Approved: By:

Spl #: 4 Sample ID: TOC-Std#2-1.250 PPM Type: Standard Date: 02/11/2019 Status: Passed  
 Vial #: 3 Method: NPOC - Feb 11, 2019; 02-54-31 Dilution: 1 : 1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	5:18 pm	-	-	-	11,514,099	2.500	1.250
2	5:26 pm	-	-	-	11,788,000	2.500	1.250
3	5:34 pm	-	-	-	11,444,716	2.500	1.250
4	5:42 pm	-	-	-	11,709,594	2.500	1.250
Avg.		-	-	-	11,614,102	2.500	1.250
Std.Dev.							
% RSD.					1.39		

Spl #: 5 Sample ID: TOC-Std#3-2.500 PPM Type: Standard Date: 02/11/2019 Status: Passed  
 Vial #: 4 Method: NPOC - Feb 11, 2019; 02-54-31 Dilution: 1 : 1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	5:50 pm	-	-	-	21,654,245	5.000	2.500
2	5:58 pm	-	-	-	21,360,038	5.000	2.500
3	6:06 pm	-	-	-	21,521,272	5.000	2.500
4	6:15 pm	-	-	-	21,262,949	5.000	2.500
Avg.		-	-	-	21,449,626	5.000	2.500
Std.Dev.							
% RSD.					0.81		



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 93611  
 USA

Date Prepared: 02/18/2019 By: TOC

Date Approved: By:

Spl #: 6 Sample ID: TOC-Std#4-3.750 PPM Type: Standard Date: 02/11/2019 Status: Passed  
 Vial #: 5 Method: NPOC - Feb 11, 2019; 02-54-31 Dilution: 1 : 1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	6:23 pm	-	-	-	30,612,289	7.500	3.750
2	6:31 pm	-	-	-	30,309,053	7.500	3.750
3	6:39 pm	-	-	-	30,351,074	7.500	3.750
4	6:47 pm	-	-	-	30,593,670	7.500	3.750
Avg.		-	-	-	30,466,521	7.500	3.750
Std.Dev.							
% RSD.					0.52		

Spl #: 7 Sample ID: TOC-Std#5-5.000 PPM Type: Standard Date: 02/11/2019 Status: Passed  
 Vial #: 6 Method: NPOC - Feb 11, 2019; 02-54-31 Dilution: 1 : 1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	6:56 pm	-	-	-	38,971,032	10.000	5.000
2	7:04 pm	-	-	-	38,706,906	10.000	5.000
3	7:12 pm	-	-	-	38,956,234	10.000	5.000
4	7:20 pm	-	-	-	39,153,413	10.000	5.000
Avg.		-	-	-	38,946,896	10.000	5.000
Std.Dev.							
% RSD.					0.47		





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 Clovis, Ca  
 93611  
 USA

Date Prepared: 02/18/2019 By: TOC

Date Approved: By:

Spl #: 8 Sample ID: ICB Type: Sample Date: 02/11/2019 Status: Passed  
 Vial #: 7 Method: NPOC - Feb 11, 2019; 02-54-31 Dilution: 1 : 1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	7:31 pm	-	-	-	1,702,854	0.313	0.156
2	7:39 pm	-	-	-	1,725,871	0.318	0.159
3	7:46 pm	-	-	-	1,685,579	0.308	0.154
4	7:54 pm	-	-	-	1,757,576	0.326	0.163
Avg.		-	-	-	1,717,970	0.316	0.158
Std.Dev.							
% RSD.					1.81		

Spl #: 9 Sample ID: ICV Sugar Type: Check\_Stan Date: 02/11/2019 Status: Passed  
 Vial #: 8 Method: NPOC - Feb 11, 2019; 02-54-31 Dilution: 1 : 1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	8:02 pm	-	-	-	22,271,756	5.419	2.710
2	8:10 pm	-	-	-	22,113,536	5.379	2.690
3	8:18 pm	-	-	-	22,033,394	5.359	2.680
4	8:26 pm	-	-	-	22,233,919	5.409	2.705
Avg.		-	-	-	22,163,151	5.392	2.696
Std.Dev.							
% RSD.					0.49		

**INORGANIC ANALYSIS**  
**Raw Data**

**APPL, INC.**

Method SM3500Fe	Units mg/L	Ferrous Iron	Instrument: Genisis Spectrometer
Analyte Fe2+	QCG: 190208A		Wavelength: 510 nm
Analyst HH	Final Volume: 50mL		

Date	Time	Appl ID	[Fe2+]	Absorbance	% Recovery
06/15/18	12:27	ICB	0.00	0.000	
06/15/18	12:27	Ical 1	1.00	0.099	98.7%
06/15/18	12:28	Ical 2	2.00	0.201	100.4%
06/15/18	12:28	Ical 3	4.00	0.396	98.9%
06/15/18	12:29	Ical 4	5.00	0.501	100.1%
06/15/18	12:30	Ical 5	10.00	1.000	100.0%
06/15/18	12:31	ICV	3.00	0.316	105.2%
06/15/18	12:32	ICB	0.00	0.000	

Slope	0.100015306	Algorithm Check: Appl ID Absorbance Result 190205 LCS 0.316 3.16
Intercept	0.000258661	
Coefficient of Determination	0.999973247	
Result = (Absorbance-Raw Blk-Intercept)/ Slope		
Test:	HH	190211 3.16

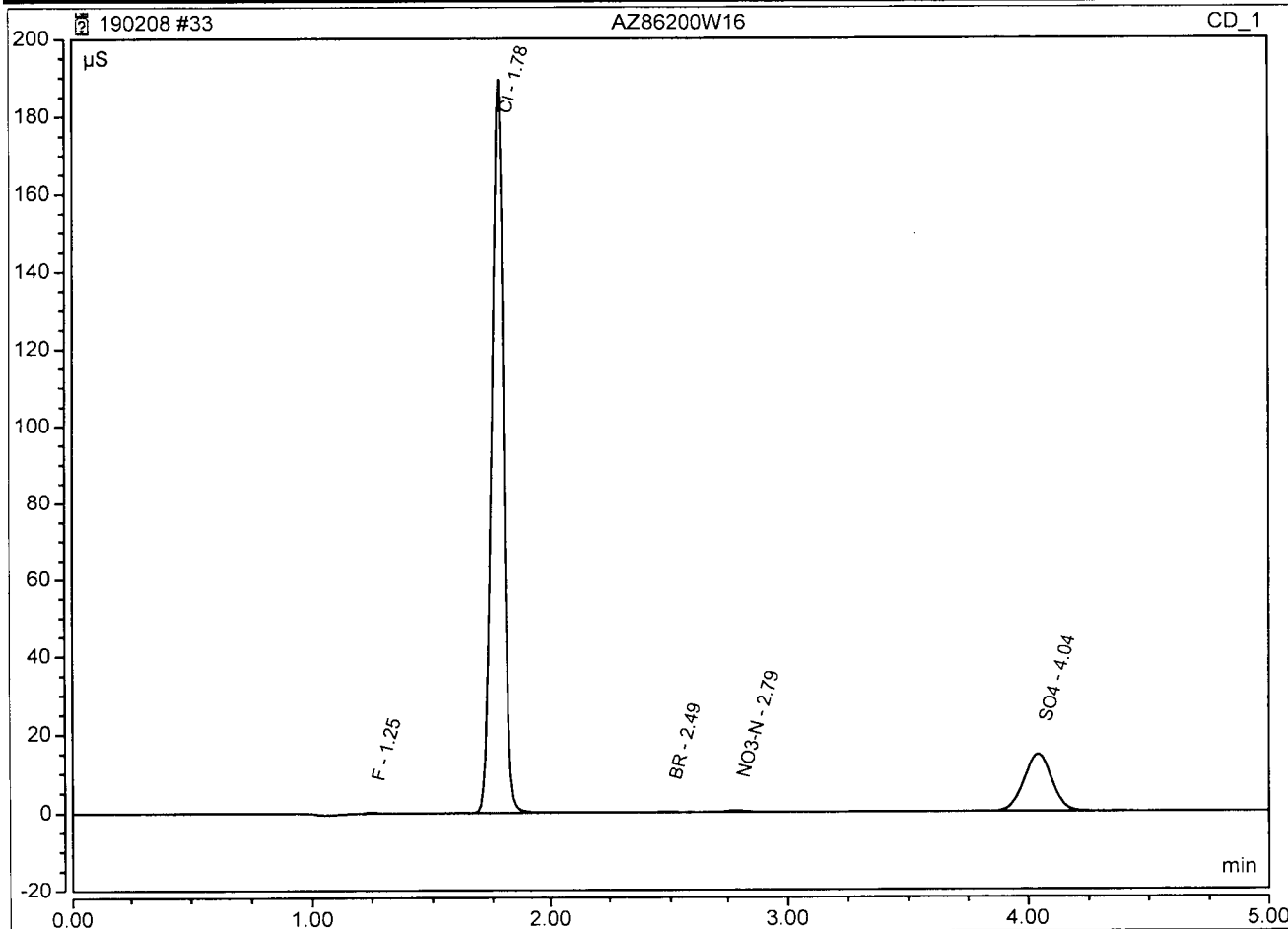
  

Date	Time	Appl ID	DF	Raw Result	SubSample Amount	Raw BLK	Calc Conc	Result	QC True	% Recovery
02/08/19	8:39	CCV 4.0 190208	1	0.390	25mL		3.90	3.90	4.00	97.4%
02/08/19	8:40	CCB 190208	1	-0.001	25mL		-0.01	-0.01		
02/08/19	8:41	190208 LCS	1	0.312	25mL		3.12	3.12	3.00	103.9%
02/08/19	8:42	190208 LCSD	1	0.303	25mL		3.03	3.03	3.00	100.9%
02/08/19	8:42	AZ86190W13	1	0.116	25mL		1.16	1.16		
02/08/19	8:42	AZ86191W13	1	0.113	25mL		1.13	1.13		
02/08/19	8:43	AZ86192W13	1	0.114	25mL		1.14	1.14		
02/08/19	8:43	AZ86195W13	1	0.031	25mL		0.31	0.31		
02/08/19	8:44	AZ86193W13	1	0.047	25mL		0.47	0.47		
02/08/19	8:47	AZ86190W13 MS	1	0.415	25mL		4.15	4.15		
02/08/19	8:48	AZ86190W13 MSD	1	0.419	25mL		4.19	4.19		
02/08/19	8:55	AZ86196W13	1	0.033	25mL		0.33	0.33		
02/08/19	8:56	AZ86194W13	1	0.061	25mL		0.61	0.61		
02/08/19	8:56	AZ86197W13	1	0.041	25mL		0.41	0.41		
02/08/19	8:57	AZ86198W13	1	0.021	25mL		0.21	0.21		
02/08/19	8:58	CCV 4.0 190208	1	0.389	25mL		3.89	3.89	4.00	97.2%
02/08/19	8:58	CCB 190208	1	-0.001	25mL		-0.01	-0.01		
02/08/19	11:06	CCV 4.0 190208	1	0.391	25mL		3.91	3.91	4.00	97.7%
02/08/19	11:07	CCB 190208	1	0.002	25mL		0.02	0.02		
02/08/19	11:08	AZ86200W17	1	0.085	25mL		0.85	0.85		
02/08/19	11:08	CCV 4.0 190208	1	0.392	25mL		3.92	3.92	4.00	97.9%
02/08/19	11:09	CCB 190208	1	0.002	25mL		0.02	0.02		

### Peak Integration Report

Sample Name:	AZ86200W16	Inj. Vol.:	25.00
Injection Type:	Unknown	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	08-Feb-2019 / 14:17	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.25	F	BMB	0.012	0.211	0.1466
2	1.78	Cl	BMB	10.834	189.369	101.7449
3	2.49	BR	BMB	0.009	0.117	0.2513
4	2.79	NO3-N	BMB	0.042	0.450	0.1914
5	4.04	SO4	BMB	1.953	14.569	29.3924

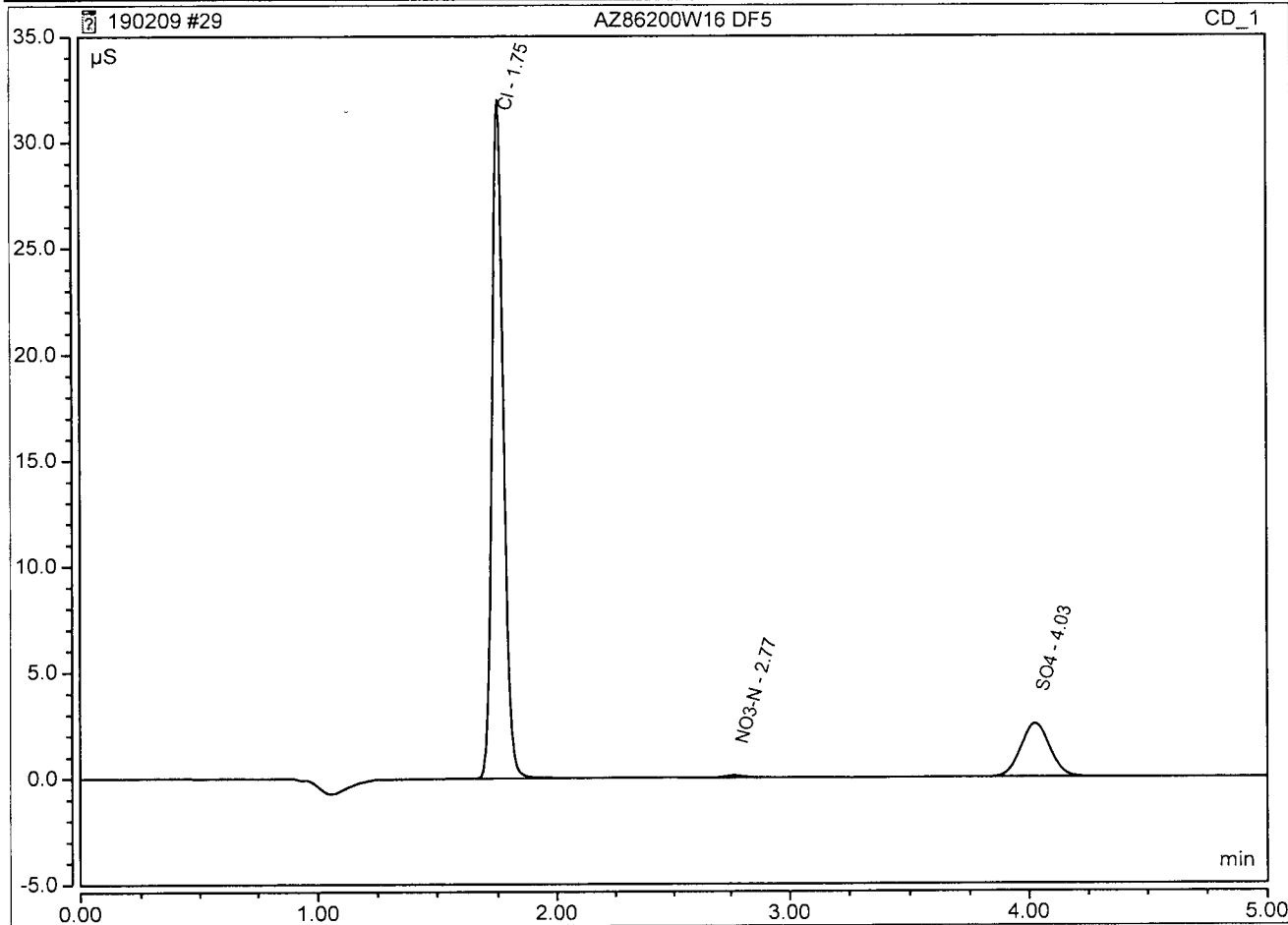




### Peak Integration Report

Sample Name:	AZ86200W16 DF5	Inj. Vol.:	25.00
Injection Type:	Unknown	Dilution Factor:	5.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	09-Feb-2019 / 13:52	Run Time:	5.00

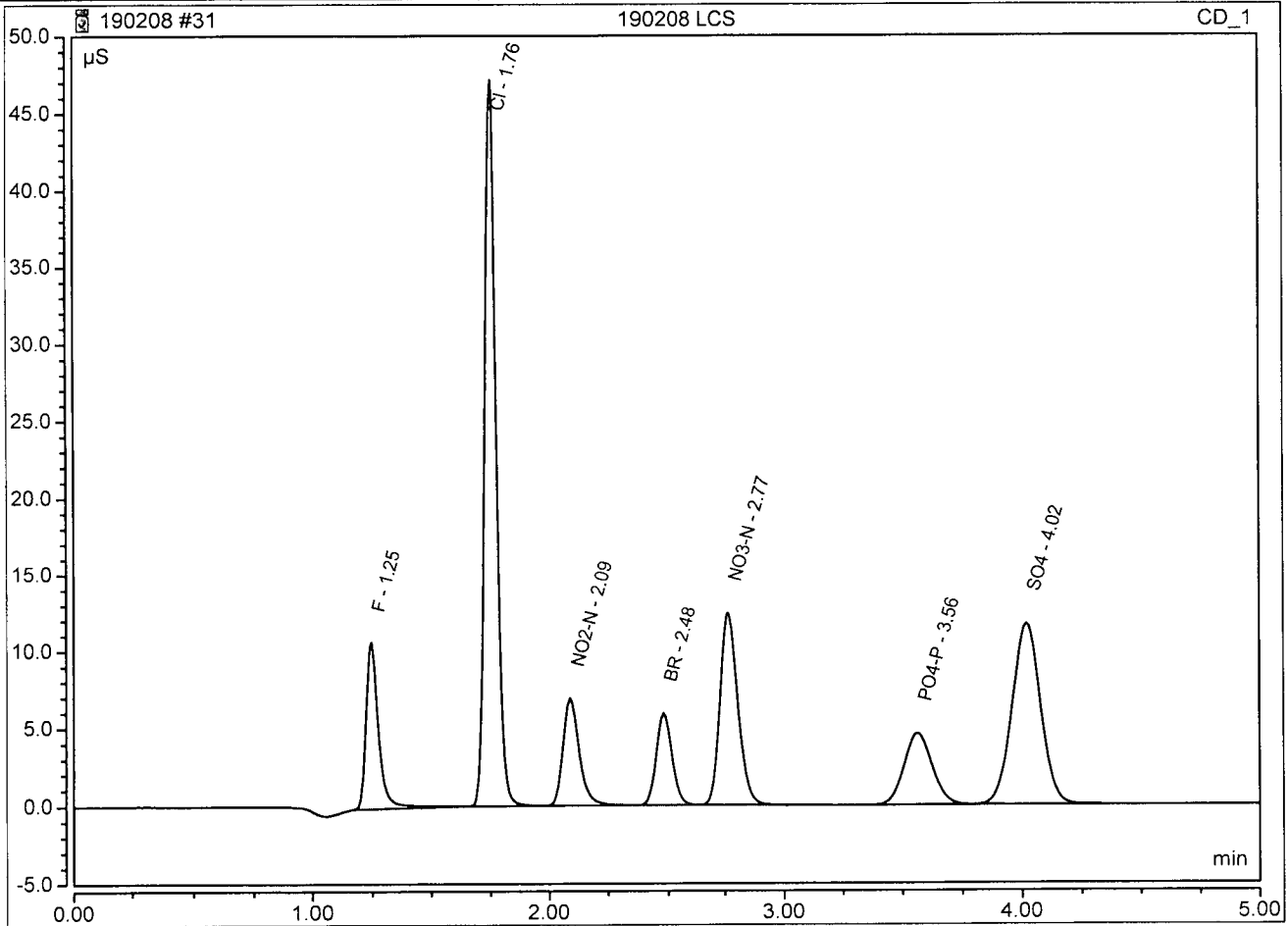
No.	Time (min)	Peak Name	Peak Type	Area ( $\mu\text{S}\cdot\text{min}$ )	Height ( $\mu\text{S}$ )	Amount (mg/L)
1	1.75	Cl	BMB	1.755	31.993	82.3840
2	2.77	NO3-N	BMB	0.009	0.103	0.2134
3	4.03	SO4	BMB	0.359	2.517	26.9957



### Peak Integration Report

Sample Name:	190208 LCS	Inj. Vol.:	25.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	08-Feb-2019 / 14:02	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.25	F	BMB	0.664	10.755	5.3259
2	1.76	Cl	BMB	2.592	47.123	24.3453
3	2.09	NO2-N	BMB	0.550	6.896	3.1097
4	2.48	BR	BMB	0.462	5.908	12.6875
5	2.77	NO3-N	BMB	1.093	12.407	4.9849
6	3.56	PO4-P	BMB	0.624	4.587	8.9458
7	4.02	SO4	BMB	1.621	11.700	24.3923



Algorithm Check:

y = Peak Area

x = mg/L S04

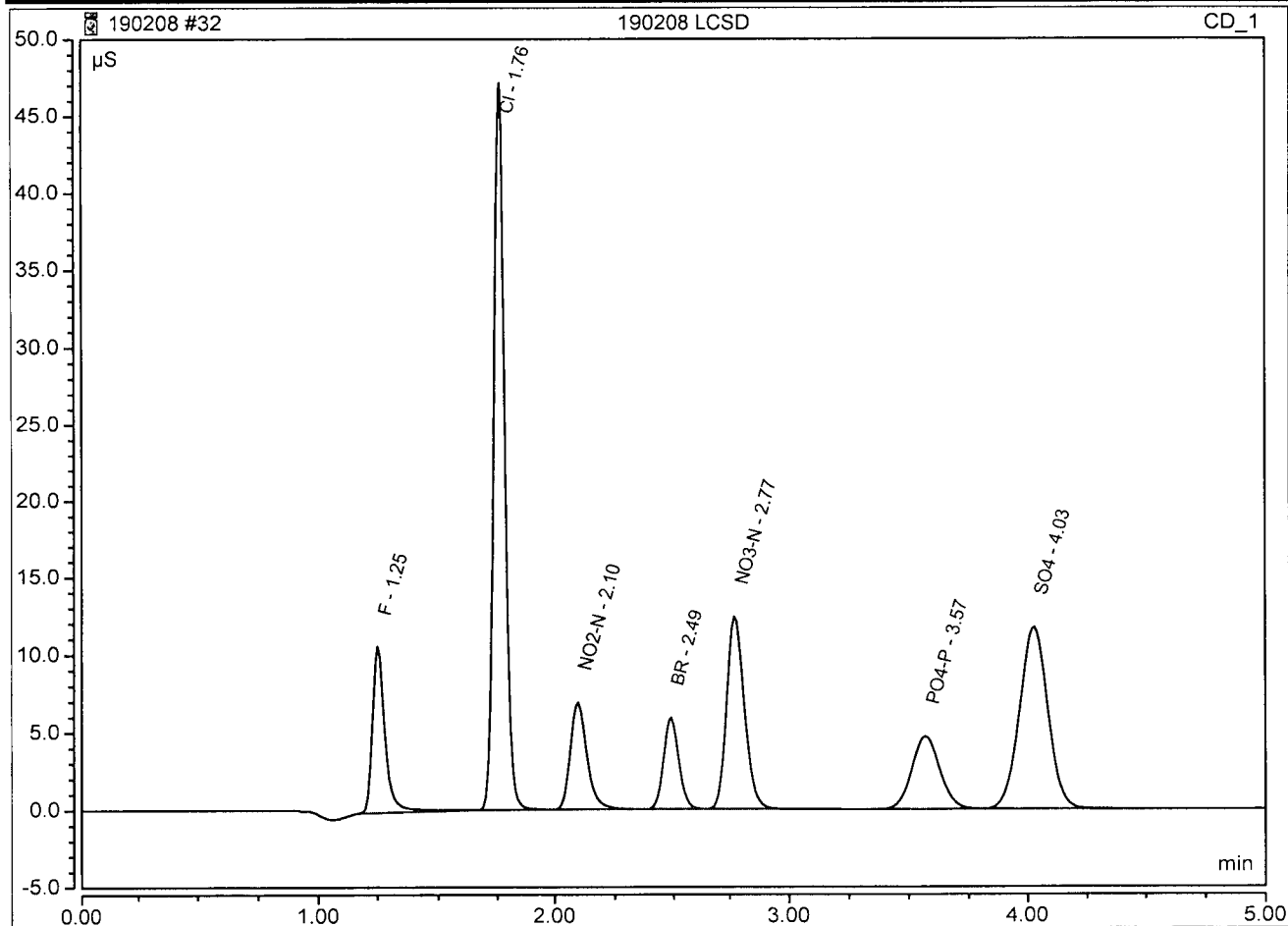
$$y = 0.0664 \quad x + \quad 0.0000$$

$$y = 1.6207 \quad \text{therefor } x = 24.41 \text{ TH 19012}$$

### Peak Integration Report

Sample Name:	190208 LCSD	Inj. Vol.:	25.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	08-Feb-2019 / 14:10	Run Time:	5.00

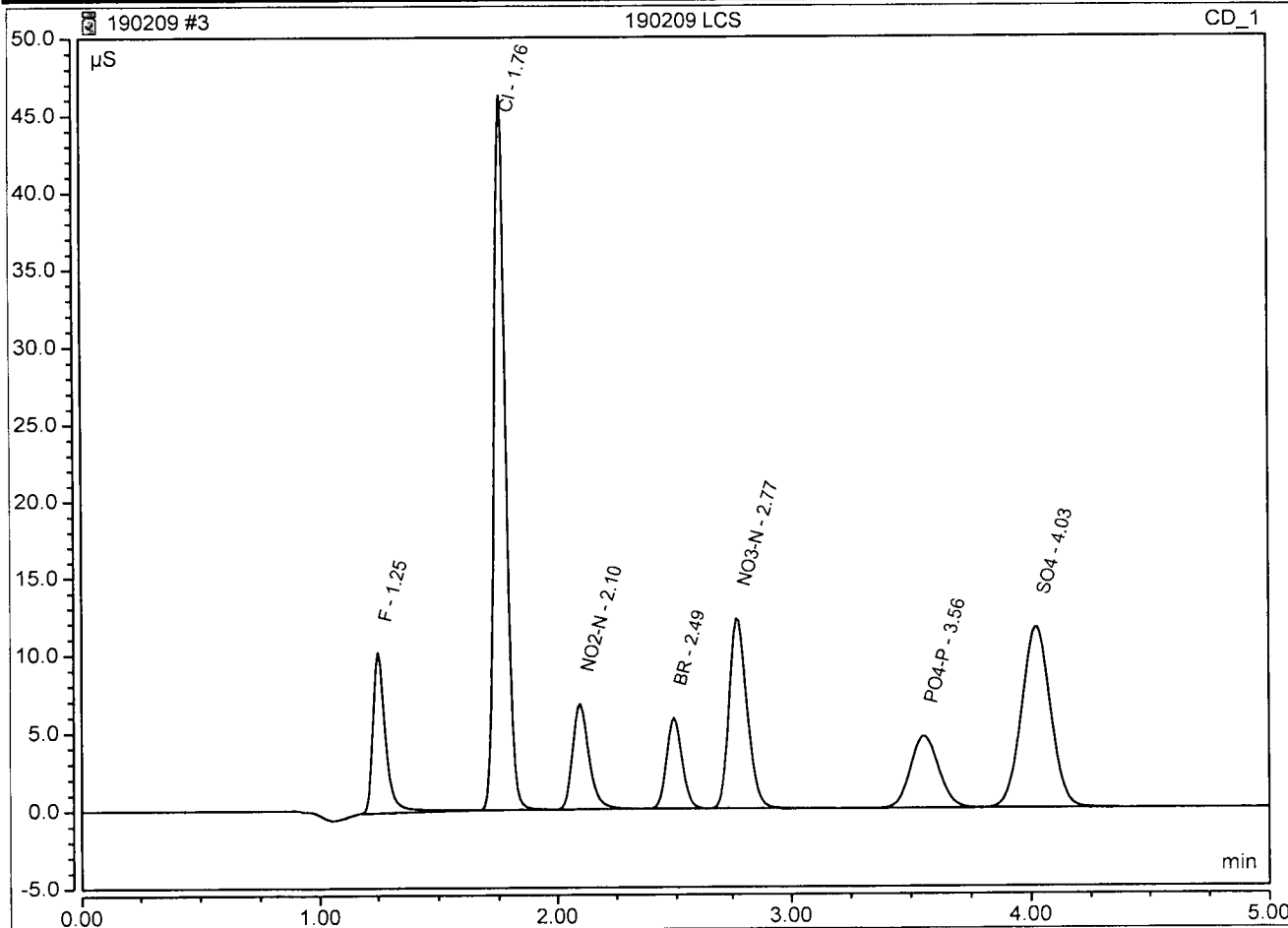
No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.25	F	BMB	0.663	10.715	5.3133
2	1.76	Cl	BMB	2.595	47.131	24.3744
3	2.10	NO2-N	BMB	0.551	6.901	3.1150
4	2.49	BR	BMB	0.462	5.904	12.6867
5	2.77	NO3-N	BMB	1.094	12.400	4.9899
6	3.57	PO4-P	BMB	0.638	4.689	9.1505
7	4.03	SO4	BMB	1.623	11.700	24.4232



### Peak Integration Report

Sample Name:	190209 LCS	Inj. Vol.:	25.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	09-Feb-2019 / 08:24	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.25	F	BMB	0.655	10.296	5.2505
2	1.76	Cl	BMB	2.585	46.227	24.2771
3	2.10	NO2-N	BMB	0.546	6.760	3.0882
4	2.49	BR	BMB	0.462	5.830	12.7009
5	2.77	NO3-N	BMB	1.093	12.239	4.9848
6	3.56	PO4-P	BMB	0.635	4.639	9.1045
7	4.03	SO4	BMB	1.624	11.625	24.4407



Algorithm Check:

y = Peak Area

x = mg/L S04

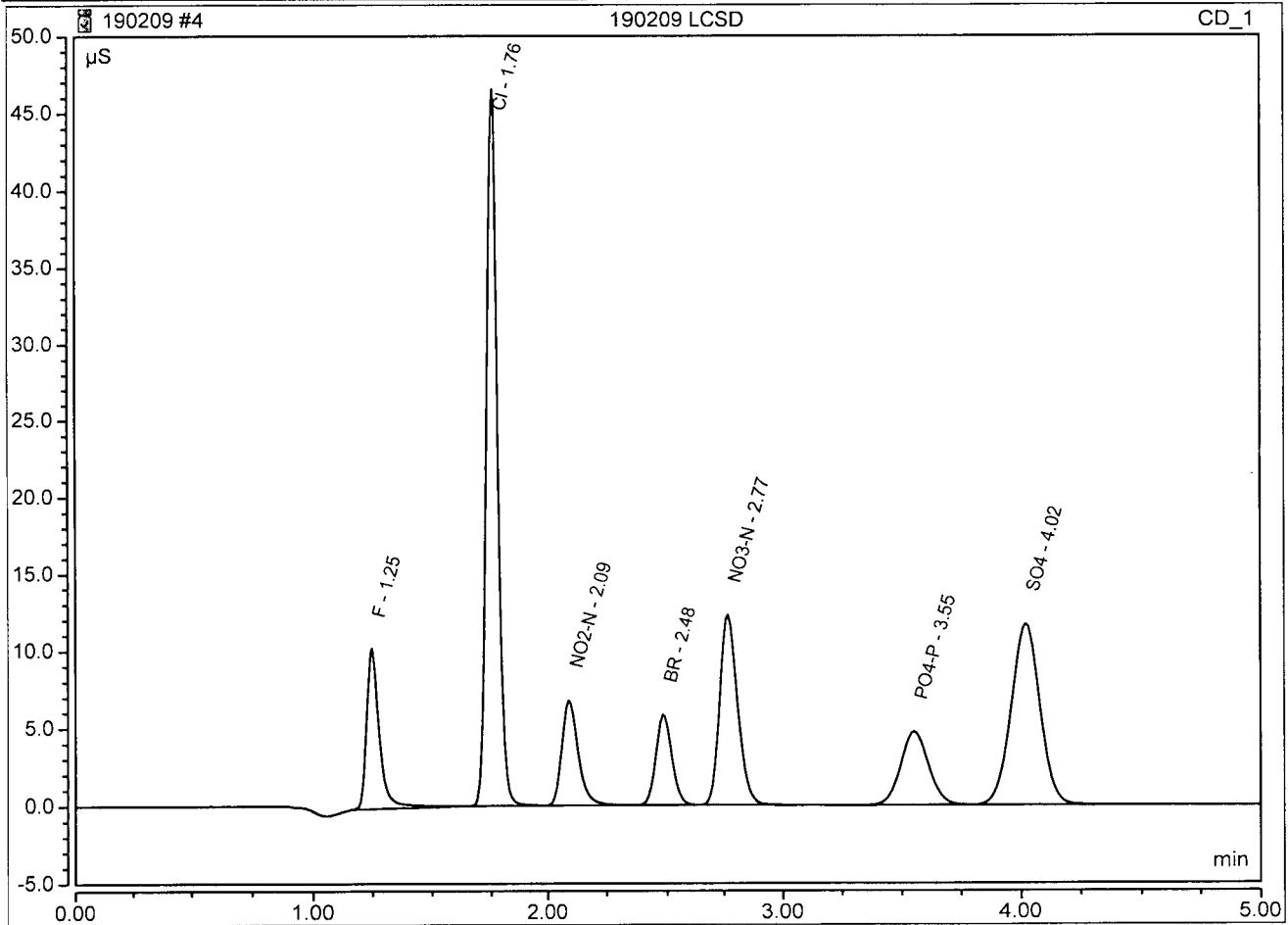
$$y = 0.0664 \quad x + \quad 0.0000$$

$$y = 1.6239 \quad \text{therefor } x = 24.46 \text{ TH } 190212$$

### Peak Integration Report

Sample Name:	190209 LCSD	Inj. Vol.:	25.00
Injection Type:	Check Standard	Dilution Factor:	1.0000
Program:	Anion APM 190124	Operator:	chemist_wetlab
Inj. Date / Time:	09-Feb-2019 / 08:32	Run Time:	5.00

No.	Time (min)	Peak Name	Peak Type	Area (µS*min)	Height (µS)	Amount (mg/L)
1	1.25	F	BMB	0.653	10.330	5.2377
2	1.76	Cl	BMB	2.589	46.546	24.3126
3	2.09	NO2-N	BMB	0.547	6.794	3.0927
4	2.48	BR	BMB	0.462	5.855	12.7065
5	2.77	NO3-N	BMB	1.094	12.284	4.9907
6	3.55	PO4-P	BMB	0.646	4.733	9.2705
7	4.02	SO4	BMB	1.624	11.653	24.4406



# AQ2 Report



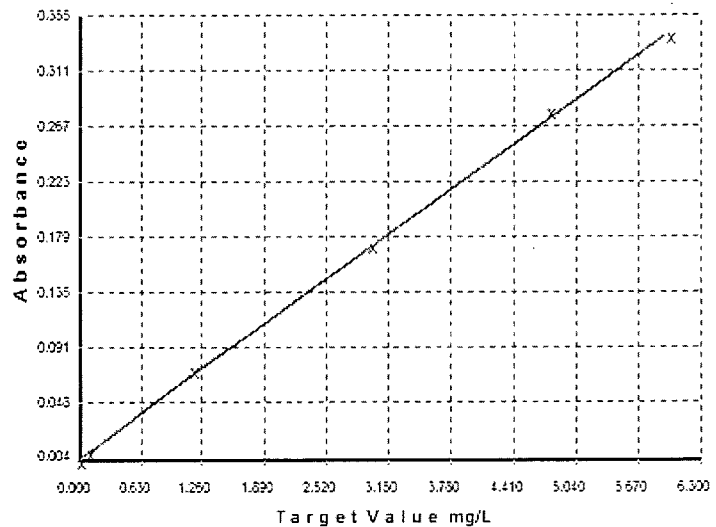
**Serial Number:** 190170  
**Software Version:** 2.1.0  
**Report Requested By:** Eve V  
**Date & Time:** 2019-02-13 15:13:51  
**Tray Number:** 11  
**Tray Name:** 190213A TOXN

## TOXN

### Calibration Chart

Type	Absorbance	Calc mg/L	Target mg/L	% Error
S1	0.0037	-0.0381	0.0000	
S90	0.0107	0.0870	0.1000	-12.97
S91	0.0755	1.2457	1.2000	3.81
S92	0.1736	2.9989	3.0000	-0.04
S93	0.2786	4.8745	4.8000	1.55
S94	0.3378	5.9320	6.0000	-1.13
S0	0.0038	-0.0347	0.0000	

### Calibration Graph



**Polynomial Order:** 1  
**Correlation Coefficient:** 0.9998  
**Carryover(%):** 0.1  
**Calibration equation:**  $y = bx + a$   
**y =:** Concentration mg/L  
**x =:** Measured absorbance  
**a =:** -1.034598E-001  
**b =:** 1.786588E+001  
**Date & Time:** 2019-02-13 14:45:56

## Reagents

Name	Batch	Prepared By	Expiry Date
NO3 W Buffer	Algorithm check	Joel	
Sulfa-NEDD	$y = 17.96588x + 0.179856 - 0.1034598$	Joel	
	$y = 3.11$	EV	2/13/19

Cup	Type	ID	Result	Units	QC Pro	Raw Data	Auto Dil.	Man Dil.	User	Time/Date
		S1	0.0037			0.003657			Ev	2019-02-13 14:32:33
		S90	0.0107			0.010662			Ev	2019-02-13 14:34:48
		S91	0.0755			0.075515			Ev	2019-02-13 14:37:01
		S92	0.1736			0.173645			Ev	2019-02-13 14:39:15
		S93	0.2786			0.278631			Ev	2019-02-13 14:41:29
		S94	0.3378			0.337822			Ev	2019-02-13 14:43:42
		S0	0.0038			0.003848			Ev	2019-02-13 14:45:56
		CCV	2.9328	mg/L		0.169946			Ev	2019-02-13 14:48:09
		CCB	-0.0313	mg/L		0.004040			Ev	2019-02-13 14:50:22
3	U1	✓ICV TOXN	3.1098	mg/L		0.179856			Ev	2019-02-13 14:52:36
4	U2	ICB TOXN	-0.0137	mg/L		0.005023			Ev	2019-02-13 14:54:51
5	U3	190213A BLK TOXN	-0.0238	mg/L		0.004461			Ev	2019-02-13 14:55:58
6	U4	190213A LCS	2.9001	mg/L		0.168117			Ev	2019-02-13 14:56:55
7	U5	190213A LCSD	2.9041	mg/L		0.168341			Ev	2019-02-13 14:57:51
8	U6	1ppm TOXN	1.0035	mg/L		0.061962			Ev	2019-02-13 14:58:47
9	U7	AZ86200W16	0.1938	mg/L		0.016638			Ev	2019-02-13 14:59:43
10	U8	AZ86200W16 MS	3.5262	mg/L		0.203160			Ev	2019-02-13 15:00:39
11	U9	AZ86200W16 MSD	3.6891	mg/L		0.212278			Ev	2019-02-13 15:01:35
		CCV	3.0536	mg/L		0.176711			Ev	2019-02-13 15:02:32
		CCB	-0.0169	mg/L		0.004844			Ev	2019-02-13 15:03:28

## Metrohm 814/809 Titrando Data

Sample ID	Analysis Date/Time	Method	Titration Volume		OH	CO3	HCO3	Total Alk	Unit	Sample Vol	N	Batch	Initials
			(to 8.3)	(total)									
AZ86200W15	2019-02-13 13:50:40 UTC-8	Alkalinity	0.000	1.382	0.00	0.00	54.73	54.73	mg/L	25 mL	0.0198	190213A	AR
190213A LCSD	2019-02-13 13:31:23 UTC-8	Alkalinity	0.000	5.780	0.00	0.00	228.89	228.89	mg/L	25 mL	0.0198	190213A	AR
190213A LCS	2019-02-13 13:21:49 UTC-8	Alkalinity	0.000	5.782	0.00	0.00	228.97	228.97	mg/L	25 mL	0.0198	190213A	AR
190213A BLK	2019-02-13 13:18:37 UTC-8	Alkalinity	0.000	0.066	0.00	0.00	2.61	2.61	mg/L	25 mL	0.0198	190213A	AR



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 Clovis, Ca  
 93611  
 USA

Date Prepared: 02/17/2019

By:

TOC

Date Approved:

By:

Sample Results Summary

Spl #	Vial #	Sample ID	Num Rep	Act Rep	Method	Type	Dil	Customer ID	Mode	Avg. Area (cts)	Avg. Mass (ug)	Avg. Conc (PPM)	Std. Dev	% RSD	Notes
34	34	CCV	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	QC #1	1 : 1	00000000	TOC	21,173,836	5.316	2.658	461,598	2.18	
35	35	CCB	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	QC #1	1 : 1	00000000	TOC	2,431,812	0.611	0.306	63,952	2.63	
3	5	190213A LCS	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	QC #1	1 : 1	00000000	TOC	17,425,240	4.375	2.187	98,650	0.57	
4	6	190213A LCSD	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	QC #1	1 : 1	00000000	TOC	17,206,265	4.320	2.160	111,046	0.65	
11	10	CCV 190212	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	QC #1	1 : 1	00000000	TOC	21,546,495	5.409	2.704	129,277	0.60	
12	11	CCB	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	QC #1	1 : 1	00000000	TOC	2,243,558	0.563	0.282	64,732	2.89	
13	12	AZ86200W05 TOC	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	Sample	1 : 1	00000000	TOC	2,549,657	0.525	0.263	1,988,929	78.01	Pass
23	10	CCV 190212	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	QC #1	1 : 1	00000000	TOC	20,349,294	5.109	2.555	1,690,420	8.31	
24	11	CCB	4	4	NPOC - Feb 11, 2019; 02-54-31 PM	QC #1	1 : 1	00000000	TOC	13,896	0.003	0.002	17,018	122.47	







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**Sample Results**

Spl #: 34 Sample ID: CCV Type: QC #1 Date: 02/13/2019 Status: Passed  
 Vial #: 34 Method: NPOC - Feb 11, 2019; 02-54-31 Dilution: 1:1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	8:48 am	-	-	-	21,613,624	5.426	2.713
2	8:56 am	-	-	-	21,531,430	5.406	2.703
3	9:04 am	-	-	-	20,771,851	5.215	2.608
4	9:12 am	-	-	-	20,778,437	5.217	2.608
<b>Avg.</b>		-	-	-	21,173,836	5.316	2.658
<b>Std.Dev.</b>							
<b>% RSD.</b>							2.18

Spl #: 35 Sample ID: CCB Type: QC #1 Date: 02/13/2019 Status: Passed  
 Vial #: 35 Method: NPOC - Feb 11, 2019; 02-54-31 Dilution: 1:1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	9:23 am	-	-	-	2,426,350	0.609	0.305
2	9:31 am	-	-	-	2,523,661	0.634	0.317
3	9:39 am	-	-	-	2,394,622	0.601	0.301
4	9:46 am	-	-	-	2,382,614	0.598	0.299
<b>Avg.</b>		-	-	-	2,431,812	0.611	0.306
<b>Std.Dev.</b>							
<b>% RSD.</b>							2.63

Denotes Excluded Replicates  
 By Sample Report



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Date Prepared: 02/17/2019 By: TOC  
 Date Approved: By:

Spl #: 11 Sample ID: CCV 190212 Type: QC #1 Date: 02/13/2019 Status: Passed  
 Vial #: 10 Method: NPOC - Feb 11, 2019; 02-54-31 Dilution: 1 : 1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	9:23 pm	-	-	-	21,570,741	5.415	2.708
2	9:31 pm	-	-	-	21,668,118	5.440	2.719
3	9:39 pm	-	-	-	21,583,376	5.419	2.709
4	9:47 pm	-	-	-	21,363,745	5.364	2.682
Avg.		-	-	-	21,546,495	5.409	2.704
Std.Dev.							
% RSD.							0.60

Spl #: 12 Sample ID: CCB Type: QC #1 Date: 02/13/2019 Status: Passed  
 Vial #: 11 Method: NPOC - Feb 11, 2019; 02-54-31 Dilution: 1 : 1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	9:58 pm	-	-	-	2,334,995	0.586	0.293
2	10:05 pm	-	-	-	2,221,045	0.558	0.279
3	10:13 pm	-	-	-	2,234,864	0.561	0.281
4	10:21 pm	-	-	-	2,183,327	0.548	0.274
Avg.		-	-	-	2,243,558	0.563	0.282
Std.Dev.							
% RSD.							2.89



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Date Approved: By:

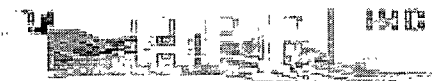
Spl #: 13 Sample ID: AZ86200W05 TOC Type: Sample Date: 02/13/2019 Status: Passed  
 Vial #: 12 Method: NPOC - Feb 11, 2019; 02-54-31 Dilution: 1 : 1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	10:32 pm	-	-	-	4,954,664	1.129	0.565
2	10:39 pm	-	-	-	3,411,627	0.742	0.371
3	10:47 pm	-	-	-	960,300	0.126	0.063
4	10:54 pm	-	-	-	872,037	0.104	0.051
Avg.		-	-	-	2,549,657	0.525	0.263
Std.Dev.					78.01		
% RSD.							

Spl #: 23 Sample ID: CCV 190212 Type: QC #1 Date: 02/14/2019 Status: Passed  
 Vial #: 10 Method: NPOC - Feb 11, 2019; 02-54-31 Dilution: 1 : 1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	3:55 am	-	-	-	21,306,554	5.349	2.675
2	4:03 am	-	-	-	21,028,032	5.279	2.640
3	4:11 am	-	-	-	21,242,621	5.333	2.667
4	4:20 am	-	-	-	17,819,967	4.474	2.237
Avg.		-	-	-	20,349,294	5.109	2.555
Std.Dev.					8.31		
% RSD.							





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Date Prepared: 02/17/2019 By: *TOC*  
 Date Approved: By:

Spl #: 24 Sample ID: CCB Type: QC #1 Date: 02/14/2019 Status: Passed  
 Vial #: 11 Method: NPOC - Feb 11, 2019; 02-54-31 Dilution: 1:1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	4:31 am	-	-	-	19,402	0.005	0.002
2	4:39 am	-	-	-	622	0.000	0.000
3	4:46 am	-	-	-	0	0.000	0.000
4	4:54 am	-	-	-	35,558	0.009	0.005
Avg.		-	-	-	13,896	0.003	0.002
Std.Dev.					122.47		
% RSD.							

Spl #: 3 Sample ID: 190213A LCS Type: QC #1 Date: 02/13/2019 Status: Passed  
 Vial #: 5 Method: NPOC - Feb 11, 2019; 02-54-31 Dilution: 1:1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	11:48 am	-	-	-	17,358,532	4.358	2.178
2	11:55 am	-	-	-	17,410,530	4.371	2.186
3	12:04 pm	-	-	-	17,362,958	4.359	2.180
4	12:12 pm	-	-	-	17,568,942	4.411	2.205
Avg.		-	-	-	17,425,240	4.375	2.187
Std.Dev.							
% RSD.					0.57		





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Date Prepared: 02/17/2019

By: TOC

Date Approved:

By:

Spl #: 4 Sample ID: 190213A LCSD Type: QC #1 Date: 02/13/2019 Status: Passed  
 Vial #: 6 Method: NPOC - Feb 11, 2019; 02-54-31 Dilution: 1:1 Customer ID: 00000000

Rep #	Time	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (PPM)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (PPM)
1	12:23 pm	-	-	-	17,120,286	4.298	2.149
2	12:31 pm	-	-	-	17,200,482	4.318	2.159
3	12:39 pm	-	-	-	17,139,545	4.303	2.152
4	12:47 pm	-	-	-	17,364,746	4.360	2.180
Avg.		-	-	-	17,206,265	4.320	2.160
Std.Dev.							
% RSD.					0.65		



Standard Prep							
Prep Date	Ferrous Iron Standards			Prep'd By (Initials)		HH	
Exp Date	06/15/18						
	06/15/19						
Stock Label	Supplier	Batch Number	Exp Date	Aliquot from Stock	Final Volume	Solvent	Ferrous Iron Concentration
Ferrous Ammonium Sulfate	J.T.Baker	0000184592	08/21/20	0.351	250mL	5ml H2SO4 (0000167828) Diluted with water	200ug/L
Ferrous Sulfate	Mallinckrodt	Lot 5056 KDRX	NA	0.249	250mL	5ml H2SO4 (0000167828) Diluted with water	200ug/L
Ferrous Iron CCV/LCS/MS/ICV				Prep'd By (Initials)		HH	
Prep Date	See Injection Log						
Exp Date	24 Hours						
Initial Standard Information	Supplier	Batch Number	Exp Date	Final Standard Information			
Ferrous Iron CCV	J.T.Baker	0000184592	06/14/19	500uL	25mL	Deionized water	4mg/L
Ferrous Iron ICV/LCS	Mallinckrodt	Lot 5056 KDRX	06/14/19	375uL	25mL	Deionized water	3mg/L
Ferrous Iron Calibration Curve				Prep'd By (Initials)		HH	
Prep Date	06/15/18						
Exp Date	06/16/18						
Final Standard Information							
Point Label	Supplier	Batch Number	Exp Date	Aliquot from Stock (mL)	Final Volume	Solvent	Ferrous Iron Concentration
CCB	J.T.Baker	0000184592	06/14/19	0	25mL	Deionized water	0mg/L
Ical 1	J.T.Baker	0000184592	06/14/19	0.125	25mL	Deionized water	1mg/L
Ical 2	J.T.Baker	0000184592	06/14/19	0.25	25mL	Deionized water	2mg/L
Ical 3	J.T.Baker	0000184592	06/14/19	0.5	25mL	Deionized water	4mg/L
Ical 4	J.T.Baker	0000184592	06/14/19	0.625	25mL	Deionized water	5mg/L
Ical 5	J.T.Baker	0000184592	06/14/19	1.25	25mL	Deionized water	10mg/L
ICV	Mallinckrodt	Lot 5056 KDRX	06/14/19	0.375	25mL	Deionized water	3mg/L
Reagent Prep							
Reagent	Chemical Lot #	Chemical	Chemical Expiration Date	Amount	Date Prep		
Colorizer	0747C107	1,10-phenanthroline	na	0.2264	02/08/19		
		HCL conc	na	8drops			
Buffer	Z288018	Ammonia Acetate	na	249.3g	01/15/19		
		2018071399 Glacial Acetic Acid	06/27/20	700mL			

Anion Chromatography Working Standard									
Prep Date: 01/24/19									
Exp Date: 01/25/19									
Prep'd By (Initials): HH									
Initial Standard Information					Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier Part No.	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date	Aliquot from Stock	Final Volume	Solvent	Final Standard Conc (ug/mL)
Ion Chromatography Standard Fluoride 1000ug/mL in H <sub>2</sub> O	o2sl	O2SI-062002-01-01	1000	142626-24-38407	04/20/19	312.5 µL	25 mL	Millipore Water	12.5
Ion Chromatography Standard Nitrite as N 1000 ug/mL in H <sub>2</sub> O	o2sl	O2SI-062004-01-01	1000	142626-24-38408	04/20/19	125 µL	25 mL	Millipore Water	5
Ion Chromatography Standard Chloride, 500mL 5,000 mg/L in H <sub>2</sub> O	o2sl	062001-08-03	5000	10084781-1-39578	02/21/20	250 µL	25 mL	Millipore Water	50
Ortho-Phosphate as P Standard	Ultra Scientific	ICC-005A	1000	G34-CP-3323-39057	08/31/23	625 µL	25 mL	Millipore Water	25
Ion Chromatography Standard Nitrate as N, 500mL 1,000 mg/L in H <sub>2</sub> O	o2sl	062003-01-03	1000	880117-4-39577	02/21/20	250 µL	25 mL	Millipore Water	10
Bromide Standard	Ultra Scientific	ICC-001	1000	CR-5372-39521	12/31/21	625 µL	25 mL	Millipore Water	25
Sulfate Standard	Agilent	ICC-006	1000	CS-0688-40047	03/31/22	1250 µL	25 mL	Millipore Water	50

Anion Chromatography Calibration Curve									
Prep Date: 01/24/19									
Exp Date: 01/25/19									
Prep'd By (Initials): HH									
Initial Standard Information					Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	APPL Mix Name	Conc. Range (ug/mL)	Reference To APPL Prep Date	Exp. Date	Aliquot from Stock	Final Volume	Solvent	Final Conc. Range (ug/mL)
Ical2	Varries	ICal1	5.0-50.0	Prepared 01/24/19	01/25/19	400 µL	1000 µL	Millipore Water	0.08-0.40
Anion Chromatography Working Standard	Varries	ICal2	5.0-50.0	Prepared 01/24/19	01/25/19	20 µL	1000 µL	Millipore Water	0.1-1.0
Anion Chromatography Working Standard	Varries	ICal3	5.0-50.0	Prepared 01/24/19	01/25/19	50 µL	1000 µL	Millipore Water	0.25-2.5
Anion Chromatography Working Standard	Varries	ICal4	5.0-50.0	Prepared 01/24/19	01/25/19	100 µL	1000 µL	Millipore Water	0.5-5.0
Anion Chromatography Working Standard	Varries	ICal5	5.0-50.0	Prepared 01/24/19	01/25/19	200 µL	1000 µL	Millipore Water	1.0-10.0
Anion Chromatography Working Standard	Varries	ICal6	5.0-50.0	Prepared 01/24/19	01/25/19	500 µL	1000 µL	Millipore Water	2.5-25.0
Anion Chromatography Working Standard	Varries	ICal7	5.0-50.0	Prepared 01/24/19	01/25/19	700 µL	1000 µL	Millipore Water	3.5-35.0
Anion Chromatography Working Standard	Varries	ICal8	5.0-50.0	Prepared 01/24/19	01/25/19	1000 µL	1000 µL	Millipore Water	5.0-50.0

Anion Chromatography LCS/ICV									
Prep Date: See Injection Log									
Exp Date: 24 hours after prep									
Prep'd By (Initials): HH									
Initial Standard Information					Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier Part No.	Conc. Range (ug/mL)	Lot Number - QA Number	Exp. Date	Aliquot from Stock	Final Volume	Solvent	Final Standard Conc (ug/mL)
Fluoride	Inorganic Ventures	ICP1	993-999	K-F652018-39801	10/23/19	62.5 µL	25 mL	Millipore Water	5
Nitrite	Inorganic Ventures	ICNO21	993-1001	M2-NOX660562-39802	10/23/19	250 µL	25 mL	Millipore Water	3.04
Chloride	Inorganic Ventures	ICCL1	993-1001	N2CL664868-39904	11/26/19	500 µL	25 mL	Millipore Water	20
O-Phosphate as P	Inorganic Ventures	IPPO41	1001-1009	M2-POX655826-39803	10/23/19	125 µL	25 mL	Millipore Water	10
Nitrate as N	Inorganic Ventures	ICNNO31	994-1002	N2-NOX667147-39510	10/23/19	125 µL	25 mL	Millipore Water	5
Ion Chromatography Bromide Standard	CPI International	4400-IC8M	1000	161681-8-39539	02/06/20	312.5 µL	25 mL	Millipore Water	12.5
Sulfate	Inorganic Ventures	ICSO41	998-1006	K2-SOX01111-38875	08/13/19	500 µL	25 mL	Millipore Water	20

Anion Chromatography CCV									
Prep Date: See Injection Log									
Exp Date: 24 hours after prep									
Prep'd By (Initials): HH									
Initial Standard Information					Final Standard Information				
Name of Initial Standard (QAU Label)	Supplier	Supplier Part No.	Conc. (ug/mL)	Lot Number - QA Number	Exp. Date	Aliquot from Stock	Final Volume	Solvent	Final Standard Conc (ug/mL)
Ion Chromatography Standard Fluoride 1000ug/mL in H <sub>2</sub> O	o2sl	O2SI-062002-01-01	1000	142626-24-38407	04/20/19	125 µL	25 mL	Millipore Water	5
Ion Chromatography Standard Nitrite as N 1000 ug/mL in H <sub>2</sub> O	o2sl	O2SI-062004-01-01	1000	142626-24-38408	04/20/19	62.5 µL	25 mL	Millipore Water	2.5
Ion Chromatography Standard Chloride, 500mL 5,000 mg/L in H <sub>2</sub> O	o2sl	062001-08-03	5000	10084781-1-39578	02/21/20	125 µL	25 mL	Millipore Water	25
Ortho-Phosphate as P Standard	Ultra Scientific	ICC-005A	1000	G34-CP-3323-39057	08/31/23	250 µL	25 mL	Millipore Water	10
Ion Chromatography Standard Nitrate as N, 500mL 1,000 mg/L in H <sub>2</sub> O	o2sl	062003-01-03	1000	880117-4-39577	02/21/20	125 µL	25 mL	Millipore Water	5
Bromide Standard	Ultra Scientific	ICC-001	1000	CR-5372-39521	12/31/21	312.5 µL	25 mL	Millipore Water	12.5
Sulfate Standard	Agilent	ICC-006	1000	CS-0688-40047	03/31/22	625 µL	25 mL	Millipore Water	25

## Nitrite

### High Point @ 1.5 mg/L

0.075 mL NO<sub>2</sub> O<sub>2</sub>Si lot 142626-24 - 38408 exp: 4/20/19  
50 mL DI Water

### CCV @ 0.75 mg/L

0.0375 mL NO<sub>2</sub> O<sub>2</sub>Si lot 142626-24-38408 exp: 4/20/19  
50 mL DI Water

### ICV/LCS @ 0.73 mg/L

0.12mL NO<sub>2</sub> Inorganic Ventures lot M2-NOX660562-39802 exp: 10/23/19  
50 mL DI Water

### 1 mg/L NO<sub>2</sub>

400 uL of High point and 200 uL of DI made directly into a sample cup

Prep 02/07/19  
Exp 02/14/19  
EV

## Nitrate/TOXN

### High Point @ 6 mg/L

0.30 mL NO<sub>3</sub> O<sub>2</sub>Si lot 880117-39577 exp: 2/21/20  
50 mL DI Water

### CCV @ 3.0 mg/L

0.15 mL NO<sub>3</sub> O<sub>2</sub>Si lot 880117-39577 exp: 2/21/20  
50 mL DI Water

### ICV/LCS @ 3.0 mg/L

0.150 mL NO<sub>3</sub> Inorganic Ventures lot N2-NOX667147-39510 exp: 10/23/19  
50 mL DI Water

### 1 mg/L NO<sub>3</sub>

100 uL of High point and 500 uL of DI made directly into a sample cup

### MS @ 2.5 mg/L NO<sub>3</sub> and 0.73 mg/L NO<sub>2</sub>

0.125 mL NO<sub>3</sub> Inorganic Ventures lot N2-NOX667147-39510 exp: 10/23/19  
and 0.12mL Inorganic Ventures lot M2-NOX660562-39802 exp: 10/23/19  
Final volume 50 mL of sample

Prep 02/07/19  
Exp 02/14/19  
EV



**Tiamo Alkalinity Standard Prep**

Prep Date: \_\_\_\_\_

Exp Date: \_\_\_\_\_

Prep'd By (Initials): AR

Initial Standard Information							Final Standard Information			
Name of Initial Standard (QAU Label)	Supplier	Unit	Conc	Lot Number - QA Number	Prep/Opened	Exp. Date	Aliquot from Stock	Final Volume	Solvent	Final Standard Conc
Sulfuric Acid (H2SO4)	J.T.Baker	NA	NA	167828	NA	NA	PURCHASED	NA	NA	NA
0.10N Sulfuric Acid (H2SO4)	J.T.Baker	Normality	0.1N	167828	12/19/18	12/19/19	3ml	1L	DI	0.10N
0.02N Sulfuric Acid (H2SO4)	J.T.Baker	Normality	0.02N	167828	12/19/18	12/19/19	200mL	1L	DI	0.02N
Inorganic Spike(NaHCO3)	BDH	NA	NA	1575C510	10/18/18	08/14/20	PURCHASED	NA	NA	NA
Inorganic Spike Solution	BDH	Milligrams/Liters	250mg/L	1575C510	01/29/19	01/29/20	3.5g	500mL	DI	250mg/L
Standarizing Solution(NaCO3)	J.T.Baker	Normality	1N	178494	07/25/17	07/25/19	PURCHASED	NA	NA	NA

Name of Final Standard TOC Calibration Curve  
 Prep Date 02/11/19  
 Exp Date 03/11/19

Prep'd By (Initials) HH

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
Total Organic Carbon (TOC) Standard	Agilent	IQC-1 06-5	1000 mg/L	CS-5157-40233	11/30/20	20 uL	40 mL	DI Water	0.5 ppm
Total Organic Carbon (TOC) Standard	Agilent	IQC-1 06-5	1000 mg/L	CS-5157-40233	11/30/20	50 uL	40 mL	DI Water	1.25 ppm
Total Organic Carbon (TOC) Standard	Agilent	IQC-1 06-5	1000 mg/L	CS-5157-40233	11/30/20	100 uL	40 mL	DI Water	2.5 ppm
Total Organic Carbon (TOC) Standard	Agilent	IQC-1 06-5	1000 mg/L	CS-5157-40233	11/30/20	150 uL	40 mL	DI Water	3.75 ppm
Total Organic Carbon (TOC) Standard	Agilent	IQC-1 06-5	1000 mg/L	CS-5157-40233	11/30/20	200 uL	40 mL	DI Water	5 ppm

Name of Final Standard 1000 PPM ICV TOC Intermediate  
 Prep Date 02/11/19  
 Exp Date 02/11/20

Prep'd By (Initials) HH

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
Sugar	Millenia	814-293	42% Carbon	V298J-NA	NA	2.3831 g	1 L	DI Water	1003.45 ppm

Name of Final Standard ICV (TOC)  
 Prep Date 02/11/19  
 Exp Date 03/11/19

Prep'd By (Initials) HH

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
1000 PPM ICV TOC Intermediate	APPL Inc.	Prep: 2/11/19	1000 mg/L	Prep: 2/11/19	03/11/19	100 uL	40mL	DI Water	2.5 ppm

Name of Final Standard CCV (TOC)  
 Prep Date 02/12/19  
 Exp Date 03/12/19

Prep'd By (Initials) MM

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
Total Organic Carbon (TOC) Standard	Agilent	IQC-1 06-5	1000 mg/L	CS-5157-40233	11/30/20	100 uL	40 mL	DI Water	2.5 ppm

Name of Final Standard TOC LCS/LCSD  
 Prep Date 02/13/19  
 Exp Date 03/13/19

Prep'd By (Initials) MM

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
Total Organic Carbon (TOC) Standard	ULTRA Scientific	IQC-106-5	1000 mg/L	CR-0328-37639	02/28/19	80 uL	40 mL	DI Water	2.0 ppm

Name of Final Standard TOC MS/MSD  
 Prep Date 02/13/19  
 Exp Date 03/13/19

Prep'd By (Initials) MM

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from container Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
Total Organic Carbon (TOC) Standard	ULTRA Scientific	IQC-106-5	1000 mg/L	CR-0328-37639	02/28/19	100 uL	40 mL	sample	2.5 ppm

# SM3500FeB Injection Log

Directory: I:\Spec Sheets\Ferrous Iron (Fe2)\2019\

RunID	Injected		Sample Name	Misc Info	FileName	Multiplier
11	08 Feb 2019	08:39	CCV 4.0 190208		190208A	1.
12	08 Feb 2019	08:40	CCB 190208		190208A	1.
13	08 Feb 2019	08:41	190208 LCS		190208A	1.
14	08 Feb 2019	08:42	190208 LCSD		190208A	1.
15	08 Feb 2019	08:42	AZ86190W13		190208A	1.
16	08 Feb 2019	08:42	AZ86191W13		190208A	1.
17	08 Feb 2019	08:43	AZ86195W13		190208A	1.
18	08 Feb 2019	08:43	AZ86192W13		190208A	1.
19	08 Feb 2019	08:44	AZ86193W13		190208A	1.
22	08 Feb 2019	08:55	AZ86196W13		190208A	1.
24	08 Feb 2019	08:56	AZ86197W13		190208A	1.
23	08 Feb 2019	08:56	AZ86194W13		190208A	1.
25	08 Feb 2019	08:57	AZ86198W13		190208A	1.
26	08 Feb 2019	08:58	CCV 4.0 190208		190208A	1.
27	08 Feb 2019	08:58	CCB 190208		190208A	1.
33	15 Jun 2018	12:27	Ical 1		190208A	1.
34	15 Jun 2018	12:27	ICB		190208A	1.
35	15 Jun 2018	12:28	Ical 2		190208A	1.
36	15 Jun 2018	12:28	Ical 3		190208A	1.
37	15 Jun 2018	12:29	Ical 4		190208A	1.
38	15 Jun 2018	12:30	Ical 5		190208A	1.
39	15 Jun 2018	12:31	ICV		190208A	1.
40	15 Jun 2018	12:32	ICB		190208A	1.

# EPA 300.0 Injection Log

Directory: I:\Dionex\Charlie\

RunID	Injected		Sample Name	Misc Info	FileName	Multiplier
2	24 Jan 2019	11:58	CCB		Anions	1.
3	24 Jan 2019	12:06	i cal 1		Anions	1.
4	24 Jan 2019	12:13	i cal 2		Anions	1.
5	24 Jan 2019	12:20	i cal 3		Anions	1.
6	24 Jan 2019	12:28	i cal 4		Anions	1.
7	24 Jan 2019	12:35	i cal 5		Anions	1.
8	24 Jan 2019	12:43	i cal 6		Anions	1.
9	24 Jan 2019	12:50	i cal 7		Anions	1.
10	24 Jan 2019	12:57	i cal 8		Anions	1.
11	24 Jan 2019	13:05	CCB		Anions	1.
12	24 Jan 2019	13:12	ICV LCS 190124		Anions	1.
13	24 Jan 2019	13:20	ICVD LCSD 190124		Anions	1.

# EPA 300.0 Injection Log

Directory: I:\Dionex\Charlie\

RunID	Injected		Sample Name	Misc Info	FileName	Multiplier
29	08 Feb 2019	13:27	CCV 190208		Anions	1.
30	08 Feb 2019	13:55	CCB		Anions	1.
31	08 Feb 2019	14:02	190208 LCS		Anions	1.
32	08 Feb 2019	14:10	190208 LCSD		Anions	1.
33	08 Feb 2019	14:17	AZ86200W16		Anions	1.
34	08 Feb 2019	14:24	CCV 190208		Anions	1.
35	08 Feb 2019	14:32	CCB		Anions	1.

# EPA 300.0 Injection Log

Directory: I:\Dionex\Charlie\

RunID	Injected		Sample Name	Misc Info	FileName	Multiplier
1	09 Feb 2019	08:09	CCV 190209		Anions	1.
2	09 Feb 2019	08:17	CCB		Anions	1.
3	09 Feb 2019	08:24	190209 LCS		Anions	1.
4	09 Feb 2019	08:32	190209 LCSD		Anions	1.
22	09 Feb 2019	13:01	CCV 190209		Anions	1.
23	09 Feb 2019	13:08	CCB		Anions	1.
29	09 Feb 2019	13:52	AZ86200W16 DF5		Anions	5.
30	09 Feb 2019	14:00	CCV 190209		Anions	1.
31	09 Feb 2019	14:07	CCB		Anions	1.

# EPA 353.2 Injection Log

Directory: I:\EVE\Export\2019\

RunID	Injected		Sample Name	Misc Info	FileName	Multiplier
1	13 Feb 2019	14:32	Standard 1 TOXN/NO3		190213A TO	1.
2	13 Feb 2019	14:34	Standard 90 TOXN/NO3		190213A TO	1.
3	13 Feb 2019	14:37	Standard 91 TOXN/NO3		190213A TO	1.
4	13 Feb 2019	14:39	Standard 92 TOXN/NO3		190213A TO	1.
5	13 Feb 2019	14:41	Standard 93 TOXN/NO3		190213A TO	1.
6	13 Feb 2019	14:43	Standard 94 TOXN/NO3		190213A TO	1.
7	13 Feb 2019	14:45	Standard 0 TOXN/NO3		190213A TO	1.
8	13 Feb 2019	14:48	CCV TOXN/NO3		190213A TO	1.
9	13 Feb 2019	14:50	CCB TOXN/NO3		190213A TO	1.
10	13 Feb 2019	14:52	ICV TOXN		190213A TO	1.
11	13 Feb 2019	14:54	ICB TOXN		190213A TO	1.
12	13 Feb 2019	14:55	190213A BLK TOXN		190213A TO	1.
13	13 Feb 2019	14:56	190213A LCS TOXN/NO3		190213A TO	1.
14	13 Feb 2019	14:57	190213A LCSD TOXN/NO3		190213A TO	1.
16	13 Feb 2019	14:59	AZ86200W16 TOXN/NO3		190213A TO	1.
19	13 Feb 2019	15:02	CCV TOXN/NO3		190213A TO	1.
20	13 Feb 2019	15:03	CCB TOXN/NO3		190213A TO	1.



# SM 2320B Injection Log

Directory: I:\Tiamo\EXPORT\

RunID	Injected		Sample Name	Misc Info	FileName	Multiplier
1	13 Feb 2019	13:18	190213A BLK		190214A_AL	1.
2	13 Feb 2019	13:21	190213A LCS		190214A_AL	1.
3	13 Feb 2019	13:31	190213A LCSD		190214A_AL	1.
4	13 Feb 2019	13:50	AZ86200W15		190214A_AL	1.

## 9060A Injection Log

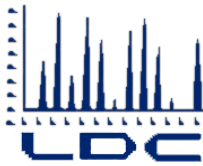
Directory: OI Analytical - TOC Reporter - G949730077 - Wet Chemistry

RunID	Injected		Sample Name	Misc Info	FileName	Multiplier
1	11 Feb 2019	16:13	TOC-RW		190211A	1.
2	11 Feb 2019	16:47	TOC-Std#1-0.500 PPM		190211A	1.
3	11 Feb 2019	17:18	TOC-Std#2-1.250 PPM		190211A	1.
4	11 Feb 2019	17:50	TOC-Std#3-2.500 PPM		190211A	1.
5	11 Feb 2019	18:23	TOC-Std#4-3.750 PPM		190211A	1.
6	11 Feb 2019	18:56	TOC-Std#5-5.000 PPM		190211A	1.
7	11 Feb 2019	19:31	ICB		190211A	1.
8	11 Feb 2019	20:02	ICV Sugar		190211A	1.

## 9060A Injection Log

Directory: OI Analytical - TOC Reporter - G949730077 - Wet Chemistry

RunID	Injected		Sample Name	Misc Info	FileName	Multiplier
34	13 Feb 2019	8:48	CCV		190212A	1.
35	13 Feb 2019	9:23	CCB		190212A	1.
38	13 Feb 2019	11:48	190213A LCS		190213A	1.
39	13 Feb 2019	12:23	190213A LCSD		190213A	1.
52	13 Feb 2019	21:23	CCV		190213A	1.
53	13 Feb 2019	21:58	CCB		190213A	1.
54	13 Feb 2019	22:32	AZ86200W05 TOC		190213A	1.
64	14 Feb 2019	3:55	CCV		190213A	1.
65	14 Feb 2019	4:31	CCB		190213A	1.



## LABORATORY DATA CONSULTANTS, INC.

2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

AECOM  
1001 Bishop Street Suite 1600  
Honolulu, HI 96813  
ATTN: Ms. Margie Pascua  
[Margie.Pascua@aecom.com](mailto:Margie.Pascua@aecom.com)

February 7, 2019

SUBJECT: REVISED Red Hill Bulk Storage Facility, CTO 18F0126, Data Validation

Dear Ms. Pascua,

Enclosed are the revision validation reports for the fractions listed below. This SDG was received on January 10, 2019. Attachment 1 is a summary of the samples that were reviewed for each analysis.

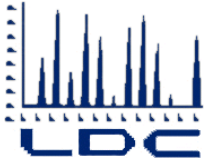
- Revision: Incorrect Nitrate compound was qualified for sample ERH719.

### LDC Project #44152 RV1:

<u>SDG #</u>	<u>Fraction</u>
87650/18L0338	Volatiles, Phenol & Tentatively Identified Compounds, Polynuclear Aromatic Hydrocarbons, 2-(2-Methoxyethoxy)-ethanol, Wet Chemistry, Gasoline Range Organics, Total Petroleum Hydrocarbons as Extractables, Methane

The data validation was performed under Level C & D validation guidelines. The analyses were validated using the following documents and variances, as applicable to each method:

- Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i, Revision 02; January 2017
- Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i, Revision 01, April 2017
- Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i, Revision 00, September 2017
- Sampling and Analysis Plan, Addendum 03 Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i, Revision 00; June 2018
- Project Procedures Manual, U.S. Naval Facilities Engineering Command Environmental Restoration Program, NAVFAC Pacific, DON 2015
- U.S. Department of Defense Quality Systems Manual for Environmental Laboratories, Version 5.1, 2017



## LABORATORY DATA CONSULTANTS, INC.

2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIB, November 2004; update IV, February 2007; update V, July 2014

Please feel free to contact us if you have any questions.

Sincerely,

Stella Cuenco

[scuenco@lab-data.com](mailto:scuenco@lab-data.com)

Operations Manager/Senior Chemist



## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** January 30, 2019

**Parameters:** Volatiles

**Validation Level:** Level C & D

**Laboratory:** APPL, Inc.

**Sample Delivery Group (SDG):** 87650

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
ERH719**	AZ84057**	Water	12/12/18
ERH718	AZ84058	Water	12/12/18
ERH720	AZ84059	Water	12/12/18
ERH721	AZ84060	Water	12/12/18
ERH722	AZ84061	Water	12/13/18
ERH723	AZ84062	Water	12/13/18
ERH719MS	AZ84057MS	Water	12/12/18
ERH719MSD	AZ84057MSD	Water	12/12/18
ERH722MS	AZ84061MS	Water	12/13/18
ERH722MSD	AZ84061MSD	Water	12/13/18

\*\*Indicates sample underwent Level D validation

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) which are Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX) by Environmental Protection Agency (EPA) SW 846 Method 8260B

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level D data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.



The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## Qualification Code Reference

- H Holding times were exceeded.
- S Surrogate recovery was outside QC limits.
- C Calibration %RSD,  $r$ ,  $r^2$  or %D were noncompliant.
- R Calibration RRF was  $<0.05$ .
- B Presumed contamination from preparation (method blank).
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD was high.
- I Internal standard performance was unsatisfactory.
- M Instrument Performance Check (BFB or DFTPP) was noncompliant.
- T Presumed contamination from trip blank.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Instrument performance for pesticides was poor.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. GC/MS Instrument Performance Check**

A bromofluorobenzene (BFB) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

## **III. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

For compounds where average relative response factors (RRFs) were utilized, the percent relative standard deviations (%RSD) were less than or equal to 15.0%.

In the case where the laboratory used a calibration curve to evaluate the compounds, all coefficients of determination ( $r^2$ ) were greater than or equal to 0.990.

Average relative response factors (RRF) for all compounds were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

## **IV. Continuing Calibration**

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0% for all compounds.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

## **V. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## VI. Field Blanks

Samples ERH718 and ERH721 were identified as trip blanks. No contaminants were found.

## VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

## VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
ERH722MS/MSD (ERH722)	Toluene	-	136 (80-121)	NA	-

Relative percent differences (RPD) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
ERH722MS/MSD (ERH722)	Toluene	22.0 ( $\leq 20$ )	NA	-

## IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## X. Field Duplicates

Samples ERH719\*\* and ERH720 and samples ERH722 and ERH723 were identified as field duplicates. No results were detected in any of the samples.

## XI. Internal Standards

All internal standard areas and retention times were within QC limits.

## **XII. Compound Quantitation**

All compound quantitations met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

## **XIII. Target Compound Identifications**

All target compound identifications met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

## **XIV. System Performance**

The system performance was acceptable for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

## **XV. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**Red Hill Bulk Storage Facility, CTO 18F0126  
Volatiles - Data Qualification Summary - SDG 87650**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Volatiles - Laboratory Blank Data Qualification Summary - SDG 87650**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Volatiles - Field Blank Data Qualification Summary - SDG 87650**

No Sample Data Qualified in this SDG

LDC #: 44152A1  
 SDG #: 87650  
 Laboratory: APPL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**  
 Level C/D

Date: 1/17/19  
 Page: 1 of 1  
 Reviewer: [Signature]  
 2nd Reviewer: [Signature]

**METHOD:** GC/MS Volatiles (BTEX)(EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	% RSD ≤ 15, 12 CV ≤ 20
IV.	Continuing calibration <i>blowing cal</i>	Δ	CV ≤ 20/50
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	TB = 2, 4
VII.	Surrogate spikes	Δ	
VIII.	Matrix spike/Matrix spike duplicates	SW	
IX.	Laboratory control samples	A	Les 1P
X.	Field duplicates	ND	D = 1, 3 5, 6
XI.	Internal standards	Δ	
XII.	Compound quantitation RL/LOQ/LODs	A	Not reviewed for Level C validation.
XIII.	Target compound identification	Δ	Not reviewed for Level C validation.
XIV.	System performance	A	Not reviewed for Level C validation.
XV.	Overall assessment of data	Δ	

Note: A = Acceptable ND = No compounds detected D = Duplicate SB=Source blank  
 N = Not provided/applicable R = Rinsate TB = Trip blank OTHER:  
 SW = See worksheet FB = Field blank EB = Equipment blank

\*\* Indicates sample underwent Level D validation

	Client ID	Lab ID	Matrix	Date
1	ERH719** D	AZ84057**	Water	12/12/18
2	ERH718 TB	AZ84058	Water	12/12/18
3	ERH720 D	AZ84059	Water	12/12/18
4	ERH721 TB	AZ84060	Water	12/12/18
5	ERH722 D <sub>1</sub>	AZ84061	Water	12/13/18
6	ERH723 D <sub>1</sub>	AZ84062	Water	12/13/18
7	ERH719MS	AZ84057MS	Water	12/12/18
8	ERH719MSD	AZ84057MSD	Water	12/12/18
9	ERH722MS	AZ84061MS	Water	12/13/18
10	ERH722MSD	AZ84061MSD	Water	12/13/18
11				
12	181219 BL - BLK			
13	181220 AL - BLK			

3 181217 AL - BLK

LDC #: 44152A 1

**VALIDATION FINDINGS CHECKLIST**

Page: 1 of 2  
 Reviewer: FT  
 2nd Reviewer: AV

**Method: Volatiles (EPA SW 846 Method 8260B)**

Validation Area	Yes	No	NA	Findings/Comments
<b>I. Technical holding times</b>				
Were all technical holding times met?	/			
Was cooler temperature criteria met?	/			
<b>II. GC/MS Instrument performance check</b>				
Were the BFB performance results reviewed and found to be within the specified criteria?	/			
Were all samples analyzed within the 12 hour clock criteria?	/			
<b>IIIa. Initial calibration</b>				
Did the laboratory perform a 5 point calibration prior to sample analysis?	/			
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	/			
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of > 0.990?	/			
Were all percent relative standard deviations (%RSD) ≤ 30% (15%) and relative response factors (RRF) ≥ 0.05?	/			
<b>IIIb. Initial Calibration Verification</b>				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	/			
Were all percent differences (%D) ≤ 20%?	/			
<b>IV. Continuing calibration</b>				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	/			
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	/			
Were all percent differences (%D) ≤ 20% and relative response factors (RRF) ≥ 0.05?	/			
<b>V. Laboratory Blanks</b>				
Was a laboratory blank associated with every sample in this SDG?	/			
Was a laboratory blank analyzed at least once every 12 hours for each matrix and concentration?	/			
Was there contamination in the laboratory blanks?		/		
<b>VI. Field blanks</b>				
Were field blanks were identified in this SDG?	/			
Were target compounds detected in the field blanks?		/		
<b>VII. Surrogate spikes</b>				
Were all surrogate percent recovery (%R) within QC limits?	/			
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			/	



LDC #: 44152A |

VALIDATION FINDINGS CHECKLIST

Page: 2 of 2  
 Reviewer: FT  
 2nd Reviewer: [Signature]

Validation Area	Yes	No	NA	Findings/Comments
<b>VIII. Matrix spike/Matrix spike duplicates</b>				
Were matrix spike (MS) and matrix spike duplicate (MSD) analyzed in this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>IX. Laboratory control samples</b>				
Was an LCS analyzed per analytical batch in this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>X. Field duplicates</b>				
Were field duplicate pairs identified in this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were target compounds detected in the field duplicates?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>XI. Internal standards</b>				
Were internal standard area counts within -50% to +100% of the associated calibration standard?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were retention times within + 30 seconds of the associated calibration standard?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XII. Compound quantitation</b>				
Did the laboratory LOQs/RLs meet the QAPP LOQs/RLs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XIII. Target compound identification</b>				
Were relative retention times (RRT's) within + 0.06 RRT units of the standard?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were chromatogram peaks verified and accounted for?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XIV. System performance</b>				
System performance was found to be acceptable.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XV. Overall assessment of data</b>				
Overall assessment of data was found to be acceptable.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

## TARGET COMPOUND WORKSHEET

### METHOD: VOA

A. Chloromethane	AA. Tetrachloroethene	AAA. 1,3,5-Trimethylbenzene	AAAA. Ethyl tert-butyl ether	A1. 1,3-Butadiene
B. Bromomethane	BB. 1,1,2,2-Tetrachloroethane	BBB. 4-Chlorotoluene	BBBB. tert-Amyl methyl ether	B1. Hexane
C. Vinyl chloride	CC. Toluene	CCC. tert-Butylbenzene	CCCC. 1-Chlorohexane	C1. Heptane
D. Chloroethane	DD. Chlorobenzene	DDD. 1,2,4-Trimethylbenzene	DDDD. Isopropyl alcohol	D1. Propylene
E. Methylene chloride	EE. Ethylbenzene	EEE. sec-Butylbenzene	EEEE. Acetonitrile	E1. Freon 11
F. Acetone	FF. Styrene	FFF. 1,3-Dichlorobenzene	FFFF. Acrolein	F1. Freon 12
G. Carbon disulfide	GG. Xylenes, total	GGG. p-Isopropyltoluene	GGGG. Acrylonitrile	G1. Freon 113
H. 1,1-Dichloroethene	HH. Vinyl acetate	HHH. 1,4-Dichlorobenzene	HHHH. 1,4-Dioxane	H1. Freon 114
I. 1,1-Dichloroethane	II. 2-Chloroethylvinyl ether	III. n-Butylbenzene	IIII. Isobutyl alcohol	I1. 2-Nitropropane
J. 1,2-Dichloroethene, total	JJ. Dichlorodifluoromethane	JJJ. 1,2-Dichlorobenzene	JJJJ. Methacrylonitrile	J1. Dimethyl disulfide
K. Chloroform	KK. Trichlorofluoromethane	KKK. 1,2,4-Trichlorobenzene	KKKK. Propionitrile	K1. 2,3-Dimethyl pentane
L. 1,2-Dichloroethane	LL. Methyl-tert-butyl ether	LLL. Hexachlorobutadiene	LLLL. Ethyl ether	L1. 2,4-Dimethyl pentane
M. 2-Butanone	MM. 1,2-Dibromo-3-chloropropane	MMM. Naphthalene	MMMM. Benzyl chloride	M1. 3,3-Dimethyl pentane
N. 1,1,1-Trichloroethane	NN. Methyl ethyl ketone	NNN. 1,2,3-Trichlorobenzene	NNNN. Iodomethane	N1. 2-Methylpentane
O. Carbon tetrachloride	OO. 2,2-Dichloropropane	OOO. 1,3,5-Trichlorobenzene	OOOO. 1,1-Difluoroethane	O1. 3-Methylpentane
P. Bromodichloromethane	PP. Bromochloromethane	PPP. trans-1,2-Dichloroethene	PPPP. Tetrahydrofuran	P1. 3-Ethylpentane
Q. 1,2-Dichloropropane	QQ. 1,1-Dichloropropene	QQQ. cis-1,2-Dichloroethene	QQQQ. Methyl acetate	Q1. 2,2-Dimethylpentane
R. cis-1,3-Dichloropropene	RR. Dibromomethane	RRR. m,p-Xylenes	RRRR. Ethyl acetate	R1. 2,2,3-Trimethylbutane
S. Trichloroethene	SS. 1,3-Dichloropropane	SSS. o-Xylene	SSSS. Cyclohexane	S1. 2,2,4-Trimethylpentane
T. Dibromochloromethane	TT. 1,2-Dibromoethane	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	TTTT. Methyl cyclohexane	T1. 2-Methylhexane
U. 1,1,2-Trichloroethane	UU. 1,1,1,2-Tetrachloroethane	UUU. 1,2-Dichlorotetrafluoroethane	UUUU. Allyl chloride	U1. Nonanal
V. Benzene	VV. Isopropylbenzene	VVV. 4-Ethyltoluene	VVVV. Methyl methacrylate	V1. 2-Methylnaphthalene
W. trans-1,3-Dichloropropene	WW. Bromobenzene	WWW. Ethanol	WWWWW. Ethyl methacrylate	W1. Methanol
X. Bromoform	XX. 1,2,3-Trichloropropane	XXX. Di-isopropyl ether	XXXX. cis-1,4-Dichloro-2-butene	X1. 1,2,3-Trimethylbenzene
Y. 4-Methyl-2-pentanone	YY. n-Propylbenzene	YYY. tert-Butanol	YYYY. trans-1,4-Dichloro-2-butene	Y1.
Z. 2-Hexanone	ZZ. 2-Chlorotoluene	ZZZ. tert-Butyl alcohol	ZZZZ. Pentachloroethane	Z1.

**VALIDATION FINDINGS WORKSHEET**  
**Matrix Spike/Matrix Spike Duplicates**

**METHOD :** GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

- Y N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.
- Y N N/A Was a MS/MSD analyzed every 20 samples of each matrix?
- Y N N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	9 + 10	CC	( )	136 ( 80-121 )	( )	5 (Q)	Jdt/A NP
		CC	( )	( )	22.0 ( 20 )	↓ (E)	Jdt/A ↓
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		



LDC#: 44152A1  
 SDG#: see cover

**VALIDATION FINDINGS WORKSHEET**  
**Initial Calibration Calculation Verification**

Page: 1 of 1  
 Reviewer: FR  
 2nd Reviewer: R

Method: HPLC Polynuclear Aromatic Hydrocarbons (EPA SW 846 Method 8310)

Calibration Date	System	Compound	Standard	(Y) Response	(X) Concentration
12/18/2018	GCMS Loki	Ethylbenzene	1	0.010790633	0.02
			2	0.024652012	0.04
			3	0.043683496	0.08
			4	0.11591099	0.20
			5	0.249304267	0.40
			6	0.566084275	0.80
			8	1.191473188	1.60

**Regression Output**

**Reported**

Constant	-0.021693	-0.021700
Std Err of Y Est		
R Squared	0.998295	0.998000
Degrees of Freedom		
X Coefficient(s)	0.749601	0.750000
Std Err of Coef.		
Correlation Coefficient	0.999147	
Coefficient of Determination (r <sup>2</sup> )	0.998295	0.998000

LDC #: 44152A/

### VALIDATION FINDINGS WORKSHEET Continuing Calibration Results Verification

Page: 1 of 1

Reviewer: FT

2nd Reviewer: A

**METHOD:** GC/MS VOA (EPA SW 846 Method 8260B)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 \* (ave. RRF - RRF)/ave. RRF

RRF =  $(A_x)(C_{is}) / (A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF

RRF = continuing calibration RRF

A<sub>x</sub> = Area of compound,

A<sub>is</sub> = Area of associated internal standard

C<sub>x</sub> = Concentration of compound,

C<sub>is</sub> = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference internal Standard)	Average RRF (initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	ccv0015	12/20/18	✓ (1st internal standard)	1.1970	1.148	1.148	4.1	4.1
			BE (L) (2nd internal standard)	10.0	9.266	9.266	<del>7.3</del> 7.3	7.3
			(3rd internal standard)					
			(4th internal standard)					
2			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
			(4th internal standard)					
3			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
			(4th internal standard)					
4			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
			(4th internal standard)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 44150A1

## VALIDATION FINDINGS WORKSHEET

### Surrogate Results Verification

Page: 1 of 1  
 Reviewer: FT  
 2nd reviewer: TC

**METHOD:** GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery:  $SF/SS * 100$

Where: SF = Surrogate Found  
 SS = Surrogate Spiked

Sample ID: #1

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane	28.0	29.3915	118	118	0
1,2-Dichloroethane-d4		27.9318	112	112	↓
Toluene-d8	↓	24.5597	98.2	98.2	↓
Bromofluorobenzene	↓	21.9521	87.8	87.8	↓

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

LDC #: 44152A/

**VALIDATION FINDINGS WORKSHEET**  
**Matrix Spike/Matrix Spike Duplicates Results Verification**

Page: 1 of 1  
 Reviewer: FT  
 2nd Reviewer: 1

**METHOD:** GC/MS VOA (EPA Method 8260B)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 \* (SSC - SC)/SA

Where: SSC = Spiked sample concentration  
 SA = Spike added

SC = Sample concentration

RPD = |MSC - MSC| \* 2 / (MSC + MSCD)

MSC = Matrix spike concentration

MSCD = Matrix spike duplicate concentration

MS/MSD sample: 7+8

Compound	Spike Added (ug/L)		Sample Concentration (ug/L)	Spiked Sample Concentration (ug/L)		Matrix Spike		Matrix Spike Duplicate		MS/MSD	
	MS	MSD		MS	MSD	Percent Recovery		Percent Recovery		RPD	
						Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
1,1-Dichloroethene											
Trichloroethene											
Benzene	10.0	10.0	ND	8.50	8.84	85.0	85.0	88.4	88.4	3.9	3.9
Toluene	10.0	10.0	ND	8.85	9.33	88.5	88.5	93.3	93.3	5.3	5.3
Chlorobenzene											

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.



LDC #: 44152A/

**VALIDATION FINDINGS WORKSHEET**  
**Laboratory Control Sample Results Verification**

Page: 1 of 1  
 Reviewer: FT  
 2nd Reviewer: ↑

**METHOD:** GC/MS VOA (EPA Method 8260B)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 \* SSC/SA

Where: SSC = Spiked sample concentration  
 SA = Spike added

RPD = | LCSC - LCSDC | \* 2 / (LCSC + LCSDC)

LCSC = Laboratory control sample concentration    LCSDC = Laboratory control sample duplicate concentration

LCS ID: 181219DL LCS ID

Compound	Spike Added (ug/L)		Spiked Sample Concentration (ug/L)		LCS		LCSD		LCS/LCSD	
	LCS	LCSD	LCS	LCSD	Percent Recovery		Percent Recovery		RPD	
					Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
1,1-Dichloroethene										
Trichloroethene										
Benzene	10.0	10.0	10.2	9.95	102	102	99.5	99.5	2.5	2.5
Toluene	↓	↓	9.68	9.67	96.8	96.8	96.7	96.7	0.10	0.10
Chlorobenzene										

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

### VALIDATION FINDINGS WORKSHEET Sample Calculation Verification

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

- Y/N/N/A Were all reported results recalculated and verified for all level IV samples?
- Y/N/N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

$$\text{Concentration} = \frac{(A_x)(I_s)(DF)}{(A_{is})(RRF)(V_o)(\%S)}$$

- $A_x$  = Area of the characteristic ion (EICP) for the compound to be measured
- $A_{is}$  = Area of the characteristic ion (EICP) for the specific internal standard
- $I_s$  = Amount of internal standard added in nanograms (ng)
- RRF = Relative response factor of the calibration standard.
- $V_o$  = Volume or weight of sample pruged in milliliters (ml) or grams (g).
- Df = Dilution factor.
- %S = Percent solids, applicable to soils and solid matrices only.

Example:

Sample I.D. 181219BL LES ✓

$$\begin{aligned} \text{Conc.} &= \frac{125751 (25)}{(258432) (1.197)} \\ &= 10.163 \text{ ug/L} \end{aligned}$$

#	Sample ID	Compound	Reported Concentration (ug/L) ✓	Calculated Concentration (ug/L)	Qualification
	<u>LES</u>	<u>✓</u>	<u>10.2</u>	<u>10.2</u>	

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** January 30, 2019

**Parameters:** Phenol & Tentatively Identified Compounds

**Validation Level:** Level C & D

**Laboratory:** APPL, Inc.

**Sample Delivery Group (SDG):** 87650

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
ERH719**	AZ84057**	Water	12/12/18
ERH720	AZ84059	Water	12/12/18
ERH722	AZ84061	Water	12/13/18
ERH723	AZ84062	Water	12/13/18
ERH719MS	AZ84057MS	Water	12/12/18
ERH719MSD	AZ84057MSD	Water	12/12/18
ERH722MS	AZ84061MS	Water	12/13/18
ERH722MSD	AZ84061MSD	Water	12/13/18

\*\*Indicates sample underwent Level D validation

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Phenol & Tentatively Identified Compounds (TICs) by Environmental Protection Agency (EPA) SW 846 Method 8270D

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level D data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## Qualification Code Reference

- H Holding times were exceeded.
- S Surrogate recovery was outside QC limits.
- C Calibration %RSD,  $r$ ,  $r^2$  or %D were noncompliant.
- R Calibration RRF was  $<0.05$ .
- B Presumed contamination from preparation (method blank).
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD was high.
- I Internal standard performance was unsatisfactory.
- M Instrument Performance Check (BFB or DFTPP) was noncompliant.
- T Presumed contamination from trip blank.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Instrument performance for pesticides was poor.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

## I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## II. GC/MS Instrument Performance Check

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

## III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0%.

Average relative response factors (RRF) were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

## IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0%.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0%.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

## V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks with the following exceptions:

Blank ID	Extraction Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
181217A-BLK	12/17/18	Cyclohexane, 1,2,4-trimethyl- (3.65) Nonane (4.22) Decane (5.30) Decane, 3-methyl- (5.89)	28.3 ppb 53.9 ppb 71.7 ppb 50.4 ppb	All samples in SDG 87650

Sample concentrations were compared to concentrations detected in the laboratory blanks. The sample concentrations were either not detected or were significantly greater (>10X for TICs, >5X for other contaminants) than the concentrations found in the associated laboratory blanks.

## VI. Field Blanks

No field blanks were identified in this SDG.

## VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

## VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits.

Relative percent differences (RPD) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
ERH719MS/MSD (ERH719**)	Phenol	20.1 (≤20)	NA	-
ERH722MS/MSD (ERH722)	Phenol	23.9 (≤20)	NA	-

## IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## X. Field Duplicates

Samples ERH719\*\* and ERH720 and samples ERH722 and ERH723 were identified as field duplicates. No results were detected in any of the samples.

## XI. Internal Standards

All internal standard areas and retention times were within QC limits.

## XII. Compound Quantitation

All compound quantitations met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.



### **XIII. Target Compound Identifications**

All target compound identifications met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

### **XIV. System Performance**

The system performance was acceptable for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

### **XV. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**Red Hill Bulk Storage Facility, CTO 18F0126  
Phenol & Tentatively Identified Compounds - Data Qualification Summary - SDG  
87650**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Phenol & Tentatively Identified Compounds - Laboratory Blank Data Qualification  
Summary - SDG 87650**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Phenol & Tentatively Identified Compounds - Field Blank Data Qualification  
Summary - SDG 87650**

No Sample Data Qualified in this SDG

LDC #: 44152A2a  
 SDG #: 87650  
 Laboratory: APPL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**

Level C/D

Date: 1/17/19  
 Page: 1 of 1  
 Reviewer: R  
 2nd Reviewer: R

**METHOD:** GC/MS Phenol & TICs (EPA SW 846 Method 8270D)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	ΔA	%RSD ≤ 15      ICV ≤ 20
IV.	Continuing calibration / closing cal	Δ	CCV ≤ 20
V.	Laboratory Blanks	Δ	
VI.	Field blanks	N	
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	SW	
IX.	Laboratory control samples	A	LED 10
X.	Field duplicates	ND	D = 1, 2      3, 4
XI.	Internal standards	Δ	
XII.	Compound quantitation RL/LOQ/LODs	Δ	Not reviewed for Level C validation.
XIII.	Target compound identification	Δ	Not reviewed for Level C validation.
XIV.	System performance	Δ	Not reviewed for Level C validation.
XV.	Overall assessment of data	Δ	

Note: A = Acceptable      ND = No compounds detected      D = Duplicate      SB=Source blank  
 N = Not provided/applicable      R = Rinsate      TB = Trip blank      OTHER:  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

\*\* Indicates sample underwent Level D validation

	Client ID	Lab ID	Matrix	Date
1	ERH719** D	AZ84057**	Water	12/12/18
2	ERH720 D	AZ84059	Water	12/12/18
3	ERH722 D <sub>1</sub>	AZ84061	Water	12/12/18
4	ERH723 D <sub>1</sub>	AZ84062	Water	12/12/18
5	ERH719MS	AZ84057MS	Water	12/12/18
6	ERH719MSD	AZ84057MSD	Water	12/12/18
7	ERH722MS	AZ84061MS	Water	12/12/18
8	ERH722MSD	AZ84061MSD	Water	12/12/18
9				
10				
11	181217A - B1K			
12				
13				

**Method:** Semivolatiles (EPA SW 846 Method 8270D)

Validation Area	Yes	No	NA	Findings/Comments
<b>I. Technical holding times</b>				
Were all technical holding times met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was cooler temperature criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>II. GC/MS Instrument performance check</b>				
Were the DFTPP performance results reviewed and found to be within the specified criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all samples analyzed within the 12 hour clock criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>IIIa. Initial calibration</b>				
Did the laboratory perform a 5 point calibration prior to sample analysis?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent relative standard deviations (%RSD) $\leq$ 15% and relative response factors (RRF) within method criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of $> 0.990$ ?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>IIIb. Initial Calibration Verification</b>				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent differences (%D) $\leq$ 20%?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>IV. Continuing calibration</b>				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent differences (%D) $\leq$ 20% and relative response factors (RRF) within method criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>V. Laboratory Blanks</b>				
Was a laboratory blank associated with every sample in this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was a laboratory blank analyzed at least once every 12 hours for each matrix and concentration?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was there contamination in the laboratory blanks? If yes, please see the blanks validation findings worksheet.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>VI. Field blanks</b>				
Were field blanks were identified in this SDG?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Were target compounds detected in the field blanks?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>VII. Surrogate spikes</b>				
Were all surrogate percent recovery (%R) within QC limits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If any percent recoveries (%R) was less than 10%, was a reanalysis performed to confirm %R?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>VIII. Matrix spike/Matrix spike duplicates</b>				
Were matrix spike (MS) and matrix spike duplicate (MSD) analyzed in this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

Validation Area	Yes	No	NA	Findings/Comments
<b>IX. Laboratory control samples</b>				
Was an LCS analyzed for this SDG?	/			
Was an LCS analyzed per analytical batch?	/			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	/			
<b>X. Field duplicates</b>				
Were field duplicate pairs identified in this SDG?	/			
Were target compounds detected in the field duplicates?		/		
<b>XI. Internal standards</b>				
Were internal standard area counts within -50% to +100% of the associated calibration standard?	/			
Were retention times within + 30 seconds of the associated calibration standard?	/			
<b>XII. Compound quantitation</b>				
Did the laboratory LOQs/RLs meet the QAPP LOQs/RLs?	/			
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	/			
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	/			
<b>XIII. Target compound identification</b>				
Were relative retention times (RRT's) within + 0.06 RRT units of the standard?	/			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	/			
Were chromatogram peaks verified and accounted for?	/			
<b>XIV. System performance</b>				
System performance was found to be acceptable.	/			
<b>XV. Overall assessment of data</b>				
Overall assessment of data was found to be acceptable.	/			

## VALIDATION FINDINGS WORKSHEET

**METHOD: GC/MS SVOA**

A. Phenol	AA. 2-Chloronaphthalene	AAA. Butylbenzylphthalate	AAAA. Dibenzothiophene	A1. N-Nitrosodiethylamine
B. Bis (2-chloroethyl) ether	BB. 2-Nitroaniline	BBB. 3,3'-Dichlorobenzidine	BBBB. Benzo(a)fluoranthene	B1. N-Nitrosodi-n-butylamine
C. 2-Chlorophenol	CC. Dimethylphthalate	CCC. Benzo(a)anthracene	CCCC. Benzo(b)fluorene	C1. N-Nitrosomethylethylamine
D. 1,3-Dichlorobenzene	DD. Acenaphthylene	DDD. Chrysene	DDDD. cis/trans-Decalin	D1. N-Nitrosomorpholine
E. 1,4-Dichlorobenzene	EE. 2,6-Dinitrotoluene	EEE. Bis(2-ethylhexyl)phthalate	EEEE. Biphenyl	E1. N-Nitrosopyrrolidine
F. 1,2-Dichlorobenzene	FF. 3-Nitroaniline	FFF. Di-n-octylphthalate	FFFF. Retene	F1. Phenacetin
G. 2-Methylphenol	GG. Acenaphthene	GGG. Benzo(b)fluoranthene	GGGG. C30-Hopane	G1. 2-Acetylaminofluorene
H. 2,2'-Oxybis(1-chloropropane)	HH. 2,4-Dinitrophenol	HHH. Benzo(k)fluoranthene	HHHH. 1-Methylphenanthrene	H1. Pronamide
I. 4-Methylphenol	II. 4-Nitrophenol	III. Benzo(a)pyrene	IIII. 1,4-Dioxane	I1. Methyl methanesulfonate
J. N-Nitroso-di-n-propylamine	JJ. Dibenzofuran	JJJ. Indeno(1,2,3-cd)pyrene	JJJJ. Acetophenone	J1. Ethyl methanesulfonate
K. Hexachloroethane	KK. 2,4-Dinitrotoluene	KKK. Dibenz(a,h)anthracene	KKKK. Atrazine	K1. o,o',o''-Triethylphosphorothioate
L. Nitrobenzene	LL. Diethylphthalate	LLL. Benzo(g,h,i)perylene	LLLL. Benzaldehyde	L1. n-Phenylene diamine
M. Isophorone	MM. 4-Chlorophenyl-phenyl ether	MMM. Bis(2-Chloroisopropyl)ether	MMMM. Caprolactam	M1. 1,4-Naphthoquinone
N. 2-Nitrophenol	NN. Fluorene	NNN. Aniline	NNNN. 2,6-Dichlorophenol	N1. N-Nitro-o-toluidine
O. 2,4-Dimethylphenol	OO. 4-Nitroaniline	OOO. N-Nitrosodimethylamine	OOOO. 1,2-Diphenylhydrazine	O1. 1,3,5-Trinitrobenzene
P. Bis(2-chloroethoxy)methane	PP. 4,6-Dinitro-2-methylphenol	PPP. Benzoic Acid	PPPP. 3-Methylphenol	P1. Pentachlorobenzene
Q. 2,4-Dichlorophenol	QQ. N-Nitrosodiphenylamine	QQQ. Benzyl alcohol	QQQQ. 3&4-Methylphenol	Q1. 4-Aminobiphenyl
R. 1,2,4-Trichlorobenzene	RR. 4-Bromophenyl-phenylether	RRR. Pyridine	RRRR. 4-Dimethyldibenzothiophene (4MDT)	R1. 2-Naphthylamine
S. Naphthalene	SS. Hexachlorobenzene	SSS. Benzidine	SSSS. 2/3-Dimethyldibenzothiophene (4MDT)	S1. Triphenylene
T. 4-Chloroaniline	TT. Pentachlorophenol	TTT. 1-Methylnaphthalene	TTTT. 1-Methyldibenzothiophene (1MDT)	T1. Octachlorostyrene
U. Hexachlorobutadiene	UU. Phenanthrene	UUU. Benzo(b)thiophene	UUUU. 2,3,4,6-Tetrachlorophenol	U1. Famphur
V. 4-Chloro-3-methylphenol	VV. Anthracene	VVV. Benzonaphthothiophene	VVVV. 1,2,4,5-Tetrachlorobenzene	V1. 1,4-phenylenediamine
W. 2-Methylnaphthalene	WW. Carbazole	WWW. Benzo(e)pyrene	WWWWW. 2-Picoline	W1. Methapyrilene
X. Hexachlorocyclopentadiene	XX. Di-n-butylphthalate	XXX. 2,6-Dimethylnaphthalene	XXXX. 3-Methylcholanthrene	X1. Pentachloroethane
Y. 2,4,6-Trichlorophenol	YY. Fluoranthene	YYY. 2,3,5-Trimethylnaphthalene	YYYY. a,a-Dimethylphenethylamine	Y1. 3,3'-Dimethylbenzidine
Z. 2,4,5-Trichlorophenol	ZZ. Pyrene	ZZZ. Perylene	ZZZZ. Hexachloropropene	Z1. o-Toluidine

LDC #: 44152A22

# VALIDATION FINDINGS WORKSHEET

Page: 1 of 1

## Blanks

Reviewer: FT

2nd Reviewer: [Signature]

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

- N N/A Was a method blank analyzed for each matrix?
- N N/A Was a method blank analyzed for each concentration preparation level?
- N N/A Was a method blank associated with every sample?
- N N/A Was the blank contaminated? If yes, please see qualification below.

Blank extraction date: 12/17/18 Blank analysis date: 12/20/18

Conc. units: ug/L Associated Samples: All (ND)

Compound	Blank ID								
	181217A-	BIK							
TIC	see following	page							

Blank extraction date: \_\_\_\_\_ Blank analysis date: \_\_\_\_\_

Conc. units: \_\_\_\_\_ Associated Samples: \_\_\_\_\_

Compound	Blank ID								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:  
Common contaminants such as the phthalates and TICs noted above that were detected in samples within ten times the associated method blank concentration were qualified as not detected, "U". Other contaminants within five times the method blank concentration were also qualified as not detected, "U".

Tentatively Identified Compound (LSC) summary

Operator ID: MA Date Acquired: 20 Dec 18 8:21  
Data File: M:\YODA\DATA\Y181201\1201Y194.D  
Name: 181217A BLK 1/800  
Misc:  
Method: M:\YODA\DATA\Y181201\Y1201NC.M (RTE Integrator)  
Title: EPA 8270C  
Library Searched: M:\DATABASE\WILEY138.L

44/52A2a

TIC Top Hit name	RT	EstConc	Units	Area	IntStd	ISRT	ISArea	ISConc
Cyclohexane, 1,2,4-t	3.65	28.3	ppb	26170200	ISTD01	5.48	46260300	40.0
Nonane	4.22	53.9	ppb	49882900	ISTD01	5.48	46260300	40.0
Decane	5.30	71.7	ppb	66376600	ISTD01	5.48	46260300	40.0
Decane, 3-methyl-	5.89	50.4	ppb	46606400	ISTD01	5.48	46260300	40.0

1201Y194.D Y1201NC.M Wed Jan 09 09:35:11 2019



LDC #: 44152A2a

**VALIDATION FINDINGS WORKSHEET**  
**Matrix Spike/Matrix Spike Duplicates**

Page: 1 of 1

Reviewer: FT

2nd Reviewer: AK

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.

Y N N/A Was a MS/MSD analyzed every 20 samples of each matrix?

Y N N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

(E)

#	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	516	Δ	( )	( )	20.1 ( 20 )	1	Low / A (ND)
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
	718	Δ	( )	( )	23.9 ( 20 )	3	Low / A ND
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		

LDC #: 44/52 A2a

**VALIDATION FINDINGS WORKSHEET**  
**Initial Calibration Calculation Verification**

Page: 1 of 1  
Reviewer: FT  
2nd Reviewer: [Signature]

METHOD: GCMS 8270D

The calibration factors (RRFF), average RRFF, and relative standard deviation (%RSD) were recalculated for compounds identified below using the following calculations:

$$\text{RRF} = (A_x)(C_{is}) / (A_{is})(C_x)$$

average RRF = sum of the RRFs/number of standards

$$\%RSD = 100 * (S/X)$$

Where:

A<sub>x</sub> = Area of compound

C<sub>x</sub> = Concentration of compound

S = Standard deviation of the RRFs

X = Mean of the RRFs

A<sub>is</sub> = Area of associated internal standard

C<sub>is</sub> = Concentration of internal Standard

#	Standard ID	Calibration Date	Compound	Reported (RRF 40 std)	Recalculated (RRF40 std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
	ICAL	12/1/2018	A	2.322	2.322	2.459	2.459	7.70	7.70

### VALIDATION FINDINGS WORKSHEET Continuing Calibration Results Verification

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270C)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference =  $100 * (\text{ave. RRF} - \text{RRF}) / \text{ave. RRF}$   
 $\text{RRF} = (A_x)(C_{is}) / (A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF  
 RRF = continuing calibration RRF  
 $A_x$  = Area of compound,  $A_{is}$  = Area of associated internal standard  
 $C_x$  = Concentration of compound,  $C_{is}$  = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Internal Standard)	Average RRF (Initial)	Reported	Recalculated	Reported	Recalculated
					RRF (CC)	RRF (CC)	%D	%D
1	ccv 1811	12/20/18	A (1st IS)	2.459	2.263	2.263	7.9	7.9
			(2nd IS)					
			(3rd IS)					
			(4th IS)					
			(5th IS)					
			(6th IS)					
2			(1st IS)					
			(2nd IS)					
			(3rd IS)					
			(4th IS)					
			(5th IS)					
			(6th IS)					
3			(1st IS)					
			(2nd IS)					
			(3rd IS)					
			(4th IS)					
			(5th IS)					
			(6th IS)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 44152 A2a

## VALIDATION FINDINGS WORKSHEET

### Surrogate Results Verification

 Page: 1 of 1  
 Reviewer: FT  
 2nd reviewer: a
**METHOD:** GC/MS Semivolatiles (EPA SW 846 Method 8270C)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

 % Recovery:  $SF/SS * 100$ 

 Where: SF = Surrogate Found  
 SS = Surrogate Spiked

 Sample ID: #1

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5	125.0	97.9895	78.4	78.4	0
2-Fluorobiphenyl	↓	87.6495	70.1	70.1	↓
Terphenyl-d14	↓	93.2789	74.6	74.6	↓
Phenol-d5	250.0	256.9213	103	103	↓
2-Fluorophenol	↓	261.5165	105	105	↓
2,4,6-Tribromophenol	↓	204.4210	81.8	81.8	↓
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID: \_\_\_\_\_

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID: \_\_\_\_\_

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

LDC #: 44152A2a

## VALIDATION FINDINGS WORKSHEET

### Matrix Spike/Matrix Spike Duplicates Results Verification

Page: 1 of 1  
 Reviewer: FT  
 2nd Reviewer: ↑

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270C)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery =  $100 * (SSC - SC) / SA$

Where: SSC = Spiked sample concentration  
 SA = Spike added

SC = Sample concentration

RPD =  $|MSC - MSC| * 2 / (MSC + MSDC)$

MSC = Matrix spike concentration

MSDC = Matrix spike duplicate concentration

MS/MSD samples: 7 + B

Compound	Spike Added (ug/L)		Sample Concentration (ug/L)	Spiked Sample Concentration (ug/L)		Matrix Spike		Matrix Spike Duplicate		MS/MSD	
	MS	MSD		MS	MSD	Percent Recovery		Percent Recovery		RPD	
						Reported	Recalc	Reported	Recalc	Reported	Recalc
Phenol	62.5	62.5	ND	69.4	54.6	111	111	87.4	87.4	23.9	23.9
N-Nitroso-di-n-propylamine											
4-Chloro-3-methylphenol											
Acenaphthene											
Pentachlorophenol											
Pyrene											

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

**VALIDATION FINDINGS WORKSHEET**

**Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification**

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270C)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 \* (SC/SA)

Where: SSC = Spike concentration  
SA = Spike added

RPD = |LCSC - LCSDC| \* 2 / (LCSC + LCSDC)

LCSC = Laboratory control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS/LCSD samples: 181217A vs 1P

Compound	Spike Added (ug/L)		Spike Concentration (ug/L)		LCS		LCSD		LCS/LCSD	
	LCS	LCSD	LCS	LCSD	Percent Recovery		Percent Recovery		RPD	
					Reported	Recalc	Reported	Recalc	Reported	Recalculated
Phenol	62.6	62.5	68.3	70.6	109	109	113	113	3.3	3.3
N-Nitroso-di-n-propylamine										
4-Chloro-3-methylphenol										
Acenaphthene										
Pentachlorophenol										
Pyrene										

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 44152A2a

### VALIDATION FINDINGS WORKSHEET Sample Calculation Verification

Page: 1 of 1  
Reviewer: FT  
2nd reviewer: A

METHOD: GC/MS BNA (EPA SW 846 Method 8270C)

Y/N N/A  
Y/N N/A

Were all reported results recalculated and verified for all level IV samples?  
Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

$$\text{Concentration} = \frac{(A_x)(I_s)(V_i)(DF)(2.0)}{(A_{is})(RRF)(V_o)(V_i)(\%S)}$$

- A<sub>x</sub> = Area of the characteristic ion (EICP) for the compound to be measured
- A<sub>is</sub> = Area of the characteristic ion (EICP) for the specific internal standard
- I<sub>s</sub> = Amount of internal standard added in nanograms (ng)
- V<sub>o</sub> = Volume or weight of sample extract in milliliters (ml) or grams (g).
- V<sub>i</sub> = Volume of extract injected in microliters (ul)
- V<sub>t</sub> = Volume of the concentrated extract in microliters (ul)
- Df = Dilution Factor.
- %S = Percent solids, applicable to soil and solid matrices only.
- 2.0 = Factor of 2 to account for GPC cleanup

Example:

Sample I.D. 181217A LC Δ

$$\text{Conc.} = \frac{(1500359)(40)(1)(1000)}{(446755)(2.459)(800)}$$

= 68.3 ug/L

#	Sample ID	Compound	Reported Concentration (ug/L)	Calculated Concentration (ug/L)	Qualification
	LC	A	68.3	68.3	

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** January 30, 2019

**Parameters:** Polynuclear Aromatic Hydrocarbons

**Validation Level:** Level C & D

**Laboratory:** APPL, Inc.

**Sample Delivery Group (SDG):** 87650

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
ERH719**	AZ84057**	Water	12/12/18
ERH720	AZ84059	Water	12/12/18
ERH722	AZ84061	Water	12/13/18
ERH723	AZ84062	Water	12/13/18
ERH719MS	AZ84057MS	Water	12/12/18
ERH719MSD	AZ84057MSD	Water	12/12/18
ERH722MS	AZ84061MS	Water	12/13/18
ERH722MSD	AZ84061MSD	Water	12/13/18

\*\*Indicates sample underwent Level D validation



## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polynuclear Aromatic Hydrocarbons (PAHs) which are 1-Methylnaphthalene, 2-Methylnaphthalene, and Naphthalene by Environmental Protection Agency (EPA) SW 846 Method 8270D in Selected Ion Monitoring (SIM) mode

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level D data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## Qualification Code Reference

- H Holding times were exceeded.
- S Surrogate recovery was outside QC limits.
- C Calibration %RSD,  $r$ ,  $r^2$  or %D were noncompliant.
- R Calibration RRF was  $<0.05$ .
- B Presumed contamination from preparation (method blank).
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD was high.
- I Internal standard performance was unsatisfactory.
- M Instrument Performance Check (BFB or DFTPP) was noncompliant.
- T Presumed contamination from trip blank.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Instrument performance for pesticides was poor.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. GC/MS Instrument Performance Check**

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

## **III. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0% for all compounds.

Average relative response factors (RRF) for all compounds were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

## **IV. Continuing Calibration**

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0% for all compounds.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

## **V. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **VI. Field Blanks**

No field blanks were identified in this SDG.

## VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits with the following exceptions:

Sample	Surrogate	%R (Limits)	Affected Compound	Flag	A or P
ERH720	Fluoranthene-d10	127 (58-120)	All compounds	NA	-

## VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## X. Field Duplicates

Samples ERH719\*\* and ERH720 and samples ERH722 and ERH723 were identified as field duplicates. No results were detected in any of the samples.

## XI. Internal Standards

All internal standard areas and retention times were within QC limits.

## XII. Compound Quantitation

All compound quantitations met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

## XIII. Target Compound Identifications

All target compound identifications met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

## XIV. System Performance

The system performance was acceptable for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

## **XV. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**Red Hill Bulk Storage Facility, CTO 18F0126  
Polynuclear Aromatic Hydrocarbons - Data Qualification Summary - SDG 87650**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Polynuclear Aromatic Hydrocarbons - Laboratory Blank Data Qualification  
Summary - SDG 87650**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Polynuclear Aromatic Hydrocarbons - Field Blank Data Qualification Summary -  
SDG 87650**

No Sample Data Qualified in this SDG

LDC #: 44152A2b  
 SDG #: 87650  
 Laboratory: APPL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**

Level C/D

Date: 11/16/19  
 Page: 6 of 7  
 Reviewer: [Signature]  
 2nd Reviewer: [Signature]

**METHOD:** GC/MS Polynuclear Aromatic Hydrocarbons (EPA SW 846 Method 8270D-SIM)

TTT, W, S

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A Δ	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A Δ	% R ≤ 15      ICV ≤ 20
IV.	Continuing calibration / closing cv	Δ	CV ≤ 20 / SD
V.	Laboratory Blanks	Δ	
VI.	Field blanks	N	
VII.	Surrogate spikes	SW	
VIII.	Matrix spike/Matrix spike duplicates	A	
IX.	Laboratory control samples	A	Low ID
X.	Field duplicates	ND	D = 1,2      3,4
XI.	Internal standards	Δ	
XII.	Compound quantitation RL/LOQ/LODs	Δ	Not reviewed for Level C validation.
XIII.	Target compound identification	Δ	Not reviewed for Level C validation.
XIV.	System performance	Δ	Not reviewed for Level C validation.
XV.	Overall assessment of data	Δ	

Note: A = Acceptable      ND = No compounds detected      D = Duplicate      SB=Source blank  
 N = Not provided/applicable      R = Rinsate      TB = Trip blank      OTHER:  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

\*\* Indicates sample underwent Level D validation

	Client ID	Lab ID	Matrix	Date
1	ERH719** D	AZ84057**	Water	12/12/18
2	ERH720 D	AZ84059	Water	12/12/18
3	ERH722 P <sub>1</sub>	AZ84061	Water	12/12/18
4	ERH723 D <sub>1</sub>	AZ84062	Water	12/12/18
5	ERH719MS	AZ84057MS	Water	12/12/18
6	ERH719MSD	AZ84057MSD	Water	12/12/18
7	ERH722MS	AZ84061MS	Water	12/12/18
8	ERH722MSD	AZ84061MSD	Water	12/12/18
9				

Notes:

18/217A BLK				



LDC #: 44152 A2b

**VALIDATION FINDINGS CHECKLIST**

Page: 1 of 2  
 Reviewer: FJ  
 2nd Reviewer: TC

**Method:** PAH (EPA SW 846 Method 8270D-SIM)

Validation Area	Yes	No	NA	Findings/Comments
<b>I. Technical holding times</b>				
Were all technical holding times met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was cooler temperature criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>II. GC/MS Instrument performance check (Not required)</b>				
Were the DFTPP performance results reviewed and found to be within the specified criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all samples analyzed within the 12 hour clock criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>IIIa. Initial calibration</b>				
Did the laboratory perform a 5 point calibration prior to sample analysis?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent relative standard deviations (%RSD) $\leq$ 15% and relative response factors (RRF) $\geq$ 0.05?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of $> 0.990$ ?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>IIIb. Initial Calibration Verification</b>				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent differences (%D) $\leq$ 20%?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>IV. Continuing calibration</b>				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent differences (%D) $\leq$ 20% and relative response factors (RRF) $\geq$ 0.05?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent differences (%D) $\leq$ 50% for closing calibration verifications?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>V. Laboratory Blanks</b>				
Was a laboratory blank associated with every sample in this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was a laboratory blank analyzed for each matrix and concentration?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was there contamination in the laboratory blanks? If yes, please see the blanks validation findings worksheet.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>VI. Field blanks</b>				
Were field blanks identified in this SDG?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Were target compounds detected in the field blanks?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>VII. Surrogate spikes</b>				
Were all surrogate percent differences (%R) within QC limits?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
If any percent recoveries (%R) was less than 10 percent, was a reanalysis performed to confirm %R?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

LDC #: 44152A2b

**VALIDATION FINDINGS CHECKLIST**

Page: 2 of 2  
 Reviewer: \_\_\_\_\_  
 2nd Reviewer: RA

Validation Area	Yes	No	NA	Findings/Comments
<b>VIII. Matrix spike/Matrix spike duplicates</b>				
Were matrix spike (MS) and matrix spike duplicate (MSD) analyzed in this SDG?	/			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	/			
<b>IX. Laboratory control samples</b>				
Was an LCS analyzed for this SDG?	/			
Was an LCS analyzed per extraction batch?	/			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	/			
<b>X. Field duplicates</b>				
Were field duplicate pairs identified in this SDG?	/			
Were target compounds detected in the field duplicates?		/		
<b>XI. Internal standards</b>				
Were internal standard area counts within -50% or +100% of the associated calibration standard?	/			
Were retention times within + 10 seconds of the associated calibration standard?	/			
<b>XII. Compound quantitation</b>				
Did the laboratory LOQs/RLs meet the QAPP LOQs/RLs?	/			
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	/			
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	/			
Did compound quantitation limits meet QAPP limits?	/			
<b>XIII. Target compound identification</b>				
Were relative retention times (RRT's) within + 0.06 RRT units of the standard?	/			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	/			
Were chromatogram peaks verified and accounted for?	/			
<b>XIV. System performance</b>				
System performance was found to be acceptable.	/			
<b>XV. Overall assessment of data</b>				
Overall assessment of data was found to be acceptable.	/			

## VALIDATION FINDINGS WORKSHEET

**METHOD: GC/MS SVOA**

A. Phenol	AA. 2-Chloronaphthalene	AAA. Butylbenzylphthalate	AAAA. Dibenzothiophene	A1. N-Nitrosodiethylamine
B. Bis (2-chloroethyl) ether	BB. 2-Nitroaniline	BBB. 3,3'-Dichlorobenzidine	BBBB. Benzo(a)fluoranthene	B1. N-Nitrosodi-n-butylamine
C. 2-Chlorophenol	CC. Dimethylphthalate	CCC. Benzo(a)anthracene	CCCC. Benzo(b)fluorene	C1. N-Nitrosomethylethylamine
D. 1,3-Dichlorobenzene	DD. Acenaphthylene	DDD. Chrysene	DDDD. cis/trans-Decalin	D1. N-Nitrosomorpholine
E. 1,4-Dichlorobenzene	EE. 2,6-Dinitrotoluene	EEE. Bis(2-ethylhexyl)phthalate	EEEE. Biphenyl	E1. N-Nitrosopyrrolidine
F. 1,2-Dichlorobenzene	FF. 3-Nitroaniline	FFF. Di-n-octylphthalate	FFFF. Retene	F1. Phenacetin
G. 2-Methylphenol	GG. Acenaphthene	GGG. Benzo(b)fluoranthene	GGGG. C30-Hopane	G1. 2-Acetylaminofluorene
H. 2,2'-Oxybis(1-chloropropane)	HH. 2,4-Dinitrophenol	HHH. Benzo(k)fluoranthene	HHHH. 1-Methylphenanthrene	H1. Pronamide
I. 4-Methylphenol	II. 4-Nitrophenol	III. Benzo(a)pyrene	IIII. 1,4-Dioxane	I1. Methyl methanesulfonate
J. N-Nitroso-di-n-propylamine	JJ. Dibenzofuran	JJJ. Indeno(1,2,3-cd)pyrene	JJJJ. Acetophenone	J1. Ethyl methanesulfonate
K. Hexachloroethane	KK. 2,4-Dinitrotoluene	KKK. Dibenz(a,h)anthracene	KKKK. Atrazine	K1. o,o',o''-Triethylphosphorothioate
L. Nitrobenzene	LL. Diethylphthalate	LLL. Benzo(g,h,i)perylene	LLLL. Benzaldehyde	L1. n-Phenylene diamine
M. Isophorone	MM. 4-Chlorophenyl-phenyl ether	MMM. Bis(2-Chloroisopropyl)ether	MMMM. Caprolactam	M1. 1,4-Naphthoquinone
N. 2-Nitrophenol	NN. Fluorene	NNN. Aniline	NNNN. 2,6-Dichlorophenol	N1. N-Nitro-o-toluidine
O. 2,4-Dimethylphenol	OO. 4-Nitroaniline	OOO. N-Nitrosodimethylamine	OOOO. 1,2-Diphenylhydrazine	O1. 1,3,5-Trinitrobenzene
P. Bis(2-chloroethoxy)methane	PP. 4,6-Dinitro-2-methylphenol	PPP. Benzoic Acid	PPPP. 3-Methylphenol	P1. Pentachlorobenzene
Q. 2,4-Dichlorophenol	QQ. N-Nitrosodiphenylamine	QQQ. Benzyl alcohol	QQQQ. 3&4-Methylphenol	Q1. 4-Aminobiphenyl
R. 1,2,4-Trichlorobenzene	RR. 4-Bromophenyl-phenylether	RRR. Pyridine	RRRR. 4-Dimethyldibenzothiophene (4MDT)	R1. 2-Naphthylamine
S. Naphthalene	SS. Hexachlorobenzene	SSS. Benzidine	SSSS. 2/3-Dimethyldibenzothiophene (4MDT)	S1. Triphenylene
T. 4-Chloroaniline	TT. Pentachlorophenol	TTT. 1-Methylnaphthalene	TTTT. 1-Methyldibenzothiophene (1MDT)	T1. Octachlorostyrene
U. Hexachlorobutadiene	UU. Phenanthrene	UUU. Benzo(b)thiophene	UUUU. 2,3,4,6-Tetrachlorophenol	U1. Famphur
V. 4-Chloro-3-methylphenol	VV. Anthracene	VVV. Benzonaphthothiophene	VVVV. 1,2,4,5-Tetrachlorobenzene	V1. 1,4-phenylenediamine
W. 2-Methylnaphthalene	WW. Carbazole	WWW. Benzo(e)pyrene	WWWW. 2-Picoline	W1. Methapyrilene
X. Hexachlorocyclopentadiene	XX. Di-n-butylphthalate	XXX. 2,6-Dimethylnaphthalene	XXXX. 3-Methylcholanthrene	X1. Pentachloroethane
Y. 2,4,6-Trichlorophenol	YY. Fluoranthene	YYY. 2,3,5-Trimethylnaphthalene	YYYY. a,a-Dimethylphenethylamine	Y1. 3,3'-Dimethylbenzidine
Z. 2,4,5-Trichlorophenol	ZZ. Pyrene	ZZZ. Perylene	ZZZZ. Hexachloropropene	Z1. o-Toluidine

LDC #: 44/52A26

### VALIDATION FINDINGS WORKSHEET

Page: 1 of 1

#### Surrogate Recovery

Reviewer: FT

2nd Reviewer: [Signature]

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualification below for all questions answered "N". Not applicable questions are identified as "N/A".

- Y N N/A Were percent recoveries (%R) for surrogates within QC limits?  
 Y N N/A If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?  
 Y N N/A If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

(S)

#	Sample ID	Surrogate	%R (Limits)	Qualifications
	2	YY-d10	127 (58-120)	Jdu / P ND
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	

(NBZ) = Nitrobenzene - d5      (2FP) = 2-Fluorophenol  
 (FBP) = 2-Fluorobiphenyl      (TBP) = 2,4,6 -Tribromophenol  
 (TPH) = Terphenyl - d14      (2CP) = 2-Chlorophenol - d4

LDC #: 44152A26

**VALIDATION FINDINGS WORKSHEET**  
**Initial Calibration Calculation Verification**

Page: 1 of 1  
 Reviewer: FT  
 2nd Reviewer: [Signature]

METHOD: GCMS 8270D

The calibration factors (RRFF), average RRFF, and relative standard deviation (%RSD) were recalculated for compounds identified below using the following calculations:

$RRF = (A_x)(C_{is}) / (A_{is})(C_x)$

average RRF = sum of the RRFs/number of standards

$\%RSD = 100 * (S/X)$

Where:

A<sub>x</sub> = Area of compound

C<sub>x</sub> = Concentration of compound

S = Standard deviation of the RRFs

X = Mean of the RRFs

A<sub>is</sub> = Area of associated internal standard

C<sub>is</sub> = Concentration of internal Standard

#	Standard ID	Calibration Date	Compound	Reported (RRF1.0 std)	Recalculated (RRF1.0 std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
	ICAL	10/26/2018	S	1.0400	1.0400	1.0340	1.0340	6.0	6.0

LDC #: 44152 A26

### VALIDATION FINDINGS WORKSHEET Continuing Calibration Results Verification

Page: 1 of 1  
 Reviewer: FT  
 2nd Reviewer: ↑

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270C)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference =  $100 * (\text{ave. RRF} - \text{RRF}) / \text{ave. RRF}$   
 $\text{RRF} = (A_x)(C_{is}) / (A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF  
 RRF = continuing calibration RRF  
 $A_x$  = Area of compound,  $A_{is}$  = Area of associated internal standard  
 $C_x$  = Concentration of compound,  $C_{is}$  = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Internal Standard)	Average RRF (Initial)	Reported	Recalculated	Reported	Recalculated
					RRF (CC)	RRF (CC)	%D	%D
1	CON 0837	12/19/18	S (1st IS)	1.040	1.087	1.087	5.2	5.2
			(2nd IS)					
			(3rd IS)					
			(4th IS)					
			(5th IS)					
			(6th IS)					
2			(1st IS)					
			(2nd IS)					
			(3rd IS)					
			(4th IS)					
			(5th IS)					
			(6th IS)					
3			(1st IS)					
			(2nd IS)					
			(3rd IS)					
			(4th IS)					
			(5th IS)					
			(6th IS)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 44152A2b

**VALIDATION FINDINGS WORKSHEET**  
**Surrogate Results Verification**

Page: 1 of 1  
 Reviewer: FT  
 2nd reviewer: AC

**METHOD:** GC/MS Semivolatiles (EPA SW 846 Method 8270C)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS \* 100

Where: SF = Surrogate Found  
 SS = Surrogate Spiked

Sample ID: #1

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
<del>Nitrobenzene-d5</del> <u>W-d10</u>	<u>6.25</u>	<u>5.4650</u>	<u>87.4</u>	<u>87.4</u>	<u>0</u>
<del>2-Fluorobiphenyl</del> <u>Y-d10</u>	<u>6.25</u>	<u>6.6228</u>	<u>106</u>	<u>106</u>	<u>0</u>
<del>Terphenyl-d14</del>					
<del>Phenol-d5</del>					
<del>2-Fluorophenol</del>					
<del>2,4,6-Tribromophenol</del>					
<del>2-Chlorophenol-d4</del>					
<del>1,2-Dichlorobenzene-d4</del>					

Sample ID: \_\_\_\_\_

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID: \_\_\_\_\_

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

LDC #: 44152 A26

**VALIDATION FINDINGS WORKSHEET**  
**Matrix Spike/Matrix Spike Duplicates Results Verification**

Page: 1 of 1  
 Reviewer: FT  
 2nd Reviewer: [Signature]

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270C)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 \* (SSC - SC)/SA

Where: SSC = Spiked sample concentration  
 SA = Spike added

SC = Sample concentration

RPD = |MSC - MSC| \* 2/(MSC + MSDC)

MSC = Matrix spike concentration

MSDC = Matrix spike duplicate concentration

MS/MSD samples: 5 + 6

Compound	Spike Added (ug/L)		Sample Concentration (ug/L)	Spiked Sample Concentration (ug/L)		Matrix Spike		Matrix Spike Duplicate		MS/MSD	
	MS	MSD		MS	MSD	Percent Recovery		Percent Recovery		RPD	
						Reported	Recalc	Reported	Recalc	Reported	Recalc
Phenol											
N-Nitroso-di-n-propylamine											
4-Chloro-3-methylphenol											
Acenaphthene											
Pentachlorophenol											
Pyrene											
S	6.25	6.25	ND	5.45	5.77	87.2	87.2	92.3	92.3	5.7	5.7

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.



LDC #: 44152A26

**VALIDATION FINDINGS WORKSHEET**

**Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification**

Reviewer: FT

2nd Reviewer: *[Signature]*

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270C)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 \* (SC/SA)

Where: SSC = Spike concentration  
SA = Spike added

RPD = |LCSC - LCSDC| \* 2 / (LCSC + LCSDC)

LCSC = Laboratory control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS/LCSD samples: 181217A WSD

Compound	Spike Added (ug/L)		Spike Concentration (ug/L)		LCS		LCSD		LCS/LCSD	
	LCS	LCSD	LCS	LCSD	Percent Recovery		Percent Recovery		RPD	
					Reported	Recalc	Reported	Recalc	Reported	Recalculated
Phenol										
N-Nitroso-di-n-propylamine										
4-Chloro-3-methylphenol										
Acenaphthene										
Pentachlorophenol										
Pyrene										
S	6.25	6.25	5.16 <sup>F1</sup> 5.38	5.16	86.1	86.1	82.6	82.6	4.2	4.2

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

## VALIDATION FINDINGS WORKSHEET Sample Calculation Verification

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270C)

Y N N/A  
Y N N/A

Were all reported results recalculated and verified for all level IV samples?

Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

$$\text{Concentration} = \frac{(A_x)(I_s)(V_i)(DF)(2.0)}{(A_{is})(RRF)(V_o)(V_i)(\%S)}$$

- $A_x$  = Area of the characteristic ion (EICP) for the compound to be measured
- $A_{is}$  = Area of the characteristic ion (EICP) for the specific internal standard
- $I_s$  = Amount of internal standard added in nanograms (ng)
- $V_o$  = Volume or weight of sample extract in milliliters (ml) or grams (g).
- $V_i$  = Volume of extract injected in microliters (ul)
- $V_t$  = Volume of the concentrated extract in microliters (ul)
- Df = Dilution Factor.
- %S = Percent solids, applicable to soil and solid matrices only.
- 2.0 = Factor of 2 to account for GPC cleanup

Example:

Sample I.D. 181217A ves: S

$$\text{Conc.} = \frac{36151 (2.5) (1) (1000)}{20300 (1.0340) (800)}$$

= 5.382 ug/l

#	Sample ID	Compound	Reported Concentration (ug/l)	Calculated Concentration (ug/l)	Qualification
	<u>ves</u>	<u>S</u>	<u>5.38</u>	<u>5.38</u>	

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** January 30, 2019

**Parameters:** 2-(2-Methoxyethoxy)-ethanol

**Validation Level:** Level C & D

**Laboratory:** APPL, Inc.

**Sample Delivery Group (SDG):** 87650

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
ERH719**	AZ84057**	Water	12/12/18
ERH720	AZ84059	Water	12/12/18
ERH722	AZ84061	Water	12/13/18
ERH723	AZ84062	Water	12/13/18
ERH719MS	AZ84057MS	Water	12/12/18
ERH719MSD	AZ84057MSD	Water	12/12/18
ERH722MS	AZ84061MS	Water	12/13/18
ERH722MSD	AZ84061MSD	Water	12/13/18

\*\*Indicates sample underwent Level D validation

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

2-(2-Methoxyethoxy)-ethanol by Environmental Protection Agency (EPA) SW 846 Method 8270D Modified

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level D data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## Qualification Code Reference

- H Holding times were exceeded.
- S Surrogate recovery was outside QC limits.
- C Calibration %RSD,  $r$ ,  $r^2$  or %D were noncompliant.
- R Calibration RRF was  $<0.05$ .
- B Presumed contamination from preparation (method blank).
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD was high.
- I Internal standard performance was unsatisfactory.
- M Instrument Performance Check (BFB or DFTPP) was noncompliant.
- T Presumed contamination from trip blank.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Instrument performance for pesticides was poor.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. GC/MS Instrument Performance Check**

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

## **III. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0%.

Average relative response factors (RRF) were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

## **IV. Continuing Calibration**

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0%.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0%.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

## **V. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **VI. Field Blanks**

No field blanks were identified in this SDG.

## VII. Surrogates

Surrogates were not added to all samples as required by the method. Using professional judgment, no data were qualified, since the LCS/LCSD/MS/MSD percent recoveries were within QC limits. Additionally, all base surrogate percent recoveries were within QC limits in the phenol analysis.

## VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
181217A-LCS/D (All samples in SDG 87650)	2-(2-Methoxyethoxy)-ethanol	-	139 (30-130)	NA	-

Relative percent differences (RPD) were within QC limits.

## X. Field Duplicates

Samples ERH719\*\* and ERH720 and samples ERH722 and ERH723 were identified as field duplicates. No results were detected in any of the samples.

## XI. Internal Standards

All internal standard areas and retention times were within QC limits.

## XII. Compound Quantitation

All compound quantitations met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

## XIII. Target Compound Identifications

All target compound identifications met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.



#### **XIV. System Performance**

The system performance was acceptable for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

#### **XV. Overall Assessment of Data**

The analysis was conducted within all specifications of the method with the exception noted in Section VII. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**Red Hill Bulk Storage Facility, CTO 18F0126  
2-(2-Methoxyethoxy)-ethanol - Data Qualification Summary - SDG 87650**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
2-(2-Methoxyethoxy)-ethanol - Laboratory Blank Data Qualification Summary -  
SDG 87650**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
2-(2-Methoxyethoxy)-ethanol - Field Blank Data Qualification Summary - SDG  
87650**

No Sample Data Qualified in this SDG

LDC #: 44152A2c  
 SDG #: 87650  
 Laboratory: APPL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**  
 Level C/D

Date: 1/17/19  
 Page: 1 of 1  
 Reviewer: [Signature]  
 2nd Reviewer: [Signature]

**METHOD:** GC/MS 2-(2-Methoxyethoxy)-Ethanol (EPA SW 846 Method 8270D-SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	GC/MS Instrument performance check	Δ	
III.	Initial calibration/ICV	A/A	% PSD ≤ 5      ICV ≤ 20
IV.	Continuing calibration / closing cv	Δ	cv ≤ 20
V.	Laboratory Blanks	A	
VI.	Field blanks	N	
VII.	Surrogate spikes	SW	
VIII.	Matrix spike/Matrix spike duplicates	A	
IX.	Laboratory control samples	SW	
X.	Field duplicates	ND	D = 1, 2      3, 4
XI.	Internal standards	Δ	
XII.	Compound quantitation RL/LOQ/LODs	Δ	Not reviewed for Level C validation.
XIII.	Target compound identification	Δ	Not reviewed for Level C validation.
XIV.	System performance	Δ	Not reviewed for Level C validation.
XV.	Overall assessment of data	Δ	

Note: A = Acceptable      ND = No compounds detected      D = Duplicate      SB=Source blank  
 N = Not provided/applicable      R = Rinsate      TB = Trip blank      OTHER:  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

\*\* Indicates sample underwent Level D validation

	Client ID	Lab ID	Matrix	Date
1	ERH719** D	AZ84057**	Water	12/12/18
2	ERH720 D	AZ84059	Water	12/12/18
3	ERH722 P <sub>1</sub>	AZ84061	Water	12/13/18
4	ERH723 P <sub>1</sub>	AZ84062	Water	12/13/18
5	ERH719MS	AZ84057MS	Water	12/12/18
6	ERH719MSD	AZ84057MSD	Water	12/12/18
7	ERH722MS	AZ84061MS	Water	12/13/18
8	ERH722MSD	AZ84061MSD	Water	12/13/18
9				

Notes:

181218A-BIK				

**Method:** Semivolatiles (EPA SW 846 Method 8270D)

Validation Area	Yes	No	NA	Findings/Comments
<b>I. Technical holding times</b>				
Were all technical holding times met?	/			
Was cooler temperature criteria met?	/			
<b>II. GC/MS Instrument performance check</b>				
Were the DFTPP performance results reviewed and found to be within the specified criteria?	/			
Were all samples analyzed within the 12 hour clock criteria?	/			
<b>IIIa. Initial calibration</b>				
Did the laboratory perform a 5 point calibration prior to sample analysis?	/			
Were all percent relative standard deviations (%RSD) ≤ 15% and relative response factors (RRF) within method criteria?	/			
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of > 0.990?		P? /	/	
<b>IIIb. Initial Calibration Verification</b>				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	/			
Were all percent differences (%D) ≤ 20%?	/			
<b>IV. Continuing calibration</b>				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	/			
Were all percent differences (%D) ≤ 20% and relative response factors (RRF) within method criteria?	/			
<b>V. Laboratory Blanks</b>				
Was a laboratory blank associated with every sample in this SDG?	/			
Was a laboratory blank analyzed at least once every 12 hours for each matrix and concentration?	/			
Was there contamination in the laboratory blanks? If yes, please see the blanks validation findings worksheet.		/		
<b>VI. Field blanks</b>				
Were field blanks were identified in this SDG?		/		
Were target compounds detected in the field blanks?			/	
<b>VII. Surrogate spikes</b>				
Were all surrogate percent recovery (%R) within QC limits?			/	
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?			/	
If any percent recoveries (%R) was less than 10%, was a reanalysis performed to confirm %R ?			/	
<b>VIII. Matrix spike/Matrix spike duplicates</b>				
Were matrix spike (MS) and matrix spike duplicate (MSD) analyzed in this SDG?	/			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	/			

LDC #: 44152 Adc

**VALIDATION FINDINGS CHECKLIST**

Page: 2 of 2  
 Reviewer: FR  
 2nd Reviewer: FR

Validation Area	Yes	No	NA	Findings/Comments
<b>IX. Laboratory control samples</b>				
Was an LCS analyzed for this SDG?	/			
Was an LCS analyzed per analytical batch?	/			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	/			
<b>X. Field duplicates</b>				
Were field duplicate pairs identified in this SDG?	/			
Were target compounds detected in the field duplicates?	/			
<b>XI. Internal standards</b>				
Were internal standard area counts within -50% to +100% of the associated calibration standard?	/			
Were retention times within + 30 seconds of the associated calibration standard?	/			
<b>XII. Compound quantitation</b>				
Did the laboratory LOQs/RLs meet the QAPP LOQs/RLs?	/			
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	/			
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	/			
<b>XIII. Target compound identification</b>				
Were relative retention times (RRT's) within $\pm 0.06$ RRT units of the standard?	/			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	/			
Were chromatogram peaks verified and accounted for?	/			
<b>XIV. System performance</b>				
System performance was found to be acceptable.	/			
<b>XV. Overall assessment of data</b>				
Overall assessment of data was found to be acceptable.	/			

## VALIDATION FINDINGS WORKSHEET

**METHOD: GC/MS SVOA**

A. Phenol	AA. 2-Chloronaphthalene	AAA. Butylbenzylphthalate	AAAA. Dibenzothiophene	A1. N-Nitrosodiethylamine
B. Bis (2-chloroethyl) ether	BB. 2-Nitroaniline	BBB. 3,3'-Dichlorobenzidine	BBBB. Benzo(a)fluoranthene	B1. N-Nitrosodi-n-butylamine
C. 2-Chlorophenol	CC. Dimethylphthalate	CCC. Benzo(a)anthracene	CCCC. Benzo(b)fluorene	C1. N-Nitrosomethylethylamine
D. 1,3-Dichlorobenzene	DD. Acenaphthylene	DDD. Chrysene	DDDD. cis/trans-Decalin	D1. N-Nitrosomorpholine
E. 1,4-Dichlorobenzene	EE. 2,6-Dinitrotoluene	EEE. Bis(2-ethylhexyl)phthalate	EEEE. Biphenyl	E1. N-Nitrosopyrrolidine
F. 1,2-Dichlorobenzene	FF. 3-Nitroaniline	FFF. Di-n-octylphthalate	FFFF. Retene	F1. Phenacetin
G. 2-Methylphenol	GG. Acenaphthene	GGG. Benzo(b)fluoranthene	GGGG. C30-Hopane	G1. 2-Acetylaminofluorene
H. 2,2'-Oxybis(1-chloropropane)	HH. 2,4-Dinitrophenol	HHH. Benzo(k)fluoranthene	HHHH. 1-Methylphenanthrene	H1. Pronamide
I. 4-Methylphenol	II. 4-Nitrophenol	III. Benzo(a)pyrene	IIII. 1,4-Dioxane	I1. Methyl methanesulfonate
J. N-Nitroso-di-n-propylamine	JJ. Dibenzofuran	JJJ. Indeno(1,2,3-cd)pyrene	JJJJ. Acetophenone	J1. Ethyl methanesulfonate
K. Hexachloroethane	KK. 2,4-Dinitrotoluene	KKK. Dibenz(a,h)anthracene	KKKK. Atrazine	K1. o,o',o''-Triethylphosphorothioate
L. Nitrobenzene	LL. Diethylphthalate	LLL. Benzo(g,h,i)perylene	LLLL. Benzaldehyde	L1. n-Phenylene diamine
M. Isophorone	MM. 4-Chlorophenyl-phenyl ether	MMM. Bis(2-Chloroisopropyl)ether	MMMM. Caprolactam	M1. 1,4-Naphthoquinone
N. 2-Nitrophenol	NN. Fluorene	NNN. Aniline	NNNN. 2,6-Dichlorophenol	N1. N-Nitro-o-toluidine
O. 2,4-Dimethylphenol	OO. 4-Nitroaniline	OOO. N-Nitrosodimethylamine	OOOO. 1,2-Diphenylhydrazine	O1. 1,3,5-Trinitrobenzene
P. Bis(2-chloroethoxy)methane	PP. 4,6-Dinitro-2-methylphenol	PPP. Benzoic Acid	PPPP. 3-Methylphenol	P1. Pentachlorobenzene
Q. 2,4-Dichlorophenol	QQ. N-Nitrosodiphenylamine	QQQ. Benzyl alcohol	QQQQ. 3&4-Methylphenol	Q1. 4-Aminobiphenyl
R. 1,2,4-Trichlorobenzene	RR. 4-Bromophenyl-phenylether	RRR. Pyridine	RRRR. 4-Dimethyldibenzothiophene (4MDT)	R1. 2-Naphthylamine
S. Naphthalene	SS. Hexachlorobenzene	SSS. Benzidine	SSSS. 2/3-Dimethyldibenzothiophene (4MDT)	S1. Triphenylene
T. 4-Chloroaniline	TT. Pentachlorophenol	TTT. 1-Methylnaphthalene	TTTT. 1-Methyldibenzothiophene (1MDT)	T1. Octachlorostyrene
U. Hexachlorobutadiene	UU. Phenanthrene	UUU. Benzo(b)thiophene	UUUU. 2,3,4,6-Tetrachlorophenol	U1. Famphur
V. 4-Chloro-3-methylphenol	VV. Anthracene	VVV. Benzonaphthothiophene	VVVV. 1,2,4,5-Tetrachlorobenzene	V1. 1,4-phenylenediamine
W. 2-Methylnaphthalene	WW. Carbazole	WWW. Benzo(e)pyrene	WWWW. 2-Picoline	W1. Methapyrilene
X. Hexachlorocyclopentadiene	XX. Di-n-butylphthalate	XXX. 2,6-Dimethylnaphthalene	XXXX. 3-Methylcholanthrene	X1. Pentachloroethane
Y. 2,4,6-Trichlorophenol	YY. Fluoranthene	YYY. 2,3,5-Trimethylnaphthalene	YYYY. a,a-Dimethylphenethylamine	Y1. 3,3'-Dimethylbenzidine
Z. 2,4,5-Trichlorophenol	ZZ. Pyrene	ZZZ. Perylene	ZZZZ. Hexachloropropene	Z1. o-Toluidine

LDC #: 44152 A2C

VALIDATION FINDINGS WORKSHEET

Surrogate Recovery

Page: 1 of 1

Reviewer: FT

2nd Reviewer: [Signature]

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualification below for all questions answered "N". Not applicable questions are identified as "N/A".


- Y N N/A Were percent recoveries (%R) for surrogates within QC limits?
- Y N N/A If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?
- Y N N/A If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Sample ID	Surrogate	%R (Limits)	Qualifications
	all	Surrogates were not added to all samples as required by the method. Using professional judgment, no data were qualified. Although the LCSD percent recovery was not within QC limits, all associated samples were non-detect. Additionally, all base surrogate percent recoveries were within QC limits in the phenol analysis.		Text
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
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			( )	
			( )	
			( )	
			( )	

(NBZ) = Nitrobenzene - d5      (2FP) = 2-Fluorophenol

LDC #: 44152 A2C

VALIDATION FINDINGS WORKSHEET  
Laboratory Control Samples (LCS)

Page: 1 of 1  
Reviewer: FT  
2nd Reviewer: 

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

N/A

Was a LCS required?

N/A

Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

(L)

#	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	18127A - lcs ID	*	( )	139 (30-130)	( )	All	John / P NO
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
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			( )	( )	( )		
			( )	( )	( )		



LDC #: 44152A2c

**VALIDATION FINDINGS WORKSHEET**  
**Initial Calibration Calculation Verification**

Page: 1 of 1  
 Reviewer: FT  
 2nd Reviewer: PC

METHOD: GCMS 8270C

The calibration factors (RRFF), average RRFF, and relative standard deviation (%RSD) were recalculated for compounds identified below using the following calculations:

$RRF = (A_x)(C_{is}) / (A_{is})(C_x)$

average RRF = sum of the RRFs/number of standards

$\%RSD = 100 * (S/X)$

Where:

A<sub>x</sub> = Area of compound

C<sub>x</sub> = Concentration of compound

S = Standard deviation of the RRFs

X = Mean of the RRFs

A<sub>is</sub> = Area of associated internal standard

C<sub>is</sub> = Concentration of internal Standard

#	Standard ID	Calibration Date	Compound	Reported (RRF 400 std)	Recalculated (RRF400 std)	Reported AverageRRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
	ICAL	11/28/2018	2-(2-Methoxyethoxy) Ethanol	0.2070	0.2070	0.2402	0.2402	7.90	7.90
	Yoda								

**VALIDATION FINDINGS WORKSHEET**  
**Continuing Calibration Results Verification**

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270C)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference =  $100 * (\text{ave. RRF} - \text{RRF}) / \text{ave. RRF}$   
 $\text{RRF} = (A_x)(C_{is}) / (A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF  
 RRF = continuing calibration RRF  
 $A_x$  = Area of compound,  
 $C_x$  = Concentration of compound,

$A_{is}$  = Area of associated internal standard  
 $C_{is}$  = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Internal Standard)	Average RRF (Initial)	Reported	Recalculated	Reported	Recalculated
					RRF (CC)	RRF (CC)	%D	%D
1	ccv 0831	12/19/18	2-(2-MEE) (1st IS)	0.2402	0.2463	0.2463	2.5	2.5
			(2nd IS)					
			(3rd IS)					
			(4th IS)					
			(5th IS)					
			(6th IS)					
2			(1st IS)					
			(2nd IS)					
			(3rd IS)					
			(4th IS)					
			(5th IS)					
			(6th IS)					
3			(1st IS)					
			(2nd IS)					
			(3rd IS)					
			(4th IS)					
			(5th IS)					
			(6th IS)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 44152A2C

## VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates Results Verification

Page: 1 of 1  
Reviewer: FT  
2nd Reviewer: AK

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270C)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery =  $100 * (SSC - SC) / SA$

Where: SSC = Spiked sample concentration  
SA = Spike added

SC = Sample concentration

RPD =  $100 * (MSC - MSD) / ((MSC + MSD) / 2)$

MSC = Matrix spike concentration

MSDC = Matrix spike duplicate concentration

MS/MSD samples: 5 + 6

Compound	Spike Added (ug/l)		Sample Concentration (ug/l)	Spiked Sample Concentration (ug/l)		Matrix Spike		Matrix Spike Duplicate		MS/MSD	
	MS	MSD		MS	MSD	Percent Recovery		Percent Recovery		RPD	
						Reported	Recalc	Reported	Recalc	Reported	Recalc
Phenol											
N-Nitroso-di-n-propylamine											
4-Chloro-3-methylphenol											
Acenaphthene											
Pentachlorophenol											
Pyrene											
<u>2-(2-MEE)</u>	<u>80.0</u>	<u>80.0</u>	<u>ND</u>	<u>96.5</u>	<u>100</u>	<u>121</u>	<u>121</u>	<u>125</u>	<u>125</u>	<u>3.6</u>	<u>3.6</u>

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 44152A2C

**VALIDATION FINDINGS WORKSHEET**

**Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification**

Reviewer: FT  
 2nd Reviewer: [Signature]

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270C)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 \* (SC/SA)

Where: SSC = Spike concentration  
 SA = Spike added

RPD = | LCSC - LCSDC | \* 2 / (LCSC + LCSDC)

LCSC = Laboratory control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS/LCSD samples: 181218A

Compound	Spike Added		Spike Concentration		LCS		LCSD		LCS/LCSD	
	(ug/L)		(ug/L)		Percent Recovery		Percent Recovery		RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
Phenol										
N-Nitroso-di-n-propylamine										
4-Chloro-3-methylphenol										
Acenaphthene										
Pentachlorophenol										
Pyrene										
2-(2-ME)-E	80.0	80.0	92.3	111	115	115	139	139	18.4	18.4

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 44152 A2C

**VALIDATION FINDINGS WORKSHEET**  
**Sample Calculation Verification**

Page: 1 of 1  
 Reviewer: FT  
 2nd reviewer: K

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270C)

Y N N/A  
Y N N/A

Were all reported results recalculated and verified for all level IV samples?  
 Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

$$\text{Concentration} = \frac{(A_x)(I_s)(V_i)(DF)(2.0)}{(A_s)(RRF)(V_o)(V_i)(\%S)}$$

- A<sub>x</sub> = Area of the characteristic ion (EICP) for the compound to be measured
- A<sub>s</sub> = Area of the characteristic ion (EICP) for the specific internal standard
- I<sub>s</sub> = Amount of internal standard added in nanograms (ng)
- V<sub>o</sub> = Volume or weight of sample extract in milliliters (ml) or grams (g).
- V<sub>i</sub> = Volume of extract injected in microliters (ul)
- V<sub>i</sub> = Volume of the concentrated extract in microliters (ul)
- Df = Dilution Factor.
- %S = Percent solids, applicable to soil and solid matrices only.
- 2.0 = Factor of 2 to account for GPC cleanup

Example:

Sample I.D. 181218A : LC >

$$\text{Conc.} = \frac{(255475)(40.0)}{(460642)(0.2402)}$$

=

92.35

#	Sample ID	Compound	Reported Concentration (ug/l)	Calculated Concentration (ug/l)	Qualification
	<u>LC &gt;</u>	<u>2 (2-MEE)</u>	<u>92.3</u>	<u>92.35</u>	

**Laboratory Data Consultants, Inc.  
Data Validation Report**

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** February 7, 2019

**Parameters:** Wet Chemistry

**Validation Level:** Level C & D

**Laboratory:** APPL, Inc./Analytical Resources, Inc.

**Sample Delivery Group (SDG):** 87650/18L0338

<b>Sample Identification</b>	<b>Laboratory Sample Identification</b>	<b>Matrix</b>	<b>Collection Date</b>
ERH719**	AZ84057/18L0338-01**	Water	12/12/18
ERH722	AZ84061/18L0338-02	Water	12/13/18
ERH722DUP	AZ84061/18L0338-02DUP	Water	12/13/18
ERH722MS	AZ84061/18L0338-02MS	Water	12/13/18
ERH722MSD	AZ84061/18L0338-02MSD	Water	12/13/18

\*\*Indicates sample underwent Level D validation

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Alkalinity by Standard Method 2320B

Chloride, Nitrate, and Sulfate by Environmental Protection Agency (EPA) Method 300.0

Ferrous Iron by Standard Method 3500-Fe B

Nitrate/Nitrite as Nitrogen by EPA Method 353.2

Total Organic Carbon by EPA SW 846 Method 9060A

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level D data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.



## Qualification Code Reference

- H Holding times were exceeded.
- S The sequence or number of standards used for the calibration was incorrect.
- C Correlation coefficient is  $<0.995$ .
- R %R for calibration is not within control limits.
- B Presumed contamination from preparation (method) blank or calibration blank.
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD or difference was high.
- I ICP ICS results were unsatisfactory.
- A ICP Serial Dilution %D were not within control limits.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Post Digestion Spike recovery was not within control limits.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

## I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
ERH719**	Nitrate	50.43 hours	48 hours	J (all detects)	P

## II. Initial Calibration

All criteria for the initial calibration of each method were met.

## III. Continuing Calibration

Continuing calibration frequency and analysis criteria were met for each method when applicable.

## IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks with the following exceptions:

Blank ID	Analyte	Maximum Concentration	Limit of Quantitation	Associated Samples
PB (prep blank)	Chloride Alkalinity	0.14 mg/L 2.7 mg/L	0.20 mg/L 2.0 mg/L	All samples in SDG 87650/18L0338
ICB/CCB	Chloride	0.146 mg/L	0.20 mg/L	All samples in SDG 87650/18L0338

Data qualification by the laboratory blanks was based on the maximum contaminant concentration in the laboratory blanks in the analysis of each analyte. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated laboratory blanks.

## V. Field Blanks

No field blanks were identified in this SDG.

## VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## **VII. Duplicate Sample Analysis**

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

## **VIII. Laboratory Control Samples**

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## **IX. Field Duplicates**

No field duplicates were identified in this SDG.

## **X. Sample Result Verification**

All sample result verifications were acceptable for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

## **XI. Overall Assessment of Data**

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to technical holding time, data were qualified as estimated in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

**Red Hill Bulk Storage Facility, CTO 18F0126  
Wet Chemistry - Data Qualification Summary - SDG 87650/18L0338**

<b>Sample</b>	<b>Analyte</b>	<b>Flag</b>	<b>A or P</b>	<b>Reason (Code)</b>
ERH719**	Nitrate	J (all detects)	P	Technical holding times (H)

**Red Hill Bulk Storage Facility, CTO 18F0126  
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG  
87650/18L0338**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Wet Chemistry - Field Blank Data Qualification Summary - SDG 87650/18L0338**

No Sample Data Qualified in this SDG

**Laboratory Data Consultants, Inc.  
Data Validation Report**

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126  
**LDC Report Date:** January 30, 2019  
**Parameters:** Gasoline Range Organics  
**Validation Level:** Level C & D  
**Laboratory:** APPL. Inc  
**Sample Delivery Group (SDG):** 87650

<b>Sample Identification</b>	<b>Laboratory Sample Identification</b>	<b>Matrix</b>	<b>Collection Date</b>
ERH719**	AZ84057**	Water	12/12/18
ERH718	AZ84058	Water	12/12/18
ERH720	AZ84059	Water	12/12/18
ERH721	AZ84060	Water	12/12/18
ERH722	AZ84061	Water	12/13/18
ERH723	AZ84062	Water	12/13/18
ERH719MS	AZ84057MS	Water	12/12/18
ERH719MSD	AZ84057MSD	Water	12/12/18
ERH722MS	AZ84061MS	Water	12/13/18
ERH722MSD	AZ84061MSD	Water	12/13/18

\*\*Indicates sample underwent Level D validation

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Gasoline Range Organics by Environmental Protection Agency (EPA) SW 846 Method 8260B

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level D data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered not detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## Qualification Code Reference

- H Holding times were exceeded.
- S Surrogate recovery was outside QC limits.
- C Calibration %RSD,  $r$ ,  $r^2$  or %D were noncompliant.
- R Calibration RRF was  $<0.05$ .
- B Presumed contamination from preparation (method blank).
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD was high.
- I Internal standard performance was unsatisfactory.
- M Instrument Performance Check (BFB or DFTPP) was noncompliant.
- T Presumed contamination from trip blank.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Instrument performance for pesticides was poor.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.



## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

A curve fit, based on the initial calibration, was established for quantitation. The coefficient of determination ( $r^2$ ) was greater than or equal to 0.990.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

## **III. Continuing Calibration**

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0%.

## **IV. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **V. Field Blanks**

Samples ERH718 and ERH721 were identified as trip blanks. No contaminants were found.

## **VI. Surrogates**

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

## **VII. Matrix Spike/Matrix Spike Duplicates**

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## **VIII. Laboratory Control Samples**

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## **IX. Field Duplicates**

Samples ERH719\*\* and ERH720 and samples ERH722 and ERH723 were identified as field duplicates. No results were detected in any of the samples.

## **X. Compound Quantitation**

All compound quantitations met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

## **XI. Target Compound Identifications**

All target compound identifications met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

## **XII. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**Red Hill Bulk Storage Facility, CTO 18F0126  
Gasoline Range Organics - Data Qualification Summary - SDG 87650**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Gasoline Range Organics - Laboratory Blank Data Qualification Summary - SDG  
87650**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Gasoline Range Organics - Field Blank Data Qualification Summary - SDG 87650**

No Sample Data Qualified in this SDG

LDC #: 44152A7  
 SDG #: 87650  
 Laboratory: APPL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**  
 Level C/D

Date: 1/17/19  
 Page: 1 of 1  
 Reviewer: [Signature]  
 2nd Reviewer: [Signature]

**METHOD:** GC/MS Gasoline Range Organics (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A, A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A, A	✓ ICV ≤ 20
IV.	Continuing calibration	A	OCV ≤ 20
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	TB = 2, 4      1
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	A	
IX.	Laboratory control samples	A	LES 1, 2
X.	Field duplicates	ND	D = 1, 3      5, 6
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	A	Not reviewed for Level C validation.
XIII.	Target compound identification	A	Not reviewed for Level C validation.
XIV.	System performance	A	Not reviewed for Level C validation.
XV.	Overall assessment of data	A	

Note: A = Acceptable      ND = No compounds detected      D = Duplicate      SB=Source blank  
 N = Not provided/applicable      R = Rinsate      TB = Trip blank      OTHER:  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

\*\* Indicates sample underwent Level D validation

	Client ID	Lab ID	Matrix	Date
1	ERH719** D	AZ84057**	Water	12/12/18
2	ERH718 TB	AZ84058	Water	12/12/18
3	ERH720 D	AZ84059	Water	12/12/18
4	ERH721 TB	AZ84060	Water	12/12/18
5	ERH722 D <sub>1</sub>	AZ84061	Water	12/12/18
6	ERH723 D <sub>1</sub>	AZ84062	Water	12/12/18
7	ERH719MS	AZ84057MS	Water	12/12/18
8	ERH719MSD	AZ84057MSD	Water	12/12/18
9	ERH722MS	AZ84061MS	Water	12/12/18
10	ERH722MSD	AZ84061MSD	Water	12/12/18
11	181216AL - BLK			
12	181217AL - BLK			
13				

LDC #: 44152A7

## VALIDATION FINDINGS CHECKLIST

Page: 1 of 2  
Reviewer: FT  
2nd Reviewer: K

Method: Volatiles (EPA SW 846 Method 8260B)

Validation Area	Yes	No	NA	Findings/Comments
<b>I. Technical holding times</b>				
Were all technical holding times met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was cooler temperature criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>II. GC/MS Instrument performance check</b>				
Were the BFB performance results reviewed and found to be within the specified criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all samples analyzed within the 12 hour clock criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>IIIa. Initial calibration</b>				
Did the laboratory perform a 5 point calibration prior to sample analysis?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of $> 0.990$ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent relative standard deviations (%RSD) $\leq 30\%/15\%$ and relative response factors (RRF) $> 0.05$ ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>IIIb. Initial Calibration Verification</b>				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent differences (%D) $< 20\%$ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>IV. Continuing calibration</b>				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Were all percent differences (%D) $\leq 20\%$ and relative response factors (RRF) $\geq 0.05$ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>V. Laboratory Blanks</b>				
Was a laboratory blank associated with every sample in this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was a laboratory blank analyzed at least once every 12 hours for each matrix and concentration?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was there contamination in the laboratory blanks?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>VI. Field blanks</b>				
Were field blanks were identified in this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were target compounds detected in the field blanks?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>VII. Surrogate spikes</b>				
Were all surrogate percent recovery (%R) within QC limits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

LDC #: 44LS2A7

VALIDATION FINDINGS CHECKLIST

Page: 2 of 2  
 Reviewer: FT  
 2nd Reviewer: AC

Validation Area	Yes	No	NA	Findings/Comments
<b>VIII. Matrix spike/Matrix spike duplicates</b>				
Were matrix spike (MS) and matrix spike duplicate (MSD) analyzed in this SDG?	/			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	/			
<b>IX. Laboratory control samples</b>				
Was an LCS analyzed per analytical batch in this SDG?	/			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	/			
<b>X. Field duplicates</b>				
Were field duplicate pairs identified in this SDG?	/			
Were target compounds detected in the field duplicates?		/		
<b>XI. Internal standards</b>				
Were internal standard area counts within -50% to +100% of the associated calibration standard?	/			
Were retention times within + 30 seconds of the associated calibration standard?	/			
<b>XII. Compound quantitation</b>				
Did the laboratory LOQs/RLs meet the QAPP LOQs/RLs?	/			
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	/			
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	/			
<b>XIII. Target compound identification</b>				
Were relative retention times (RRT's) within + 0.06 RRT units of the standard?	/			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	/			
Were chromatogram peaks verified and accounted for?	/			
<b>XIV. System performance</b>				
System performance was found to be acceptable.	/			
<b>XV. Overall assessment of data</b>				
Overall assessment of data was found to be acceptable.	/			

## TARGET COMPOUND WORKSHEET

### METHOD: VOA

A. Chloromethane	AA. Tetrachloroethene	AAA. 1,3,5-Trimethylbenzene	AAAA. Ethyl tert-butyl ether	A1. 1,3-Butadiene
B. Bromomethane	BB. 1,1,2,2-Tetrachloroethane	BBB. 4-Chlorotoluene	BBBB. tert-Amyl methyl ether	B1. Hexane
C. Vinyl chloride	CC. Toluene	CCC. tert-Butylbenzene	CCCC. 1-Chlorohexane	C1. Heptane
D. Chloroethane	DD. Chlorobenzene	DDD. 1,2,4-Trimethylbenzene	DDDD. Isopropyl alcohol	D1. Propylene
E. Methylene chloride	EE. Ethylbenzene	EEE. sec-Butylbenzene	EEEE. Acetonitrile	E1. Freon 11
F. Acetone	FF. Styrene	FFF. 1,3-Dichlorobenzene	FFFF. Acrolein	F1. Freon 12
G. Carbon disulfide	GG. Xylenes, total	GGG. p-Isopropyltoluene	GGGG. Acrylonitrile	G1. Freon 113
H. 1,1-Dichloroethene	HH. Vinyl acetate	HHH. 1,4-Dichlorobenzene	HHHH. 1,4-Dioxane	H1. Freon 114
I. 1,1-Dichloroethane	II. 2-Chloroethylvinyl ether	III. n-Butylbenzene	IIII. Isobutyl alcohol	I1. 2-Nitropropane
J. 1,2-Dichloroethene, total	JJ. Dichlorodifluoromethane	JJJ. 1,2-Dichlorobenzene	JJJJ. Methacrylonitrile	J1. Dimethyl disulfide
K. Chloroform	KK. Trichlorofluoromethane	KKK. 1,2,4-Trichlorobenzene	KKKK. Propionitrile	K1. 2,3-Dimethyl pentane
L. 1,2-Dichloroethane	LL. Methyl-tert-butyl ether	LLL. Hexachlorobutadiene	LLLL. Ethyl ether	L1. 2,4-Dimethyl pentane
M. 2-Butanone	MM. 1,2-Dibromo-3-chloropropane	MMM. Naphthalene	MMMM. Benzyl chloride	M1. 3,3-Dimethyl pentane
N. 1,1,1-Trichloroethane	NN. Methyl ethyl ketone	NNN. 1,2,3-Trichlorobenzene	NNNN. Iodomethane	N1. 2-Methylpentane
O. Carbon tetrachloride	OO. 2,2-Dichloropropane	OOO. 1,3,5-Trichlorobenzene	OOOO. 1,1-Difluoroethane	O1. 3-Methylpentane
P. Bromodichloromethane	PP. Bromochloromethane	PPP. trans-1,2-Dichloroethene	PPPP. Tetrahydrofuran	P1. 3-Ethylpentane
Q. 1,2-Dichloropropane	QQ. 1,1-Dichloropropene	QQQ. cis-1,2-Dichloroethene	QQQQ. Methyl acetate	Q1. 2,2-Dimethylpentane
R. cis-1,3-Dichloropropene	RR. Dibromomethane	RRR. m,p-Xylenes	RRRR. Ethyl acetate	R1. 2,2,3-Trimethylbutane
S. Trichloroethene	SS. 1,3-Dichloropropane	SSS. o-Xylene	SSSS. Cyclohexane	S1. 2,2,4-Trimethylpentane
T. Dibromochloromethane	TT. 1,2-Dibromoethane	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	TTTT. Methyl cyclohexane	T1. 2-Methylhexane
U. 1,1,2-Trichloroethane	UU. 1,1,1,2-Tetrachloroethane	UUU. 1,2-Dichlorotetrafluoroethane	UUUU. Allyl chloride	U1. Nonanal
V. Benzene	VV. Isopropylbenzene	VVV. 4-Ethyltoluene	VVVV. Methyl methacrylate	V1. 2-Methylnaphthalene
W. trans-1,3-Dichloropropene	WW. Bromobenzene	WWW. Ethanol	WWWW. Ethyl methacrylate	W1. Methanol
X. Bromoform	XX. 1,2,3-Trichloropropane	XXX. Di-isopropyl ether	XXXX. cis-1,4-Dichloro-2-butene	X1. 1,2,3-Trimethylbenzene
Y. 4-Methyl-2-pentanone	YY. n-Propylbenzene	YYY. tert-Butanol	YYYY. trans-1,4-Dichloro-2-butene	Y1.
Z. 2-Hexanone	ZZ. 2-Chlorotoluene	ZZZ. tert-Butyl alcohol	ZZZZ. Pentachloroethane	Z1.

LDC#: 44152A7  
 SDG#: per cover

**VALIDATION FINDINGS WORKSHEET**  
**Initial Calibration Calculation Verification**

Page: 1 of 1  
 Reviewer: [Signature]  
 2nd Reviewer: [Signature]

Method: Gasoline (EPA SW 846 Method 8260B)

Calibration Date	System	Compound	Standard	(Y) Response	(X) Concentration
12/1318	GCMS Loki	GRO	1	12.74130278	0.8
			2	13.18824863	2.0
			3	15.26099345	4.0
			4	19.35712328	12.0
			5	27.27559621	24.0
			6	32.30160527	32.0
			7	37.40233854	40.0

**Regression Output**

**Reported**

Constant	12.202847	12.200000
Std Err of Y Est		
R Squared	0.999103	0.999000
Degrees of Freedom		
X Coefficient(s)	0.628112	0.628000
Std Err of Coef.		
Correlation Coefficient	0.999551	
Coefficient of Determination (r <sup>2</sup> )	0.999103	0.999000



### VALIDATION FINDINGS WORKSHEET Continuing Calibration Results Verification

**METHOD:** GC/MS VOA (EPA SW 846 Method 8260B)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference =  $100 * (\text{ave. RRF} - \text{RRF}) / \text{ave. RRF}$   
 $\text{RRF} = (A_x)(C_{is}) / (A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF  
 RRF = continuing calibration RRF  
 $A_x$  = Area of compound,                       $A_{is}$  = Area of associated internal standard  
 $C_x$  = Concentration of compound,         $C_{is}$  = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference internal Standard)	Average RRF (initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	ceV	12/17/18	GRU (1st internal standard)	300	308.874	309.0	3.0	3.0
			(2nd internal standard)					
			(3rd internal standard)					
			(4th internal standard)					
2			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
			(4th internal standard)					
3			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
			(4th internal standard)					
4			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
			(4th internal standard)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 44152A7

**VALIDATION FINDINGS WORKSHEET**  
**Surrogate Results Verification**

Page: 1 of 1  
 Reviewer: FT  
 2nd reviewer: DL

**METHOD:** GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS \* 100

Where: SF = Surrogate Found  
 SS = Surrogate Spiked

Sample ID: #1

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene	<u>75.0</u>	<u>22.84</u>	<u>91.4</u>	<u>91.4</u>	<u>0</u>

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

LDC #: 44152A7

**VALIDATION FINDINGS WORKSHEET**  
**Matrix Spike/Matrix Spike Duplicates Results Verification**

Page: 1 of 1  
 Reviewer: FT  
 2nd Reviewer: [Signature]

**METHOD:** GC/MS VOA (EPA Method 8260B)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery =  $100 * (SSC - SC) / SA$

Where: SSC = Spiked sample concentration  
 SA = Spike added

SC = Sample concentration

RPD =  $|MSC - MSC| * 2 / (MSC + MSDC)$

MSC = Matrix spike concentration

MSDC = Matrix spike duplicate concentration

MS/MSD sample: 748

Compound	Spike Added (ug/L)		Sample Concentration (ug/L)	Spiked Sample Concentration (ug/L)		Matrix Spike		Matrix Spike Duplicate		MS/MSD	
	MS	MSD		MS	MSD	Percent Recovery		Percent Recovery		RPD	
						Reported	Recalc	Reported	Recalc	Reported	Recalculated
<del>GRU</del> <del>1,1-Dichloroethene</del>	300	300	ND	274	272	91.3	91.3	90.7	90.7	0.73	0.73
Trichloroethene											
Benzene											
Toluene											
Chlorobenzene											

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 44152A7

**VALIDATION FINDINGS WORKSHEET**  
**Laboratory Control Sample Results Verification**

Page: 1 of 1  
 Reviewer: FT  
 2nd Reviewer: AC

**METHOD:** GC/MS VOA (EPA Method 8260B)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery =  $100 * SSC/SA$

Where: SSC = Spiked sample concentration  
 SA = Spike added

RPD =  $|LCSC - LCSDC| * 2 / (LCSC + LCSDC)$

LCSC = Laboratory control sample concentration    LCSDC = Laboratory control sample duplicate concentration

LCS ID: 1812126AL - LCS 1D

Compound	Spike Added (ug/L)		Spiked Sample Concentration (ug/L)		LCS		LCSD		LCS/LCSD	
	LCS	LCSD	LCS	LCSD	Percent Recovery		Percent Recovery		RPD	
					Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
<del>4,1-Dichloroethene</del>	300	300	274	260	91.3	91.3	86.7	86.7	5.2	5.2
<del>Trichloroethene</del>										
<del>Benzene</del>										
<del>Toluene</del>										
<del>Chlorobenzene</del>										

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.



## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** January 30, 2019

**Parameters:** Total Petroleum Hydrocarbons as Extractables

**Validation Level:** Level C & D

**Laboratory:** APPL, Inc.

**Sample Delivery Group (SDG):** 87650

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
ERH719**	AZ84057**	Water	12/12/18
ERH720	AZ84059	Water	12/12/18
ERH722	AZ84061	Water	12/13/18
ERH723	AZ84062	Water	12/13/18
ERH719(SGCU)**	AZ84057(SGCU)**	Water	12/12/18
ERH723(SGCU)	AZ84062(SGCU)	Water	12/12/18
ERH719MS	AZ84057MS	Water	12/12/18
ERH719MSD	AZ84057MSD	Water	12/12/18
ERH722MS	AZ84061MS	Water	12/13/18
ERH722MSD	AZ84061MSD	Water	12/13/18
ERH719RE**	AZ84057RE**	Water	12/12/18
ERH720RE	AZ84059RE	Water	12/12/18
ERH722RE	AZ84061RE	Water	12/13/18
ERH723RE	AZ84062RE	Water	12/13/18

Samples ending in "SGCU" underwent Silica Gel cleanup  
 \*\*Indicates sample underwent Level D validation

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Total Petroleum Hydrocarbons (TPH) as Extractables by Environmental Protection Agency (EPA) SW 846 Method 8015B

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level D data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered not detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.



## Qualification Code Reference

- H Holding times were exceeded.
- S Surrogate recovery was outside QC limits.
- C Calibration %RSD,  $r$ ,  $r^2$  or %D were noncompliant.
- R Calibration RRF was  $<0.05$ .
- B Presumed contamination from preparation (method blank).
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD was high.
- I Internal standard performance was unsatisfactory.
- M Instrument Performance Check (BFB or DFTPP) was noncompliant.
- T Presumed contamination from trip blank.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Instrument performance for pesticides was poor.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

## I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met with the following exceptions:

Sample	Compound	Total Days From Sample Collection Until Extraction	Required Holding Time (in Days) From Sample Collection Until Extraction	Flag	A or P
ERH719RE** ERH720RE	All compounds	43	7	R (all non-detects)	A
ERH722RE ERH723RE	All compounds	42	7	R (all non-detects)	A

## II. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

## III. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

## IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## V. Field Blanks

No field blanks were identified in this SDG.

## VI. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits with the following exceptions:

Sample	Surrogate	%R (Limits)	Affected Compound	Flag	A or P
ERH719**	ortho-Terphenyl	53.6 (56-125)	All compounds	UJ (all non-detects)	A
ERH719(SGCU)**	ortho-Terphenyl	49.4 (56-125)	All compounds	UJ (all non-detects)	A

## VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
ERH719MS/MSD (ERH719**)	Oil (C24-C40)	117 (41-113)	-	NA	-

Relative percent differences (RPD) were within QC limits.

## VIII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## IX. Field Duplicates

Samples ERH719\*\* and ERH720, samples ERH722 and ERH723, samples ERH719RE\*\* and ERH720RE, and samples ERH722RE and ERH723RE were identified as field duplicates. No results were detected in any of the samples.

## X. Compound Quantitation

All compound quantitations met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

## XI. Target Compound Identifications

All target compound identifications met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

## XII. Overall Assessment of Data

The analysis was conducted within all specifications of the method.

In the case where more than one result was reported for an individual sample, the least technically acceptable results were deemed unusable as follows:

Sample	Compound	Reason	Flag	A or P
ERH719RE** ERH720RE ERH722RE ERH723RE	All compounds	Extracted outside holding time.	R	A

Due to surrogate %R, data were qualified as estimated in two samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

**Red Hill Bulk Storage Facility, CTO 18F0126  
 Total Petroleum Hydrocarbons as Extractables - Data Qualification Summary -  
 SDG 87650**

Sample	Compound	Flag	A or P	Reason (Code)
ERH719** ERH719(SGCU)**	All compounds	UJ (all non-detects)	A	Surrogates (%R) (S)
ERH719RE** ERH720RE ERH722RE ERH723RE	All compounds	R	A	Overall assessment of data (D)

**Red Hill Bulk Storage Facility, CTO 18F0126  
 Total Petroleum Hydrocarbons as Extractables - Laboratory Blank Data  
 Qualification Summary - SDG 87650**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
 Total Petroleum Hydrocarbons as Extractables - Field Blank Data Qualification  
 Summary - SDG 87650**

No Sample Data Qualified in this SDG

LDC #: 44152A8  
 SDG #: 87650  
 Laboratory: APPL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**

Level C/D

Date: 1/16/19  
 Page: 1 of 1  
 Reviewer: [Signature]  
 2nd Reviewer: [Signature]

**METHOD:** GC TPH as Extractables (EPA SW 846 Method 8015B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A, SW	
II.	Initial calibration/ICV	A, Δ	% RSD / ICV ≤ 20
III.	Continuing calibration	Δ	CV ≤ 20
IV.	Laboratory Blanks	Δ	
V.	Field blanks	N	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	SW	
VIII.	Laboratory control samples	A	LCID
IX.	Field duplicates	ND	D = 1, 2, 3, 4, 11, 12, 13, 14
X.	Compound quantitation RL/LOQ/LODs	A	Not reviewed for Level C validation.
XI.	Target compound identification	A	Not reviewed for Level C validation.
XII.	Overall assessment of data	SW	

Note: A = Acceptable      ND = No compounds detected      D = Duplicate      SB = Source blank  
 N = Not provided/applicable      R = Rinsate      TB = Trip blank      OTHER:  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

\*\* Indicates sample underwent Level D validation

	Client ID	Lab ID	Matrix	Date
1	ERH719** D	AZ84057**	Water	12/12/18
2	ERH720 D	AZ84059	Water	12/12/18
3	ERH722 D <sub>1</sub>	AZ84061	Water	12/13/18
4	ERH723 D <sub>1</sub>	AZ84062	Water	12/13/18
5	ERH719(SGCU)**	AZ84057(SGCU)**	Water	12/12/18
6	ERH723(SGCU)	AZ84062(SGCU)	Water	12/12/18
7	ERH719MS	AZ84057MS	Water	12/12/18
8	ERH719MSD	AZ84057MSD	Water	12/12/18
9	ERH722MS	AZ84061MS	Water	12/13/18
10	ERH722MSD	AZ84061MSD	Water	12/13/18
11	#1 RE **	- 57 RE		12/12/18
12	#2 RE	- 59 RE		↓
13	#3 RE	- 61 RE		12/13/18
14	#4 RE	- 62 RE		12/13/18
①	181214A - BIK			
②	181214A1 - BIK			
③	190124A1 - BIK			

LDC #: 44152 AS

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2  
 Reviewer: FT  
 2nd Reviewer: A

Method:  GC  HPLC

Validation Area	Yes	No	NA	Findings/Comments
<b>I: Technical holding times</b>				
Were all technical holding times met?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Was cooler temperature criteria met?	<input checked="" type="checkbox"/>			
<b>IIa: Initial calibration</b>				
Did the laboratory perform a 5 point calibration prior to sample analysis?	<input checked="" type="checkbox"/>			
Were all percent relative standard deviations (%RSD) < 20%?	<input checked="" type="checkbox"/>			
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?			<input checked="" type="checkbox"/>	
Were the RT windows properly established?	<input checked="" type="checkbox"/>			
<b>IIb: Initial calibration verification</b>				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	<input checked="" type="checkbox"/>			
Were all percent differences (%D) < 20%?	<input checked="" type="checkbox"/>			
<b>III: Continuing calibration</b>				
Was a continuing calibration analyzed daily?	<input checked="" type="checkbox"/>			
Were all percent differences (%D) < 20%?	<input checked="" type="checkbox"/>			
Were all the retention times within the acceptance windows?	<input checked="" type="checkbox"/>			
<b>IV: Laboratory Blanks</b>				
Was a laboratory blank associated with every sample in this SDG?	<input checked="" type="checkbox"/>			
Was a laboratory blank analyzed for each matrix and concentration?	<input checked="" type="checkbox"/>			
Was there contamination in the laboratory blanks?		<input checked="" type="checkbox"/>		
<b>V: Field Blanks</b>				
Were field blanks identified in this SDG?		<input checked="" type="checkbox"/>		
Were target compounds detected in the field blanks?			<input checked="" type="checkbox"/>	
<b>VI: Surrogate spikes</b>				
Were all surrogate percent recovery (%R) within the QC limits?		<input checked="" type="checkbox"/>		
If the percent recovery (%R) of one or more surrogates was outside QC limits, was a reanalysis performed to confirm %R?			<input checked="" type="checkbox"/>	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			<input checked="" type="checkbox"/>	
<b>VII: Matrix spike/Matrix spike duplicates</b>				
Were matrix spike (MS) and matrix spike duplicate (MSD) analyzed in this SDG?	<input checked="" type="checkbox"/>			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?		<input checked="" type="checkbox"/>		
<b>VIII: Laboratory control samples</b>				
Was an LCS analyzed per analytical batch?	<input checked="" type="checkbox"/>			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	<input checked="" type="checkbox"/>			

LDC #: 44152 AB

VALIDATION FINDINGS CHECKLIST

Page: 2 of 2  
Reviewer: FT  
2nd Reviewer: R

Validation Area	Yes	No	NA	Findings/Comments
<b>IX: Field duplicates</b>				
Were field duplicate pairs identified in this SDG?	/			
Were target compounds detected in the field duplicates?	/			
<b>X: Compound quantitation</b>				
Did the laboratory LOQs/RLs meet the QAPP LOQs/RLs?	/			
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	/			
<b>XI: Target compound identification</b>				
Were the retention times of reported detects within the RT windows?	/			
<b>XIII: Overall assessment of data</b>				
Overall assessment of data was found to be acceptable.	/			





**VALIDATION FINDINGS WORKSHEET**  
**Surrogate Recovery**

METHOD:  GC  HPLC

Are surrogates required by the method? Yes  or No .

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were surrogates spiked into all samples and blanks?

Y N N/A Did all surrogate recoveries (%R) meet the QC limits?

S

#	Sample ID	Detector/Column	Surrogate Compound	%R (Limits)		Qualifications	
	1		H	53.6	( 56 - 125 )	J U A	ND
					( )		
					( )		
	5		H	49.4	( 56 - 125 )	J U A	ND
					( )		
					( )		
					( )		
					( )		
					( )		
					( )		
					( )		
					( )		
					( )		
					( )		
					( )		
					( )		
					( )		
					( )		
					( )		
					( )		
					( )		

	Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound
A	Chlorobenzene (CBZ)	G	Octacosane	M	Benzo(e)Pyrene	S	1-Chloro-3-Nitrobenzene	Y	Tetrachloro-m- xylene
B	4-Bromofluorobenzene (BFB)	H	Ortho-Terphenyl	N	Terphenyl-D14	T	3,4-Dinitrotoluene	Z	2-Bromonaphthalene
C	a,a,a-Trifluorotoluene	I	Fluorobenzene (FBZ)	O	Decachlorobiphenyl (DCB)	U	Triphenyltin	AA	Chloro-octadecane
D	Bromochlorobenzene	J	n-Triacontane	P	1-methylnaphthalene	V	Tri-n-propyltin	BB	2,4-Dichlorophenylacetic acid
E	1,4-Dichlorobutane	K	Hexacosane	Q	Dichlorophenyl Acetic Acid (DCAA)	W	Tributyl Phosphate	CC	2,5-Dibromotoluene
F	1,4-Difluorobenzene (DFB)	L	Bromobenzene	R	4-Nitrophenol	X	Triphenyl Phosphate		





LDC #: 44152 AS

**VALIDATION FINDINGS WORKSHEET**  
**Initial Calibration Calculation Verification**

Page: 1 of 1  
Reviewer: FT  
2nd Reviewer: AC

METHOD: GC X HPLC \_\_\_\_\_

The calibration factors (CF), average CF, and relative standard deviation (%RSD) were recalculated for compounds identified below using the following calculations:

CF = A/C  
average CF = sum of the CF/number of standards  
%RSD = 100 \* (S/X)

Where: A = Area of compound  
C = Concentration of compound  
S = Standard deviation of calibration factors  
X = Mean of calibration factors

#	Standard ID	Calibration Date	Compound	Reported ( std=250ppb)	Recalculated ( std=250ppb)	Reported Average CF (Initial)	Recalculated Average CF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL	9/5/2018	Diesel C10-C24)	1547772	1547772	1638598	1638598	10.0	10.0
	Apollo								





LDC #: 44152 A8

## VALIDATION FINDINGS WORKSHEET

### Matrix Spike/Matrix Spike Duplicates Results Verification

Page: 1 of 1

Reviewer: FT  
 2nd Reviewer: [Signature]

METHOD:  GC  HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

$$\% \text{Recovery} = 100 * (\text{SSC} - \text{SC}) / \text{SA}$$

Where

SSC = Spiked sample concentration

MS = Matrix spike

SC = Sample concentration

MSD = Matrix spike duplicate

SA = Spike added

$$\text{RPD} = \frac{(|\text{SSC} - \text{SSC}_{\text{MSD}}| * 2)}{(\text{SSC} + \text{SSC}_{\text{MSD}})} * 100$$

MS/MSD samples: 9 + 10

Compound	Spike Added (ug/L)		Sample Cono. (ug/L)	Spike Sample Concentration (ug/L)		Matrix spike		Matrix Spike Duplicate		MS/MSD	
	MS	MSD		MS	MSD	Percent Recovery		Percent Recovery		RPD	
						Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)											
Diesel C <sub>10</sub> -C <sub>24</sub> (8015)	1250	1250	ND	1280	1520	102	102	122	122	17.1	17.1
Benzene (8021B)											
Methane (RSK-175)											
2,4-D (8151)											
Dinoseb (8151)											
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)											
2,4,6-Trinitrotoluene (8330)											
Phorate (8141A)											
Malathion (8141A)											
Formaldehyde (8315A)											

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.



LDC #: 44152A8

**VALIDATION FINDINGS WORKSHEET**

Page: 1 of 1

**Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification**

Reviewer: FT

2nd Reviewer: AC

METHOD: GC HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

$\% \text{Recovery} = 100 * (\text{SSC}/\text{SA})$

$\text{RPD} = \frac{((\text{SSCLCS} - \text{SSCLCSD}) * 2)}{(\text{SSCLCS} + \text{SSCLCSD})} * 100$

Where SSC = Spiked sample concentration

LCS = Laboratory Control Sample

SA = Spike added

LCSD = Laboratory Control Sample duplicate

LCS/LCSD samples: 181214A LCS/D

Compound	Spike Added ( <u>ng/L</u> )		Spike Sample Concentration ( <u>ng/L</u> )		LCS		LCSD		LCS/LCSD		
	LCS	LCSD	LCS	LCSD	Percent Recovery		Percent Recovery		RPD		
					Reported	Recalc.	Reported	Recalc.	Reported	Recalc.	
Gasoline (8015)											
Diesel <u>ep-c24</u> (8015)	<u>1250</u>	<u>1250</u>	<u>1180</u>	<u>1220</u>	<u>94.4</u>	<u>94.4</u>	<u>97.6</u>	<u>97.6</u>	<u>3.3</u>	<u>3.3</u>	
Benzene (8021B)											
Methane (RSK-175)											
2,4-D (8151)											
Dinoseb (8151)											
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)											
2,4,6-Trinitrotoluene (8330)											
Phorate (8141A)											
Malathion (8141A)											
Formaldehyde (8315A)											

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.



**Laboratory Data Consultants, Inc.  
Data Validation Report**

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** January 30, 2019

**Parameters:** Methane

**Validation Level:** Level C & D

**Laboratory:** APPL, Inc.

**Sample Delivery Group (SDG):** 87650

<b>Sample Identification</b>	<b>Laboratory Sample Identification</b>	<b>Matrix</b>	<b>Collection Date</b>
ERH719**	AZ84057**	Water	12/12/18
ERH718	AZ84058	Water	12/12/18
ERH721	AZ84060	Water	12/12/18
ERH722	AZ84061	Water	12/13/18

\*\*Indicates sample underwent Level D validation

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Methane by Method RSK-175

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level D data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## Qualification Code Reference

- H Holding times were exceeded.
- S Surrogate recovery was outside QC limits.
- C Calibration %RSD,  $r$ ,  $r^2$  or %D were noncompliant.
- R Calibration RRF was  $<0.05$ .
- B Presumed contamination from preparation (method blank).
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD was high.
- I Internal standard performance was unsatisfactory.
- M Instrument Performance Check (BFB or DFTPP) was noncompliant.
- T Presumed contamination from trip blank.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Instrument performance for pesticides was poor.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

## I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## II. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% with the following exceptions:

Date	Standard	Compound	%RSD	Associated Samples	Flag	A or P
11/18/18	ICAL	Methane	21	All samples in SDG 87650	UJ (all non-detects)	A

Retention time windows were established as required by the method for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

## III. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 20.0%.

Retention times of all compounds in the calibration standards were within the established retention time windows for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

## IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## V. Field Blanks

Samples ERH718 and ERH721 were identified as trip blanks. No contaminants were found.

## **VI. Matrix Spike/Matrix Spike Duplicates**

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

## **VII. Laboratory Control Samples**

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## **VIII. Field Duplicates**

No field duplicates were identified in this SDG.

## **IX. Compound Quantitation**

All compound quantitations met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

## **X. Target Compound Identification**

All target compound identifications met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

## **XI. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to initial calibration %RSD, data were qualified as estimated in four samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.



**Red Hill Bulk Storage Facility, CTO 18F0126  
Methane - Data Qualification Summary - SDG 87650**

Sample	Compound	Flag	A or P	Reason (Code)
ERH719** ERH718 ERH721 ERH722	Methane	UJ (all non-detects)	A	Initial calibration (%RSD) (C)

**Red Hill Bulk Storage Facility, CTO 18F0126  
Methane - Laboratory Blank Data Qualification Summary - SDG 87650**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Methane - Field Blank Data Qualification Summary - SDG 87650**

No Sample Data Qualified in this SDG

LDC #: 44152A51  
 SDG #: 87650  
 Laboratory: APPL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**

Level C/D

Date: 1/17/19  
 Page: 1 of 1  
 Reviewer: FA  
 2nd Reviewer: FA

**METHOD:** GC Methane (Method RSK-175)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	Δ / Δ	
II.	Initial calibration/ICV	SWA	% PSD / ICV ≤ 20
III.	Continuing calibration	A	CCV ≤ 20
IV.	Laboratory Blanks	A	
V.	Field blanks	NP	TB = 2, 3
VI.	Matrix spike/Matrix spike duplicates	N	CS
VII.	Laboratory control samples	A	res ID
VIII.	Field duplicates	N	
IX.	Compound quantitation RL/LOQ/LODs	A	Not reviewed for Level C validation.
X.	Target compound identification	A	Not reviewed for Level C validation.
XI.	Overall assessment of data	A	

Note: A = Acceptable      ND = No compounds detected      D = Duplicate      SB=Source blank  
 N = Not provided/applicable      R = Rinsate      TB = Trip blank      OTHER:  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

\*\* Indicates sample underwent Level D validation

	Client ID	Lab ID	Matrix	Date
1	ERH719**	AZ84057**	Water	12/12/18
2	ERH718      TB	AZ84058	Water	12/12/18
3	ERH721      TB	AZ84060	Water	12/12/18
4	ERH722	AZ84061	Water	12/12/18
5				
6				
7				
8				
9				
10				
11				
12				
13				

Notes:

1	181220A - B/L				
2	181221A - B/L				

LDC #: 44152 AS

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2  
 Reviewer: FT  
 2nd Reviewer: [Signature]

Method:  GC  HPLC

Validation Area	Yes	No	NA	Findings/Comments
<b>I. Technical holding times</b>				
Were all technical holding times met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was cooler temperature criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>IIa. Initial calibration</b>				
Did the laboratory perform a 5 point calibration prior to sample analysis?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent relative standard deviations (%RSD) < 20%?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Were the RT windows properly established?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>IIb. Initial calibration verification</b>				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent differences (%D) < 20%?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>III. Continuing calibration</b>				
Was a continuing calibration analyzed daily?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent differences (%D) < 20%?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all the retention times within the acceptance windows?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>IV. Laboratory Blanks</b>				
Was a laboratory blank associated with every sample in this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was a laboratory blank analyzed for each matrix and concentration?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was there contamination in the laboratory blanks?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>V. Field Blanks</b>				
Were field blanks identified in this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were target compounds detected in the field blanks?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>VI. Surrogate spikes</b>				
Were all surrogate percent recovery (%R) within the QC limits?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If the percent recovery (%R) of one or more surrogates was outside QC limits, was a reanalysis performed to confirm %R?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>VII. Matrix spike/Matrix spike duplicates</b>				
Were matrix spike (MS) and matrix spike duplicate (MSD) analyzed in this SDG?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>VIII. Laboratory control samples</b>				
Was an LCS analyzed per analytical batch?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

LDC #: 4452 AS 1

VALIDATION FINDINGS CHECKLIST

Page: 2 of 2  
 Reviewer: FT  
 2nd Reviewer: A

Validation Area	Yes	No	NA	Findings/Comments
<b>IX: Field duplicates</b>				
Were field duplicate pairs identified in this SDG?		/		
Were target compounds detected in the field duplicates?			✓	
<b>X: Compound quantitation</b>				
Did the laboratory LOQs/RLs meet the QAPP LOQs/RLs?	/			
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	/			
<b>XI: Target compound identification</b>				
Were the retention times of reported detects within the RT windows?	/			
<b>XIII: Overall assessment of data</b>				
Overall assessment of data was found to be acceptable.	/			

LDC #: 44152AS/

# VALIDATION FINDINGS WORKSHEET

## Initial Calibration

Page: 1 of 1

Reviewer: FT

2nd Reviewer: [Signature]

METHOD:  GC  HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

- Y  N  N/A Was a 5 point calibration curve performed?
- Y  N  N/A Was a linear fit used for evaluation? If yes, the acceptance criteria for each compound is %RSD less than or equal to 20.0%.
- Y  N  N/A Was a curve fit used for evaluation? If yes, what was the acceptance criteria used for evaluation? \_\_\_\_\_
- Y  N  N/A Did the initial calibration meet the acceptance criteria?
- Y  N  N/A Was initial calibration performed at the required frequency?

### Level IV Only

- Y  N  N/A Were the retention time windows properly established for all compounds?
- Y  N  N/A Were compounds run at the required concentrations in the initial calibrations? (c)

#	Date	Standard ID	Column / Detector	Compound	Finding RSD Limit $\leq$ 20%	Associated Samples	Qualifications
	11/18/18	ICAL		Methane	21	All	U/A All (NO)

Comments \_\_\_\_\_

LDC #: 14/S2AS/

**VALIDATION FINDINGS WORKSHEET**  
**Initial Calibration Calculation Verification**

Page: 1 of 1  
 Reviewer: FT  
 2nd Reviewer: *[Signature]*

METHOD: GC X HPLC \_\_\_\_\_

The calibration factors (CF), average CF, and relative standard deviation (%RSD) were recalculated for compounds identified below using the following calculations:

CF = A/C  
 average CF = sum of the CF/number of standards  
 %RSD = 100 \* (S/X)

Where: A = Area of compound  
 C = Concentration of compound  
 S = Standard deviation of calibration factors  
 X = Mean of calibration factors

#	Standard ID	Calibration Date	Compound	Reported ( std=20.850ppb)	Recalculated ( std=20.850ppb)	Reported Average CF (Initial)	Recalculated Average CF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL	11/18/2018	methane	14054	14054	13501	13501	21.0	21.0

LDC #: 44/52 AS/

**VALIDATION FINDINGS WORKSHEET**  
**Continuing Calibration Results Verification**

Page: 1 of 1  
 Reviewer: FT  
 2nd Reviewer: R

METHOD: GC  HPLC

The percent difference (%D) of the initial calibration average Calibration Factors (CF) and the continuing calibration CF were recalculated for the compounds identified below using the following calculation:

% Difference =  $100 * (\text{ave. CF} - \text{CF}) / \text{ave. CF}$       Where: ave. CF = initial calibration average CF  
 CF = continuing calibration CF  
 A = Area of compound  
 C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(ICAL)/ CCV Conc.	Reported	Recalculated	Reported	Recalculated
					CF/ Conc. CCV	CF/ Conc. CCV	%D	%D
1	ccv 1902	12/20/18	Methane	13501	12344	12344	8.6	8.6
2	ccv 1042	12/21/18	↓	↓	12204	12204	9.6	9.6
3								
4								

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 44152A5/

**VALIDATION FINDINGS WORKSHEET**

Page: 1 of 1

**Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification**

Reviewer: FT

2nd Reviewer: AC

METHOD:  GC  HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

$\% \text{Recovery} = 100 * (\text{SSC}/\text{SA})$

$\text{RPD} = ((\text{SSCLCS} - \text{SSCLCSD}) * 2) / (\text{SSCLCS} + \text{SSCLCSD}) * 100$

Where SSC = Spiked sample concentration

LCS = Laboratory Control Sample

SA = Spike added

LCSD = Laboratory Control Sample duplicate

LCS/LCSD samples: 181221A - LCS/D

Compound	Spike Added (ug/L)		Spike Sample Concentration (ug/L)		LCS		LCSD		LCS/LCSD		
	LCS	LCSD	LCS	LCSD	Percent Recovery		Percent Recovery		RPD		
					Reported	Recalc.	Reported	Recalc.	Reported	Recalc.	
Gasoline (8015)											
Diesel (8015)											
Benzene (8021B)											
Methane (RSK-175)	83.4	83.4	75.4	80.6	90.4	90.4	96.6	96.6	6.7	6.7	
2,4-D (8151)											
Dinoseb (8151)											
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)											
2,4,6-Trinitrotoluene (8330)											
Phorate (8141A)											
Malathion (8141A)											
Formaldehyde (8315A)											

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.





**Red Hill Bulk Storage Facility, CTO 18F0126 - SDG 87650/18L0338  
LDC 44152**

AECOM

EPA_NO	LAB_ID	DF	ANALYTE	COLL_DATE	ANAL_DATE	QCLev	RESULT	UNITS	LAB_Q	LOQ	LOD	REV	Q_C
<b>METHOD: 2320B</b>													
ERH719	AZ84057	1	ALKALINITY, TOTAL (AS CaCO3)	12/12/2018	12/18/2018 6:25:00 PM	D	71.4	MG_L		2.0	1.70		
ERH719	AZ84057	1	BICARBONATE	12/12/2018	12/18/2018 6:25:00 PM	D	71.4	MG_L		2.0	1.70		
ERH719	AZ84057	1	CARBONATE (AS CO3)	12/12/2018	12/18/2018 6:25:00 PM	D	1.70	MG_L	U	2.0	1.70		U
ERH722	AZ84061	1	ALKALINITY, TOTAL (AS CaCO3)	12/13/2018	12/18/2018 6:31:00 PM	C	62.7	MG_L		2.0	1.70		
ERH722	AZ84061	1	BICARBONATE	12/13/2018	12/18/2018 6:31:00 PM	C	62.7	MG_L		2.0	1.70		
ERH722	AZ84061	1	CARBONATE (AS CO3)	12/13/2018	12/18/2018 6:31:00 PM	C	1.70	MG_L	U	2.0	1.70		U
<b>METHOD: 300.0</b>													
ERH719	AZ84057	5	CHLORIDE (AS CL)	12/12/2018	12/19/2018 9:56:00 AM	D	107	MG_L	D	5.0	1.00		
ERH719	AZ84057	1	NITROGEN, NITRATE (AS N)	12/12/2018	12/14/2018 11:51:00 AM	D	2.3	MG_L		0.5	0.18	J	h
ERH719	AZ84057	1	SULFATE (AS SO4)	12/12/2018	12/14/2018 11:51:00 AM	D	17.0	MG_L		1.0	0.20		
ERH722	AZ84061	5	CHLORIDE (AS CL)	12/13/2018	12/19/2018 10:06:00 AM	C	105	MG_L	D	5.0	1.00		
ERH722	AZ84061	1	NITROGEN, NITRATE (AS N)	12/13/2018	12/14/2018 11:41:00 AM	C	2.2	MG_L		0.5	0.18		
ERH722	AZ84061	1	SULFATE (AS SO4)	12/13/2018	12/14/2018 11:41:00 AM	C	14.4	MG_L		1.0	0.20		
<b>METHOD: 3500-FE-B</b>													
ERH719	AZ84057	1	Iron, Ion (Fe2+)	12/12/2018	12/14/2018 11:33:00 AM	D	0.30	MG_L	J	1.0	0.32	J	
ERH722	AZ84061	1	Iron, Ion (Fe2+)	12/13/2018	12/14/2018 11:34:00 AM	C	0.35	MG_L	J	1.0	0.32	J	
<b>METHOD: 353.2</b>													
ERH719	AZ84057	1	NITROGEN, NITRATE-NITRITE	12/12/2018	12/19/2018 5:04:00 PM	D	0.61	MG_L		0.10	0.100		
ERH722	AZ84061	1	NITROGEN, NITRATE-NITRITE	12/13/2018	12/19/2018 5:15:00 PM	C	0.61	MG_L		0.10	0.100		
<b>METHOD: 8015B_E</b>													
ERH719	AZ84057	1	C10-C24 DIESEL RANGE ORG SILICA GEL CLEAN UP	12/12/2018	1/2/2019 3:50:00 PM	D	25.00	UG_L	U	40.0	25.00	UJ	s
ERH719	AZ84057	1	C10-C24 DIESEL RANGE ORGANICS	12/12/2018	12/20/2018 5:08:00 PM	D	25.00	UG_L	U	40.0	25.00	UJ	s
ERH719	AZ84057	1	C10-C24 DIESEL RANGE ORGANICS	12/12/2018	1/25/2019 5:24:00 PM	D	25.00	UG_L	U	40.0	25.00	R	d
ERH719	AZ84057	1	C24-C40 OIL RANGE ORGANICS SILICA GEL CLEAN UP	12/12/2018	1/2/2019 3:50:00 PM	D	40.00	UG_L	U	40.0	40.00	UJ	s
ERH719	AZ84057	1	C24-C40 TOTAL PETROLEUM HYDROCARBONS, OIL RANGE	12/12/2018	1/25/2019 5:24:00 PM	D	40.00	UG_L	U	40.0	40.00	R	d
ERH719	AZ84057	1	C24-C40 TOTAL PETROLEUM HYDROCARBONS, OIL RANGE	12/12/2018	12/20/2018 5:08:00 PM	D	40.00	UG_L	U	40.0	40.00	UJ	s

EPA_NO	LAB_ID	DF	ANALYTE	COLL_DATE	ANAL_DATE	QCLev	RESULT	UNITS	LAB_Q	LOQ	LOD	REV	Q_C
<b>METHOD: 8015B_E</b>													
ERH720	AZ84059	1	C10-C24 DIESEL RANGE ORGANICS	12/12/2018	12/19/2018 8:03:00 PM	C	25.00	UG_L	U	40.0	25.00	U	
ERH720	AZ84059	1	C10-C24 DIESEL RANGE ORGANICS	12/12/2018	1/25/2019 5:44:00 PM	C	25.00	UG_L	U	40.0	25.00	R	d
ERH720	AZ84059	1	C24-C40 TOTAL PETROLEUM HYDROCARBONS, OIL RANGE	12/12/2018	1/25/2019 5:44:00 PM	C	40.00	UG_L	U	40.0	40.00	R	d
ERH720	AZ84059	1	C24-C40 TOTAL PETROLEUM HYDROCARBONS, OIL RANGE	12/12/2018	12/19/2018 8:03:00 PM	C	40.00	UG_L	U	40.0	40.00	U	
ERH722	AZ84061	1	C10-C24 DIESEL RANGE ORGANICS	12/13/2018	1/25/2019 6:04:00 PM	C	25.00	UG_L	U	40.0	25.00	R	d
ERH722	AZ84061	1	C10-C24 DIESEL RANGE ORGANICS	12/13/2018	12/19/2018 8:23:00 PM	C	25.00	UG_L	U	40.0	25.00	U	
ERH722	AZ84061	1	C24-C40 TOTAL PETROLEUM HYDROCARBONS, OIL RANGE	12/13/2018	1/25/2019 6:04:00 PM	C	40.00	UG_L	U	40.0	40.00	R	d
ERH722	AZ84061	1	C24-C40 TOTAL PETROLEUM HYDROCARBONS, OIL RANGE	12/13/2018	12/19/2018 8:23:00 PM	C	40.00	UG_L	U	40.0	40.00	U	
ERH723	AZ84062	1	C10-C24 DIESEL RANGE ORG SILICA GEL CLEAN UP	12/13/2018	1/2/2019 4:10:00 PM	C	25.00	UG_L	U	40.0	25.00	U	
ERH723	AZ84062	1	C10-C24 DIESEL RANGE ORGANICS	12/13/2018	12/20/2018 5:28:00 PM	C	25.00	UG_L	U	40.0	25.00	U	
ERH723	AZ84062	1	C10-C24 DIESEL RANGE ORGANICS	12/13/2018	1/25/2019 6:24:00 PM	C	25.00	UG_L	U	40.0	25.00	R	d
ERH723	AZ84062	1	C24-C40 OIL RANGE ORGANICS SILICA GEL CLEAN UP	12/13/2018	1/2/2019 4:10:00 PM	C	40.00	UG_L	U	40.0	40.00	U	
ERH723	AZ84062	1	C24-C40 TOTAL PETROLEUM HYDROCARBONS, OIL RANGE	12/13/2018	12/20/2018 5:28:00 PM	C	40.00	UG_L	U	40.0	40.00	U	
ERH723	AZ84062	1	C24-C40 TOTAL PETROLEUM HYDROCARBONS, OIL RANGE	12/13/2018	1/25/2019 6:24:00 PM	C	40.00	UG_L	U	40.0	40.00	R	d
<b>METHOD: 8260B</b>													
ERH719	AZ84057	1	BENZENE	12/12/2018	12/20/2018 2:09:00 AM	D	0.30	UG_L	U	1.0	0.30	U	
ERH719	AZ84057	1	ETHYLBENZENE	12/12/2018	12/20/2018 2:09:00 AM	D	0.50	UG_L	U	1.0	0.50	U	
ERH719	AZ84057	1	PETROLEUM HYDROCARBONS C6-C10	12/12/2018	12/16/2018 2:35:00 PM	D	18.0	UG_L	U	20	18.0	U	
ERH719	AZ84057	1	TOLUENE	12/12/2018	12/20/2018 2:09:00 AM	D	0.30	UG_L	U	1.0	0.30	U	
ERH719	AZ84057	1	Xylenes	12/12/2018	12/20/2018 2:09:00 AM	D	0.30	UG_L	U	2.0	0.30	U	
ERH718	AZ84058	1	BENZENE	12/12/2018	12/20/2018 2:37:00 AM	C	0.30	UG_L	U	1.0	0.30	U	
ERH718	AZ84058	1	ETHYLBENZENE	12/12/2018	12/20/2018 2:37:00 AM	C	0.50	UG_L	U	1.0	0.50	U	
ERH718	AZ84058	1	PETROLEUM HYDROCARBONS C6-C10	12/12/2018	12/16/2018 3:04:00 PM	C	18.0	UG_L	U	20	18.0	U	
ERH718	AZ84058	1	TOLUENE	12/12/2018	12/20/2018 2:37:00 AM	C	0.30	UG_L	U	1.0	0.30	U	
ERH718	AZ84058	1	Xylenes	12/12/2018	12/20/2018 2:37:00 AM	C	0.30	UG_L	U	2.0	0.30	U	
ERH720	AZ84059	1	BENZENE	12/12/2018	12/17/2018 4:44:00 PM	C	0.30	UG_L	U	1.0	0.30	U	
ERH720	AZ84059	1	ETHYLBENZENE	12/12/2018	12/17/2018 4:44:00 PM	C	0.50	UG_L	U	1.0	0.50	U	

EPA_NO	LAB_ID	DF	ANALYTE	COLL_DATE	ANAL_DATE	QCLev	RESULT	UNITS	LAB_Q	LOQ	LOD	REV	Q_C
<b>METHOD: 8260B</b>													
ERH720	AZ84059	1	PETROLEUM HYDROCARBONS C6-C10	12/12/2018	12/17/2018 4:43:00 PM	C	18.0	UG_L	U	20	18.0	U	
ERH720	AZ84059	1	TOLUENE	12/12/2018	12/17/2018 4:44:00 PM	C	0.30	UG_L	U	1.0	0.30	U	
ERH720	AZ84059	1	Xylenes	12/12/2018	12/17/2018 4:44:00 PM	C	0.30	UG_L	U	2.0	0.30	U	
ERH721	AZ84060	1	BENZENE	12/13/2018	12/17/2018 5:13:00 PM	C	0.30	UG_L	U	1.0	0.30	U	
ERH721	AZ84060	1	ETHYLBENZENE	12/13/2018	12/17/2018 5:13:00 PM	C	0.50	UG_L	U	1.0	0.50	U	
ERH721	AZ84060	1	PETROLEUM HYDROCARBONS C6-C10	12/13/2018	12/17/2018 5:12:00 PM	C	18.0	UG_L	U	20	18.0	U	
ERH721	AZ84060	1	TOLUENE	12/13/2018	12/17/2018 5:13:00 PM	C	0.30	UG_L	U	1.0	0.30	U	
ERH721	AZ84060	1	Xylenes	12/13/2018	12/17/2018 5:13:00 PM	C	0.30	UG_L	U	2.0	0.30	U	
ERH722	AZ84061	1	BENZENE	12/13/2018	12/17/2018 5:41:00 PM	C	0.30	UG_L	U	1.0	0.30	U	
ERH722	AZ84061	1	ETHYLBENZENE	12/13/2018	12/17/2018 5:41:00 PM	C	0.50	UG_L	U	1.0	0.50	U	
ERH722	AZ84061	1	PETROLEUM HYDROCARBONS C6-C10	12/13/2018	12/17/2018 5:40:00 PM	C	18.0	UG_L	U	20	18.0	U	
ERH722	AZ84061	1	TOLUENE	12/13/2018	12/17/2018 5:41:00 PM	C	0.30	UG_L	U	1.0	0.30	U	
ERH722	AZ84061	1	Xylenes	12/13/2018	12/17/2018 5:41:00 PM	C	0.30	UG_L	U	2.0	0.30	U	
ERH723	AZ84062	1	BENZENE	12/13/2018	12/20/2018 9:07:00 PM	C	0.30	UG_L	U	1.0	0.30	U	
ERH723	AZ84062	1	ETHYLBENZENE	12/13/2018	12/20/2018 9:07:00 PM	C	0.50	UG_L	U	1.0	0.50	U	
ERH723	AZ84062	1	PETROLEUM HYDROCARBONS C6-C10	12/13/2018	12/16/2018 4:59:00 PM	C	18.0	UG_L	U	20	18.0	U	
ERH723	AZ84062	1	TOLUENE	12/13/2018	12/20/2018 9:07:00 PM	C	0.30	UG_L	U	1.0	0.30	U	
ERH723	AZ84062	1	Xylenes	12/13/2018	12/20/2018 9:07:00 PM	C	0.30	UG_L	U	2.0	0.30	U	
<b>METHOD: 8270D</b>													
ERH719	AZ84057	1	2-(2-METHOXY ETHOXY)-ETHANOL	12/12/2018	12/19/2018 11:39:00 AM	D	80.0	UG_L	U	100	80.0	U	
ERH719	AZ84057	1	PHENOL	12/12/2018	12/20/2018 1:29:00 PM	D	4.00	UG_L	U	5.0	4.00	U	
ERH720	AZ84059	1	2-(2-METHOXY ETHOXY)-ETHANOL	12/12/2018	12/19/2018 1:08:00 PM	C	80.0	UG_L	U	100	80.0	U	
ERH720	AZ84059	1	PHENOL	12/12/2018	12/20/2018 1:57:00 PM	C	4.00	UG_L	U	5.0	4.00	U	
ERH722	AZ84061	1	1-METHYL-3-PROPYLCYCLOHEXANE	12/13/2018	12/20/2018 2:24:00 PM	C	7.5	UG_L	T	0	0		
ERH722	AZ84061	1	2-(2-METHOXY ETHOXY)-ETHANOL	12/13/2018	12/19/2018 2:19:00 PM	C	80.0	UG_L	U	100	80.0	U	
ERH722	AZ84061	1	PENTANEDIOIC ACID, DIMETHYL ESTER	12/13/2018	12/20/2018 2:24:00 PM	C	15	UG_L	T	0	0		
ERH722	AZ84061	1	PHENOL	12/13/2018	12/20/2018 2:24:00 PM	C	4.00	UG_L	U	5.0	4.00	U	

EPA_NO	LAB_ID	DF	ANALYTE	COLL_DATE	ANAL_DATE	QCLev	RESULT	UNITS	LAB_Q	LOQ	LOD	REV	Q_C
<b>METHOD: 8270D</b>													
ERH722	AZ84061	1	TETRACHLOROETHYLENE(PCE)	12/13/2018	12/20/2018 2:24:00 PM	C	77	UG_L	T	0	0		
ERH722	AZ84061	1	TOLUENE	12/13/2018	12/20/2018 2:24:00 PM	C	87	UG_L	T	0	0		
ERH723	AZ84062	1	2-(2-METHOXY ETHOXY)-ETHANOL	12/13/2018	12/19/2018 2:42:00 PM	C	80.0	UG_L	U	100	80.0	U	
ERH723	AZ84062	1	Hexanedioic Acid Dioctyl Ester	12/13/2018	12/20/2018 2:52:00 PM	C	11	UG_L	T	0	0		
ERH723	AZ84062	1	PHENOL	12/13/2018	12/20/2018 2:52:00 PM	C	4.00	UG_L	U	5.0	4.00	U	
ERH723	AZ84062	1	TETRACHLOROETHYLENE(PCE)	12/13/2018	12/20/2018 2:52:00 PM	C	78	UG_L	T	0	0		
ERH723	AZ84062	1	TOLUENE	12/13/2018	12/20/2018 2:52:00 PM	C	14	UG_L	T	0	0		
<b>METHOD: 8270DSIM</b>													
ERH719	AZ84057	1	1-METHYLNAPHTHALENE	12/12/2018	12/19/2018 4:17:00 PM	D	0.10	UG_L	U	0.2	0.10	U	
ERH719	AZ84057	1	2-METHYLNAPHTHALENE	12/12/2018	12/19/2018 4:17:00 PM	D	0.10	UG_L	U	0.2	0.10	U	
ERH719	AZ84057	1	NAPHTHALENE	12/12/2018	12/19/2018 4:17:00 PM	D	0.10	UG_L	U	0.2	0.10	U	
ERH720	AZ84059	1	1-METHYLNAPHTHALENE	12/12/2018	12/19/2018 4:47:00 PM	C	0.10	UG_L	U	0.2	0.10	U	
ERH720	AZ84059	1	2-METHYLNAPHTHALENE	12/12/2018	12/19/2018 4:47:00 PM	C	0.10	UG_L	U	0.2	0.10	U	
ERH720	AZ84059	1	NAPHTHALENE	12/12/2018	12/19/2018 4:47:00 PM	C	0.10	UG_L	U	0.2	0.10	U	
ERH722	AZ84061	1	1-METHYLNAPHTHALENE	12/13/2018	12/19/2018 6:14:00 PM	C	0.10	UG_L	U	0.2	0.10	U	
ERH722	AZ84061	1	2-METHYLNAPHTHALENE	12/13/2018	12/19/2018 6:14:00 PM	C	0.10	UG_L	U	0.2	0.10	U	
ERH722	AZ84061	1	NAPHTHALENE	12/13/2018	12/19/2018 6:14:00 PM	C	0.10	UG_L	U	0.2	0.10	U	
ERH723	AZ84062	1	1-METHYLNAPHTHALENE	12/13/2018	12/19/2018 6:43:00 PM	C	0.10	UG_L	U	0.2	0.10	U	
ERH723	AZ84062	1	2-METHYLNAPHTHALENE	12/13/2018	12/19/2018 6:43:00 PM	C	0.10	UG_L	U	0.2	0.10	U	
ERH723	AZ84062	1	NAPHTHALENE	12/13/2018	12/19/2018 6:43:00 PM	C	0.10	UG_L	U	0.2	0.10	U	
<b>METHOD: 9060</b>													
ERH719	18L0338-01	1	TOTAL ORGANIC CARBON	12/13/2018	12/20/2018	D	0.5	MG_L	U	0.5	0.5	U	
ERH722	18L0338-02	1	TOTAL ORGANIC CARBON	12/13/2018	12/20/2018	C	0.5	MG_L	U	0.5	0.5	U	
<b>METHOD: RSK175</b>													
ERH719	AZ84057	1	METHANE	12/12/2018	12/21/2018 10:59:00 AM	D	1.00	UG_L	U	5.0	1.00	UJ	c
ERH718	AZ84058	1	METHANE	12/12/2018	12/20/2018 6:54:00 PM	C	1.00	UG_L	U	5.0	1.00	UJ	c
ERH721	AZ84060	1	METHANE	12/13/2018	12/20/2018 6:57:00 PM	C	1.00	UG_L	U	5.0	1.00	UJ	c
ERH722	AZ84061	1	METHANE	12/13/2018	12/20/2018 7:00:00 PM	C	1.00	UG_L	U	5.0	1.00	UJ	c

LDC #: 44152

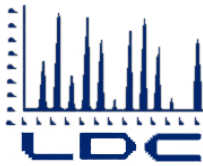
**EDD POPULATION COMPLETENESS WORKSHEET**

Date: 2/7  
 Page: 1 of 1  
 2<sup>nd</sup> Reviewer: [Signature]

The LDC job number listed above was entered by [Signature]  
 Entered from Body or Summary

	EDD Process		Comments/Action
I.	EDD Completeness	-	
Ia.	- All methods present?	Y	
Ib.	- All samples present/match report?	Y	
Ic.	- All reported analytes present?	Y	
Id.	- 10% or <u>100%</u> verification of EDD?	Y	
II.	EDD Preparation/Entry	-	
IIa.	- Carryover U/J?	Y	
IIb.	- Reason Codes used? If so, note which codes.	Y	
IIc.	- Additional Information (QC Level, Validator, Validated Y/N, etc.)	Y	
III.	Reasonableness Checks	-	
IIIa.	- Do all qualified ND results have ND qualifier (e.g. UJ)?	Y	
IIIb.	- Do all qualified detect results have detect qualifier (e.g. J)?	Y	
IIIc.	- If reason codes are used, do all qualified results have reason code field populated, and vice versa?	Y	
IIId.	- Does the detect flag require changing for blank qualifier? If so, are all U results marked ND?	+	
IIIe.	- Do blank concentrations in report match EDD where data was qualified due to blank contamination?	-	
IIIf.	- Were multiple results reported due to dilutions/reanalysis? If so, were results qualified appropriately?	Y/Y	
IIIg.	- Are there any discrepancies between the data packet and the EDD?	N	

Notes: \*see discrepancy sheet



## LABORATORY DATA CONSULTANTS, INC.

2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

AECOM  
1001 Bishop Street Suite 1600  
Honolulu, HI 96813  
ATTN: Ms. Margie Pascua  
[Margie.Pascua@aecom.com](mailto:Margie.Pascua@aecom.com)

March 5, 2019

SUBJECT: Red Hill Bulk Storage Facility, CTO 18F0126, Data Validation

Dear Ms. Pascua,

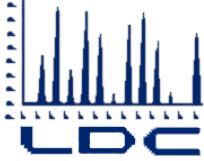
Enclosed are the final validation reports for the fractions listed below. This SDG was received on February 19, 2019. Attachment 1 is a summary of the samples that were reviewed for each analysis.

### LDC Project #44408:

<u>SDG #</u>	<u>Fraction</u>
87940	Volatiles, Phenol & Tentatively Identified Compounds, Polynuclear Aromatic Hydrocarbons, 2-(2-Methoxyethoxy)-ethanol, Wet Chemistry, Gasoline Range Organics, Total Petroleum Hydrocarbons as Extractables, Methane

The data validation was performed under Level C & D validation guidelines. The analyses were validated using the following documents and variances, as applicable to each method:

- Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i, Revision 02; January 2017
- Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i, Revision 01, April 2017
- Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i, Revision 00, September 2017
- Sampling and Analysis Plan, Addendum 03 Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i, Revision 00; June 2018
- Project Procedures Manual, U.S. Naval Facilities Engineering Command Environmental Restoration Program, NAVFAC Pacific, DON 2015
- U.S. Department of Defense Quality Systems Manual for Environmental Laboratories, Version 5.1, 2017



## LABORATORY DATA CONSULTANTS, INC.

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- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIB, November 2004; update IV, February 2007; update V, July 2014

Please feel free to contact us if you have any questions.

Sincerely,

Stella Cuenco

[scuenco@lab-data.com](mailto:scuenco@lab-data.com)

Operations Manager/Senior Chemist



EDD 90/10 C/D	<b>LDC #44408 (AECOM-Honolulu, HI / Red Hill Bulk Storage Facility, CTO 18F0126)</b>
---------------	--

LDC	SDG#	DATE REC'D	(2) DATE DUE	BTEX (8260B)		Phenol & TICs (8270D)		(3)PAHs (8270D -SIM)		2,2-MEE (8270D-M)		GRO (8260B)		TPH-E (8015B)		SGCU TPH-E (8015B)		Methane (175)		Alk. (2320B)		Cl,SO <sub>4</sub> NO <sub>3</sub> (300.0)		Fe II (3500-Fe B)		NO <sub>3</sub> /NO <sub>2</sub> -N (353.2)		TOC (9060A)									
				W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S					W	S	W	S
Matrix: Water/Soil																																					
A	87940	02/19/19	03/05/19	8	0	4	0	4	0	4	0	8	0	4	0	0	0	7	0	3	0	3	0	3	0	3	0	3	0								
A	87940	02/19/19	03/05/19	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0								
Total	T/SC			9	0	5	0	5	0	5	0	9	0	5	0	1	0	8	0	4	0	4	0	4	0	4	0	4	0	0	0	0	0	0	67		

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** February 28, 2019

**Parameters:** Volatiles

**Validation Level:** Level C & D

**Laboratory:** APPL, Inc.

**Sample Delivery Group (SDG):** 87940

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
ERH729	AZ85561	Water	01/23/19
ERH730	AZ85562	Water	01/23/19
ERH731	AZ85563	Water	01/23/19
ERH735	AZ85564	Water	01/23/19
ERH736	AZ85565	Water	01/23/19
ERH740	AZ85566	Water	01/23/19
ERH741**	AZ85567**	Water	01/23/19
ERH748	AZ85568	Water	01/23/19
ERH749	AZ85569	Water	01/23/19
ERH730MS	AZ85562MS	Water	01/23/19
ERH730MSD	AZ85562MSD	Water	01/23/19

\*\*Indicates sample underwent Level D validation

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) which are Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX) by Environmental Protection Agency (EPA) SW 846 Method 8260B

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level D data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## Qualification Code Reference

- H Holding times were exceeded.
- S Surrogate recovery was outside QC limits.
- C Calibration %RSD,  $r$ ,  $r^2$  or %D were noncompliant.
- R Calibration RRF was  $<0.05$ .
- B Presumed contamination from preparation (method blank).
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD was high.
- I Internal standard performance was unsatisfactory.
- M Instrument Performance Check (BFB or DFTPP) was noncompliant.
- T Presumed contamination from trip blank.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Instrument performance for pesticides was poor.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. GC/MS Instrument Performance Check**

A bromofluorobenzene (BFB) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

## **III. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0% for all compounds.

Average relative response factors (RRF) for all compounds were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

## **IV. Continuing Calibration**

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0% for all compounds.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

## **V. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **VI. Field Blanks**

Samples ERH729, ERH735, ERH740, and ERH748 were identified as trip blanks. No contaminants were found.

## VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

## VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
ERH730MS/MSD (ERH730)	Toluene	69.8 (80-121)	70.0 (80-121)	UJ (all non-detects)	A

Relative percent differences (RPD) were within QC limits.

## IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
190125ALLCS/D (All samples in SDG 87940)	Toluene	-	78.9 (80-121)	UJ (all non-detects)	P

Relative percent differences (RPD) were within QC limits.

## X. Field Duplicates

Samples ERH730 and ERH731 were identified as field duplicates. No results were detected in any of the samples.

## XI. Internal Standards

All internal standard areas and retention times were within QC limits.

## XII. Compound Quantitation

All compound quantitations met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

### **XIII. Target Compound Identifications**

All target compound identifications met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

### **XIV. System Performance**

The system performance was acceptable for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

### **XV. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to MS/MSD %R and LCS/LCSD %R, data were qualified as estimated in nine samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.



**Red Hill Bulk Storage Facility, CTO 18F0126  
 Volatiles - Data Qualification Summary - SDG 87940**

Sample	Compound	Flag	A or P	Reason (Code)
ERH730	Toluene	UJ (all non-detects)	A	Matrix spike/Matrix spike duplicate (%R) (Q)
ERH729 ERH730 ERH731 ERH735 ERH736 ERH740 ERH741** ERH748 ERH749	Toluene	UJ (all non-detects)	P	Laboratory control samples (%R) (L)

**Red Hill Bulk Storage Facility, CTO 18F0126  
 Volatiles - Laboratory Blank Data Qualification Summary - SDG 87940**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
 Volatiles - Field Blank Data Qualification Summary - SDG 87940**

No Sample Data Qualified in this SDG

LDC #: 44408A1a  
 SDG #: 87940  
 Laboratory: APPL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**

Level C/D

Date: 2/27/19  
 Page: 1 of 1  
 Reviewer: FA  
 2nd Reviewer: TE

**METHOD:** GC/MS Volatiles (BTEX)(EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	GC/MS Instrument performance check	Δ	
III.	Initial calibration/ICV	A/A	% PSD ≤ 15      ICV ≤ 20
IV.	Continuing calibration / closing cal	A	cal ≤ 20
V.	Laboratory Blanks	Δ	
VI.	Field blanks	ND	TB = 1, 4, 6, 8
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	SW	
IX.	Laboratory control samples	SW	Lab ID
X.	Field duplicates	ND	ID = 2, 3
XI.	Internal standards	Δ	
XII.	Compound quantitation RL/LOQ/LODs	Δ	Not reviewed for Level C validation.
XIII.	Target compound identification	Δ	Not reviewed for Level C validation.
XIV.	System performance	A	Not reviewed for Level C validation.
XV.	Overall assessment of data	A	

Note: A = Acceptable      ND = No compounds detected      D = Duplicate      SB=Source blank  
 N = Not provided/applicable      R = Rinsate      TB = Trip blank      OTHER:  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

\*\* Indicates sample underwent Level D validation

	Client ID	Lab ID	Matrix	Date
1	ERH729      TB	AZ85561	Water	01/23/19
2	ERH730      D	AZ85562	Water	01/23/19
3	ERH731      D	AZ85563	Water	01/23/19
4	ERH735      TB	AZ85564	Water	01/23/19
5	ERH736	AZ85565	Water	01/23/19
6	ERH740      TB	AZ85566	Water	01/23/19
7	ERH741      **	AZ85567      **	Water	01/23/19
8	ERH748      TB	AZ85568	Water	01/23/19
9	ERH749	AZ85569	Water	01/23/19
10	ERH730MS	AZ85562MS	Water	01/23/19
11	ERH730MSD	AZ85562MSD	Water	01/23/19
12				
13	1902SAL - BLK			

LDC #: 44408A1a

**VALIDATION FINDINGS CHECKLIST**

Page: 1 of 2  
 Reviewer: FT  
 2nd Reviewer: A

**Method: Volatiles (EPA SW 846 Method 8260B)**

Validation Area	Yes	No	NA	Findings/Comments
<b>I. Technical holding times</b>				
Were all technical holding times met?	/			
Was cooler temperature criteria met?	/			
<b>II. GC/MS Instrument performance check</b>				
Were the BFB performance results reviewed and found to be within the specified criteria?	/			
Were all samples analyzed within the 12 hour clock criteria?	/			
<b>IIIa. Initial calibration</b>				
Did the laboratory perform a 5 point calibration prior to sample analysis?	/			
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	/			
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of > 0.990?			/	
Were all percent relative standard deviations (%RSD) ≤ 30%/15% and relative response factors (RRF) > 0.05?	/			
<b>IIIb. Initial Calibration Verification</b>				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	/			
Were all percent differences (%D) < 20%?	/			
<b>IV. Continuing calibration</b>				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	/			
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	/			
Were all percent differences (%D) ≤ 20% and relative response factors (RRF) ≥ 0.05?	/			
<b>V. Laboratory Blanks</b>				
Was a laboratory blank associated with every sample in this SDG?	/			
Was a laboratory blank analyzed at least once every 12 hours for each matrix and concentration?	/			
Was there contamination in the laboratory blanks?		/		
<b>VI. Field blanks</b>				
Were field blanks were identified in this SDG?	/			
Were target compounds detected in the field blanks?		/		
<b>VII. Surrogate spikes</b>				
Were all surrogate percent recovery (%R) within QC limits?	/			
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			/	

LDC #: 44408A1a

**VALIDATION FINDINGS CHECKLIST**

Page: 2 of 2  
 Reviewer: FT  
 2nd Reviewer: AE

Validation Area	Yes	No	NA	Findings/Comments
<b>VIII. Matrix spike/Matrix spike duplicates</b>				
Were matrix spike (MS) and matrix spike duplicate (MSD) analyzed in this SDG?	/			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?		/		
<b>IX. Laboratory control samples</b>				
Was an LCS analyzed per analytical batch in this SDG?	/			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?		/		
<b>X. Field duplicates</b>				
Were field duplicate pairs identified in this SDG?	/			
Were target compounds detected in the field duplicates?		/		
<b>XI. Internal standards</b>				
Were internal standard area counts within -50% to +100% of the associated calibration standard?	/			
Were retention times within + 30 seconds of the associated calibration standard?	/			
<b>XII. Compound quantitation</b>				
Did the laboratory LOQs/RLs meet the QAPP LOQs/RLs?	/			
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	/			
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	/			
<b>XIII. Target compound identification</b>				
Were relative retention times (RRT's) within + 0.06 RRT units of the standard?	/			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	/			
Were chromatogram peaks verified and accounted for?	/			
<b>XIV. System performance</b>				
System performance was found to be acceptable.	/			
<b>XV. Overall assessment of data</b>				
Overall assessment of data was found to be acceptable.	/			

## TARGET COMPOUND WORKSHEET

### METHOD: VOA

A. Chloromethane	AA. Tetrachloroethene	AAA. 1,3,5-Trimethylbenzene	AAAA. Ethyl tert-butyl ether	A1. 1,3-Butadiene
B. Bromomethane	BB. 1,1,2,2-Tetrachloroethane	BBB. 4-Chlorotoluene	BBBB. tert-Amyl methyl ether	B1. Hexane
C. Vinyl chloride	CC. Toluene	CCC. tert-Butylbenzene	CCCC. 1-Chlorohexane	C1. Heptane
D. Chloroethane	DD. Chlorobenzene	DDD. 1,2,4-Trimethylbenzene	DDDD. Isopropyl alcohol	D1. Propylene
E. Methylene chloride	EE. Ethylbenzene	EEE. sec-Butylbenzene	EEEE. Acetonitrile	E1. Freon 11
F. Acetone	FF. Styrene	FFF. 1,3-Dichlorobenzene	FFFF. Acrolein	F1. Freon 12
G. Carbon disulfide	GG. Xylenes, total	GGG. p-Isopropyltoluene	GGGG. Acrylonitrile	G1. Freon 113
H. 1,1-Dichloroethene	HH. Vinyl acetate	HHH. 1,4-Dichlorobenzene	HHHH. 1,4-Dioxane	H1. Freon 114
I. 1,1-Dichloroethane	II. 2-Chloroethylvinyl ether	III. n-Butylbenzene	IIII. Isobutyl alcohol	I1. 2-Nitropropane
J. 1,2-Dichloroethene, total	JJ. Dichlorodifluoromethane	JJJ. 1,2-Dichlorobenzene	JJJJ. Methacrylonitrile	J1. Dimethyl disulfide
K. Chloroform	KK. Trichlorofluoromethane	KKK. 1,2,4-Trichlorobenzene	KKKK. Propionitrile	K1. 2,3-Dimethyl pentane
L. 1,2-Dichloroethane	LL. Methyl-tert-butyl ether	LLL. Hexachlorobutadiene	LLLL. Ethyl ether	L1. 2,4-Dimethyl pentane
M. 2-Butanone	MM. 1,2-Dibromo-3-chloropropane	MMM. Naphthalene	MMMM. Benzyl chloride	M1. 3,3-Dimethyl pentane
N. 1,1,1-Trichloroethane	NN. Methyl ethyl ketone	NNN. 1,2,3-Trichlorobenzene	NNNN. Iodomethane	N1. 2-Methylpentane
O. Carbon tetrachloride	OO. 2,2-Dichloropropane	OOO. 1,3,5-Trichlorobenzene	OOOO. 1,1-Difluoroethane	O1. 3-Methylpentane
P. Bromodichloromethane	PP. Bromochloromethane	PPP. trans-1,2-Dichloroethene	PPPP. Tetrahydrofuran	P1. 3-Ethylpentane
Q. 1,2-Dichloropropane	QQ. 1,1-Dichloropropene	QQQ. cis-1,2-Dichloroethene	QQQQ. Methyl acetate	Q1. 2,2-Dimethylpentane
R. cis-1,3-Dichloropropene	RR. Dibromomethane	RRR. m,p-Xylenes	RRRR. Ethyl acetate	R1. 2,2,3-Trimethylbutane
S. Trichloroethene	SS. 1,3-Dichloropropane	SSS. o-Xylene	SSSS. Cyclohexane	S1. 2,2,4-Trimethylpentane
T. Dibromochloromethane	TT. 1,2-Dibromoethane	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	TTTT. Methyl cyclohexane	T1. 2-Methylhexane
U. 1,1,2-Trichloroethane	UU. 1,1,1,2-Tetrachloroethane	UUU. 1,2-Dichlorotetrafluoroethane	UUUU. Allyl chloride	U1. Nonanal
V. Benzene	VV. Isopropylbenzene	VVV. 4-Ethyltoluene	VVVV. Methyl methacrylate	V1. 2-Methylnaphthalene
W. trans-1,3-Dichloropropene	WW. Bromobenzene	WWW. Ethanol	WWWWW. Ethyl methacrylate	W1. Methanol
X. Bromoform	XX. 1,2,3-Trichloropropane	XXX. Di-isopropyl ether	XXXX. cis-1,4-Dichloro-2-butene	X1. 1,2,3-Trimethylbenzene
Y. 4-Methyl-2-pentanone	YY. n-Propylbenzene	YYY. tert-Butanol	YYYY. trans-1,4-Dichloro-2-butene	Y1.
Z. 2-Hexanone	ZZ. 2-Chlorotoluene	ZZZ. tert-Butyl alcohol	ZZZZ. Pentachloroethane	Z1.

LDC #: 44408A 1a

### VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1  
Reviewer: FT  
2nd Reviewer: [Signature]

METHOD : GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

- Y N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.
- Y N N/A Was a MS/MSD analyzed every 20 samples of each matrix?
- Y N N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	10 & 11	ce	69.8 (80-121)	70.0 (80-121)	( )	2	J/MS/A (ND)
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		

Q

LDC #: 44468A1a

### VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

Page: 1 of 1  
Reviewer: FT  
2nd Reviewer: [Signature]

METHOD: GC/MS BNA (EPA SW 846 Method 8270C)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a LCS required?

Y N N/A Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

(L)

#	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	190125AL	CC	( )	78.9 (80-91)	( )	All	J/W/P (ND)
	190125AL	CC	( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		

LDC #: 44408A/a

**VALIDATION FINDINGS WORKSHEET**  
**Initial Calibration Calculation Verification**

Page: 1 of 1  
 Reviewer: FT  
 2nd Reviewer: [Signature]

METHOD: GCMS 8260B

The calibration factors (RRFF), average RRFF, and relative standard deviation (%RSD) were recalculated for compounds identified below using the following calculations:

$RRF = (A_x)(C_{is}) / (A_{is})(C_x)$

average RRF = sum of the RRFs/number of standards

$\%RSD = 100 * (S/X)$

Where:

A<sub>x</sub> = Area of compound

C<sub>x</sub> = Concentration of compound

S = Standard deviation of the RRFs

X = Mean of the RRFs

A<sub>is</sub> = Area of associated internal standard

C<sub>is</sub> = Concentration of internal Standard

#	Standard ID	Calibration Date	Compound	Reported (RRF 5 std)	Recalculated (RRF 5 std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
	ICAL	1/21/2019	V (IS 1)	0.8882	0.8882	0.8881	0.8881	4.5	4.5
	Loki		EE (IS 2)	0.7119	0.7119	0.7272	0.7272	5.1	5.1



**VALIDATION FINDINGS WORKSHEET**  
**Continuing Calibration Results Verification**

**METHOD:** GC/MS VOA (EPA SW 846 Method 8260B)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

$$\% \text{ Difference} = 100 * (\text{ave. RRF} - \text{RRF}) / \text{ave. RRF}$$

$$\text{RRF} = (A_x)(C_{is}) / (A_{is})(C_x)$$

Where: ave. RRF = initial calibration average RRF

RRF = continuing calibration RRF

$A_x$  = Area of compound,

$A_{is}$  = Area of associated internal standard

$C_x$  = Concentration of compound,

$C_{is}$  = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference internal Standard)	Average RRF (initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	0125L02 CCV	1/25/19	✓ (1st internal standard)	0.8881	0.9418	0.9418	6.0	6.0
			EE (2nd internal standard)	0.7272	0.6816	0.6816	6.3	6.3
			(3rd internal standard)					
			(4th internal standard)					
2			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
			(4th internal standard)					
3			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
			(4th internal standard)					
4			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
			(4th internal standard)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 44408A/a

**VALIDATION FINDINGS WORKSHEET**  
**Surrogate Results Verification**

Page: 1 of 1  
 Reviewer: FT  
 2nd reviewer: [Signature]

**METHOD:** GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS \* 100

Where: SF = Surrogate Found  
 SS = Surrogate Spiked

Sample ID: 7

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane	25.0	28.534	114	114	0
1,2-Dichloroethane-d4	↓	28.399	114	114	↓
Toluene-d8	↓	26.268	105	105	↓
Bromofluorobenzene	↓	22.613	90.5	90.5	↓

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

LDC #: 44408A/a

**VALIDATION FINDINGS WORKSHEET**  
**Matrix Spike/Matrix Spike Duplicates Results Verification**

Page: 1 of 1

Reviewer: FT

2nd Reviewer: [Signature]

**METHOD:** GC/MS VOA (EPA Method 8260B)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery =  $100 * (SSC - SC) / SA$

Where: SSC = Spiked sample concentration  
 SA = Spike added

SC = Sample concentration

RPD =  $|MSC - MSC1| * 2 / (MSC + MSC1)$

MSC = Matrix spike concentration

MSC1 = Matrix spike duplicate concentration

MS/MSD sample: 10 + 11

Compound	Spike Added (ug/l)		Sample Concentration (ug/l)	Spiked Sample Concentration (ug/l)		Matrix Spike		Matrix Spike Duplicate		MS/MSD	
	MS	MSD		MS	MSD	Percent Recovery		Percent Recovery		RPD	
						Reported	Recalc	Reported	Recalc	Reported	Recalculated
1,1-Dichloroethene											
Trichloroethene											
Benzene	10.0	10.0	ND	9.26	9.00	92.6	92.6	90.0	90.0	2.8	2.8
Toluene	10.0	10.0	ND	6.98	7.00	69.8	69.8	70.0	70.0	0.29	0.29
Chlorobenzene											

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 4440BA/a

**VALIDATION FINDINGS WORKSHEET**  
**Laboratory Control Sample Results Verification**

Page: 1 of 1  
 Reviewer: FT  
 2nd Reviewer: AY

**METHOD:** GC/MS VOA (EPA Method 8260B)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 \* SSC/SA

Where: SSC = Spiked sample concentration  
 SA = Spike added

RPD = | LCSC - LCSDC | \* 2 / (LCSC + LCSDC)

LCSC = Laboratory control sample concentration    LCSDC = Laboratory control sample duplicate concentration

LCS ID: 190125 AL    LES 1D

Compound	Spike Added (ug/L)		Spiked Sample Concentration (ug/L)		LCS		LCSD		LCS/LCSD	
	LCS	LCSD	LCS	LCSD	Percent Recovery		Percent Recovery		RPD	
					Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
1,1-Dichloroethene										
Trichloroethene										
Benzene	10.0	10.0	11.1	10.5	111	111	105	105	5.6	5.6
Toluene	10.0	10.0	<del>7.80</del> 7.89 8.26	7.89	82.6	82.6	78.9	78.9	4.6	4.6
Chlorobenzene										

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

**VALIDATION FINDINGS WORKSHEET**  
**Sample Calculation Verification**

**METHOD:** GC/MS VOA (EPA SW 846 Method 8260B)

Y N N/A  
Y N N/A

Were all reported results recalculated and verified for all level IV samples?

Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

$$\text{Concentration} = \frac{(A_x)(I_s)(DF)}{(A_{is})(RRF)(V_o)(\%S)}$$

- A<sub>x</sub> = Area of the characteristic ion (EICP) for the compound to be measured
- A<sub>is</sub> = Area of the characteristic ion (EICP) for the specific internal standard
- I<sub>s</sub> = Amount of internal standard added in nanograms (ng)
- RRF = Relative response factor of the calibration standard.
- V<sub>o</sub> = Volume or weight of sample pruged in milliliters (ml) or grams (g).
- Df = Dilution factor.
- %S = Percent solids, applicable to soils and solid matrices only.

Example:

Sample I.D. 190125AL ✓  
LCS

$$\text{Conc.} = \frac{(144642) (25.0)}{(366144) (0.8881)}$$

= 11.1 ug/L

#	Sample ID	Compound	Reported Concentration (ug/L)	Calculated Concentration (ug/L)	Qualification
	<u>LCS</u>	<u>✓</u>	<u>11.1</u>	<u>11.1</u>	

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** February 28, 2019

**Parameters:** Phenol & Tentatively Identified Compounds

**Validation Level:** Level C & D

**Laboratory:** APPL, Inc.

**Sample Delivery Group (SDG):** 87940

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
ERH730	AZ85562	Water	01/23/19
ERH731	AZ85563	Water	01/23/19
ERH736	AZ85565	Water	01/23/19
ERH741**	AZ85567**	Water	01/23/19
ERH749	AZ85569	Water	01/23/19
ERH730MS	AZ85562MS	Water	01/23/19
ERH730MSD	AZ85562MSD	Water	01/23/19

\*\*Indicates sample underwent Level D validation

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Phenol & Tentatively Identified Compounds (TICs) by Environmental Protection Agency (EPA) SW 846 Method 8270D

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level D data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.



## Qualification Code Reference

- H Holding times were exceeded.
- S Surrogate recovery was outside QC limits.
- C Calibration %RSD,  $r$ ,  $r^2$  or %D were noncompliant.
- R Calibration RRF was  $<0.05$ .
- B Presumed contamination from preparation (method blank).
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD was high.
- I Internal standard performance was unsatisfactory.
- M Instrument Performance Check (BFB or DFTPP) was noncompliant.
- T Presumed contamination from trip blank.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Instrument performance for pesticides was poor.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

## I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## II. GC/MS Instrument Performance Check

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

## III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0%.

Average relative response factors (RRF) were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

## IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0%.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0%.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

## V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks with the following exceptions:

Blank ID	Extraction Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
190130A-BLK	01/30/19	Benzene, methyl- (2.18) Ethene, tetrachloro- (2.80) Butanedioic acid, dimethyl ester (5.53) Pentanedioic acid, dimethyl ester (6.37) Hexanedioic acid, dimethyl ester (7.15)	218.0 ppb 84.6 ppb 7.7 ppb 18.4 ppb 5.3 ppb	ERH730 ERH731 ERH749

Blank ID	Extraction Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
190128A-BLK	01/28/19	Benzene, methyl- (2.19) Ethene, tetrachloro- (2.82) Butanedioic acid, dimethyl ester (5.54) Pentanedioic acid, dimethyl ester (6.38) Hexanedioic acid, dimethyl ester (7.16)	12.6 ppb 105.1 ppb 7.2 ppb 17.4 ppb 5.2 ppb	ERH736 ERH741**

Sample concentrations were compared to concentrations detected in the laboratory blanks. The sample concentrations were either not detected or were significantly greater (>10X for TICs, >5X for other contaminants) than the concentrations found in the associated laboratory blanks.

## VI. Field Blanks

No field blanks were identified in this SDG.

## VII. Surrogates

Surrogates were added to all samples as required by the method. Surrogate recoveries (%R) were not within QC limits for sample ERH749. Using professional judgment, no data were qualified when one base or one acid surrogate %R was outside the QC limits and the %R was greater than or equal to 10%.

## VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits.

Relative percent differences (RPD) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
ERH730MS/MSD (ERH730)	Phenol	27.2 (≤20)	NA	-

## IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## X. Field Duplicates

Samples ERH730 and ERH731 were identified as field duplicates. No results were detected in any of the samples.

## **XI. Internal Standards**

All internal standard areas and retention times were within QC limits.

## **XII. Compound Quantitation**

All compound quantitations met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

## **XIII. Target Compound Identifications**

All target compound identifications met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

## **XIV. System Performance**

The system performance was acceptable for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

## **XV. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**Red Hill Bulk Storage Facility, CTO 18F0126  
Phenol & Tentatively Identified Compounds - Data Qualification Summary - SDG  
87940**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Phenol & Tentatively Identified Compounds - Laboratory Blank Data Qualification  
Summary - SDG 87940**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Phenol & Tentatively Identified Compounds - Field Blank Data Qualification  
Summary - SDG 87940**

No Sample Data Qualified in this SDG

LDC #: 44408A2a  
 SDG #: 87940  
 Laboratory: APPL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**  
 Level C/D

Date: 2/27/19  
 Page: 1 of 1  
 Reviewer: F7  
 2nd Reviewer: JL

**METHOD:** GC/MS Phenol & TICs (EPA SW 846 Method 8270D)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	0% PSD ≤ 15 ICV ≤ 20
IV.	Continuing calibration /closing	Δ	CCV ≤ 20/50
V.	Laboratory Blanks	SW	
VI.	Field blanks	N	
VII.	Surrogate spikes	SW	
VIII.	Matrix spike/Matrix spike duplicates	SW	
IX.	Laboratory control samples	A	less 10
X.	Field duplicates	ND	D = 1, 2
XI.	Internal standards	Δ	
XII.	Compound quantitation RL/LOQ/LODs	Δ	Not reviewed for Level C validation.
XIII.	Target compound identification	Δ	Not reviewed for Level C validation.
XIV.	System performance	A	Not reviewed for Level C validation.
XV.	Overall assessment of data	Δ	

Note: A = Acceptable      ND = No compounds detected      D = Duplicate      SB=Source blank  
 N = Not provided/applicable      R = Rinsate      TB = Trip blank      OTHER:  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

\*\* Indicates sample underwent Level D validation

	Client ID	Lab ID	Matrix	Date
1	ERH730 <sup>W</sup> D	AZ85562 <sup>W</sup>	Water	01/23/19
2	ERH731 D	AZ85563	Water	01/23/19
3	ERH736	AZ85565	Water	01/23/19
4	ERH741 **	AZ85567 **	Water	01/23/19
5	ERH749	AZ85569	Water	01/23/19
6	ERH730MS	AZ85562MS	Water	01/23/19
7	ERH730MSD	AZ85562MSD	Water	01/23/19
8				
9				
10				

Notes:

1	190128A - BIK				
2	190130A - BIK				

**Method:** Semivolatiles (EPA SW 846 Method 8270D)

Validation Area	Yes	No	NA	Findings/Comments
<b>I. Technical holding times</b>				
Were all technical holding times met?	/			
Was cooler temperature criteria met?	/			
<b>II. GC/MS Instrument performance check</b>				
Were the DFTPP performance results reviewed and found to be within the specified criteria?	/			
Were all samples analyzed within the 12 hour clock criteria?	/			
<b>IIIa. Initial calibration</b>				
Did the laboratory perform a 5 point calibration prior to sample analysis?	/			
Were all percent relative standard deviations (%RSD) ≤15% and relative response factors (RRF) within method criteria?	/			
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of > 0.990?			/	
<b>IIIb. Initial Calibration Verification</b>				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	/			
Were all percent differences (%D) ≤ 20%?	/			
<b>IV. Continuing calibration</b>				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	/			
Were all percent differences (%D) ≤ 20% and relative response factors (RRF) within method criteria?	/			
<b>V. Laboratory Blanks</b>				
Was a laboratory blank associated with every sample in this SDG?	/			
Was a laboratory blank analyzed at least once every 12 hours for each matrix and concentration?	/			
Was there contamination in the laboratory blanks? If yes, please see the blanks validation findings worksheet.			/	
<b>VI. Field blanks</b>				
Were field blanks were identified in this SDG?		/		
Were target compounds detected in the field blanks?			/	
<b>VII. Surrogate spikes</b>				
Were all surrogate percent recovery (%R) within QC limits?		/		
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?		/		
If any percent recoveries (%R) was less than 10%, was a reanalysis performed to confirm %R ?			/	
<b>VIII. Matrix spike/Matrix spike duplicates</b>				
Were matrix spike (MS) and matrix spike duplicate (MSD) analyzed in this SDG?	/			

Validation Area	Yes	No	NA	Findings/Comments
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?		<input checked="" type="checkbox"/>		
<b>IX. Laboratory control samples</b>				
Was an LCS analyzed per extraction batch?	<input checked="" type="checkbox"/>			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	<input checked="" type="checkbox"/>			
<b>X. Field duplicates</b>				
Were field duplicate pairs identified in this SDG?	<input checked="" type="checkbox"/>			
Were target compounds detected in the field duplicates?		<input checked="" type="checkbox"/>		
<b>XI. Internal standards</b>				
Were internal standard area counts within -50% to +100% of the associated calibration standard?	<input checked="" type="checkbox"/>			
Were retention times within + 30 seconds of the associated calibration standard?	<input checked="" type="checkbox"/>			
<b>XII. Compound quantitation</b>				
Did the laboratory LOQs/RLs meet the QAPP LOQs/RLs?	<input checked="" type="checkbox"/>			
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	<input checked="" type="checkbox"/>			
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	<input checked="" type="checkbox"/>			
<b>XIII. Target compound identification</b>				
Were relative retention times (RRT's) within + 0.06 RRT units of the standard?	<input checked="" type="checkbox"/>			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	<input checked="" type="checkbox"/>			
Were chromatogram peaks verified and accounted for?	<input checked="" type="checkbox"/>			
<b>XIV. System performance</b>				
System performance was found to be acceptable.	<input checked="" type="checkbox"/>			
<b>XV. Overall assessment of data</b>				
Overall assessment of data was found to be acceptable.	<input checked="" type="checkbox"/>			



## VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS SVOA

A. Phenol	CC. Dimethylphthalate	EEE. Bis(2-ethylhexyl)phthalate	GGGG. C30-Hopane	I1. Methyl methanesulfonate
B. Bis (2-chloroethyl) ether	DD. Acenaphthylene	FFF. Di-n-octylphthalate	HHHH. 1-Methylphenanthrene	J1. Ethyl methanesulfonate
C. 2-Chlorophenol	EE. 2,6-Dinitrotoluene	GGG. Benzo(b)fluoranthene	IIII. 1,4-Dioxane	K1. o,o',o''-Triethylphosphorothioate
D. 1,3-Dichlorobenzene	FF. 3-Nitroaniline	HHH. Benzo(k)fluoranthene	JJJJ. Acetophenone	L1. n-Phenylene diamine
E. 1,4-Dichlorobenzene	GG. Acenaphthene	III. Benzo(a)pyrene	KKKK. Atrazine	M1. 1,4-Naphthoquinone
F. 1,2-Dichlorobenzene	HH. 2,4-Dinitrophenol	JJJ. Indeno(1,2,3-cd)pyrene	LLLL. Benzaldehyde	N1. N-Nitro-o-toluidine
G. 2-Methylphenol	II. 4-Nitrophenol	KKK. Dibenz(a,h)anthracene	MMMM. Caprolactam	O1. 1,3,5-Trinitrobenzene
H. 2,2'-Oxybis(1-chloropropane)	JJ. Dibenzofuran	LLL. Benzo(g,h,i)perylene	NNNN. 2,6-Dichlorophenol	P1. Pentachlorobenzene
I. 4-Methylphenol	KK. 2,4-Dinitrotoluene	MMM. Bis(2-Chloroisopropyl)ether	OOOO. 1,2-Diphenylhydrazine	Q1. 4-Aminobiphenyl
J. N-Nitroso-di-n-propylamine	LL. Diethylphthalate	NNN. Aniline	PPPP. 3-Methylphenol	R1. 2-Naphthylamine
K. Hexachloroethane	MM. 4-Chlorophenyl-phenyl ether	OOO. N-Nitrosodimethylamine	QQQQ. 3&4-Methylphenol	S1. Triphenylene
L. Nitrobenzene	NN. Fluorene	PPP. Benzoic Acid	RRRR. 4-Dimethyldibenzothiophene (4MDT)	T1. Octachlorostyrene
M. Isophorone	OO. 4-Nitroaniline	QQQ. Benzyl alcohol	SSSS. 2/3-Dimethyldibenzothiophene (4MDT)	U1. Famphur
N. 2-Nitrophenol	PP. 4,6-Dinitro-2-methylphenol	RRR. Pyridine	TTTT. 1-Methyldibenzothiophene (1MDT)	V1. 1,4-phenylenediamine
O. 2,4-Dimethylphenol	QQ. N-Nitrosodiphenylamine	SSS. Benzidine	UUUU.. 2,3,4,6-Tetrachlorophenol	W1. Methapyrilene
P. Bis(2-chloroethoxy)methane	RR. 4-Bromophenyl-phenylether	TTT. 1-Methylnaphthalene	VVVV. 1,2,4,5-Tetrachlorobenzene	X1. Pentachloroethane
Q. 2,4-Dichlorophenol	SS. Hexachlorobenzene	UUU. Benzo(b)thiophene	WWWW.. 2-Picoline	Y1. 3,3'-Dimethylbenzidine
R. 1,2,4-Trichlorobenzene	TT. Pentachlorophenol	VVV. Benzonaphthothiophene	XXXX. 3-Methylcholanthrene	Z1. o-Toluidine
S. Naphthalene	UU. Phenanthrene	WWW. Benzo(e)pyrene	YYYY. a,a-Dimethylphenethylamine	A2. 1-Naphthylamine
T. 4-Chloroaniline	VV. Anthracene	XXX. 2,6-Dimethylnaphthalene	ZZZZ. Hexachloropropene	B2. 4-Aminobiphenyl
U. Hexachlorobutadiene	WW. Carbazole	YYY. 2,3,5-Trimethylnaphthalene	A1. N-Nitrosodiethylamine	C2. 4-Nitroquinoline-1-oxide
V. 4-Chloro-3-methylphenol	XX. Di-n-butylphthalate	ZZZ. Perylene	B1. N-Nitrosodi-n-butylamine	D2. Hexachloropene
W. 2-Methylnaphthalene	YY. Fluoranthene	AAAA. Dibenzothiophene	C1. N-Nitrosomethylethylamine	E2. Bis (2-chloro-1-methylethyl) ether
X. Hexachlorocyclopentadiene	ZZ. Pyrene	BBBB. Benzo(a)fluoranthene	D1. N-Nitrosomorpholine	F2. Bifenthrin
Y. 2,4,6-Trichlorophenol	AAA. Butylbenzylphthalate	CCCC. Benzo(b)fluorene	E1. N-Nitrosopyrrolidine	G2. Cyfluthrin
Z. 2,4,5-Trichlorophenol	BBB. 3,3'-Dichlorobenzidine	DDDD. cis/trans-Decalin	F1. Phenacetin	H2. Cypermethrin
AA. 2-Chloronaphthalene	CCC. Benzo(a)anthracene	EEEE. Biphenyl	G1. 2-Acetylaminofluorene	I2. Permethrin (cis/trans)
BB. 2-Nitroaniline	DDD. Chrysene	FFFF. Retene	H1. Pronamide	J2. 5-Nitro-o-toluidine

### VALIDATION FINDINGS WORKSHEET Blanks

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

- Y N N/A Was a method blank analyzed for each matrix?
- Y N N/A Was a method blank analyzed for each concentration preparation level?
- Y N N/A Was a method blank associated with every sample?
- Y N N/A Was the blank contaminated? If yes, please see qualification below.

Blank extraction date: 1/30/19 Blank analysis date: 2/1/19

Conc. units: ug/L

Associated Samples: 1, 2, 5

Compound	Blank ID								
	<u>190130A-BLK</u>								
<u>TIC see following page</u>									

Blank extraction date: 1/28/19 Blank analysis date: 1/30/19

Conc. units: ug/L

Associated Samples: 3, 4

Compound	Blank ID								
	<u>190128A-BLK</u>								
<u>↓</u>									

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:  
Common contaminants such as the phthalates and TICs noted above that were detected in samples within ten times the associated method blank concentration were qualified as not detected, "U". Other contaminants within five times the method blank concentration were also qualified as not detected, "U".

Tentatively Identified Compound (LSC) summary

Operator ID: MA Date Acquired: 1 Feb 19 16:19  
Data File: M:\YODA\DATA\Y190124\0124Y098.D  
Name: 190130A Blk 1/800  
Misc:  
Method: M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
Title: EPA 8270C  
Library Searched: M:\DATABASE\WILEY138.L

TIC Top Hit name	RT	EstConc	Units	Area	IntStd	ISRT	ISArea	ISConc
Benzene, methyl-	2.18	218.0	ppb	11425600	ISTD01	5.46	2620080	40.0
Ethene, tetrachloro-	2.80	84.6	ppb	4431650	ISTD01	5.46	2620080	40.0
Butanedioic acid, di	5.53	7.7	ppb	401962	ISTD01	5.46	2620080	40.0
Pentanedioic acid, d	6.37	18.4	ppb	1289090	ISTD02	6.90	3509310	40.0
Hexanedioic acid, di	7.15	5.3	ppb	369644	ISTD02	6.90	3509310	40.0

0124Y098.D Y0125NC.M Sat Feb 09 07:21:40 2019

Associated sample 1, 2, 5 (ND)

Tentatively Identified Compound (LSC) summary

Operator ID: MA Date Acquired: 30 Jan 19 14:56  
Data File: M:\YODA\DATA\Y190124\0124Y055.D  
Name: 190128A BLK 1/800  
Misc:  
Method: M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
Title: EPA 8270C  
Library Searched: M:\DATABASE\WILEY138.L

TIC Top Hit name	RT	EstConc Units	Area	IntStd	ISRT	ISArea	ISConc
Benzene, methyl-	2.19	12.6 ppb	589519	ISTD01	5.47	2340150	40.0
Ethene, tetrachloro-	2.82	105.1 ppb	4921080	ISTD01	5.47	2340150	40.0
Butanedioic acid, di	5.54	7.2 ppb	334891	ISTD01	5.47	2340150	40.0
Pentanedioic acid, d	6.38	17.4 ppb	1179470	ISTD02	6.90	3385010	40.0
Hexanedioic acid, di	7.16	5.2 ppb	355228	ISTD02	6.90	3385010	40.0

0124Y055.D Y0125NC.M Sat Feb 09 07:06:46 2019

Associated sample 3, 4 (ND)



LDC #: 44408A2a

**VALIDATION FINDINGS WORKSHEET  
Matrix Spike/Matrix Spike Duplicates**

Page: 1 of 1  
Reviewer: FT  
2nd Reviewer: (Signature)

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y ~~N~~ N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.

Y ~~N~~ N/A Was a MS/MSD analyzed every 20 samples of each matrix?

Y ~~N~~ N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

(E)

#	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	<u>6 + 7</u>	<u>A</u>	( )	( )	<u>27.2 ( 20 )</u>	<u>#1</u>	<u>Just / A (NO)</u>
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
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			( )	( )	( )		
			( )	( )	( )		

LDC #: 14408A2a

**VALIDATION FINDINGS WORKSHEET**  
**Initial Calibration Calculation Verification**

Page: 1 of 1  
 Reviewer: FT  
 2nd Reviewer: [Signature]

METHOD: GCMS 8270D

The calibration factors (RRFF), average RRFF, and relative standard deviation (%RSD) were recalculated for compounds identified below using the following calculations:

$RRF = (A_x)(C_{is}) / (A_{is})(C_x)$

average RRF = sum of the RRFs/number of standards

$\%RSD = 100 * (S/X)$

Where:

A<sub>x</sub> = Area of compound

C<sub>x</sub> = Concentration of compound

S = Standard deviation of the RRFs

X = Mean of the RRFs

A<sub>is</sub> = Area of associated internal standard

C<sub>is</sub> = Concentration of internal Standard

#	Standard ID	Calibration Date	Compound	Reported (RRF 40 std)	Recalculated (RRF40 std)	Reported AverageRRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
	ICAL	1/25/2019	A	3.089	3.089	3.026	3.026	9.90	9.90

### VALIDATION FINDINGS WORKSHEET Continuing Calibration Results Verification

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference =  $100 * (\text{ave. RRF} - \text{RRF}) / \text{ave. RRF}$   
 $\text{RRF} = (A_x)(C_{is}) / (A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF  
 RRF = continuing calibration RRF  
 $A_x$  = Area of compound,  $A_{is}$  = Area of associated internal standard  
 $C_x$  = Concentration of compound,  $C_{is}$  = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Internal Standard)	Average RRF (Initial)	Reported	Recalculated	Reported	Recalculated
					RRF (CC)	RRF (CC)	%D	%D
1	0124Y054	1/30/19	Pheno / (1st IS)	3.026	2.954	2.954	2.4	2.4
			(2nd IS)					
			(3rd IS)					
			(4th IS)					
			(5th IS)					
			(6th IS)					
2			(1st IS)					
			(2nd IS)					
			(3rd IS)					
			(4th IS)					
			(5th IS)					
			(6th IS)					
3			(1st IS)					
			(2nd IS)					
			(3rd IS)					
			(4th IS)					
			(5th IS)					
			(6th IS)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.



LDC #: 44408A2a

**VALIDATION FINDINGS WORKSHEET**  
**Surrogate Results Verification**

Page: 1 of 1  
 Reviewer: FT  
 2nd reviewer: jt

**METHOD:** GC/MS Semivolatiles (EPA SW 846 Method 8270D)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS \* 100

Where: SF = Surrogate Found  
 SS = Surrogate Spiked

Sample ID: #4

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5	125.0	93.9836	75.2	75.2	0
2-Fluorobiphenyl	↓	103.5614	82.8	82.8	↓
Terphenyl-d14	↓	103.4884	82.8	82.8	
Phenol-d5	250.0	165.4720	66.2	66.2	
2-Fluorophenol	↓	178.4207	71.4	71.4	
2,4,6-Tribromophenol	↓	238.6654	95.5	95.5	
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID: \_\_\_\_\_

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID: \_\_\_\_\_

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

LDC #: 44408A2a

## VALIDATION FINDINGS WORKSHEET

### Matrix Spike/Matrix Spike Duplicates Results Verification

Page: 1 of 1  
 Reviewer: FT  
 2nd Reviewer: PC

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery =  $100 * (SSC - SC) / SA$

Where: SSC = Spiked sample concentration  
 SA = Spike added

SC = Sample concentration

RPD =  $|MSC - MSC1| * 2 / (MSC + MSC1)$

MSC = Matrix spike concentration

MSC1 = Matrix spike duplicate concentration

MS/MSD samples: 6 + 7

Compound	Spike Added (ug/L)		Sample Concentration (ug/L)	Spiked Sample Concentration (ug/L)		Matrix Spike		Matrix Spike Duplicate		MS/MSD	
	MS	MSD		MS	MSD	Percent Recovery		Percent Recovery		RPD	
						Reported	Recalc	Reported	Recalc	Reported	Recalc
Phenol	62.5	62.5	ND	48.1	36.6	77.0	77.0	58.6	58.6	27.2	27.2
N-Nitroso-di-n-propylamine											
4-Chloro-3-methylphenol											
Acenaphthene											
Pentachlorophenol											
Pyrene											

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 44408A2a

**VALIDATION FINDINGS WORKSHEET**

**Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification**

Reviewer: FT

2nd Reviewer: AC

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery =  $100 * (SC/SA)$

Where: SSC = Spike concentration  
SA = Spike added

RPD =  $100 * (LCS - LCSD) / (LCS + LCSD)$

LCS = Laboratory control sample concentration LCSD = Laboratory control sample duplicate concentration

LCS/LCSD samples: 190128A - was 10

Compound	Spike Added (ug/L)		Spike Concentration (ug/L)		LCS		LCSD		LCS/LCSD	
	LCS	LCSD	LCS	LCSD	Percent Recovery		Percent Recovery		RPD	
					Reported	Recalc	Reported	Recalc	Reported	Recalculated
Phenol	62.5	62.5	55.8	55.8	89.3	89.3	89.3	89.3	0	0
N-Nitroso-di-n-propylamine										
4-Chloro-3-methylphenol										
Acenaphthene										
Pentachlorophenol										
Pyrene										
P										

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

**VALIDATION FINDINGS WORKSHEET**  
**Sample Calculation Verification**

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

Y/N N/A  
Y/N N/A

Were all reported results recalculated and verified for all level IV samples?  
 Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

$$\text{Concentration} = \frac{(A_x)(I_s)(V_i)(DF)(2.0)}{(A_s)(RRF)(V_o)(V_i)(\%S)}$$

- A<sub>x</sub> = Area of the characteristic ion (EICP) for the compound to be measured
- A<sub>s</sub> = Area of the characteristic ion (EICP) for the specific internal standard
- I<sub>s</sub> = Amount of internal standard added in nanograms (ng)
- V<sub>o</sub> = Volume or weight of sample extract in milliliters (ml) or grams (g).
- V<sub>i</sub> = Volume of extract injected in microliters (ul)
- V<sub>t</sub> = Volume of the concentrated extract in microliters (ul)
- Df = Dilution Factor.
- %S = Percent solids, applicable to soil and solid matrices only.
- 2.0 = Factor of 2 to account for GPC cleanup

Example:

Sample I.D. 190128A LES phenol

$$\text{Conc.} = \frac{(1547482)(40.0)(1)(1000)}{(457917)(3.026)(800)}$$

= 55.84 ug/L

#	Sample ID	Compound	Reported Concentration (ug/L)	Calculated Concentration (ug/L)	Qualification
	LES	phenol	55.8	55.84	

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** February 28, 2019

**Parameters:** Polynuclear Aromatic Hydrocarbons

**Validation Level:** Level C & D

**Laboratory:** APPL, Inc.

**Sample Delivery Group (SDG):** 87940

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
ERH730	AZ85562	Water	01/23/19
ERH731	AZ85563	Water	01/23/19
ERH736	AZ85565	Water	01/23/19
ERH741**	AZ85567**	Water	01/23/19
ERH749	AZ85569	Water	01/23/19
ERH730MS	AZ85562MS	Water	01/23/19
ERH730MSD	AZ85562MSD	Water	01/23/19

\*\*Indicates sample underwent Level D validation

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polynuclear Aromatic Hydrocarbons (PAHs) which are 1-Methylnaphthalene, 2-Methylnaphthalene, and Naphthalene by Environmental Protection Agency (EPA) SW 846 Method 8270D in Selected Ion Monitoring (SIM) mode

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level D data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## Qualification Code Reference

- H Holding times were exceeded.
- S Surrogate recovery was outside QC limits.
- C Calibration %RSD,  $r$ ,  $r^2$  or %D were noncompliant.
- R Calibration RRF was  $<0.05$ .
- B Presumed contamination from preparation (method blank).
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD was high.
- I Internal standard performance was unsatisfactory.
- M Instrument Performance Check (BFB or DFTPP) was noncompliant.
- T Presumed contamination from trip blank.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Instrument performance for pesticides was poor.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.



## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. GC/MS Instrument Performance Check**

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

## **III. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0% for all compounds.

Average relative response factors (RRF) for all compounds were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

## **IV. Continuing Calibration**

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0% for all compounds.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

## **V. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **VI. Field Blanks**

No field blanks were identified in this SDG.

## VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits with the following exceptions:

Sample	Surrogate	%R (Limits)	Affected Compound	Flag	A or P
ERH736	2-Methylnaphthalene-d10 Fluoranthene-d10	134 (39-114) 127 (58-120)	All compounds	NA	-
ERH741**	2-Methylnaphthalene-d10 Fluoranthene-d10	130 (39-114) 121 (58-120)	All compounds	NA	-
ERH749	Fluoranthene-d10	116 (39-114)	All compounds	NA	-

## VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
ERH730MS/MSD (ERH730)	1-Methylnaphthalene 2-Methylnaphthalene Naphthalene	21.4 ( $\leq 20$ ) 21.5 ( $\leq 20$ ) 21.2 ( $\leq 20$ )	NA	-

## IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## X. Field Duplicates

Samples ERH730 and ERH731 were identified as field duplicates. No results were detected in any of the samples.

## XI. Internal Standards

All internal standard areas and retention times were within QC limits.

## XII. Compound Quantitation

All compound quantitations met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

### **XIII. Target Compound Identifications**

All target compound identifications met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

### **XIV. System Performance**

The system performance was acceptable for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

### **XV. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**Red Hill Bulk Storage Facility, CTO 18F0126  
Polynuclear Aromatic Hydrocarbons - Data Qualification Summary - SDG 87940**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Polynuclear Aromatic Hydrocarbons - Laboratory Blank Data Qualification  
Summary - SDG 87940**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Polynuclear Aromatic Hydrocarbons - Field Blank Data Qualification Summary -  
SDG 87940**

No Sample Data Qualified in this SDG

LDC #: 44408A2b  
 SDG #: 87940  
 Laboratory: APPL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**  
 Level C/D

Date: 2/27/19  
 Page: 1 of 1  
 Reviewer: [Signature]  
 2nd Reviewer: [Signature]

**METHOD:** GC/MS Polynuclear Aromatic Hydrocarbons (EPA SW 846 Method 8270D-SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/Δ	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	Δ/Δ	% PSD ≤ 15      101 ≤ 20
IV.	Continuing calibration / closing cal	A	CV ≤ 20
V.	Laboratory Blanks	Δ	
VI.	Field blanks	N	
VII.	Surrogate spikes	SW	
VIII.	Matrix spike/Matrix spike duplicates	SW	
IX.	Laboratory control samples	A	res/p
X.	Field duplicates	ND	D = 1.2
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	Δ	Not reviewed for Level C validation.
XIII.	Target compound identification	Δ	Not reviewed for Level C validation.
XIV.	System performance	Δ	Not reviewed for Level C validation.
XV.	Overall assessment of data	Δ	

Note: A = Acceptable      ND = No compounds detected      D = Duplicate      SB=Source blank  
 N = Not provided/applicable      R = Rinsate      TB = Trip blank      OTHER:  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

\*\* Indicates sample underwent Level D validation

	Client ID	Lab ID	Matrix	Date
1	ERH730 <sup>w</sup> 0	AZ85562 <sup>w</sup>	Water	01/23/19
2	ERH731 0	AZ85563	Water	01/23/19
3	ERH736	AZ85565	Water	01/23/19
4	ERH741 **	AZ85567 **	Water	01/23/19
5	ERH749	AZ85569	Water	01/23/19
6	ERH730MS	AZ85562MS	Water	01/23/19
7	ERH730MSD	AZ85562MSD	Water	01/23/19
8				
9				

Notes:

1	19028A - BIK				
2	19130A - BIK				

TTT, W, S

**Method:** PAH (EPA SW 846 Method 8270D-SIM)

Validation Area	Yes	No	NA	Findings/Comments
<b>I. Technical holding times</b>				
Were all technical holding times met?	/			
Was cooler temperature criteria met?	/			
<b>II. GC/MS Instrument performance check (Not required)</b>				
Were the DFTPP performance results reviewed and found to be within the specified criteria?	/			
Were all samples analyzed within the 12 hour clock criteria?	/			
<b>IIIa. Initial calibration</b>				
Did the laboratory perform a 5 point calibration prior to sample analysis?	/			
Were all percent relative standard deviations (%RSD) $\leq$ 15% and relative response factors (RRF) $\geq$ 0.05?	/			
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of $\geq$ 0.990?			/	
<b>IIIb. Initial Calibration Verification</b>				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	/			
Were all percent differences (%D) $\leq$ 20%?	/			
<b>IV. Continuing calibration</b>				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	/			
Were all percent differences (%D) $\leq$ 20% and relative response factors (RRF) $\geq$ 0.05?	/			
Were all percent differences (%D) $\leq$ 50% for closing calibration verifications?	/			
<b>V. Laboratory Blanks</b>				
Was a laboratory blank associated with every sample in this SDG?	/			
Was a laboratory blank analyzed for each matrix and concentration?	/			
Was there contamination in the laboratory blanks?		/		
<b>VI. Field blanks</b>				
Were field blanks identified in this SDG?		/		
Were target compounds detected in the field blanks?			/	
<b>VII. Surrogate spikes</b>				
Were all surrogate percent differences (%R) within QC limits?	/	/		
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?		/	/	
If any percent recoveries (%R) was less than 10 percent, was a reanalysis performed to confirm %R?			/	
<b>VIII. Matrix spike/Matrix spike duplicates</b>				
Were matrix spike (MS) and matrix spike duplicate (MSD) analyzed in this SDG?	/			

LDC #: 4408A2b

**VALIDATION FINDINGS CHECKLIST**

Page: 2 of 2  
 Reviewer: F7  
 2nd Reviewer: A

Validation Area	Yes	No	NA	Findings/Comments
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?		/		
<b>IX. Laboratory control samples</b>				
Was an LCS analyzed per extraction batch?	/			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	/			
<b>X. Field duplicates</b>				
Were field duplicate pairs identified in this SDG?	/			
Were target compounds detected in the field duplicates?		/		
<b>XI. Internal standards</b>				
Were internal standard area counts within -50% or +100% of the associated calibration standard?	/			
Were retention times within + 10 seconds of the associated calibration standard?	/			
<b>XII. Compound quantitation</b>				
Did the laboratory LOQs/RLs meet the QAPP LOQs/RLs?	/			
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	/			
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	/			
Did compound quantitation limits meet QAPP limits?	/			
<b>XIII. Target compound identification</b>				
Were relative retention times (RRT's) within + 0.06 RRT units of the standard?	/			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	/			
Were chromatogram peaks verified and accounted for?	/			
<b>XIV. System performance</b>				
System performance was found to be acceptable.	/			
<b>XV. Overall assessment of data</b>				
Overall assessment of data was found to be acceptable.	/			

## VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS SVOA

A. Phenol	CC. Dimethylphthalate	EEE. Bis(2-ethylhexyl)phthalate	GGGG. C30-Hopane	I1. Methyl methanesulfonate
B. Bis (2-chloroethyl) ether	DD. Acenaphthylene	FFF. Di-n-octylphthalate	HHHH. 1-Methylphenanthrene	J1. Ethyl methanesulfonate
C. 2-Chlorophenol	EE. 2,6-Dinitrotoluene	GGG. Benzo(b)fluoranthene	IIII. 1,4-Dioxane	K1. o,o',o''-Triethylphosphorothioate
D. 1,3-Dichlorobenzene	FF. 3-Nitroaniline	HHH. Benzo(k)fluoranthene	JJJJ. Acetophenone	L1. n-Phenylene diamine
E. 1,4-Dichlorobenzene	GG. Acenaphthene	III. Benzo(a)pyrene	KKKK. Atrazine	M1. 1,4-Naphthoquinone
F. 1,2-Dichlorobenzene	HH. 2,4-Dinitrophenol	JJJ. Indeno(1,2,3-cd)pyrene	LLLL. Benzaldehyde	N1. N-Nitro-o-toluidine
G. 2-Methylphenol	II. 4-Nitrophenol	KKK. Dibenz(a,h)anthracene	MMMM. Caprolactam	O1. 1,3,5-Trinitrobenzene
H. 2,2'-Oxybis(1-chloropropane)	JJ. Dibenzofuran	LLL. Benzo(g,h,i)perylene	NNNN. 2,6-Dichlorophenol	P1. Pentachlorobenzene
I. 4-Methylphenol	KK. 2,4-Dinitrotoluene	MMM. Bis(2-Chloroisopropyl)ether	OOOO. 1,2-Diphenylhydrazine	Q1. 4-Aminobiphenyl
J. N-Nitroso-di-n-propylamine	LL. Diethylphthalate	NNN. Aniline	PPPP. 3-Methylphenol	R1. 2-Naphthylamine
K. Hexachloroethane	MM. 4-Chlorophenyl-phenyl ether	OOO. N-Nitrosodimethylamine	QQQQ. 3&4-Methylphenol	S1. Triphenylene
L. Nitrobenzene	NN. Fluorene	PPP. Benzoic Acid	RRRR. 4-Dimethyldibenzothiophene (4MDT)	T1. Octachlorostyrene
M. Isophorone	OO. 4-Nitroaniline	QQQ. Benzyl alcohol	SSSS. 2/3-Dimethyldibenzothiophene (4MDT)	U1. Famphur
N. 2-Nitrophenol	PP. 4,6-Dinitro-2-methylphenol	RRR. Pyridine	TTTT. 1-Methyldibenzothiophene (1MDT)	V1. 1,4-phenylenediamine
O. 2,4-Dimethylphenol	QQ. N-Nitrosodiphenylamine	SSS. Benzidine	UUUU.. 2,3,4,6-Tetrachlorophenol	W1. Methapyrilene
P. Bis(2-chloroethoxy)methane	RR. 4-Bromophenyl-phenylether	TTT. 1-Methylnaphthalene	VVVV. 1,2,4,5-Tetrachlorobenzene	X1. Pentachloroethane
Q. 2,4-Dichlorophenol	SS. Hexachlorobenzene	UUU. Benzo(b)thiophene	WWWW.. 2-Picoline	Y1. 3,3'-Dimethylbenzidine
R. 1,2,4-Trichlorobenzene	TT. Pentachlorophenol	VVV. Benzonaphthothiophene	XXXX. 3-Methylcholanthrene	Z1. o-Toluidine
S. Naphthalene	UU. Phenanthrene	WWW. Benzo(e)pyrene	YYYY. a,a-Dimethylphenethylamine	A2. 1-Naphthylamine
T. 4-Chloroaniline	VV. Anthracene	XXX. 2,6-Dimethylnaphthalene	ZZZZ. Hexachloropropene	B2. 4-Aminobiphenyl
U. Hexachlorobutadiene	WW. Carbazole	YYY. 2,3,5-Trimethylnaphthalene	A1. N-Nitrosodiethylamine	C2. 4-Nitroquinoline-1-oxide
V. 4-Chloro-3-methylphenol	XX. Di-n-butylphthalate	ZZZ. Perylene	B1. N-Nitrosodi-n-butylamine	D2. Hexachloropene
W. 2-Methylnaphthalene	YY. Fluoranthene	AAAA. Dibenzothiophene	C1. N-Nitrosomethylethylamine	E2. Bis (2-chloro-1-methylethyl) ether
X. Hexachlorocyclopentadiene	ZZ. Pyrene	BBBB. Benzo(a)fluoranthene	D1. N-Nitrosomorpholine	F2. Bifenthrin
Y. 2,4,6-Trichlorophenol	AAA. Butylbenzylphthalate	CCCC. Benzo(b)fluorene	E1. N-Nitrosopyrrolidine	G2. Cyfluthrin
Z. 2,4,5-Trichlorophenol	BBB. 3,3'-Dichlorobenzidine	DDDD. cis/trans-Decalin	F1. Phenacetin	H2. Cypermethrin
AA. 2-Chloronaphthalene	CCC. Benzo(a)anthracene	EEEE. Biphenyl	G1. 2-Acetylaminofluorene	I2. Permethrin (cis/trans)
BB. 2-Nitroaniline	DDD. Chrysene	FFFF. Retene	H1. Pronamide	J2. 5-Nitro-o-toluidine



LDC #: 44408A2b

### VALIDATION FINDINGS WORKSHEET Surrogate Recovery

Page: 1 of 1  
Reviewer: FT  
2nd Reviewer: R

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualification below for all questions answered "N". Not applicable questions are identified as "N/A".

- Y (N) N/A Were percent recoveries (%R) for surrogates within QC limits?  
 Y (N) N/A If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?  
 Y (N) N/A If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

(S)

#	Sample ID	Surrogate	%R (Limits)	Qualifications
	3	W-d10	134 ( 39-114 )	Jdet / P ND
		YY-d10	127 ( 58-120 )	↓
	4	↓	130 ( ↓ )	Jdet / P ND
			121 ( ↓ )	↓
	5	W-d10	116 ( 39-114 )	Jdet / P ND
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	

(NBZ) = Nitrobenzene - d5                      (2FP) = 2-Fluorophenol  
 (FBP) = 2-Fluorobiphenyl                  (TBP) = 2,4,6 -Tribromophenol  
 (TPH) = Terphenyl - d14                    (2CP) = 2-Chlorophenol - d4

LDC #: 44408A26

### VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1  
Reviewer: FT  
2nd Reviewer: [Signature]

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.

Y N N/A Was a MS/MSD analyzed every 20 samples of each matrix?

Y N N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits? (E)

#	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	6 & 7	TTT	( )	( )	21.4 ( 20 )	# 1	Soil / A NO
		W	( )	( )	21.5 ( )	↓	↓
		S	( )	( )	21.2 ↓	↓	↓
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		

LDC #: 44408A2b

**VALIDATION FINDINGS WORKSHEET**  
**Initial Calibration Calculation Verification**

Page: 1 of 1

Reviewer: FT

2nd Reviewer: [Signature]

METHOD: GCMS 8270<sup>D</sup>

The calibration factors (RRFF), average RRFF, and relative standard deviation (%RSD) were recalculated for compounds identified below using the following calculations:

$RRF = (Ax)(Cis)/(Ais)(Cx)$

average RRF = sum of the RRFs/number of standards

$\%RSD = 100 * (S/X)$

Where:

Ax = Area of compound

Cx = Concentration of compound

S = Standard deviation of the RRFs

X = Mean of the RRFs

Ais = Area of associated internal standard

Cis = Concentration of internal Standard

#	Standard ID	Calibration Date	Compound	Reported (RRF 5 ppb std)	Recalculated (RRF 5 ppb std)	Reported AverageRRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
	ICAL Linus	1/22/2019	S	1.383	1.383	1.259	1.259	13.00	13.00

### VALIDATION FINDINGS WORKSHEET Continuing Calibration Results Verification

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference =  $100 * (\text{ave. RRF} - \text{RRF}) / \text{ave. RRF}$   
 $\text{RRF} = (A_x)(C_{is}) / (A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF  
 RRF = continuing calibration RRF  
 $A_x$  = Area of compound,  $A_{is}$  = Area of associated internal standard  
 $C_x$  = Concentration of compound,  $C_{is}$  = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Internal Standard)	Average RRF (Initial)	Reported	Recalculated	Reported	Recalculated
					RRF (CC)	RRF (CC)	%D	%D
1	01224037 CCV	1/30/19	S (1st IS)	1.259	1.293	1.293	2.7	2.7
			(2nd IS)					
			(3rd IS)					
			(4th IS)					
			(5th IS)					
			(6th IS)					
2			(1st IS)					
			(2nd IS)					
			(3rd IS)					
			(4th IS)					
			(5th IS)					
			(6th IS)					
3			(1st IS)					
			(2nd IS)					
			(3rd IS)					
			(4th IS)					
			(5th IS)					
			(6th IS)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 44408Aa2b

## VALIDATION FINDINGS WORKSHEET

### Surrogate Results Verification

Page: 1 of 1Reviewer: FT2nd reviewer: AL**METHOD:** GC/MS Semivolatiles (EPA SW 846 Method 8270D)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS \* 100

Where: SF = Surrogate Found  
SS = Surrogate SpikedSample ID: # 4

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5	W-d10	6.250	8.1558	130	0
2-Fluorobiphenyl	YY-d10	6.250	7.5487	121	0
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID: \_\_\_\_\_

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID: \_\_\_\_\_

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

LDC #: 4440BA26

**VALIDATION FINDINGS WORKSHEET**  
**Matrix Spike/Matrix Spike Duplicates Results Verification**

Page: 1 of 1  
 Reviewer: FT  
 2nd Reviewer: K

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery =  $100 * (SSC - SC) / SA$

Where: SSC = Spiked sample concentration  
 SA = Spike added

SC = Sample concentration

RPD =  $|MSC - MSC| * 2 / (MSC + MSDC)$

MSC = Matrix spike concentration

MSDC = Matrix spike duplicate concentration

MS/MSD samples: 6 & 7

Compound	Spike Added (ug/L)		Sample Concentration (ug/L)	Spiked Sample Concentration (ug/L)		Matrix Spike		Matrix Spike Duplicate		MS/MSD	
	MS	MSD		MS	MSD	Percent Recovery		Percent Recovery		RPD	
						Reported	Recalc	Reported	Recalc	Reported	Recalc
Phenol											
N-Nitroso-di-n-propylamine											
4-Chloro-3-methylphenol											
Acenaphthene											
Pentachlorophenol											
Pyrene											
<u>S</u>	<u>6.25</u>	<u>6.25</u>	<u>ND</u>	<u>4.42</u>	<u>5.47</u>	<u>70.7</u>	<u>70.7</u>	<u>87.5</u>	<u>87.5</u>	<u>21.2</u>	<u>21.2</u>

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 44408A2b

**VALIDATION FINDINGS WORKSHEET**

**Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification**

Reviewer: FT

2nd Reviewer: [Signature]

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 \* (SC/SA)

Where: SSC = Spike concentration  
SA = Spike added

RPD = | LCSC - LCSDC | \* 2 / (LCSC + LCSDC)

LCSC = Laboratory control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS/LCSD samples: 190128A was 10

Compound	Spike Added (ug/L)		Spike Concentration (ug/L)		LCS		LCSD		LCS/LCSD	
	LCS	LCSD	LCS	LCSD	Percent Recovery		Percent Recovery		RPD	
					Reported	Recalc	Reported	Recalc	Reported	Recalculated
Phenol										
N-Nitroso-di-n-propylamine										
4-Chloro-3-methylphenol										
Acenaphthene										
Pentachlorophenol										
Pyrene										
<u>S</u>	<u>6.25</u>	<u>6.25</u>	<u>6.12</u>	<u>5.39</u>	<u>97.9</u>	<u>99.9</u>	<u>86.2</u>	<u>86.2</u>	<u>12.7</u>	<u>12.7</u>

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

### VALIDATION FINDINGS WORKSHEET Sample Calculation Verification

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270C)

- N N/A Were all reported results recalculated and verified for all level IV samples?
- N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

$$\text{Concentration} = \frac{(A_x)(I_s)(V_i)(DF)(2.0)}{(A_s)(RRF)(V_o)(V_i)(\%S)}$$

- $A_x$  = Area of the characteristic ion (EICP) for the compound to be measured
- $A_s$  = Area of the characteristic ion (EICP) for the specific internal standard
- $I_s$  = Amount of internal standard added in nanograms (ng)
- $V_o$  = Volume or weight of sample extract in milliliters (ml) or grams (g).
- $V_i$  = Volume of extract injected in microliters (ul)
- $V_t$  = Volume of the concentrated extract in microliters (ul)
- Df = Dilution Factor.
- %S = Percent solids, applicable to soil and solid matrices only.
- 2.0 = Factor of 2 to account for GPC cleanup

Example:

Sample I.D. 19012BA LES: S

$$\text{Conc.} = \frac{(32899) (2.5) (1) (1000)}{(13343) (1.259) (800)}$$

= 6.12 ug/L

#	Sample ID	Compound	Reported Concentration (ug/L)	Calculated Concentration ( )	Qualification
	<u>LES</u>	<u>S</u>	<u>6.12</u>		



## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** February 28, 2019

**Parameters:** 2-(2-Methoxyethoxy)-ethanol

**Validation Level:** Level C & D

**Laboratory:** APPL, Inc.

**Sample Delivery Group (SDG):** 87940

<b>Sample Identification</b>	<b>Laboratory Sample Identification</b>	<b>Matrix</b>	<b>Collection Date</b>
ERH730	AZ85562	Water	01/23/19
ERH731	AZ85563	Water	01/23/19
ERH736	AZ85565	Water	01/23/19
ERH741**	AZ85567**	Water	01/23/19
ERH749	AZ85569	Water	01/23/19
ERH730MS	AZ85562MS	Water	01/23/19
ERH730MSD	AZ85562MSD	Water	01/23/19

\*\*Indicates sample underwent Level D validation

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

2-(2-Methoxyethoxy)-ethanol by Environmental Protection Agency (EPA) SW 846 Method 8270D Modified

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level D data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## Qualification Code Reference

- H Holding times were exceeded.
- S Surrogate recovery was outside QC limits.
- C Calibration %RSD,  $r$ ,  $r^2$  or %D were noncompliant.
- R Calibration RRF was  $<0.05$ .
- B Presumed contamination from preparation (method blank).
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD was high.
- I Internal standard performance was unsatisfactory.
- M Instrument Performance Check (BFB or DFTPP) was noncompliant.
- T Presumed contamination from trip blank.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Instrument performance for pesticides was poor.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. GC/MS Instrument Performance Check**

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

## **III. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0%.

Average relative response factors (RRF) were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

## **IV. Continuing Calibration**

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0%.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0%.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

## **V. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **VI. Field Blanks**

No field blanks were identified in this SDG.

## VII. Surrogates

Surrogates were not added to all samples as required by the method. Using professional judgment, no data were qualified, since the LCS/LCSD and MS/MSD percent recoveries were within QC limits.

All surrogate percent recoveries were within QC limits in the phenol analysis with the following exceptions:

Sample	Surrogate	%R (Limits)	Affected Compound	Flag	A or P
ERH749	2-Fluorobiphenyl Terphenyl-d14	239 (44-119) 189 (50-134)	All compounds	NA	-

## VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

Relative percent differences (RPD) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
190128A-LCS/LCSD (All samples in SDG 87940)	2-(2-Methoxyethoxy)-ethanol	41.0 (≤20)	UJ (all non-detects)	P

## X. Field Duplicates

Samples ERH730 and ERH731 were identified as field duplicates. No results were detected in any of the samples.

## XI. Internal Standards

All internal standard areas and retention times were within QC limits.

## XII. Compound Quantitation

All compound quantitations met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

### **XIII. Target Compound Identifications**

All target compound identifications met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

### **XIV. System Performance**

The system performance was acceptable for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

### **XV. Overall Assessment of Data**

The analysis was conducted within all specifications of the method with the exception noted in Section VII. No results were rejected in this SDG.

Due to LCS/LCSD RPD, data were qualified as estimated in five samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

**Red Hill Bulk Storage Facility, CTO 18F0126  
2-(2-Methoxyethoxy)-ethanol - Data Qualification Summary - SDG 87940**

Sample	Compound	Flag	A or P	Reason (Code)
ERH730 ERH731 ERH736 ERH741** ERH749	2-(2-Methoxyethoxy)-ethanol	UJ (all non-detects)	P	Laboratory control samples (RPD) (L)

**Red Hill Bulk Storage Facility, CTO 18F0126  
2-(2-Methoxyethoxy)-ethanol - Laboratory Blank Data Qualification Summary - SDG 87940**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
2-(2-Methoxyethoxy)-ethanol - Field Blank Data Qualification Summary - SDG 87940**

No Sample Data Qualified in this SDG



LDC #: 44408A2c  
 SDG #: 87940  
 Laboratory: APPL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**  
 Level C/D

Date: 2/27/19  
 Page: 1 of 1  
 Reviewer: FB  
 2nd Reviewer: RT

**METHOD:** GC/MS 2-(2-Methoxyethoxy)-Ethanol (EPA SW 846 Method 8270D-8M)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	GC/MS Instrument performance check	Δ	
III.	Initial calibration/ICV	A/A	% PSD ≤ 15      ICV ≤ 20
IV.	Continuing calibration / closing cal	A	cal ≤ 20
V.	Laboratory Blanks	Δ	
VI.	Field blanks	N	
VII.	Surrogate spikes	SW	
VIII.	Matrix spike/Matrix spike duplicates	Δ	
IX.	Laboratory control samples	SW	less 10
X.	Field duplicates	ND	D = 1, 2
XI.	Internal standards	Δ	
XII.	Compound quantitation RL/LOQ/LODs	Δ	Not reviewed for Level C validation.
XIII.	Target compound identification	Δ	Not reviewed for Level C validation.
XIV.	System performance	Δ	Not reviewed for Level C validation.
XV.	Overall assessment of data	Δ	

Note: A = Acceptable      ND = No compounds detected      D = Duplicate      SB=Source blank  
 N = Not provided/applicable      R = Rinsate      TB = Trip blank      OTHER:  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

\*\* Indicates sample underwent Level D validation

	Client ID	Lab ID	Matrix	Date
1	ERH730 <sup>h</sup> D	AZ85562 <sup>h</sup>	Water	01/23/19
2	ERH731 D	AZ85563	Water	01/23/19
3	ERH736	AZ85565	Water	01/23/19
4	ERH741 **	AZ85567 **	Water	01/23/19
5	ERH749	AZ85569	Water	01/23/19
6	ERH730MS	AZ85562MS	Water	01/23/19
7	ERH730MSD	AZ85562MSD	Water	01/23/19
8				
9				

Notes:

1	190128A BIK				

**Method:** Semivolatiles (EPA SW 846 Method 8270D)

Validation Area	Yes	No	NA	Findings/Comments
<b>I. Technical holding times</b>				
Were all technical holding times met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was cooler temperature criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>II. GC/MS Instrument performance check</b>				
Were the DFTPP performance results reviewed and found to be within the specified criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all samples analyzed within the 12 hour clock criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>IIIa. Initial calibration</b>				
Did the laboratory perform a 5 point calibration prior to sample analysis?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent relative standard deviations (%RSD) $\leq$ 15% and relative response factors (RRF) within method criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of $\geq$ 0.990?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>IIIb. Initial Calibration Verification</b>				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent differences (%D) $<$ 20%?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>IV. Continuing calibration</b>				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent differences (%D) $\leq$ 20% and relative response factors (RRF) within method criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>V. Laboratory Blanks</b>				
Was a laboratory blank associated with every sample in this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was a laboratory blank analyzed at least once every 12 hours for each matrix and concentration?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was there contamination in the laboratory blanks? If yes, please see the blanks validation findings worksheet.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>VI. Field blanks</b>				
Were field blanks were identified in this SDG?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Were target compounds detected in the field blanks?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>VII. Surrogate spikes</b>				
Were all surrogate percent recovery (%R) within QC limits?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
If any percent recoveries (%R) was less than 10%, was a reanalysis performed to confirm %R?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>VIII. Matrix spike/Matrix spike duplicates</b>				
Were matrix spike (MS) and matrix spike duplicate (MSD) analyzed in this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

LDC #: 4440BA2C

**VALIDATION FINDINGS CHECKLIST**

Page: 2 of 2  
 Reviewer: [Signature]  
 2nd Reviewer: [Signature]

Validation Area	Yes	No	NA	Findings/Comments
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>IX. Laboratory control samples</b>				
Was an LCS analyzed per extraction batch?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>X. Field duplicates</b>				
Were field duplicate pairs identified in this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were target compounds detected in the field duplicates?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>XI. Internal standards</b>				
Were internal standard area counts within -50% to +100% of the associated calibration standard?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were retention times within + 30 seconds of the associated calibration standard?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XII. Compound quantitation</b>				
Did the laboratory LOQs/RLs meet the QAPP LOQs/RLs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XIII. Target compound identification</b>				
Were relative retention times (RRT's) within $\pm 0.06$ RRT units of the standard?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were chromatogram peaks verified and accounted for?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XIV. System performance</b>				
System performance was found to be acceptable.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XV. Overall assessment of data</b>				
Overall assessment of data was found to be acceptable.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

## VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS SVOA

A. Phenol	CC. Dimethylphthalate	EEE. Bis(2-ethylhexyl)phthalate	GGGG. C30-Hopane	I1. Methyl methanesulfonate
B. Bis (2-chloroethyl) ether	DD. Acenaphthylene	FFF. Di-n-octylphthalate	HHHH. 1-Methylphenanthrene	J1. Ethyl methanesulfonate
C. 2-Chlorophenol	EE. 2,6-Dinitrotoluene	GGG. Benzo(b)fluoranthene	IIII. 1,4-Dioxane	K1. o,o',o''-Triethylphosphorothioate
D. 1,3-Dichlorobenzene	FF. 3-Nitroaniline	HHH. Benzo(k)fluoranthene	JJJJ. Acetophenone	L1. n-Phenylene diamine
E. 1,4-Dichlorobenzene	GG. Acenaphthene	III. Benzo(a)pyrene	KKKK. Atrazine	M1. 1,4-Naphthoquinone
F. 1,2-Dichlorobenzene	HH. 2,4-Dinitrophenol	JJJ. Indeno(1,2,3-cd)pyrene	LLLL. Benzaldehyde	N1. N-Nitro-o-toluidine
G. 2-Methylphenol	II. 4-Nitrophenol	KKK. Dibenz(a,h)anthracene	MMMM. Caprolactam	O1. 1,3,5-Trinitrobenzene
H. 2,2'-Oxybis(1-chloropropane)	JJ. Dibenzofuran	LLL. Benzo(g,h,i)perylene	NNNN. 2,6-Dichlorophenol	P1. Pentachlorobenzene
I. 4-Methylphenol	KK. 2,4-Dinitrotoluene	MMM. Bis(2-Chloroisopropyl)ether	OOOO. 1,2-Diphenylhydrazine	Q1. 4-Aminobiphenyl
J. N-Nitroso-di-n-propylamine	LL. Diethylphthalate	NNN. Aniline	PPPP. 3-Methylphenol	R1. 2-Naphthylamine
K. Hexachloroethane	MM. 4-Chlorophenyl-phenyl ether	OOO. N-Nitrosodimethylamine	QQQQ. 3&4-Methylphenol	S1. Triphenylene
L. Nitrobenzene	NN. Fluorene	PPP. Benzoic Acid	RRRR. 4-Dimethyldibenzothiophene (4MDT)	T1. Octachlorostyrene
M. Isophorone	OO. 4-Nitroaniline	QQQ. Benzyl alcohol	SSSS. 2/3-Dimethyldibenzothiophene (4MDT)	U1. Famphur
N. 2-Nitrophenol	PP. 4,6-Dinitro-2-methylphenol	RRR. Pyridine	TTTT. 1-Methyldibenzothiophene (1MDT)	V1. 1,4-phenylenediamine
O. 2,4-Dimethylphenol	QQ. N-Nitrosodiphenylamine	SSS. Benzidine	UUUU.. 2,3,4,6-Tetrachlorophenol	W1. Methapyrilene
P. Bis(2-chloroethoxy)methane	RR. 4-Bromophenyl-phenylether	TTT. 1-Methylnaphthalene	VVVV. 1,2,4,5-Tetrachlorobenzene	X1. Pentachloroethane
Q. 2,4-Dichlorophenol	SS. Hexachlorobenzene	UUU. Benzo(b)thiophene	WWWW.. 2-Picoline	Y1. 3,3'-Dimethylbenzidine
R. 1,2,4-Trichlorobenzene	TT. Pentachlorophenol	VVV. Benzonaphthothiophene	XXXX. 3-Methylcholanthrene	Z1. o-Toluidine
S. Naphthalene	UU. Phenanthrene	WWW. Benzo(e)pyrene	YYYY. a,a-Dimethylphenethylamine	A2. 1-Naphthylamine
T. 4-Chloroaniline	VV. Anthracene	XXX. 2,6-Dimethylnaphthalene	ZZZZ. Hexachloropropene	B2. 4-Aminobiphenyl
U. Hexachlorobutadiene	WW. Carbazole	YYY. 2,3,5-Trimethylnaphthalene	A1. N-Nitrosodiethylamine	C2. 4-Nitroquinoline-1-oxide
V. 4-Chloro-3-methylphenol	XX. Di-n-butylphthalate	ZZZ. Perylene	B1. N-Nitrosodi-n-butylamine	D2. Hexachloropene
W. 2-Methylnaphthalene	YY. Fluoranthene	AAAA. Dibenzothiophene	C1. N-Nitrosomethylethylamine	E2. Bis (2-chloro-1-methylethyl) ether
X. Hexachlorocyclopentadiene	ZZ. Pyrene	BBBB. Benzo(a)fluoranthene	D1. N-Nitrosomorpholine	F2. Bifenthrin
Y. 2,4,6-Trichlorophenol	AAA. Butylbenzylphthalate	CCCC. Benzo(b)fluorene	E1. N-Nitrosopyrrolidine	G2. Cyfluthrin
Z. 2,4,5-Trichlorophenol	BBB. 3,3'-Dichlorobenzidine	DDDD. cis/trans-Decalin	F1. Phenacetin	H2. Cypermethrin
AA. 2-Chloronaphthalene	CCC. Benzo(a)anthracene	EEEE. Biphenyl	G1. 2-Acetylaminofluorene	I2. Permethrin (cis/trans)
BB. 2-Nitroaniline	DDD. Chrysene	FFFF. Retene	H1. Pronamide	J2. 5-Nitro-o-toluidine

LDC #: 4440BA2C

### VALIDATION FINDINGS WORKSHEET Surrogate Recovery

Page: 6 of 1  
Reviewer: FT  
2nd Reviewer: [Signature]

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualification below for all questions answered "N". Not applicable questions are identified as "N/A".

- Y  N  N/A Were percent recoveries (%R) for surrogates within QC limits?
- Y  N  N/A If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?
- Y  N  N/A If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Sample ID	Surrogate	%R (Limits)	Qualifications
	1-4, 5	Surrogates were not added to all samples as required by the method. Using professional judgment, no data were qualified, since the LCS/LCSD and MS/MSD percent recoveries were within QC limits. <del>Additionally, all base surrogate percent recoveries were within QC limits in the Phenol Analysis.</del> ↶		Text
	5	FBP (from phenol analysis)	239 ( 44-119 )	Jdet/P ND (S)
		TPH (from phenol analysis)	189 ( 50-134 )	

(NBZ) = Nitrobenzene - d5      (2FP) = 2-Fluorophenol  
(FBP) = 2-Fluorobiphenyl      (TBP) = 2,4,6-Tribromophenol  
(TPH) = Terphenyl - d14      (2CP) = 2-Chlorophenol - d4

LDC #: 44408A2C

**VALIDATION FINDINGS WORKSHEET  
Laboratory Control Samples (LCS)**

Page: 1 of 1  
Reviewer: FT  
2nd Reviewer: A

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N / N/A

Was a LCS required?

Y N / N/A

Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits? (L)

#	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	190128A -	*	( )	( )	41.0 ( 20 )	All	J/W/P ND
	LCSD		( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
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			( )	( )	( )		
			( )	( )	( )		

LDC #: 44408A2c

**VALIDATION FINDINGS WORKSHEET**  
**Initial Calibration Calculation Verification**

Page: 1 of 1  
Reviewer: FT  
2nd Reviewer: KE

METHOD: GCMS 8270<sup>D</sup>

The calibration factors (RRFF), average RRFF, and relative standard deviation (%RSD) were recalculated for compounds identified below using the following calculations:

$$\text{RRF} = (\text{Ax})(\text{Cis})/(\text{Ais})(\text{Cx})$$

average RRF = sum of the RRFs/number of standards

$$\% \text{RSD} = 100 * (\text{S}/\text{X})$$

Where:

Ax = Area of compound

Cx = Concentration of compound

S = Standard deviation of the RRFs

X = Mean of the RRFs

Ais = Area of associated internal standard

Cis = Concentration of internal Standard

#	Standard ID	Calibration Date	Compound	Reported (RRF 400 std)	Recalculated (RRF400 std)	Reported AverageRRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
	ICAL	11/28/2018	2-(2-Methoxyethoxy) Ethanol	0.2070	0.2070	0.2402	0.2402	7.90	7.90
	Yoda								

LDC #: 44400A2c

## VALIDATION FINDINGS WORKSHEET Continuing Calibration Results Verification

Page: 1 of 1  
 Reviewer: FT  
 2nd Reviewer: M

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference =  $100 * (\text{ave. RRF} - \text{RRF}) / \text{ave. RRF}$   
 $\text{RRF} = (A_x)(C_{is}) / (A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF  
 RRF = continuing calibration RRF  
 $A_x$  = Area of compound,  $A_{is}$  = Area of associated internal standard  
 $C_x$  = Concentration of compound,  $C_{is}$  = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Internal Standard)	Average RRF (Initial)	Reported	Recalculated	Reported	Recalculated
					RRF (CC)	RRF (CC)	%D	%D
1	11284057	1/29/19	2-(2-ME)-E (1st IS)	0.2402	0.2337	0.2337	2.7	2.7
			(2nd IS)					
			(3rd IS)					
			(4th IS)					
			(5th IS)					
			(6th IS)					
2			(1st IS)					
			(2nd IS)					
			(3rd IS)					
			(4th IS)					
			(5th IS)					
			(6th IS)					
3			(1st IS)					
			(2nd IS)					
			(3rd IS)					
			(4th IS)					
			(5th IS)					
			(6th IS)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.



LDC #: 44408A2c

**VALIDATION FINDINGS WORKSHEET**  
**Matrix Spike/Matrix Spike Duplicates Results Verification**

Page: 1 of 1  
 Reviewer: FT  
 2nd Reviewer: [Signature]

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery =  $100 * (SSC - SC) / SA$

Where: SSC = Spiked sample concentration  
 SA = Spike added

SC = Sample concentration

RPD =  $|MSC - MSC| * 2 / (MSC + MSDC)$

MSC = Matrix spike concentration

MSDC = Matrix spike duplicate concentration

MS/MSD samples: 6 & 7

Compound	Spike Added (ug/L)		Sample Concentration (ug/L)	Spiked Sample Concentration (ug/L)		Matrix Spike		Matrix Spike Duplicate		MS/MSD	
	MS	MSD		MS	MSD	Percent Recovery		Percent Recovery		RPD	
						Reported	Recalc	Reported	Recalc	Reported	Recalc
Phenol											
N-Nitroso-di-n-propylamine											
4-Chloro-3-methylphenol											
Acenaphthene											
Pentachlorophenol											
Pyrene											
2-(2-ME)-E	80.0	80.0	ND	73.1	77.2	91.4	91.4	96.5	96.5	5.5	5.5

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 44408A2C

**VALIDATION FINDINGS WORKSHEET**

**Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification**

Reviewer: FT

2nd Reviewer: AK

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 \* (SC/SA)

Where: SSC = Spike concentration  
SA = Spike added

RPD = |LCSC - LCSDC| \* 2 / (LCSC + LCSDC)

LCSC = Laboratory control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS/LCSD samples: 190128A LCSD

Compound	Spike Added (ug/L)		Spike Concentration (ug/L)		LCS		LCSD		LCS/LCSD	
	LCS	LCSD	LCS	LCSD	Percent Recovery		Percent Recovery		RPD	
					Reported	Recalc	Reported	Recalc	Reported	Recalculated
Phenol										
N-Nitroso-di-n-propylamine										
4-Chloro-3-methylphenol										
Acenaphthene										
Pentachlorophenol										
Pyrene										
<u>2-(2-ME)-E</u>	<u>80.0</u>	<u>80.0</u>	<u>88.7</u>	<u>58.5</u>	<u>111</u>	<u>111</u>	<u>73.1</u>	<u>73.1</u>	<u>41.0</u>	<u>41.0</u>

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

# VALIDATION FINDINGS WORKSHEET

## Sample Calculation Verification

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Y N N/A  
Y N N/A

Were all reported results recalculated and verified for all level IV samples?

Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

$$\text{Concentration} = \frac{(A_x)(I_s)(V_i)(DF)(2.0)}{(A_{is})(RRF)(V_o)(V_i)(\%S)}$$

- A<sub>x</sub> = Area of the characteristic ion (EICP) for the compound to be measured
- A<sub>is</sub> = Area of the characteristic ion (EICP) for the specific internal standard
- I<sub>s</sub> = Amount of internal standard added in nanograms (ng)
- V<sub>o</sub> = Volume or weight of sample extract in milliliters (ml) or grams (g).
- V<sub>i</sub> = Volume of extract injected in microliters (ul)
- V<sub>t</sub> = Volume of the concentrated extract in microliters (ul)
- Df = Dilution Factor.
- %S = Percent solids, applicable to soil and solid matrices only.
- 2.0 = Factor of 2 to account for GPC cleanup

Example:

Sample I.D. 19D128A LCS

$$\text{Conc.} = \frac{(163673) (40.0)}{(307091) (0.2402)}$$

=

88.7 ug/L

#	Sample ID	Compound	Reported Concentration (ug/L)	Calculated Concentration (ug/L)	Qualification
	<u>LCS</u>	<u>2-(2-ME)-E</u>	<u>88.7</u>	<u>88.7</u>	

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** March 4, 2019

**Parameters:** Wet Chemistry

**Validation Level:** Level C & D

**Laboratory:** APPL, Inc.

**Sample Delivery Group (SDG):** 87940

<b>Sample Identification</b>	<b>Laboratory Sample Identification</b>	<b>Matrix</b>	<b>Collection Date</b>
ERH730**	AZ85562**	Water	01/23/19
ERH736	AZ85565	Water	01/22/19
ERH741	AZ85567	Water	01/22/19
ERH749	AZ85569	Water	01/23/19

\*\*Indicates sample underwent Level D validation

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Alkalinity by Standard Method 2320B

Chloride, Nitrate, and Sulfate by Environmental Protection Agency (EPA) Method 300.0

Ferrous Iron by Standard Method 3500-Fe B

Nitrate/Nitrite as Nitrogen by EPA Method 353.2

Total Organic Carbon by EPA SW 846 Method 9060A

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level D data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## Qualification Code Reference

- H Holding times were exceeded.
- S The sequence or number of standards used for the calibration was incorrect.
- C Correlation coefficient is  $<0.995$ .
- R %R for calibration is not within control limits.
- B Presumed contamination from preparation (method) blank or calibration blank.
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD or difference was high.
- I ICP ICS results were unsatisfactory.
- A ICP Serial Dilution %D were not within control limits.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Post Digestion Spike recovery was not within control limits.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

## I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
ERH736	Nitrate	54 hours	48 hours	UJ (all non-detects)	P
ERH741	Nitrate	77 hours	48 hours	J (all detects)	P
ERH749	Nitrate	55 hours	48 hours	J (all detects)	P

## II. Initial Calibration

All criteria for the initial calibration of each method were met.

## III. Continuing Calibration

Continuing calibration frequency and analysis criteria were met for each method when applicable.

## IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks with the following exceptions:

Blank ID	Analyte	Maximum Concentration	Limit of Quantitation	Associated Samples
PB (prep blank)	Chloride	0.15 mg/L	1.0 mg/L	ERH741
ICB/CCB	Chloride	0.147 mg/L	1.0 mg/L	ERH741
PB (prep blank)	Chloride	0.13 mg/L	1.0 mg/L	ERH730** ERH749
ICB/CCB	Chloride	0.145 mg/L	1.0 mg/L	ERH730** ERH749
PB (prep blank)	Total alkalinity Bicarbonate alkalinity Total organic carbon	1.5 mg/L 1.5 mg/L 0.23 mg/L	2.0 mg/L 2.0 mg/L 0.93 mg/L	All samples in SDG 87940
ICB/CCB	Total organic carbon	0.31 mg/L	0.93 mg/L	All samples in SDG 87940



Data qualification by the laboratory blanks was based on the maximum contaminant concentration in the laboratory blanks in the analysis of each analyte. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated laboratory blanks with the following exceptions:

Sample	Analyte	Reported Concentration	Limit of Quantitation	Modified Final Concentration
ERH730**	Total organic carbon	0.68 mg/L	0.93 mg/L	0.68U mg/L
ERH736	Total organic carbon	1.2 mg/L	0.93 mg/L	1.2U mg/L
ERH749	Total organic carbon	0.96 mg/L	0.93 mg/L	0.96U mg/L

## V. Field Blanks

No field blanks were identified in this SDG.

## VI. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

## VII. Duplicate Sample Analysis

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

## VIII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## IX. Field Duplicates

No field duplicates were identified in this SDG.

## X. Sample Result Verification

All sample result verifications were acceptable for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

## **XI. Overall Assessment of Data**

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to technical holding time, data were qualified as estimated in three samples.

Due to laboratory blank contamination, data were qualified as not detected in three samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

**Red Hill Bulk Storage Facility, CTO 18F0126  
Wet Chemistry - Data Qualification Summary - SDG 87940**

Sample	Analyte	Flag	A or P	Reason (Code)
ERH736 ERH741 ERH749	Nitrate	J (all detects) UJ (all non-detects)	P	Technical holding times (H)

**Red Hill Bulk Storage Facility, CTO 18F0126  
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 87940**

Sample	Analyte	Modified Final Concentration	A or P	Code
ERH730**	Total organic carbon	0.68U mg/L	A	B
ERH736	Total organic carbon	1.2U mg/L	A	B
ERH749	Total organic carbon	0.96U mg/L	A	B

**Red Hill Bulk Storage Facility, CTO 18F0126  
Wet Chemistry - Field Blank Data Qualification Summary - SDG 87940**

No Sample Data Qualified in this SDG

LDC #: 44408A6  
 SDG #: 87940  
 Laboratory: APPL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**  
 Level C/D

Date: 2/22/19  
 Page: 1 of 1  
 Reviewer: [Signature]  
 2nd Reviewer: [Signature]

**METHOD: (Analyte)** Alkalinity (SM2320B), Chloride, Nitrate, Sulfate (EPA Method 300.0), Ferrous Iron (SM3500-Fe B), Nitrate/Nitrite-N (EPA Method 353.2), TOC (EPA SW846 Method 9060A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / SW	
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	SW	
V	Field blanks	N	
VI.	Matrix Spike/Matrix Spike Duplicates	N	C.S.
VII.	Duplicate sample analysis	N	
VIII.	Laboratory control samples	A	LCS / D
IX.	Field duplicates	N	
X.	Sample result verification	A	Not reviewed for Level C validation.
XI.	Overall assessment of data	A	

Note: A = Acceptable      ND = No compounds detected      D = Duplicate      SB=Source blank  
 N = Not provided/applicable      R = Rinsate      TB = Trip blank      OTHER:  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

\*\* Indicates sample underwent Level D validation

	Client ID	Lab ID	Matrix	Date
1	ERH730**	AZ85562**	Water	01/23/19
2	ERH736	AZ85565	Water	01/23/19 <sup>22</sup>
3	ERH741**	AZ85567**	Water	01/23/19 <sup>22</sup>
4	ERH749	AZ85569	Water	01/23/19
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				

Notes: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Method: Inorganics (EPA Method See Cover)

Validation Area	Yes	No	NA	Findings/Comments
<b>I. Technical holding times</b>				
All technical holding times were met.		✓		
<b>II. Calibration</b>				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial calibration correlation coefficients > 0.995?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% QC limits?	✓			
Were titrant checks performed as required? (Level IV only)	✓			
Were balance checks performed as required? (Level IV only)			✓	
<b>III. Blanks</b>				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.	✓			
<b>IV. Matrix spike/Matrix spike duplicates and Duplicates</b>				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.			✓	
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.			✓	
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of ≤ CRDL (≤ 2X CRDL for soil) was used for samples that were ≤ 5X the CRDL, including when only one of the duplicate sample values were < 5X the CRDL.			✓	
<b>V. Laboratory control samples</b>				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	✓			
<b>VI. Regional Quality Assurance and Quality Control</b>				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

**VALIDATION FINDINGS CHECKLIST**

Validation Area	Yes	No	NA	Findings/Comments
<b>VII. Sample Result Verification</b>				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
Were detection limits < RL?	✓			
<b>VIII. Overall assessment of data</b>				
Overall assessment of data was found to be acceptable.	✓			
<b>IX. Field duplicates</b>				
Field duplicate pairs were identified in this SDG.		✓		
Target analytes were detected in the field duplicates.			✓	
<b>X. Field blanks</b>				
Field blanks were identified in this SDG.		✓		
Target analytes were detected in the field blanks.			✓	

**VALIDATION FINDINGS WORKSHEET**  
**Sample Specific Analysis Reference**

All circled methods are applicable to each sample.

Sample ID	Parameter
1-4	pH TDS (Cl) F (NO <sub>3</sub> ) NO <sub>2</sub> (SO <sub>4</sub> ) O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN (TOC) Cr6+ ClO <sub>4</sub> (Ferrous Fe) (NO <sub>3</sub> /NO <sub>2</sub> )
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
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	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
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	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>

Comments:

---

**VALIDATION FINDINGS WORKSHEET**  
**Technical Holding Times**

All circled dates have exceeded the technical holding time.  
 Y N N/A Were all samples preserved as applicable to each method ?  
 Y N N/A Were all cooler temperatures within validation criteria?

CODE: H

<b>Method:</b>		EPA 300.0					
<b>Parameters:</b>		Nitrate					
<b>Technical holding time:</b>		48 Hours.					
Sample ID	Sampling date	Analysis date	Total Time	Qualifier	Analysis date	Total Time	Qualifier
2	1/22/19 12:10	1/24/19 18:26	54 hrs.	J/W/P (ND)			
3	1/22/19 3:15	1/25/19 19:52	77 hrs.	J/W/P (Det)			
4	1/23/19 11:30	1/25/19 <del>14:52</del> 18:23 JB	55 hrs.	↓			



**VALIDATION FINDINGS WORKSHEET**

**Blanks**

CODE: B

Reviewer: JB

2nd Reviewer: 

**METHOD:** Inorganics, Method See Cover

**Conc. units:** mg/L **Associated Samples** 3

Analyte	Blank ID	Blank ID	Blank Action Limit										
	PB	ICB/CCB (mg/L)		No Qualifiers (> 5x)									
Chloride	0.15	0.147	0.75										

Cl LOQ = 1.0 mg/L

**Conc. units:** mg/L **Associated Samples:** 1, 4

Analyte	Blank ID	Blank ID	Blank Action Limit										
	PB	ICB/CCB (mg/L)		No Qualifiers (> 5x)									
Chloride	0.13	0.145	0.725										

Cl LOQ Blank = 1.0 mg/L

Cl LOQ sample 1 = 5.0 mg/L

Cl LOQ sample 4 = 10.0 mg/L

**Conc. units:** mg/L **Associated Samples:** All

Analyte	Blank ID	Blank ID	Blank Action Limit										
	PB	ICB/CCB (mg/L)		1	2	4							
Alkalinity, Total	1.5		7.5										
Bicarbonate as CaCO3	1.5		7.5										
TOC	0.23	0.31	1.55	0.68	1.2	0.96							

Alk LOQ = 2.0 mg/L

TOC LOQ = 0.93 mg/L

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:  
All contaminants within five times the method blank concentration were qualified as not detected, "U".

LDC #: 44408A6

## Validation Findings Worksheet Initial and Continuing Calibration Calculation Verification

Page: 1 of 1

Reviewer: ✓

2nd Reviewer: AC

Method: Inorganics, Method See Cover

The correlation coefficient (r) for the calibration of NO<sub>3</sub>/NO<sub>2</sub> was recalculated. Calibration date: 1/28/19

An initial or continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

$$\%R = \frac{\text{Found} \times 100}{\text{True}}$$

Where, Found = concentration of each analyte measured in the analysis of the ICV or CCV solution  
True = concentration of each analyte in the ICV or CCV source

Type of analysis	Analyte	Standard	Conc. (ug/L)	Area	Recalculated	Reported	Acceptable (Y/N)
					r or r <sup>2</sup>	r or r <sup>2</sup>	
Initial calibration	NO <sub>3</sub> /NO <sub>2</sub>	s1	0	0.0089	0.9986	0.9986	Y
		s2	0.1	0.0168			
		s3	1.2	0.0861			
		s4	3	0.1847			
		s5	4.8	0.2698			
		s6	6	0.327			
Calibration verification	SO <sub>4</sub>	ICV	<u>Found:</u> 25 mg/L	<u>True:</u> 25 mg/L	100.7	99.37	Y
Calibration verification	TOC	CCV	<u>Found:</u> 2.623 mg/L	<u>True:</u> 2.50 mg/L	104.9	106.37	Y
Calibration verification							

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 44408A6

**VALIDATION FINDINGS WORKSHEET**  
**Level IV Recalculation Worksheet**

Page: 1 of 1  
Reviewer: JB  
2nd Reviewer: [Signature]

**METHOD:** Inorganics, Method See Cover

Percent recoveries (%R) for a laboratory control sample and a matrix spike sample were recalculated using the following formula:

$\%R = \frac{\text{Found}}{\text{True}} \times 100$     Where,    Found = concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).  
True = concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$RPD = \frac{|S-D|}{(S+D)/2} \times 100$     Where,    S = Original sample concentration  
D = Duplicate sample concentration

Sample ID	Type of Analysis	Element	Found / S (units)	True / D (units)	Recalculated	Reported	Acceptable (Y/N)
					%R / RPD	%R / RPD	
LCS	Laboratory control sample 1/24	Ferrous Fe	3.066 mg/L	3.00 mg/L	102.7%	102.7%	Y
	Matrix spike sample		(SSR-SR)				
	Duplicate sample						

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**VALIDATION FINDINGS WORKSHEET**  
**Sample Calculation Verification**

**METHOD:** Inorganics, Method See Cover

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

- Y  N  N/A Have results been reported and calculated correctly?
- Y  N  N/A Are results within the calibrated range of the instruments?
- Y  N  N/A Are all detection limits below the CRQL?

Compound (analyte) results for TDC reported with a positive detect were recalculated and verified using the following equation:

Concentration = Recalculation:

$$Toc = \frac{Area - Bck}{Slope} = \frac{5903614 - 457983}{8072424.299} = 0.675 \text{ mg/L}$$

#	Sample ID	Analyte	Reported Concentration (mg/L)	Calculated Concentration (mg/L)	Acceptable (Y/N)
	1	Cl <sup>-</sup>	10.8	10.9	Y
		NO <sub>3</sub> /NO <sub>2</sub>	0.51	0.51	Y
		Alk <sup>-</sup>	59.0	59.0	Y
		Toc	0.68	0.68	Y

Note: \_\_\_\_\_

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** February 28, 2019

**Parameters:** Gasoline Range Organics

**Validation Level:** Level C & D

**Laboratory:** APPL. Inc

**Sample Delivery Group (SDG):** 87940

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
ERH729	AZ85561	Water	01/23/19
ERH730	AZ85562	Water	01/23/19
ERH731	AZ85563	Water	01/23/19
ERH735	AZ85564	Water	01/23/19
ERH736	AZ85565	Water	01/23/19
ERH740	AZ85566	Water	01/23/19
ERH741**	AZ85567**	Water	01/23/19
ERH748	AZ85568	Water	01/23/19
ERH749	AZ85569	Water	01/23/19
ERH730MS	AZ85562MS	Water	01/23/19
ERH730MSD	AZ85562MSD	Water	01/23/19

\*\*Indicates sample underwent Level D validation

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Gasoline Range Organics by Environmental Protection Agency (EPA) SW 846 Method 8260B

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level D data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered not detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## Qualification Code Reference

- H Holding times were exceeded.
- S Surrogate recovery was outside QC limits.
- C Calibration %RSD, r,  $r^2$  or %D were noncompliant.
- R Calibration RRF was  $<0.05$ .
- B Presumed contamination from preparation (method blank).
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD was high.
- I Internal standard performance was unsatisfactory.
- M Instrument Performance Check (BFB or DFTPP) was noncompliant.
- T Presumed contamination from trip blank.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Instrument performance for pesticides was poor.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.



## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

A curve fit, based on the initial calibration, was established for quantitation. The coefficient of determination ( $r^2$ ) was greater than or equal to 0.990.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

## **III. Continuing Calibration**

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0%.

## **IV. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **V. Field Blanks**

Samples ERH729, ERH735, ERH740, and ERH748 were identified as trip blanks. No contaminants were found.

## **VI. Surrogates**

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

## **VII. Matrix Spike/Matrix Spike Duplicates**

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## **VIII. Laboratory Control Samples**

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## **IX. Field Duplicates**

Samples ERH730 and ERH731 were identified as field duplicates. No results were detected in any of the samples.

## **X. Compound Quantitation**

All compound quantitations met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

## **XI. Target Compound Identifications**

All target compound identifications met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

## **XII. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**Red Hill Bulk Storage Facility, CTO 18F0126  
Gasoline Range Organics - Data Qualification Summary - SDG 87940**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Gasoline Range Organics - Laboratory Blank Data Qualification Summary - SDG  
87940**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Gasoline Range Organics - Field Blank Data Qualification Summary - SDG 87940**

No Sample Data Qualified in this SDG

LDC #: 44408A7  
 SDG #: 87940  
 Laboratory: APPL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**  
 Level C/D

Date: 2/27/19  
 Page: 1 of 1  
 Reviewer: [Signature]  
 2nd Reviewer: [Signature]

**METHOD:** GC/MS Gasoline Range Organics (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A, Δ	
II.	GC/MS Instrument performance check	Δ	
III.	Initial calibration/ICV	A, Δ	ICV ≤ 20
IV.	Continuing calibration	Δ	CCV ≤ 20
V.	Laboratory Blanks	Δ	
VI.	Field blanks	ND	TB = 1, 4, 6, 8
VII.	Surrogate spikes	Δ	
VIII.	Matrix spike/Matrix spike duplicates	A	
IX.	Laboratory control samples	Δ	see ID
X.	Field duplicates	ND	ID = 2, 3
XI.	Internal standards	Δ	
XII.	Compound quantitation RL/LOQ/LODs	Δ	Not reviewed for Level C validation.
XIII.	Target compound identification	Δ	Not reviewed for Level C validation.
XIV.	System performance	Δ	Not reviewed for Level C validation.
XV.	Overall assessment of data	A	

Note: A = Acceptable      ND = No compounds detected      D = Duplicate      SB=Source blank  
 N = Not provided/applicable      R = Rinsate      TB = Trip blank      OTHER:  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

\*\* Indicates sample underwent Level D validation

	Client ID	Lab ID	Matrix	Date
1	ERH729 TB	AZ85561	Water	01/23/19
2	ERH730 D	AZ85562	Water	01/23/19
3	ERH731 D	AZ85563	Water	01/23/19
4	ERH735 TB	AZ85564	Water	01/23/19
5	ERH736	AZ85565	Water	01/23/19
6	ERH740 TB	AZ85566	Water	01/23/19
7	ERH741 **	AZ85567 **	Water	01/23/19
8	ERH748 TB	AZ85568	Water	01/23/19
9	ERH749	AZ85569	Water	01/23/19
10	ERH730MS	AZ85562MS	Water	01/23/19
11	ERH730MSD	AZ85562MSD	Water	01/23/19
12				
13	190125ALI- BIK			

**Method:** Volatiles (EPA SW 846 Method 8260B)

Validation Area	Yes	No	NA	Findings/Comments
<b>I. Technical holding times</b>				
Were all technical holding times met?	/			
Was cooler temperature criteria met?	/			
<b>II. GC/MS Instrument performance check</b>				
Were the BFB performance results reviewed and found to be within the specified criteria?	/			
Were all samples analyzed within the 12 hour clock criteria?	/			
<b>IIIa. Initial calibration</b>				
Did the laboratory perform a 5 point calibration prior to sample analysis?	/			
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?			/	
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of > 0.990?	/			
Were all percent relative standard deviations (%RSD) ≤ 30%/15% and relative response factors (RRF) ≥ 0.05?			/	
<b>IIIb. Initial Calibration Verification</b>				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	/			
Were all percent differences (%D) < 20%?	/			
<b>IV. Continuing calibration</b>				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	/			
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?			/	
Were all percent differences (%D) ≤ 20% and relative response factors (RRF) ≥ 0.05?	/			
<b>V. Laboratory Blanks</b>				
Was a laboratory blank associated with every sample in this SDG?	/			
Was a laboratory blank analyzed at least once every 12 hours for each matrix and concentration?	/			
Was there contamination in the laboratory blanks?			/	
<b>VI. Field blanks</b>				
Were field blanks were identified in this SDG?	/			
Were target compounds detected in the field blanks?			/	
<b>VII. Surrogate spikes</b>				
Were all surrogate percent recovery (%R) within QC limits?	/			
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			/	

LDC #: 44408A7

## VALIDATION FINDINGS CHECKLIST

Page: 2 of 2  
Reviewer: FT  
2nd Reviewer: π

Validation Area	Yes	No	NA	Findings/Comments
<b>VIII. Matrix spike/Matrix spike duplicates</b>				
Were matrix spike (MS) and matrix spike duplicate (MSD) analyzed in this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>IX. Laboratory control samples</b>				
Was an LCS analyzed per analytical batch in this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>X. Field duplicates</b>				
Were field duplicate pairs identified in this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were target compounds detected in the field duplicates?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>XI. Internal standards</b>				
Were internal standard area counts within -50% to +100% of the associated calibration standard?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were retention times within + 30 seconds of the associated calibration standard?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XII. Compound quantitation</b>				
Did the laboratory LOQs/RLs meet the QAPP LOQs/RLs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XIII. Target compound identification</b>				
Were relative retention times (RRT's) within + 0.06 RRT units of the standard?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were chromatogram peaks verified and accounted for?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XIV. System performance</b>				
System performance was found to be acceptable.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XV. Overall assessment of data</b>				
Overall assessment of data was found to be acceptable.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

## TARGET COMPOUND WORKSHEET

### METHOD: VOA

A. Chloromethane	AA. Tetrachloroethene	AAA. 1,3,5-Trimethylbenzene	AAAA. Ethyl tert-butyl ether	A1. 1,3-Butadiene
B. Bromomethane	BB. 1,1,2,2-Tetrachloroethane	BBB. 4-Chlorotoluene	BBBB. tert-Amyl methyl ether	B1. Hexane
C. Vinyl chloride	CC. Toluene	CCC. tert-Butylbenzene	CCCC. 1-Chlorohexane	C1. Heptane
D. Chloroethane	DD. Chlorobenzene	DDD. 1,2,4-Trimethylbenzene	DDDD. Isopropyl alcohol	D1. Propylene
E. Methylene chloride	EE. Ethylbenzene	EEE. sec-Butylbenzene	EEEE. Acetonitrile	E1. Freon 11
F. Acetone	FF. Styrene	FFF. 1,3-Dichlorobenzene	FFFF. Acrolein	F1. Freon 12
G. Carbon disulfide	GG. Xylenes, total	GGG. p-Isopropyltoluene	GGGG. Acrylonitrile	G1. Freon 113
H. 1,1-Dichloroethene	HH. Vinyl acetate	HHH. 1,4-Dichlorobenzene	HHHH. 1,4-Dioxane	H1. Freon 114
I. 1,1-Dichloroethane	II. 2-Chloroethylvinyl ether	III. n-Butylbenzene	IIII. Isobutyl alcohol	I1. 2-Nitropropane
J. 1,2-Dichloroethene, total	JJ. Dichlorodifluoromethane	JJJ. 1,2-Dichlorobenzene	JJJJ. Methacrylonitrile	J1. Dimethyl disulfide
K. Chloroform	KK. Trichlorofluoromethane	KKK. 1,2,4-Trichlorobenzene	KKKK. Propionitrile	K1. 2,3-Dimethyl pentane
L. 1,2-Dichloroethane	LL. Methyl-tert-butyl ether	LLL. Hexachlorobutadiene	LLLL. Ethyl ether	L1. 2,4-Dimethyl pentane
M. 2-Butanone	MM. 1,2-Dibromo-3-chloropropane	MMM. Naphthalene	MMMM. Benzyl chloride	M1. 3,3-Dimethyl pentane
N. 1,1,1-Trichloroethane	NN. Methyl ethyl ketone	NNN. 1,2,3-Trichlorobenzene	NNNN. Iodomethane	N1. 2-Methylpentane
O. Carbon tetrachloride	OO. 2,2-Dichloropropane	OOO. 1,3,5-Trichlorobenzene	OOOO. 1,1-Difluoroethane	O1. 3-Methylpentane
P. Bromodichloromethane	PP. Bromochloromethane	PPP. trans-1,2-Dichloroethene	PPPP. Tetrahydrofuran	P1. 3-Ethylpentane
Q. 1,2-Dichloropropane	QQ. 1,1-Dichloropropene	QQQ. cis-1,2-Dichloroethene	QQQQ. Methyl acetate	Q1. 2,2-Dimethylpentane
R. cis-1,3-Dichloropropene	RR. Dibromomethane	RRR. m,p-Xylenes	RRRR. Ethyl acetate	R1. 2,2,3-Trimethylbutane
S. Trichloroethene	SS. 1,3-Dichloropropane	SSS. o-Xylene	SSSS. Cyclohexane	S1. 2,2,4-Trimethylpentane
T. Dibromochloromethane	TT. 1,2-Dibromoethane	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	TTTT. Methyl cyclohexane	T1. 2-Methylhexane
U. 1,1,2-Trichloroethane	UU. 1,1,1,2-Tetrachloroethane	UUU. 1,2-Dichlorotetrafluoroethane	UUUU. Allyl chloride	U1. Nonanal
V. Benzene	VV. Isopropylbenzene	VVV. 4-Ethyltoluene	VVVV. Methyl methacrylate	V1. 2-Methylnaphthalene
W. trans-1,3-Dichloropropene	WW. Bromobenzene	WWW. Ethanol	WWWW. Ethyl methacrylate	W1. Methanol
X. Bromoform	XX. 1,2,3-Trichloropropane	XXX. Di-isopropyl ether	XXXX. cis-1,4-Dichloro-2-butene	X1. 1,2,3-Trimethylbenzene
Y. 4-Methyl-2-pentanone	YY. n-Propylbenzene	YYY. tert-Butanol	YYYY. trans-1,4-Dichloro-2-butene	Y1.
Z. 2-Hexanone	ZZ. 2-Chlorotoluene	ZZZ. tert-Butyl alcohol	ZZZZ. Pentachloroethane	Z1.

LDC#: 44408A7  
 SDG#: pu cover

**VALIDATION FINDINGS WORKSHEET**  
**Initial Calibration Calculation Verification**

Page: 1 of 1  
 Reviewer: F7  
 2nd Reviewer: JK

Method: Gasoline (EPA SW 846 Method 8260B)

Calibration Date	System	Compound	Standard	(Y) Response	(X) Concentration
1/22/2019	GCMS Loki	GRO	1	11.35443384	0.8
			2	11.98163237	2.0
			3	12.62207542	4.0
			4	18.11436978	12.0
			5	23.78842851	24.0
			6	28.60722789	32.0
			7	33.12981030	40.0

**Regression Output**

**Reported**

Constant	10.834137	10.800000
Std Err of Y Est		
R Squared	0.998425	0.998000
Degrees of Freedom		
X Coefficient(s)	0.555392	0.555000
Std Err of Coef.		
Correlation Coefficient	0.999212	
Coefficient of Determination (r <sup>2</sup> )	0.998425	0.998000



### VALIDATION FINDINGS WORKSHEET Continuing Calibration Results Verification

**METHOD:** GC/MS VOA (EPA SW 846 Method 8260B)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 \* (ave. RRF - RRF)/ave. RRF  
RRF =  $(A_x)(C_{is}) / (A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF  
RRF = continuing calibration RRF  
 $A_x$  = Area of compound,                       $A_{is}$  = Area of associated internal standard  
 $C_x$  = Concentration of compound,         $C_{is}$  = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference internal Standard)	Average RRF (initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	0125L03 COV	1/25/19	gasoline (1st internal standard)	300	285.002	285.002	5.0	5.0
			(2nd internal standard)					
			(3rd internal standard)					
			(4th internal standard)					
2			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
			(4th internal standard)					
3			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
			(4th internal standard)					
4			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
			(4th internal standard)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 44408A7

**VALIDATION FINDINGS WORKSHEET**  
**Surrogate Results Verification**

Page: 1 of 1  
Reviewer: FT  
2nd reviewer: A

**METHOD:** GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS \* 100

Where: SF = Surrogate Found  
SS = Surrogate Spiked

Sample ID: #7

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene	25.00	22.613	90.5	90.5	0

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

LDC #: 44408A7

**VALIDATION FINDINGS WORKSHEET**  
**Matrix Spike/Matrix Spike Duplicates Results Verification**

Page: 1 of 1

Reviewer: FT

2nd Reviewer: [Signature]

**METHOD:** GC/MS VOA (EPA Method 8260B)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery =  $100 * (SSC - SC) / SA$

Where: SSC = Spiked sample concentration  
 SA = Spike added

SC = Sample concentration

RPD =  $|MSC - MSC| * 2 / (MSC + MSC)$

MSC = Matrix spike concentration

MSDC = Matrix spike duplicate concentration

MS/MSD sample: 10 & 11

Compound	Spike Added (ug/L)		Sample Concentration (ug/L)	Spiked Sample Concentration (ug/L)		Matrix Spike		Matrix Spike Duplicate		MS/MSD	
	MS	MSD		MS	MSD	Percent Recovery		Percent Recovery		RPD	
						Reported	Recalc	Reported	Recalc	Reported	Recalculated
<del>GRD 1,1-Dichloroethene</del>	300	300	ND	257	290	85.7	85.7	96.7	96.7	12.1	12.1
Trichloroethene											
Benzene											
Toluene											
Chlorobenzene											

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 44408A7

**VALIDATION FINDINGS WORKSHEET**  
**Laboratory Control Sample Results Verification**

Page: 1 of 1  
 Reviewer: FT  
 2nd Reviewer: dc

**METHOD:** GC/MS VOA (EPA Method 8260B)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 \* SSC/SA

Where: SSC = Spiked sample concentration  
 SA = Spike added

RPD = | LCSC - LCSDC | \* 2 / (LCSC + LCSDC)

LCSC = Laboratory control sample concentration    LCSDC = Laboratory control sample duplicate concentration

LCS ID: 190125ALI LCS10

Compound	Spike Added (ug/L)		Spiked Sample Concentration (ug/L)		LCS		LCSD		LCS/LCSD	
	LCS	LCSD	LCS	LCSD	Percent Recovery		Percent Recovery		RPD	
					Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
<del>GRO 1,1-Dichloroethene</del>	300	300	303	318	101	101	106	106	4.8	4.8
Trichloroethene										
Benzene										
Toluene										
Chlorobenzene										

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.



## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** February 28, 2019

**Parameters:** Total Petroleum Hydrocarbons as Extractables

**Validation Level:** Level C & D

**Laboratory:** APPL, Inc.

**Sample Delivery Group (SDG):** 87940

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
ERH730	AZ85562	Water	01/23/19
ERH731	AZ85563	Water	01/23/19
ERH736	AZ85565	Water	01/23/19
ERH736RE	AZ85565RE	Water	01/23/19
ERH741**	AZ85567**	Water	01/23/19
ERH749	AZ85569	Water	01/23/19
ERH741(SGCU)**	AZ85567(SGCU)**	Water	01/23/19
ERH730MS	AZ85562MS	Water	01/23/19
ERH730MSD	AZ85562MSD	Water	01/23/19

Samples ending in "SGCU" underwent Silica Gel cleanup

\*\*Indicates sample underwent Level D validation

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Total Petroleum Hydrocarbons (TPH) as Extractables by Environmental Protection Agency (EPA) SW 846 Method 8015B

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level D data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered not detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.



## Qualification Code Reference

- H Holding times were exceeded.
- S Surrogate recovery was outside QC limits.
- C Calibration %RSD,  $r$ ,  $r^2$  or %D were noncompliant.
- R Calibration RRF was  $<0.05$ .
- B Presumed contamination from preparation (method blank).
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD was high.
- I Internal standard performance was unsatisfactory.
- M Instrument Performance Check (BFB or DFTPP) was noncompliant.
- T Presumed contamination from trip blank.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Instrument performance for pesticides was poor.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

## I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met with the following exceptions:

Sample	Compound	Total Days From Sample Collection Until Extraction	Required Holding Time (in Days) From Sample Collection Until Extraction	Flag	A or P
ERH736RE	All compounds	9	7	UJ (all non-detects)	A

## II. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

## III. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

## IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## V. Field Blanks

No field blanks were identified in this SDG.

## VI. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

## VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

### VIII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

### IX. Field Duplicates

Samples ERH730 and ERH731 were identified as field duplicates. No results were detected in any of the samples.

### X. Compound Quantitation

All compound quantitations met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

### XI. Target Compound Identifications

All target compound identifications met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

### XII. Overall Assessment of Data

The analysis was conducted within all specifications of the method.

In the case where more than one result was reported for an individual sample, the least technically acceptable results were deemed unusable as follows:

Sample	Compound	Reason	Flag	A or P
ERH736RE	All compounds	Extracted outside holding time.	R	A

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Based upon the data validation all other results are considered valid and usable for all purposes.

**Red Hill Bulk Storage Facility, CTO 18F0126  
Total Petroleum Hydrocarbons as Extractables - Data Qualification Summary -  
SDG 87940**

Sample	Compound	Flag	A or P	Reason (Code)
ERH736RE	All compounds	R	A	Overall assessment of data (D)

**Red Hill Bulk Storage Facility, CTO 18F0126  
Total Petroleum Hydrocarbons as Extractables - Laboratory Blank Data  
Qualification Summary - SDG 87940**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Total Petroleum Hydrocarbons as Extractables - Field Blank Data Qualification  
Summary - SDG 87940**

No Sample Data Qualified in this SDG

LDC #: 44408A8  
 SDG #: 87940  
 Laboratory: APPL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**  
 Level C/D

Date: 2/27/19  
 Page: 1 of 1  
 Reviewer: F7  
 2nd Reviewer: [Signature]

**METHOD:** GC TPH as Extractables (EPA SW 846 Method 8015B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / SW	
II.	Initial calibration/ICV	A / A	% PSD / ICV ≤ 20
III.	Continuing calibration	A	COV ≤ 20
IV.	Laboratory Blanks	A	
V.	Field blanks	N	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A	LOS 10
IX.	Field duplicates	ND	D = 1, 2
X.	Compound quantitation RL/LOQ/LODs	A	Not reviewed for Level C validation.
XI.	Target compound identification	A	Not reviewed for Level C validation.
XII.	Overall assessment of data	SW	

Note: A = Acceptable  
 N = Not provided/applicable  
 SW = See worksheet  
 ND = No compounds detected  
 R = Rinsate  
 FB = Field blank  
 D = Duplicate  
 TB = Trip blank  
 EB = Equipment blank  
 SB = Source blank  
 OTHER:

\*\* Indicates sample underwent Level D validation

	Client ID	Lab ID	Matrix	Date
1	ERH730 <sup>SW</sup> D	AZ85562 <sup>SW</sup>	Water	01/23/19
2	ERH731 D	AZ85563	Water	01/23/19
3	ERH736	AZ85565	Water	01/23/19
4	ERH736 <sup>RE</sup>	AZ85565 <sup>RE</sup>	Water	01/23/19
5	ERH741 **	AZ85567 **	Water	01/23/19
6	ERH749	AZ85569	Water	01/23/19
7	ERH741(SGCU) **	AZ85567(SGCU) **	Water	01/23/19
8	ERH730MS	AZ85562MS	Water	01/23/19
9	ERH730MSD	AZ85562MSD	Water	01/23/19
10				
11				
12				

Notes:

1	190125A - Blank			
2	19128A1 - Blank			
3	19128A - BIK			

Method: /GC HPLC

Validation Area	Yes	No	NA	Findings/Comments
<b>I. Technical holding times</b>				
Were all technical holding times met?	/			
Was cooler temperature criteria met?	/			
<b>IIa. Initial calibration</b>				
Did the laboratory perform a 5 point calibration prior to sample analysis?	/			
Were all percent relative standard deviations (%RSD) < 20%?	/			
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of ≥0.990?			/	
Were the RT windows properly established?	/			
<b>IIb. Initial calibration verification</b>				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	/			
Were all percent differences (%D) < 20%?	/			
<b>III. Continuing calibration</b>				
Was a continuing calibration analyzed daily?	/			
Were all percent differences (%D) < 20%?	/			
Were all the retention times within the acceptance windows?	/			
<b>IV. Laboratory Blanks</b>				
Was a laboratory blank associated with every sample in this SDG?	/			
Was a laboratory blank analyzed for each matrix and concentration?	/			
Was there contamination in the laboratory blanks?		/		
<b>V. Field Blanks</b>				
Were field blanks identified in this SDG?		/		
Were target compounds detected in the field blanks?			/	
<b>VI. Surrogate spikes</b>				
Were all surrogate percent recovery (%R) within the QC limits?	/			
If the percent recovery (%R) of one or more surrogates was outside QC limits, was a reanalysis performed to confirm %R?			/	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			/	
<b>VII. Matrix spike/Matrix spike duplicates</b>				
Were matrix spike (MS) and matrix spike duplicate (MSD) analyzed in this SDG?	/			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	/			
<b>VIII. Laboratory control samples</b>				
Was an LCS analyzed per analytical or extraction batch?	/			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	/			

LDC #: 44408AB

## VALIDATION FINDINGS CHECKLIST

Page: 2 of 2  
Reviewer: FT  
2nd Reviewer: TC

Validation Area	Yes	No	NA	Findings/Comments
<b>IX. Field duplicates</b>				
Were field duplicate pairs identified in this SDG?	/			
Were target compounds detected in the field duplicates?		/		
<b>X. Compound quantitation</b>				
Did the laboratory LOQs/RLs meet the QAPP LOQs/RLs?	/			
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	/			
<b>XI. Target compound identification</b>				
Were the retention times of reported detects within the RT windows?	/			
<b>XIII: Overall assessment of data</b>				
Overall assessment of data was found to be acceptable.	/			

**VALIDATION FINDINGS WORKSHEET**  
**Technical Holding Times**

All circled dates have exceeded the technical holding times.  
 Y/N/N/A Were all cooler temperatures within validation criteria?

Sample ID	Matrix	Preserved	Sampling Date	Extraction date	Analysis date	Total # of Days	Qualifier
METHOD: <input checked="" type="checkbox"/> GC <input type="checkbox"/> HPLC <span style="float: right;">H</span>							
4	W		1/23/19	2/1/19	2/4/19	9	J/W/A ND

**TECHNICAL HOLDING TIME CRITERIA**

**VOLATILES:**

- Water unpreserved: Aromatic within 7 days, non-aromatic within 14 days of sample collection.
- Water preserved: Both within 14 days of sample collection.
- Soils: Both within 14 days of sample collection.
- Encores unpreserved: Both within 48 hours of sample collection.
- Encores preserved: Both within 14 days of sample collection.

**EXTRACTABLES:**

- Water: Extracted within 7 days, analyzed within 40 days.
- Soil: Extracted within 14 days, analyzed within 40 days.



LDC #: 44408A8

**VALIDATION FINDINGS WORKSHEET**  
**Overall Assessment of Data**

Page: 1 of 1

Reviewer: FT

2nd Reviewer:

METHOD:  GC  HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

All available information pertaining to the data were reviewed using professional judgement to compliment the determination of the overall quality of the data.

(D)  
Y N N/A Was the overall quality and usability of the data acceptable?

#	Associated samples	Compounds	Findings	Qualifications
	4	All	re-analysis to confirm	R/A

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

LDC #: 44408A8

**VALIDATION FINDINGS WORKSHEET**  
**Initial Calibration Calculation Verification**

Page: 1 of 1  
Reviewer: FT  
2nd Reviewer: [Signature]

METHOD: GC X HPLC \_\_\_\_\_

The calibration factors (CF), average CF, and relative standard deviation (%RSD) were recalculated for compounds identified below using the following calculations:

CF = A/C  
average CF = sum of the CF/number of standards  
%RSD = 100 \* (S/X)

Where: A = Area of compound  
C = Concentration of compound  
S = Standard deviation of calibration factors  
X = Mean of calibration factors

#	Standard ID	Calibration Date	Compound	Reported ( std=250ppb)	Recalculated ( std=250ppb)	Reported Average CF (Initial)	Recalculated Average CF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL	1/17/2019	Diesel (C10-C24)	1209913	1209913	1187890	118790	3.8	3.8

LDC #: 44408AB

**VALIDATION FINDINGS WORKSHEET**  
**Continuing Calibration Results Verification**

Page: 10 of 11

Reviewer: FT

2nd Reviewer: [Signature]

METHOD: GC  HPLC

The percent difference (%D) of the initial calibration average Calibration Factors (CF) and the continuing calibration CF were recalculated for the compounds identified below using the following calculation:

% Difference =  $100 * (\text{ave. CF} - \text{CF}) / \text{ave. CF}$

Where: ave. CF = initial calibration average CF  
 CF = continuing calibration CF  
 A = Area of compound  
 C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(ICAL)/ CCV Conc.	Reported	Recalculated	Reported	Recalculated
					CF/ Conc. CCV	CF/ Conc. CCV	%D	%D
1	124061 CCV	1/29/19	Diesel G0-C24	1187890	1163780	1163780	2.0	2.0
2	201002 CCV	2/01/19	↓	↓	1159300	1159300	2.4	2.4
3								
4								

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 44408A8

**VALIDATION FINDINGS WORKSHEET**  
**Surrogate Results Verification**

Page: 1 of 1

Reviewer: FT

2nd reviewer: [Signature]

METHOD:  GC  HPLC

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS \* 100

Where: SF = Surrogate Found  
 SS = Surrogate Spiked

Sample ID: #5

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
octacosane	-	75.0	82.118	109	109	0
o-terphenyl	-	↓	72.533	96.7	96.7	0

Sample ID: \_\_\_\_\_

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

	Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound
A	Chlorobenzene (CBZ)	G	Octacosane	M	Benzo(e)Pyrene	S	1-Chloro-3-Nitrobenzene	Y	Tetrachloro-m- xylene
B	4-Bromofluorobenzene (BFB)	H	Ortho-Terphenyl	N	Terphenyl-D14	T	3,4-Dinitrotoluene	Z	2-Bromonaphthalene
C	a,a,a-Trifluorotoluene	I	Fluorobenzene (FBZ)	O	Decachlorobiphenyl (DCB)	U	Triphenyltin	AA	Chloro-octadecane
D	Bromochlorobenzene	J	n-Triacontane	P	1-methylnaphthalene	V	Tri-n-propyltin	BB	2,4-Dichlorophenylacetic acid
E	1,4-Dichlorobutane	K	Hexacosane	Q	Dichlorophenyl Acetic Acid (DCAA)	W	Tributyl Phosphate	CC	2,5-Dibromotoluene
F	1,4-Difluorobenzene (DFB)	L	Bromobenzene	R	4-Nitrophenol	X	Triphenyl Phosphate		

LDC #: 44408A8

**VALIDATION FINDINGS WORKSHEET**  
**Matrix Spike/Matrix Spike Duplicates Results Verification**

Page: 1 of 1

Reviewer: FT

2nd Reviewer: SC

METHOD:  GC  HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

$\% \text{Recovery} = 100 * (\text{SSC} - \text{SC}) / \text{SA}$

Where

SSC = Spiked sample concentration

MS = Matrix spike

SC = Sample concentration

MSD = Matrix spike duplicate

SA = Spike added

$\text{RPD} = ((\text{SSCMS} - \text{SSCMSD}) * 2) / (\text{SSCMS} + \text{SSCMSD}) * 100$

MS/MSD samples: 8 + 9

Compound	Spike Added (ug/L)		Sample Conc. (ug/L)	Spike Sample Concentration (ug/L)		Matrix spike		Matrix Spike Duplicate		MS/MSD	
	MS	MSD		MS	MSD	Percent Recovery		Percent Recovery		RPD	
						Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)											
Diesel C <sub>10</sub> -C <sub>24</sub> (8015)	1250	1250	ND	1330	1280	106	106	102	102	3.8	3.8
Benzene (8021B)											
Methane (RSK-175)											
2,4-D (8151)											
Dinoseb (8151)											
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)											
2,4,6-Trinitrotoluene (8330)											
Phorate (8141A)											
Malathion (8141A)											
Formaldehyde (8315A)											

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 44408A8

**VALIDATION FINDINGS WORKSHEET**

Page: 1 of 1

**Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification**

Reviewer: FT  
 2nd Reviewer: [Signature]

METHOD:  GC  HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

$\% \text{Recovery} = 100 * (\text{SSC} / \text{SA})$

$\text{RPD} = ((\text{SSCLCS} - \text{SSCLCSD}) * 2) / (\text{SSCLCS} + \text{SSCLCSD}) * 100$

Where SSC = Spiked sample concentration  
 LCS = Laboratory Control Sample

SA = Spike added  
 LCSD = Laboratory Control Sample duplicate

LCS/LCSD samples: 190128A LCSD

Compound	Spike Added (ug/L)		Spike Sample Concentration (ug/L)		LCS		LCSD		LCS/LCSD	
	LCS	LCSD	LCS	LCSD	Percent Recovery		Percent Recovery		RPD	
					Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)										
Diesel C10-C24 (8015)	1250	1250	1450	1510	116	116	121	121	4.1	4.1
Benzene (8021B)										
Methane (RSK-175)										
2,4-D (8151)										
Dinoseb (8151)										
Naphthalene (8310)										
Anthracene (8310)										
HMX (8330)										
2,4,6-Trinitrotoluene (8330)										
Phorate (8141A)										
Malathion (8141A)										
Formaldehyde (8315A)										
1										

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.



## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** March 4, 2019

**Parameters:** Methane

**Validation Level:** Level C & D

**Laboratory:** APPL, Inc.

**Sample Delivery Group (SDG):** 87940

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
ERH729	AZ85561	Water	01/23/19
ERH730	AZ85562	Water	01/23/19
ERH735	AZ85564	Water	01/23/19
ERH736**	AZ85565**	Water	01/23/19
ERH740	AZ85566	Water	01/23/19
ERH741	AZ85567	Water	01/23/19
ERH748	AZ85568	Water	01/23/19
ERH749	AZ85569	Water	01/23/19

\*\*Indicates sample underwent Level D validation



## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Methane by Method RSK-175

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level D data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## Qualification Code Reference

- H Holding times were exceeded.
- S Surrogate recovery was outside QC limits.
- C Calibration %RSD,  $r$ ,  $r^2$  or %D were noncompliant.
- R Calibration RRF was  $<0.05$ .
- B Presumed contamination from preparation (method blank).
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD was high.
- I Internal standard performance was unsatisfactory.
- M Instrument Performance Check (BFB or DFTPP) was noncompliant.
- T Presumed contamination from trip blank.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Instrument performance for pesticides was poor.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0%.

Retention time windows were established as required by the method for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

## **III. Continuing Calibration**

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 20.0%.

Retention times of all compounds in the calibration standards were within the established retention time windows for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

## **IV. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **V. Field Blanks**

Samples ERH729, ERH735, and ERH740 ERH748 were identified as trip blanks. No contaminants were found.

## **VI. Matrix Spike/Matrix Spike Duplicates**

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

## **VII. Laboratory Control Samples**

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## **VIII. Field Duplicates**

No field duplicates were identified in this SDG.

## **IX. Compound Quantitation**

All compound quantitations met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

## **X. Target Compound Identification**

All target compound identifications met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

## **XI. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**Red Hill Bulk Storage Facility, CTO 18F0126  
Methane - Data Qualification Summary - SDG 87940**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Methane - Laboratory Blank Data Qualification Summary - SDG 87940**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Methane - Field Blank Data Qualification Summary - SDG 87940**

No Sample Data Qualified in this SDG

LDC #: 44408A51

**VALIDATION COMPLETENESS WORKSHEET**

Date: 2/27/19

SDG #: 87940

Level C/D

Page: 1 of 1

Laboratory: APPL, Inc.

Reviewer: FT

2nd Reviewer: [Signature]

**METHOD:** GC Methane (Method RSK-175)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A, A	
II.	Initial calibration/ICV	A, A	$n^2$ $ICV \leq 20$
III.	Continuing calibration	A	$CCV \leq 20$
IV.	Laboratory Blanks	A	
V.	Field blanks	ND	TB = 1, 3, 5, 7
VI.	Matrix spike/Matrix spike duplicates	N	
VII.	Laboratory control samples	A	LCs/D
VIII.	Field duplicates	N	
IX.	Compound quantitation RL/LOQ/LODs	A	Not reviewed for Level C validation.
X.	Target compound identification	A	Not reviewed for Level C validation.
XI.	Overall assessment of data	A	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

ND = No compounds detected  
R = Rinsate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

SB=Source blank  
OTHER:

\*\* Indicates sample underwent Level D validation

	Client ID	Lab ID	Matrix	Date
1	ERH729	AZ85561	Water	01/23/19
2	ERH730	AZ85562	Water	01/23/19
3	ERH735	AZ85564	Water	01/23/19
4	ERH736	AZ85565	Water	01/23/19
5	ERH740	AZ85566	Water	01/23/19
6	ERH741**	AZ85567**	Water	01/23/19
7	ERH748	AZ85568	Water	01/23/19
8	ERH749	AZ85569	Water	01/23/19
9				
10				
11				
12				
13				

Notes:

19078A-B/K				

Method:  GC  HPLC

Validation Area	Yes	No	NA	Findings/Comments
<b>I. Technical holding times</b>				
Were all technical holding times met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was cooler temperature criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>IIa. Initial calibration</b>				
Did the laboratory perform a 5 point calibration prior to sample analysis?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent relative standard deviations (%RSD) < 20%?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of $\geq 0.990$ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were the RT windows properly established?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>IIb. Initial calibration verification</b>				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent differences (%D) < 20%?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>III. Continuing calibration</b>				
Was a continuing calibration analyzed daily?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent differences (%D) < 20%?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all the retention times within the acceptance windows?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>IV. Laboratory Blanks</b>				
Was a laboratory blank associated with every sample in this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was a laboratory blank analyzed for each matrix and concentration?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was there contamination in the laboratory blanks?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>V. Field Blanks</b>				
Were field blanks identified in this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were target compounds detected in the field blanks?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>VI. Surrogate spikes</b>				
Were all surrogate percent recovery (%R) within the QC limits?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If the percent recovery (%R) of one or more surrogates was outside QC limits, was a reanalysis performed to confirm %R?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>VII. Matrix spike/Matrix spike duplicates</b>				
Were matrix spike (MS) and matrix spike duplicate (MSD) analyzed in this SDG?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>VIII. Laboratory control samples</b>				
Was an LCS analyzed per analytical or extraction batch?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	



LDC #: 44408AS 1

**VALIDATION FINDINGS CHECKLIST**

Page: 2 of 2  
Reviewer: FT  
2nd Reviewer: [Signature]

Validation Area	Yes	No	NA	Findings/Comments
<b>IX. Field duplicates</b>				
Were field duplicate pairs identified in this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were target compounds detected in the field duplicates?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>X. Compound quantitation</b>				
Did the laboratory LOQs/RLs meet the QAPP LOQs/RLs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XI. Target compound identification</b>				
Were the retention times of reported detects within the RT windows?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>XIII. Overall assessment of data</b>				
Overall assessment of data was found to be acceptable.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

LDC#: 44408A51  
 SDG#: per cover

VALIDATION FINDINGS WORKSHEET  
Initial Calibration Calculation Verification

Page: 1 of 1  
 Reviewer: P7  
 2nd Reviewer: AK

Method: RSK 175

Calibration Date	System	Compound	Standard	(Y) Response	(X) Concentration
1/20/2019	Ints 7890	Methane	1	32996	2.080
			2	31584	4.160
			3	41402	8.340
			4	156731	20.850
			5	505025	83.400
			6	1190356	208.500
			7	3646926	834.000

**Regression Output**

**Reported**

Constant	80065.011707	80100.00
Std Err of Y Est		
R Squared	0.994074	0.994000
Degrees of Freedom		
X Coefficient(s)	4343.782489	4340.00
Std Err of Coef.		
Correlation Coefficient	0.997033	
Coefficient of Determination (r <sup>2</sup> )	0.994074	0.994000

LDC #: 44408AS1

### VALIDATION FINDINGS WORKSHEET Continuing Calibration Results Verification

Page: 1 of 1  
Reviewer: FT  
2nd Reviewer: [Signature]

METHOD: GC ✓ HPLC \_\_\_\_\_

The percent difference (%D) of the initial calibration average Calibration Factors (CF) and the continuing calibration CF were recalculated for the compounds identified below using the following calculation:

% Difference = 100 \* (ave. CF - CF)/ave. CF      Where: ave. CF = initial calibration average CF  
CF = continuing calibration CF  
A = Area of compound  
C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(ICAL)/ CCV Conc.	Reported	Recalculated	Reported	Recalculated
					CF/ Conc. CCV	CF/ Conc. CCV	%D	%D
1	<u>ccv</u> <u>19012800</u>	<u>1/28/19</u>	<u>Methane</u>	<u>83.40</u>	<u>97.452</u>	<u>97.452</u>	<u>17</u>	<u>17</u>
2								
3								
4								

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 44408A51

**VALIDATION FINDINGS WORKSHEET**

Page: 1 of 1

**Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification**

Reviewer: FT

2nd Reviewer: X

METHOD: GC HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

%Recovery = 100 \* (SSC/SA)

RPD = (((SSCLCS - SSCLCSD) \* 2) / (SSCLCS + SSCLCSD)) \* 100

Where SSC = Spiked sample concentration  
LCS = Laboratory Control Sample

SA = Spike added  
LCSD = Laboratory Control Sample duplicate

LCS/LCSD samples: 190128A LCS LP

Compound	Spike Added (ng/L)		Spike Sample Concentration (ng/L)		LCS		LCSD		LCS/LCSD	
	LCS	LCSD	LCS	LCSD	Percent Recovery		Percent Recovery		RPD	
					Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)										
Diesel (8015)										
Benzene (8021B)										
Methane (RSK-175)	83.4	83.4	98.5	98.5	117	117	118	118	1.0	1.0
2,4-D (8151)			97.5							
Dinoseb (8151)										
Naphthalene (8310)										
Anthracene (8310)										
HMX (8330)										
2,4,6-Trinitrotoluene (8330)										
Phorate (8141A)										
Malathion (8141A)										
Formaldehyde (8315A)										

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.



**Red Hill Bulk Storage Facility, CTO 18F0126 - SDG 87940  
LDC 44408**

AECOM

EPA_NO	LAB_ID	DF	ANALYTE	COLL_DATE	ANAL_DATE	QCLev	RESULT	UNITS	LAB_Q	LOQ	LOD	REV	Q_C
<b>METHOD: 2320B</b>													
ERH730	AZ85562	1	ALKALINITY, TOTAL (AS CaCO3)	1/23/2019 9:10:00 AM	1/30/2019 2:21:00 PM	D	59.0	MG_L		2.0	1.70		
ERH730	AZ85562	1	BICARBONATE	1/23/2019 9:10:00 AM	1/30/2019 2:21:00 PM	D	59.0	MG_L		2.0	1.70		
ERH730	AZ85562	1	CARBONATE (AS CO3)	1/23/2019 9:10:00 AM	1/30/2019 2:21:00 PM	D	1.70	MG_L	U	2.0	1.70		U
ERH736	AZ85565	1	ALKALINITY, TOTAL (AS CaCO3)	1/22/2019 12:10:00 PM	1/30/2019 2:54:00 PM	C	81.0	MG_L		2.0	1.70		
ERH736	AZ85565	1	BICARBONATE	1/22/2019 12:10:00 PM	1/30/2019 2:54:00 PM	C	81.0	MG_L		2.0	1.70		
ERH736	AZ85565	1	CARBONATE (AS CO3)	1/22/2019 12:10:00 PM	1/30/2019 2:54:00 PM	C	1.70	MG_L	U	2.0	1.70		U
ERH741	AZ85567	1	ALKALINITY, TOTAL (AS CaCO3)	1/22/2019 3:15:00 PM	1/30/2019 3:00:00 PM	C	266	MG_L		2.0	1.70		
ERH741	AZ85567	1	BICARBONATE	1/22/2019 3:15:00 PM	1/30/2019 3:00:00 PM	C	266	MG_L		2.0	1.70		
ERH741	AZ85567	1	CARBONATE (AS CO3)	1/22/2019 3:15:00 PM	1/30/2019 3:00:00 PM	C	1.70	MG_L	U	2.0	1.70		U
ERH749	AZ85569	1	ALKALINITY, TOTAL (AS CaCO3)	1/23/2019 11:30:00 AM	1/30/2019 3:11:00 PM	C	104	MG_L		2.0	1.70		
ERH749	AZ85569	1	BICARBONATE	1/23/2019 11:30:00 AM	1/30/2019 3:11:00 PM	C	104	MG_L		2.0	1.70		
ERH749	AZ85569	1	CARBONATE (AS CO3)	1/23/2019 11:30:00 AM	1/30/2019 3:11:00 PM	C	1.70	MG_L	U	2.0	1.70		U
<b>METHOD: 300.0</b>													
ERH730	AZ85562	5	CHLORIDE (AS CL)	1/23/2019 9:10:00 AM	1/28/2019 3:10:00 PM	D	108	MG_L	D	5.0	1.00		
ERH730	AZ85562	1	NITROGEN, NITRATE (AS N)	1/23/2019 9:10:00 AM	1/24/2019 6:33:00 PM	D	2.3	MG_L		0.5	0.18		
ERH730	AZ85562	1	SULFATE (AS SO4)	1/23/2019 9:10:00 AM	1/24/2019 6:33:00 PM	D	15.7	MG_L		1.0	0.20		
ERH736	AZ85565	1	CHLORIDE (AS CL)	1/22/2019 12:10:00 PM	1/24/2019 6:26:00 PM	C	40.3	MG_L		1.0	0.20		
ERH736	AZ85565	1	NITROGEN, NITRATE (AS N)	1/22/2019 12:10:00 PM	1/24/2019 6:26:00 PM	C	0.18	MG_L	U	0.5	0.18		UJ h
ERH736	AZ85565	1	SULFATE (AS SO4)	1/22/2019 12:10:00 PM	1/24/2019 6:26:00 PM	C	4.5	MG_L		1.0	0.20		
ERH741	AZ85567	1	CHLORIDE (AS CL)	1/22/2019 3:15:00 PM	1/25/2019 7:52:00 PM	C	48.2	MG_L		1.0	0.20		
ERH741	AZ85567	1	NITROGEN, NITRATE (AS N)	1/22/2019 3:15:00 PM	1/25/2019 7:52:00 PM	C	6.2	MG_L		0.5	0.18		J h
ERH741	AZ85567	1	SULFATE (AS SO4)	1/22/2019 3:15:00 PM	1/25/2019 7:52:00 PM	C	46.1	MG_L		1.0	0.20		
ERH749	AZ85569	10	CHLORIDE (AS CL)	1/23/2019 11:30:00 AM	1/28/2019 3:18:00 PM	C	392	MG_L	D	10.0	2.00		
ERH749	AZ85569	1	NITROGEN, NITRATE (AS N)	1/23/2019 11:30:00 AM	1/25/2019 6:23:00 PM	C	3.6	MG_L		0.5	0.18		J h
ERH749	AZ85569	10	SULFATE (AS SO4)	1/23/2019 11:30:00 AM	1/28/2019 3:18:00 PM	C	60.9	MG_L	D	10.0	2.00		
<b>METHOD: 3500-FE-B</b>													

EPA_NO	LAB_ID	DF	ANALYTE	COLL_DATE	ANAL_DATE	QCLev	RESULT	UNITS	LAB_Q	LOQ	LOD	REV	Q_C
<b>METHOD: 3500-FE-B</b>													
ERH730	AZ85562	1	Iron, Ion (Fe2+)	1/23/2019 9:10:00 AM	1/25/2019 12:48:00 PM	D	0.32	MG_L	U	1.0	0.32	U	
ERH736	AZ85565	1	Iron, Ion (Fe2+)	1/22/2019 12:10:00 PM	1/24/2019 6:02:00 PM	C	0.32	MG_L	U	1.0	0.32	U	
ERH741	AZ85567	1	Iron, Ion (Fe2+)	1/22/2019 3:15:00 PM	1/25/2019 12:49:00 PM	C	0.32	MG_L	U	1.0	0.32	U	
ERH749	AZ85569	1	Iron, Ion (Fe2+)	1/23/2019 11:30:00 AM	1/24/2019 6:02:00 PM	C	0.40	MG_L	J	1.0	0.32	J	
<b>METHOD: 353.2</b>													
ERH730	AZ85562	1	NITROGEN, NITRATE-NITRITE	1/23/2019 9:10:00 AM	1/28/2019 5:08:00 PM	D	0.51	MG_L		0.10	0.100		
ERH736	AZ85565	1	NITROGEN, NITRATE-NITRITE	1/22/2019 12:10:00 PM	1/28/2019 5:15:00 PM	C	0.100	MG_L	U	0.10	0.100	U	
ERH741	AZ85567	1	NITROGEN, NITRATE-NITRITE	1/22/2019 3:15:00 PM	1/28/2019 5:16:00 PM	C	1.7	MG_L		0.10	0.100		
ERH749	AZ85569	1	NITROGEN, NITRATE-NITRITE	1/23/2019 11:30:00 AM	1/28/2019 5:17:00 PM	C	0.89	MG_L		0.10	0.100		
<b>METHOD: 8015B_E</b>													
ERH730	AZ85562	1	C10-C24 DIESEL RANGE ORGANICS	1/23/2019 9:10:00 AM	1/29/2019 2:20:00 PM	C	25.00	UG_L	U	40.0	25.00	U	
ERH730	AZ85562	1	C24-C40 TOTAL PETROLEUM HYDROCARBONS, OIL RANGE	1/23/2019 9:10:00 AM	1/29/2019 2:20:00 PM	C	40.00	UG_L	U	40.0	40.00	U	
ERH731	AZ85563	1	C10-C24 DIESEL RANGE ORGANICS	1/23/2019 9:10:00 AM	1/29/2019 2:40:00 PM	C	25.00	UG_L	U	40.0	25.00	U	
ERH731	AZ85563	1	C24-C40 TOTAL PETROLEUM HYDROCARBONS, OIL RANGE	1/23/2019 9:10:00 AM	1/29/2019 2:40:00 PM	C	40.00	UG_L	U	40.0	40.00	U	
ERH736	AZ85565	1	C10-C24 DIESEL RANGE ORGANICS	1/22/2019 12:10:00 PM	1/29/2019 7:40:00 PM	C	25.00	UG_L	U	40.0	25.00	U	
ERH736	AZ85565	1	C10-C24 DIESEL RANGE ORGANICS	1/22/2019 12:10:00 PM	2/4/2019 12:33:00 PM	C	25.00	UG_L	U	40.0	25.00	R	d
ERH736	AZ85565	1	C24-C40 TOTAL PETROLEUM HYDROCARBONS, OIL RANGE	1/22/2019 12:10:00 PM	2/4/2019 12:33:00 PM	C	40.00	UG_L	U	40.0	40.00	R	d
ERH736	AZ85565	1	C24-C40 TOTAL PETROLEUM HYDROCARBONS, OIL RANGE	1/22/2019 12:10:00 PM	1/29/2019 7:40:00 PM	C	40.00	UG_L	U	40.0	40.00	U	
ERH741	AZ85567	1	C10-C24 DIESEL RANGE ORG SILICA GEL CLEAN UP	1/22/2019 3:15:00 PM	2/1/2019 12:08:00 PM	D	25.00	UG_L	U	40.0	25.00	U	
ERH741	AZ85567	1	C10-C24 DIESEL RANGE ORGANICS	1/22/2019 3:15:00 PM	1/29/2019 8:00:00 PM	D	380	UG_L	T3M	40.0	25.00		
ERH741	AZ85567	1	C24-C40 OIL RANGE ORGANICS SILICA GEL CLEAN UP	1/22/2019 3:15:00 PM	2/1/2019 12:08:00 PM	D	40.00	UG_L	U	40.0	40.00	U	
ERH741	AZ85567	1	C24-C40 TOTAL PETROLEUM HYDROCARBONS, OIL RANGE	1/22/2019 3:15:00 PM	1/29/2019 8:00:00 PM	D	310	UG_L		40.0	40.00		
ERH749	AZ85569	1	C10-C24 DIESEL RANGE ORGANICS	1/23/2019 11:30:00 AM	1/29/2019 3:00:00 PM	C	25.00	UG_L	U	40.0	25.00	U	
ERH749	AZ85569	1	C24-C40 TOTAL PETROLEUM HYDROCARBONS, OIL RANGE	1/23/2019 11:30:00 AM	1/29/2019 3:00:00 PM	C	40.00	UG_L	U	40.0	40.00	U	
<b>METHOD: 8260B</b>													
ERH729	AZ85561	1	BENZENE	1/23/2019 8:45:00 AM	1/25/2019 3:22:00 PM	C	0.30	UG_L	U	1.0	0.30	U	
ERH729	AZ85561	1	ETHYLBENZENE	1/23/2019 8:45:00 AM	1/25/2019 3:22:00 PM	C	0.50	UG_L	U	1.0	0.50	U	
ERH729	AZ85561	1	PETROLEUM HYDROCARBONS C6-C10	1/23/2019 8:45:00 AM	1/25/2019 3:23:00 PM	C	18.0	UG_L	U	20	18.0	U	

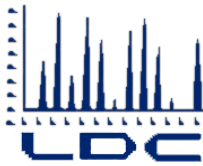
EPA_NO	LAB_ID	DF	ANALYTE	COLL_DATE	ANAL_DATE	QCLev	RESULT	UNITS	LAB_Q	LOQ	LOD	REV	Q_C
<b>METHOD: 8260B</b>													
ERH729	AZ85561	1	TOLUENE	1/23/2019 8:45:00 AM	1/25/2019 3:22:00 PM	C	0.30	UG_L	U	1.0	0.30	UJ	1
ERH729	AZ85561	1	Xylenes	1/23/2019 8:45:00 AM	1/25/2019 3:22:00 PM	C	0.30	UG_L	U	2.0	0.30	U	
ERH730	AZ85562	1	BENZENE	1/23/2019 9:10:00 AM	1/25/2019 3:51:00 PM	C	0.30	UG_L	U	1.0	0.30	U	
ERH730	AZ85562	1	ETHYLBENZENE	1/23/2019 9:10:00 AM	1/25/2019 3:51:00 PM	C	0.50	UG_L	U	1.0	0.50	U	
ERH730	AZ85562	1	PETROLEUM HYDROCARBONS C6-C10	1/23/2019 9:10:00 AM	1/25/2019 3:52:00 PM	C	18.0	UG_L	U	20	18.0	U	
ERH730	AZ85562	1	TOLUENE	1/23/2019 9:10:00 AM	1/25/2019 3:51:00 PM	C	0.30	UG_L	U	1.0	0.30	UJ	q,l
ERH730	AZ85562	1	Xylenes	1/23/2019 9:10:00 AM	1/25/2019 3:51:00 PM	C	0.30	UG_L	U	2.0	0.30	U	
ERH731	AZ85563	1	BENZENE	1/23/2019 9:10:00 AM	1/25/2019 4:20:00 PM	C	0.30	UG_L	U	1.0	0.30	U	
ERH731	AZ85563	1	ETHYLBENZENE	1/23/2019 9:10:00 AM	1/25/2019 4:20:00 PM	C	0.50	UG_L	U	1.0	0.50	U	
ERH731	AZ85563	1	PETROLEUM HYDROCARBONS C6-C10	1/23/2019 9:10:00 AM	1/25/2019 4:19:00 PM	C	18.0	UG_L	U	20	18.0	U	
ERH731	AZ85563	1	TOLUENE	1/23/2019 9:10:00 AM	1/25/2019 4:20:00 PM	C	0.30	UG_L	U	1.0	0.30	UJ	1
ERH731	AZ85563	1	Xylenes	1/23/2019 9:10:00 AM	1/25/2019 4:20:00 PM	C	0.30	UG_L	U	2.0	0.30	U	
ERH735	AZ85564	1	BENZENE	1/22/2019 8:30:00 AM	1/25/2019 4:48:00 PM	C	0.30	UG_L	U	1.0	0.30	U	
ERH735	AZ85564	1	ETHYLBENZENE	1/22/2019 8:30:00 AM	1/25/2019 4:48:00 PM	C	0.50	UG_L	U	1.0	0.50	U	
ERH735	AZ85564	1	PETROLEUM HYDROCARBONS C6-C10	1/22/2019 8:30:00 AM	1/25/2019 4:49:00 PM	C	18.0	UG_L	U	20	18.0	U	
ERH735	AZ85564	1	TOLUENE	1/22/2019 8:30:00 AM	1/25/2019 4:48:00 PM	C	0.30	UG_L	U	1.0	0.30	UJ	1
ERH735	AZ85564	1	Xylenes	1/22/2019 8:30:00 AM	1/25/2019 4:48:00 PM	C	0.30	UG_L	U	2.0	0.30	U	
ERH736	AZ85565	1	BENZENE	1/22/2019 12:10:00 PM	1/25/2019 5:17:00 PM	C	0.30	UG_L	U	1.0	0.30	U	
ERH736	AZ85565	1	ETHYLBENZENE	1/22/2019 12:10:00 PM	1/25/2019 5:17:00 PM	C	0.50	UG_L	U	1.0	0.50	U	
ERH736	AZ85565	1	PETROLEUM HYDROCARBONS C6-C10	1/22/2019 12:10:00 PM	1/25/2019 5:18:00 PM	C	18.0	UG_L	U	20	18.0	U	
ERH736	AZ85565	1	TOLUENE	1/22/2019 12:10:00 PM	1/25/2019 5:17:00 PM	C	0.30	UG_L	U	1.0	0.30	UJ	1
ERH736	AZ85565	1	Xylenes	1/22/2019 12:10:00 PM	1/25/2019 5:17:00 PM	C	0.30	UG_L	U	2.0	0.30	U	
ERH740	AZ85566	1	BENZENE	1/22/2019 2:30:00 PM	1/25/2019 5:45:00 PM	C	0.30	UG_L	U	1.0	0.30	U	
ERH740	AZ85566	1	ETHYLBENZENE	1/22/2019 2:30:00 PM	1/25/2019 5:45:00 PM	C	0.50	UG_L	U	1.0	0.50	U	
ERH740	AZ85566	1	PETROLEUM HYDROCARBONS C6-C10	1/22/2019 2:30:00 PM	1/25/2019 5:46:00 PM	C	18.0	UG_L	U	20	18.0	U	
ERH740	AZ85566	1	TOLUENE	1/22/2019 2:30:00 PM	1/25/2019 5:45:00 PM	C	0.30	UG_L	U	1.0	0.30	UJ	1
ERH740	AZ85566	1	Xylenes	1/22/2019 2:30:00 PM	1/25/2019 5:45:00 PM	C	0.30	UG_L	U	2.0	0.30	U	



EPA_NO	LAB_ID	DF	ANALYTE	COLL_DATE	ANAL_DATE	QCLev	RESULT	UNITS	LAB_Q	LOQ	LOD	REV	Q_C
<b>METHOD: 8260B</b>													
ERH741	AZ85567	1	BENZENE	1/22/2019 3:15:00 PM	1/25/2019 6:14:00 PM	D	0.30	UG_L	U	1.0	0.30	U	
ERH741	AZ85567	1	ETHYLBENZENE	1/22/2019 3:15:00 PM	1/25/2019 6:14:00 PM	D	0.50	UG_L	U	1.0	0.50	U	
ERH741	AZ85567	1	PETROLEUM HYDROCARBONS C6-C10	1/22/2019 3:15:00 PM	1/25/2019 6:15:00 PM	D	18.0	UG_L	U	20	18.0	U	
ERH741	AZ85567	1	TOLUENE	1/22/2019 3:15:00 PM	1/25/2019 6:14:00 PM	D	0.30	UG_L	U	1.0	0.30	UJ	1
ERH741	AZ85567	1	Xylenes	1/22/2019 3:15:00 PM	1/25/2019 6:14:00 PM	D	0.30	UG_L	U	2.0	0.30	U	
ERH748	AZ85568	1	BENZENE	1/23/2019 11:23:00 AM	1/25/2019 6:42:00 PM	C	0.30	UG_L	U	1.0	0.30	U	
ERH748	AZ85568	1	ETHYLBENZENE	1/23/2019 11:23:00 AM	1/25/2019 6:42:00 PM	C	0.50	UG_L	U	1.0	0.50	U	
ERH748	AZ85568	1	PETROLEUM HYDROCARBONS C6-C10	1/23/2019 11:23:00 AM	1/25/2019 6:43:00 PM	C	18.0	UG_L	U	20	18.0	U	
ERH748	AZ85568	1	TOLUENE	1/23/2019 11:23:00 AM	1/25/2019 6:42:00 PM	C	0.30	UG_L	U	1.0	0.30	UJ	1
ERH748	AZ85568	1	Xylenes	1/23/2019 11:23:00 AM	1/25/2019 6:42:00 PM	C	0.30	UG_L	U	2.0	0.30	U	
ERH749	AZ85569	1	BENZENE	1/23/2019 11:30:00 AM	1/25/2019 7:12:00 PM	C	0.30	UG_L	U	1.0	0.30	U	
ERH749	AZ85569	1	ETHYLBENZENE	1/23/2019 11:30:00 AM	1/25/2019 7:12:00 PM	C	0.50	UG_L	U	1.0	0.50	U	
ERH749	AZ85569	1	PETROLEUM HYDROCARBONS C6-C10	1/23/2019 11:30:00 AM	1/25/2019 7:11:00 PM	C	18.0	UG_L	U	20	18.0	U	
ERH749	AZ85569	1	TOLUENE	1/23/2019 11:30:00 AM	1/25/2019 7:12:00 PM	C	0.30	UG_L	U	1.0	0.30	UJ	1
ERH749	AZ85569	1	Xylenes	1/23/2019 11:30:00 AM	1/25/2019 7:12:00 PM	C	0.30	UG_L	U	2.0	0.30	U	
<b>METHOD: 8270D</b>													
ERH730	AZ85562	1	2-(2-METHOXY ETHOXY)-ETHANOL	1/23/2019 9:10:00 AM	1/29/2019 4:16:00 PM	C	80.0	UG_L	U	100	80.0	UJ	1
ERH730	AZ85562	1	Hexanedioic Acid Dioctyl Ester	1/23/2019 9:10:00 AM	2/1/2019 6:38:00 PM	C	13	UG_L	T	0	0		
ERH730	AZ85562	1	PHENOL	1/23/2019 9:10:00 AM	2/1/2019 6:38:00 PM	C	4.00	UG_L	U	5.0	4.00	U	
ERH731	AZ85563	1	2-(2-METHOXY ETHOXY)-ETHANOL	1/23/2019 9:10:00 AM	1/29/2019 4:40:00 PM	C	80.0	UG_L	U	100	80.0	UJ	1
ERH731	AZ85563	1	Dimethyl Benzidine Dihydrochloride; 3,3'	1/23/2019 9:10:00 AM	2/1/2019 7:06:00 PM	C	6.1	UG_L	T	0	0		
ERH731	AZ85563	1	PHENOL	1/23/2019 9:10:00 AM	2/1/2019 7:06:00 PM	C	4.00	UG_L	U	5.0	4.00	U	
ERH736	AZ85565	1	2-(2-METHOXY ETHOXY)-ETHANOL	1/22/2019 12:10:00 PM	1/29/2019 5:03:00 PM	C	80.0	UG_L	U	100	80.0	UJ	1
ERH736	AZ85565	1	MESITYL OXIDE	1/22/2019 12:10:00 PM	1/30/2019 6:39:00 PM	C	66	UG_L	T	0	0		
ERH736	AZ85565	1	OCTAMETHYLCYCLOTETRAILOXANE	1/22/2019 12:10:00 PM	1/30/2019 6:39:00 PM	C	16	UG_L	T	0	0		
ERH736	AZ85565	1	PHENOL	1/22/2019 12:10:00 PM	1/30/2019 6:39:00 PM	C	4.00	UG_L	U	5.0	4.00	U	
ERH741	AZ85567	1	2-(2-METHOXY ETHOXY)-ETHANOL	1/22/2019 3:15:00 PM	1/29/2019 5:27:00 PM	D	80.0	UG_L	U	100	80.0	UJ	1

EPA_NO	LAB_ID	DF	ANALYTE	COLL_DATE	ANAL_DATE	QCLev	RESULT	UNITS	LAB_Q	LOQ	LOD	REV	Q_C
<b>METHOD: 8270D</b>													
ERH741	AZ85567	1	MESITYL OXIDE	1/22/2019 3:15:00 PM	1/30/2019 7:07:00 PM	D	56	UG_L	T	0	0		
ERH741	AZ85567	1	PHENOL	1/22/2019 3:15:00 PM	1/30/2019 7:07:00 PM	D	4.00	UG_L	U	5.0	4.00	U	
ERH749	AZ85569	1	2-(2-METHOXY ETHOXY)-ETHANOL	1/23/2019 11:30:00 AM	1/30/2019 9:41:00 AM	C	80.0	UG_L	U	100	80.0	UJ	1
ERH749	AZ85569	1	DECAMETHYL-CYCLOPENTASILOXANE	1/23/2019 11:30:00 AM	2/1/2019 7:34:00 PM	C	16	UG_L	T	0	0		
ERH749	AZ85569	1	HEXAMETHYLCYCLOTRISILOXANE	1/23/2019 11:30:00 AM	2/1/2019 7:34:00 PM	C	140	UG_L	T	0	0		
ERH749	AZ85569	1	Hexanedioic Acid Dioctyl Ester	1/23/2019 11:30:00 AM	2/1/2019 7:34:00 PM	C	11	UG_L	T	0	0		
ERH749	AZ85569	1	MESITYL OXIDE	1/23/2019 11:30:00 AM	2/1/2019 7:34:00 PM	C	88	UG_L	T	0	0		
ERH749	AZ85569	1	PHENOL	1/23/2019 11:30:00 AM	2/1/2019 7:34:00 PM	C	4.00	UG_L	U	5.0	4.00	U	
<b>METHOD: 8270DSIM</b>													
ERH730	AZ85562	1	1-METHYLNAPHTHALENE	1/23/2019 9:10:00 AM	2/1/2019 5:24:00 PM	C	0.10	UG_L	U	0.2	0.10	U	
ERH730	AZ85562	1	2-METHYLNAPHTHALENE	1/23/2019 9:10:00 AM	2/1/2019 5:24:00 PM	C	0.10	UG_L	U	0.2	0.10	U	
ERH730	AZ85562	1	NAPHTHALENE	1/23/2019 9:10:00 AM	2/1/2019 5:24:00 PM	C	0.10	UG_L	U	0.2	0.10	U	
ERH731	AZ85563	1	1-METHYLNAPHTHALENE	1/23/2019 9:10:00 AM	2/1/2019 5:47:00 PM	C	0.10	UG_L	U	0.2	0.10	U	
ERH731	AZ85563	1	2-METHYLNAPHTHALENE	1/23/2019 9:10:00 AM	2/1/2019 5:47:00 PM	C	0.10	UG_L	U	0.2	0.10	U	
ERH731	AZ85563	1	NAPHTHALENE	1/23/2019 9:10:00 AM	2/1/2019 5:47:00 PM	C	0.10	UG_L	U	0.2	0.10	U	
ERH736	AZ85565	1	1-METHYLNAPHTHALENE	1/22/2019 12:10:00 PM	1/30/2019 2:52:00 PM	C	0.10	UG_L	U	0.2	0.10	U	
ERH736	AZ85565	1	2-METHYLNAPHTHALENE	1/22/2019 12:10:00 PM	1/30/2019 2:52:00 PM	C	0.10	UG_L	U	0.2	0.10	U	
ERH736	AZ85565	1	NAPHTHALENE	1/22/2019 12:10:00 PM	1/30/2019 2:52:00 PM	C	0.10	UG_L	U	0.2	0.10	U	
ERH741	AZ85567	1	1-METHYLNAPHTHALENE	1/22/2019 3:15:00 PM	1/30/2019 3:14:00 PM	D	0.10	UG_L	U	0.2	0.10	U	
ERH741	AZ85567	1	2-METHYLNAPHTHALENE	1/22/2019 3:15:00 PM	1/30/2019 3:14:00 PM	D	0.10	UG_L	U	0.2	0.10	U	
ERH741	AZ85567	1	NAPHTHALENE	1/22/2019 3:15:00 PM	1/30/2019 3:14:00 PM	D	0.10	UG_L	U	0.2	0.10	U	
ERH749	AZ85569	1	1-METHYLNAPHTHALENE	1/23/2019 11:30:00 AM	2/4/2019 11:58:00 AM	C	0.10	UG_L	U	0.2	0.10	U	
ERH749	AZ85569	1	2-METHYLNAPHTHALENE	1/23/2019 11:30:00 AM	2/4/2019 11:58:00 AM	C	0.10	UG_L	U	0.2	0.10	U	
ERH749	AZ85569	1	NAPHTHALENE	1/23/2019 11:30:00 AM	2/4/2019 11:58:00 AM	C	0.10	UG_L	U	0.2	0.10	U	
<b>METHOD: 9060A</b>													
ERH730	AZ85562	1	TOTAL ORGANIC CARBON	1/23/2019 9:10:00 AM	2/13/2019 2:54:00 AM	C		MG_L	J	0.93	0.68	U	b
ERH736	AZ85565	1	TOTAL ORGANIC CARBON	1/22/2019 12:10:00 PM	2/13/2019 3:58:00 AM	C		MG_L		0.93	1.2	U	b

EPA_NO	LAB_ID	DF	ANALYTE	COLL_DATE	ANAL_DATE	QCLev	RESULT	UNITS	LAB_Q	LOQ	LOD	REV	Q_C
<b>METHOD: 9060A</b>													
ERH741	AZ85567	1	TOTAL ORGANIC CARBON	1/22/2019 3:15:00 PM	2/13/2019 5:02:00 AM	C	1.8	MG_L		0.93	0.350		
ERH749	AZ85569	1	TOTAL ORGANIC CARBON	1/23/2019 11:30:00 AM	2/13/2019 6:07:00 AM	C		MG_L		0.93	0.96	U	b
<b>METHOD: RSK175</b>													
ERH729	AZ85561	1	METHANE	1/23/2019 8:45:00 AM	1/28/2019 10:56:00 AM	C	1.00	UG_L	U	5.0	1.00	U	
ERH730	AZ85562	1	METHANE	1/23/2019 9:10:00 AM	1/28/2019 11:01:00 AM	C	1.00	UG_L	U	5.0	1.00	U	
ERH735	AZ85564	1	METHANE	1/22/2019 8:30:00 AM	1/28/2019 11:12:00 AM	C	1.00	UG_L	U	5.0	1.00	U	
ERH736	AZ85565	1	METHANE	1/22/2019 12:10:00 PM	1/28/2019 11:05:00 AM	D	200	UG_L		5.0	1.00		
ERH740	AZ85566	1	METHANE	1/22/2019 2:30:00 PM	1/28/2019 11:14:00 AM	C	1.00	UG_L	U	5.0	1.00	U	
ERH741	AZ85567	1	METHANE	1/22/2019 3:15:00 PM	1/28/2019 11:17:00 AM	C	1.00	UG_L	U	5.0	1.00	U	
ERH748	AZ85568	1	METHANE	1/23/2019 11:23:00 AM	1/28/2019 11:19:00 AM	C	1.00	UG_L	U	5.0	1.00	U	
ERH749	AZ85569	1	METHANE	1/23/2019 11:30:00 AM	1/28/2019 11:21:00 AM	C	1.00	UG_L	U	5.0	1.00	U	



## LABORATORY DATA CONSULTANTS, INC.

2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

AECOM  
1001 Bishop Street Suite 1600  
Honolulu, HI 96813  
ATTN: Ms. Margie Pascua  
[Margie.Pascua@aecom.com](mailto:Margie.Pascua@aecom.com)

March 5, 2019

SUBJECT: Red Hill Bulk Storage Facility, CTO 18F0126, Data Validation

Dear Ms. Pascua,

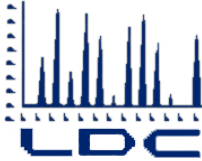
Enclosed are the final validation reports for the fractions listed below. These SDGs were received on February 20, 2019. Attachment 1 is a summary of the samples that were reviewed for each analysis.

### LDC Project #44415:

<u>SDG #</u>	<u>Fraction</u>
87918, 87932	Volatiles, Phenol & Tentatively Identified Compounds, Polynuclear Aromatic Hydrocarbons, 2-(2-Methoxyethoxy)-ethanol, Wet Chemistry, Gasoline Range Organics, Total Petroleum Hydrocarbons as Extractables, Methane

The data validation was performed under Level C & D validation guidelines. The analyses were validated using the following documents and variances, as applicable to each method:

- Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i, Revision 02; January 2017
- Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i, Revision 01, April 2017
- Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i, Revision 00, September 2017
- Sampling and Analysis Plan, Addendum 03 Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i, Revision 00; June 2018
- Project Procedures Manual, U.S. Naval Facilities Engineering Command Environmental Restoration Program, NAVFAC Pacific, DON 2015
- U.S. Department of Defense Quality Systems Manual for Environmental Laboratories, Version 5.1, 2017



## LABORATORY DATA CONSULTANTS, INC.

2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIB, November 2004; update IV, February 2007; update V, July 2014

Please feel free to contact us if you have any questions.

Sincerely,

Stella Cuenco

[scuenco@lab-data.com](mailto:scuenco@lab-data.com)

Operations Manager/Senior Chemist

EDD 90/10 C/D **LDC #44415 (AECOM-Honolulu, HI / Red Hill Bulk Storage Facility, CTO 18F0126)**

LDC	SDG#	DATE REC'D	(2) DATE DUE	BTEX (8260B)		Phenol & TICs (8270D)		(3)PAHs (8270D -SIM)		2,2-MEE (8270D-M)		GRO (8260B)		TPH-E (8015B)		SGCU TPH-E (8015B)		Methane (175)		Alk. (2320B)		Cl,SO <sub>4</sub> NO <sub>3</sub> (300.0)		Fe II (3500-Fe B)		NO <sub>3</sub> /NO <sub>2</sub> -N (353.2)		TOC (9060A)									
				W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S					W	S		
Matrix: Water/Soil																																					
A	87918	02/20/19	03/06/19	4	0	2	0	2	0	2	0	4	0	2	0	-	-	4	0	2	0	2	0	2	0	2	0	2	0								
B	87932	02/20/19	03/06/19	8	0	4	0	4	0	4	0	8	0	4	0	1	0	7	0	3	0	3	0	3	0	3	0	3	0								
B	87932	02/20/19	03/06/19	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0						
<b>Total</b>	<b>T/SC</b>			13	0	7	0	7	0	7	0	13	0	7	0	2	0	12	0	6	0	6	0	6	0	6	0	6	0	0	0	0	0	0	0	98	

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** February 28, 2019

**Parameters:** Volatiles

**Validation Level:** Level C

**Laboratory:** APPL, Inc.

**Sample Delivery Group (SDG):** 87918

<b>Sample Identification</b>	<b>Laboratory Sample Identification</b>	<b>Matrix</b>	<b>Collection Date</b>
ERH744	AZ85417	Water	01/21/19
ERH745	AZ85418	Water	01/21/19
ERH746	AZ85419	Water	01/21/19
ERH747	AZ85420	Water	01/21/19

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) which are Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX) by Environmental Protection Agency (EPA) SW 846 Method 8260B

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results.



The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## Qualification Code Reference

- H Holding times were exceeded.
- S Surrogate recovery was outside QC limits.
- C Calibration %RSD,  $r$ ,  $r^2$  or %D were noncompliant.
- R Calibration RRF was  $<0.05$ .
- B Presumed contamination from preparation (method blank).
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD was high.
- I Internal standard performance was unsatisfactory.
- M Instrument Performance Check (BFB or DFTPP) was noncompliant.
- T Presumed contamination from trip blank.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Instrument performance for pesticides was poor.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. GC/MS Instrument Performance Check**

A bromofluorobenzene (BFB) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

## **III. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0% for all compounds.

Average relative response factors (RRF) for all compounds were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

## **IV. Continuing Calibration**

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0% for all compounds.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

## **V. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **VI. Field Blanks**

Samples ERH744 and ERH746 were identified as trip blanks. No contaminants were found.

## **VII. Surrogates**

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

## **VIII. Matrix Spike/Matrix Spike Duplicates**

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

## **IX. Laboratory Control Samples**

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## **X. Field Duplicates**

No field duplicates were identified in this SDG.

## **XI. Internal Standards**

All internal standard areas and retention times were within QC limits.

## **XII. Compound Quantitation**

Raw data were not reviewed for Level C validation.

## **XIII. Target Compound Identifications**

Raw data were not reviewed for Level C validation.

## **XIV. System Performance**

Raw data were not reviewed for Level C validation.

## **XV. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**Red Hill Bulk Storage Facility, CTO 18F0126  
Volatiles - Data Qualification Summary - SDG 87918**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Volatiles - Laboratory Blank Data Qualification Summary - SDG 87918**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Volatiles - Field Blank Data Qualification Summary - SDG 87918**

No Sample Data Qualified in this SDG

LDC #: 44415A1a

**VALIDATION COMPLETENESS WORKSHEET**

SDG #: 87918

Level C

Laboratory: APPL, Inc.

Date: 2/28/19

Page: 1 of 1

Reviewer: R

2nd Reviewer: R

**METHOD:** GC/MS Volatiles (BTEX)(EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	GC/MS Instrument performance check	Δ	
III.	Initial calibration/ICV	A/A	% PSD ≤ 15      10% ≤ 20
IV.	Continuing calibration / closing cel	Δ	CV ≤ 20 / 50
V.	Laboratory Blanks	Δ	
VI.	Field blanks	ND	TB = 13
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	N	CS
IX.	Laboratory control samples	A	100/10
X.	Field duplicates	N	
XI.	Internal standards	Δ	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	Δ	

Note: A = Acceptable  
 N = Not provided/applicable  
 SW = See worksheet

ND = No compounds detected  
 R = Rinsate  
 FB = Field blank

D = Duplicate  
 TB = Trip blank  
 EB = Equipment blank

SB=Source blank  
 OTHER:

	Client ID	Lab ID	Matrix	Date
1	ERH744 TB	AZ85417	Water	01/21/19
2	ERH745	AZ85418	Water	01/21/19
3	ERH746 TB	AZ85419	Water	01/21/19
4	ERH747	AZ85420	Water	01/21/19
5				
6				
7				
8				

Notes:

AL190123-BIK				

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126  
**LDC Report Date:** February 28, 2019  
**Parameters:** Phenol & Tentatively Identified Compounds  
**Validation Level:** Level C  
**Laboratory:** APPL, Inc.  
**Sample Delivery Group (SDG):** 87918

<b>Sample Identification</b>	<b>Laboratory Sample Identification</b>	<b>Matrix</b>	<b>Collection Date</b>
ERH745	AZ85418	Water	01/21/19
ERH747	AZ85420	Water	01/21/19

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Phenol and Tentatively Identified Compounds (TIC) by Environmental Protection Agency (EPA) SW 846 Method 8270D

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results.



The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## Qualification Code Reference

- H Holding times were exceeded.
- S Surrogate recovery was outside QC limits.
- C Calibration %RSD,  $r$ ,  $r^2$  or %D were noncompliant.
- R Calibration RRF was  $<0.05$ .
- B Presumed contamination from preparation (method blank).
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD was high.
- I Internal standard performance was unsatisfactory.
- M Instrument Performance Check (BFB or DFTPP) was noncompliant.
- T Presumed contamination from trip blank.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Instrument performance for pesticides was poor.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. GC/MS Instrument Performance Check**

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

## **III. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0%.

Average relative response factors (RRF) for all compounds were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

## **IV. Continuing Calibration**

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0%.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0%.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

## **V. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks with the following exceptions:

Blank ID	Extraction Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
190123A-BLK	01/23/19	3-Penten-2-ol (1.60) Benzene, methyl- (2.19) Acetic acid, ethyl ester (2.49) Ethene, tetrachloro- (2.82) Sulfone, chloro phenyl (7.57)	27.3 ug/L 209.1 ug/L 42.4 ug/L 14.1 ug/L 6.1 ug/L	All samples in SDG 87918

Sample concentrations were compared to concentrations detected in the laboratory blanks. The sample concentrations were either not detected or were significantly greater (>10X for TICs, >5X for other contaminants) than the concentrations found in the associated laboratory blanks.

## VI. Field Blanks

No field blanks were identified in this SDG.

## VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

## VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

## IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## X. Field Duplicates

No field duplicates were identified in this SDG.

## XI. Internal Standards

All internal standard areas and retention times were within QC limits.

## XII. Compound Quantitation

Raw data were not reviewed for Level C validation.

## XIII. Target Compound Identifications

Raw data were not reviewed for Level C validation.

#### **XIV. System Performance**

Raw data were not reviewed for Level C validation.

#### **XV. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**Red Hill Bulk Storage Facility, CTO 18F0126  
Phenol & Tentatively Identified Compounds - Data Qualification Summary - SDG  
87918**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Phenol & Tentatively Identified Compounds - Laboratory Blank Data Qualification  
Summary - SDG 87918**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Phenol & Tentatively Identified Compounds - Field Blank Data Qualification  
Summary - SDG 87918**

No Sample Data Qualified in this SDG

LDC #: 44415A2a

# VALIDATION COMPLETENESS WORKSHEET

Date: 2/28/19

SDG #: 87918

Level C

Page: 1 of 1

Laboratory: APPL, Inc.

Reviewer: FJ  
2nd Reviewer: K

METHOD: GC/MS Phenol & TICs (EPA SW 846 Method 8270D)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	GC/MS Instrument performance check	Δ	
III.	Initial calibration/ICV	Δ/Δ	% PSD ≤ 15      CV ≤ 20
IV.	Continuing calibration <i>closing cal</i>	Δ	CV ≤ 20/50
V.	Laboratory Blanks	SW	
VI.	Field blanks	N	
VII.	Surrogate spikes	Δ	
VIII.	Matrix spike/Matrix spike duplicates	N	CD
IX.	Laboratory control samples	A	LES 10
X.	Field duplicates	N	
XI.	Internal standards	Δ	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	Δ	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

ND = No compounds detected  
R = Rinsate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

SB=Source blank  
OTHER:

	Client ID	Lab ID	Matrix	Date
1	ERH745	AZ85418	Water	01/21/19
2	ERH747	AZ85420	Water	01/21/19
3				
4				
5				
6				
7				
8				
9				

Notes:

190123A-BIK	1/23/19 - 1/28/19			

LDC #: 4415A2a

### VALIDATION FINDINGS WORKSHEET

### Blanks

Page: 1 of 1

Reviewer: FT

2nd Reviewer: [Signature]

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a method blank analyzed for each matrix?

Y N N/A Was a method blank analyzed for each concentration preparation level?

Y N N/A Was a method blank associated with every sample?

Y N N/A Was the blank contaminated? If yes, please see qualification below.

Blank extraction date: 1/23/19 Blank analysis date: 1/28/19

Conc. units: ug/l Associated Samples: All (NO)

Compound	Blank ID							
	190123A	Blk						
TIC	See	following	page					

Blank extraction date: \_\_\_\_\_ Blank analysis date: \_\_\_\_\_

Conc. units: \_\_\_\_\_ Associated Samples: \_\_\_\_\_

Compound	Blank ID							

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:  
Common contaminants such as the phthalates and TICs noted above that were detected in samples within ten times the associated method blank concentration were qualified as not detected, "U". Other contaminants within five times the method blank concentration were also qualified as not detected, "U".



Tentatively Identified Compound (LSC) summary

Operator ID: MA Date Acquired: 28 Jan 19 17:21  
 Data File: M:\YODA\DATA\Y190124\0124Y041.D  
 Name: 190123A BLK 1/800  
 Misc:  
 Method: M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title: EPA 8270C  
 Library Searched: M:\DATABASE\WILEY138.L

TIC Top Hit name	RT	EstConc	Units	Area	IntStd	ISRT	ISArea	ISConc
3-Penten-2-ol	1.60	27.3	ppb	1319670	ISTD01	5.47	2416120	40.0
Benzene, methyl-	2.19	209.1	ppb	10106200	ISTD01	5.47	2416120	40.0
Acetic acid, ethyl e	2.49	42.4	ppb	2047180	ISTD01	5.47	2416120	40.0
Ethene, tetrachloro-	2.82	14.1	ppb	680046	ISTD01	5.47	2416120	40.0
SULFONE, CHLORO PHEN	7.57	6.1	ppb	384616	ISTD02	6.90	3168470	40.0

0124Y041.D Y0125NC.M Tue Jan 29 12:29:17 2019

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** February 28, 2019

**Parameters:** Polynuclear Aromatic Hydrocarbons

**Validation Level:** Level C

**Laboratory:** APPL, Inc.

**Sample Delivery Group (SDG):** 87918

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
ERH745	AZ85418	Water	01/21/19
ERH747	AZ85420	Water	01/21/19

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polynuclear Aromatic Hydrocarbons (PAHs) which are 1-Methylnaphthalene, 2-Methylnaphthalene, and Naphthalene by Environmental Protection Agency (EPA) SW 846 Method 8270D in Selected Ion Monitoring (SIM) mode

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## Qualification Code Reference

- H Holding times were exceeded.
- S Surrogate recovery was outside QC limits.
- C Calibration %RSD,  $r$ ,  $r^2$  or %D were noncompliant.
- R Calibration RRF was <0.05.
- B Presumed contamination from preparation (method blank).
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD was high.
- I Internal standard performance was unsatisfactory.
- M Instrument Performance Check (BFB or DFTPP) was noncompliant.
- T Presumed contamination from trip blank.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Instrument performance for pesticides was poor.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. GC/MS Instrument Performance Check**

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

## **III. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0% for all compounds.

Average relative response factors (RRF) for all compounds were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

## **IV. Continuing Calibration**

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0% for all compounds.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

## **V. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **VI. Field Blanks**

No field blanks were identified in this SDG.

## VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits with the following exceptions:

Sample	Surrogate	%R (Limits)	Affected Compound	Flag	A or P
ERH745	2-Methylnaphthalene-d10	129 (39-114)	All compounds	NA	-
ERH747	2-Methylnaphthalene-d10	120 (39-114)	All compounds	NA	-

## VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

## IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
190123A LCS/D (All samples in SDG 87918)	2-Methylnaphthalene 1-Methylnaphthalene	122 (39-114) 118 (41-115)	120 (39-114) -	NA	-

Relative percent differences (RPD) were within QC limits.

## X. Field Duplicates

No field duplicates were identified in this SDG.

## XI. Internal Standards

All internal standard areas and retention times were within QC limits.

## XII. Compound Quantitation

Raw data were not reviewed for Level C validation.

## XIII. Target Compound Identifications

Raw data were not reviewed for Level C validation.

#### **XIV. System Performance**

Raw data were not reviewed for Level C validation.

#### **XV. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.



**Red Hill Bulk Storage Facility, CTO 18F0126  
Polynuclear Aromatic Hydrocarbons - Data Qualification Summary - SDG 87918**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Polynuclear Aromatic Hydrocarbons - Laboratory Blank Data Qualification  
Summary - SDG 87918**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Polynuclear Aromatic Hydrocarbons - Field Blank Data Qualification Summary -  
SDG 87918**

No Sample Data Qualified in this SDG

LDC #: 44415A2b  
 SDG #: 87918  
 Laboratory: APPL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**  
 Level C

Date: 2/28/19  
 Page: 1 of 1  
 Reviewer: [Signature]  
 2nd Reviewer: [Signature]

**METHOD:** GC/MS Polynuclear Aromatic Hydrocarbons (EPA SW 846 Method 8270D-SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	GC/MS Instrument performance check	Δ	
III.	Initial calibration/ICV	Δ/A	% PSD ≤ 15    ICV ≤ 20
IV.	Continuing calibration <i>(closing cov)</i>	A	cov ≤ 20/50
V.	Laboratory Blanks	Δ	
VI.	Field blanks	N	
VII.	Surrogate spikes	SW	
VIII.	Matrix spike/Matrix spike duplicates	N	CS
IX.	Laboratory control samples	SW	CS IP
X.	Field duplicates	N	
XI.	Internal standards	Δ	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	Δ	

Note: A = Acceptable      ND = No compounds detected      D = Duplicate      SB=Source blank  
 N = Not provided/applicable      R = Rinsate      TB = Trip blank      OTHER:  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

	Client ID	Lab ID	Matrix	Date
1	ERH745	AZ85418	Water	01/21/19
2	ERH747	AZ85420	Water	01/21/19
3				
4				
5				
6				
7				
8				

Notes:

190123A - BIK				

## VALIDATION FINDINGS WORKSHEET

**METHOD: GC/MS SVOA**

A. Phenol	CC. Dimethylphthalate	EEE. Bis(2-ethylhexyl)phthalate	GGGG. C30-Hopane	I1. Methyl methanesulfonate
B. Bis (2-chloroethyl) ether	DD. Acenaphthylene	FFF. Di-n-octylphthalate	HHHH. 1-Methylphenanthrene	J1. Ethyl methanesulfonate
C. 2-Chlorophenol	EE. 2,6-Dinitrotoluene	GGG. Benzo(b)fluoranthene	IIII. 1,4-Dioxane	K1. o,o',o"-Triethylphosphorothioate
D. 1,3-Dichlorobenzene	FF. 3-Nitroaniline	HHH. Benzo(k)fluoranthene	JJJJ. Acetophenone	L1. n-Phenylene diamine
E. 1,4-Dichlorobenzene	GG. Acenaphthene	III. Benzo(a)pyrene	KKKK. Atrazine	M1. 1,4-Naphthoquinone
F. 1,2-Dichlorobenzene	HH. 2,4-Dinitrophenol	JJJ. Indeno(1,2,3-cd)pyrene	LLLL. Benzaldehyde	N1. N-Nitro-o-toluidine
G. 2-Methylphenol	II. 4-Nitrophenol	KKK. Dibenz(a,h)anthracene	MMMM. Caprolactam	O1. 1,3,5-Trinitrobenzene
H. 2,2'-Oxybis(1-chloropropane)	JJ. Dibenzofuran	LLL. Benzo(g,h,i)perylene	NNNN. 2,6-Dichlorophenol	P1. Pentachlorobenzene
I. 4-Methylphenol	KK. 2,4-Dinitrotoluene	MMM. Bis(2-Chloroisopropyl)ether	OOOO. 1,2-Diphenylhydrazine	Q1. 4-Aminobiphenyl
J. N-Nitroso-di-n-propylamine	LL. Diethylphthalate	NNN. Aniline	PPPP. 3-Methylphenol	R1. 2-Naphthylamine
K. Hexachloroethane	MM. 4-Chlorophenyl-phenyl ether	OOO. N-Nitrosodimethylamine	QQQQ. 3&4-Methylphenol	S1. Triphenylene
L. Nitrobenzene	NN. Fluorene	PPP. Benzoic Acid	RRRR. 4-Dimethyldibenzothiophene (4MDT)	T1. Octachlorostyrene
M. Isophorone	OO. 4-Nitroaniline	QQQ. Benzyl alcohol	SSSS. 2/3-Dimethyldibenzothiophene (4MDT)	U1. Famphur
N. 2-Nitrophenol	PP. 4,6-Dinitro-2-methylphenol	RRR. Pyridine	TTTT. 1-Methyldibenzothiophene (1MDT)	V1. 1,4-phenylenediamine
O. 2,4-Dimethylphenol	QQ. N-Nitrosodiphenylamine	SSS. Benzidine	UUUU.. 2,3,4,6-Tetrachlorophenol	W1. Methapyrilene
P. Bis(2-chloroethoxy)methane	RR. 4-Bromophenyl-phenylether	TTT. 1-Methylnaphthalene	VVVV. 1,2,4,5-Tetrachlorobenzene	X1. Pentachloroethane
Q. 2,4-Dichlorophenol	SS. Hexachlorobenzene	UUU. Benzo(b)thiophene	WWWW.. 2-Picoline	Y1. 3,3'-Dimethylbenzidine
R. 1,2,4-Trichlorobenzene	TT. Pentachlorophenol	VVV. Benzonaphthothiophene	XXXX. 3-Methylcholanthrene	Z1. o-Toluidine
S. Naphthalene	UU. Phenanthrene	WWW. Benzo(e)pyrene	YYYY. a,a-Dimethylphenethylamine	A2. 1-Naphthylamine
T. 4-Chloroaniline	VV. Anthracene	XXX. 2,6-Dimethylnaphthalene	ZZZZ. Hexachloropropene	B2. 4-Aminobiphenyl
U. Hexachlorobutadiene	WW. Carbazole	YYY. 2,3,5-Trimethylnaphthalene	A1. N-Nitrosodiethylamine	C2. 4-Nitroquinoline-1-oxide
V. 4-Chloro-3-methylphenol	XX. Di-n-butylphthalate	ZZZ. Perylene	B1. N-Nitrosodi-n-butylamine	D2. Hexachloropene
W. 2-Methylnaphthalene	YY. Fluoranthene	AAAA. Dibenzothiophene	C1. N-Nitrosomethylethylamine	E2. Bis (2-chloro-1-methylethyl) ether
X. Hexachlorocyclopentadiene	ZZ. Pyrene	BBBB. Benzo(a)fluoranthene	D1. N-Nitrosomorpholine	F2. Bifenthrin
Y. 2,4,6-Trichlorophenol	AAA. Butylbenzylphthalate	CCCC. Benzo(b)fluorene	E1. N-Nitrosopyrrolidine	G2. Cyfluthrin
Z. 2,4,5-Trichlorophenol	BBB. 3,3'-Dichlorobenzidine	DDDD. cis/trans-Decalin	F1. Phenacetin	H2. Cypermethrin
AA. 2-Chloronaphthalene	CCC. Benzo(a)anthracene	EEEE. Biphenyl	G1. 2-Acetylaminofluorene	I2. Permethrin (cis/trans)
BB. 2-Nitroaniline	DDD. Chrysene	FFFF. Retene	H1. Pronamide	J2. 5-Nitro-o-toluidine

LDC #: 44415 A2b

**VALIDATION FINDINGS WORKSHEET**  
**Surrogate Recovery**

Page: 1 of 1  
 Reviewer: FT  
 2nd Reviewer: [Signature]

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualification below for all questions answered "N". Not applicable questions are identified as "N/A".

- Y  N  N/A Were percent recoveries (%R) for surrogates within QC limits?
- Y  N  N/A If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?
- Y  N  N/A If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

(5)

#	Sample ID	Surrogate	%R (Limits)	Qualifications
	1	W-d10	129 (39-114)	Jdt/P NO
			( )	
	2	↓	120 ( ↓ )	↓
			( )	
			( )	
	190123A-BIK	↓	124 ( ↓ )	↓
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	

(NBZ) = Nitrobenzene - d5 (2FP) = 2-Fluorophenol  
 (FBP) = 2-Fluorobiphenyl (TBP) = 2,4,6 -Tribromophenol  
 (TPH) = Terphenyl - d14 (2CP) = 2-Chlorophenol - d4

LDC #: 4415A2b

**VALIDATION FINDINGS WORKSHEET**  
**Laboratory Control Samples (LCS)**

Page: 1 of 1  
 Reviewer: FT  
 2nd Reviewer: [Signature]

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

- N/A Was a LCS required?
- N/A Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

(L)

#	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	190123A <u>LCSD</u>	W	122 (39-114)	120 (39-114)	( )	All	Jan/P NO
		TTT	118 (41-115)	( )	( )	↓	↓
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		

**Laboratory Data Consultants, Inc.  
Data Validation Report**

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** February 28, 2019

**Parameters:** 2-(2-Methoxyethoxy)-ethanol

**Validation Level:** Level C

**Laboratory:** APPL, Inc.

**Sample Delivery Group (SDG):** 87918

<b>Sample Identification</b>	<b>Laboratory Sample Identification</b>	<b>Matrix</b>	<b>Collection Date</b>
ERH745	AZ85418	Water	01/21/19
ERH747	AZ85420	Water	01/21/19

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

2-(2-Methoxyethoxy)-ethanol by Environmental Protection Agency (EPA) SW 846 Method 8270D

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.



## Qualification Code Reference

- H Holding times were exceeded.
- S Surrogate recovery was outside QC limits.
- C Calibration %RSD,  $r$ ,  $r^2$  or %D were noncompliant.
- R Calibration RRF was  $<0.05$ .
- B Presumed contamination from preparation (method blank).
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD was high.
- I Internal standard performance was unsatisfactory.
- M Instrument Performance Check (BFB or DFTPP) was noncompliant.
- T Presumed contamination from trip blank.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Instrument performance for pesticides was poor.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. GC/MS Instrument Performance Check**

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

## **III. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0%.

Average relative response factors (RRF) were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

## **IV. Continuing Calibration**

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0%.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0%.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

## **V. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **VI. Field Blanks**

No field blanks were identified in this SDG.

## **VII. Surrogates**

Surrogates were not added to all samples as required by the method. Using professional judgment, no data were qualified, since the LCS/LCSD percent recoveries were within QC limits. Additionally, all base surrogate percent recoveries were within QC limits in the phenol analysis.

## **VIII. Matrix Spike/Matrix Spike Duplicates**

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

## **IX. Laboratory Control Samples**

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## **X. Field Duplicates**

No field duplicates were identified in this SDG.

## **XI. Internal Standards**

All internal standard areas and retention times were within QC limits.

## **XII. Compound Quantitation**

Raw data were not reviewed for Level C validation.

## **XIII. Target Compound Identifications**

Raw data were not reviewed for Level C validation.

## **XIV. System Performance**

Raw data were not reviewed for Level C validation.

## **XV. Overall Assessment of Data**

The analysis was conducted within all specifications of the method with the exception noted in Section VII. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**Red Hill Bulk Storage Facility, CTO 18F0126  
2-(2-Methoxyethoxy)-ethanol - Data Qualification Summary - SDG 87918**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
2-(2-Methoxyethoxy)-ethanol - Laboratory Blank Data Qualification Summary -  
SDG 87918**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
2-(2-Methoxyethoxy)-ethanol - Field Blank Data Qualification Summary - SDG  
87918**

No Sample Data Qualified in this SDG

LDC #: 44415A2c  
 SDG #: 87918  
 Laboratory: APPL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**  
 Level C

Date: 2/28/19  
 Page: 1 of 1  
 Reviewer: [Signature]  
 2nd Reviewer: [Signature]

**METHOD:** GC/MS 2-(2-Methoxyethoxy)-Ethanol (EPA SW 846 Method 8270D-SIM)<sup>M</sup>

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	GC/MS Instrument performance check	Δ	
III.	Initial calibration/ICV	A/A	% RSD ≤ 15    CV ≤ 20
IV.	Continuing calibration / closing cv	A	CV ≤ 20/50
V.	Laboratory Blanks	Δ	
VI.	Field blanks	N	
VII.	Surrogate spikes	<del>N</del>	
VIII.	Matrix spike/Matrix spike duplicates	N	CS
IX.	Laboratory control samples	A	CS/D
X.	Field duplicates	N	
XI.	Internal standards	Δ	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	Δ	

Note: A = Acceptable      ND = No compounds detected      D = Duplicate      SB=Source blank  
 N = Not provided/applicable      R = Rinsate      TB = Trip blank      OTHER:  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

	Client ID	Lab ID	Matrix	Date
1	ERH745	AZ85418	Water	01/21/19
2	ERH747	AZ85420	Water	01/21/19
3				
4				
5				
6				
7				
8				

Notes:

-	19024A-BIK				

LDC #: 44415 A2C

**VALIDATION FINDINGS WORKSHEET**  
**Surrogate Recovery**

Page: 1 of 1  
Reviewer: ET  
2nd Reviewer: [Signature]

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualification below for all questions answered "N". Not applicable questions are identified as "N/A".

- Y N N/A Were percent recoveries (%R) for surrogates within QC limits?  
Y N N/A If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?  
Y N N/A If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Sample ID	Surrogate	%R (Limits)	Qualifications
	all	Surrogates were not added to all samples as required by the method. Using professional judgment, no data were qualified, since the LCS/LCSD percent recoveries were within QC limits. Additionally, all base surrogate percent recoveries were within QC limits in the phenol analysis.		Text
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
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			( )	
			( )	
			( )	
			( )	
			( )	

(NBZ) = Nitrobenzene - d5      (2FP) = 2-Fluorophenol  
(FBP) = 2-Fluorobiphenyl      (TBP) = 2,4,6 -Tribromophenol  
(TPH) = Terphenyl - d14      (2CP) = 2-Chlorophenol - d4

**Laboratory Data Consultants, Inc.  
Data Validation Report**

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** March 4, 2019

**Parameters:** Wet Chemistry

**Validation Level:** Level C

**Laboratory:** APPL, Inc.

**Sample Delivery Group (SDG):** 87918

<b>Sample Identification</b>	<b>Laboratory Sample Identification</b>	<b>Matrix</b>	<b>Collection Date</b>
ERH745	AZ85418	Water	01/21/19
ERH747	AZ85420	Water	01/21/19

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Alkalinity by Standard Method 2320B

Chloride, Nitrate, and Sulfate by Environmental Protection Agency (EPA) Method 300.0

Ferrous Iron by Standard Method 3500-Fe B

Nitrate/Nitrite as Nitrogen by EPA Method 353.2

Total Organic Carbon by EPA SW 846 Method 9060A

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results.



The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## Qualification Code Reference

- H Holding times were exceeded.
- S The sequence or number of standards used for the calibration was incorrect.
- C Correlation coefficient is  $<0.995$ .
- R %R for calibration is not within control limits.
- B Presumed contamination from preparation (method) blank or calibration blank.
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD or difference was high.
- I ICP ICS results were unsatisfactory.
- A ICP Serial Dilution %D were not within control limits.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Post Digestion Spike recovery was not within control limits.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

## I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met.

## II. Initial Calibration

All criteria for the initial calibration of each method were met.

## III. Continuing Calibration

Continuing calibration frequency and analysis criteria were met for each method when applicable.

## IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks with the following exceptions:

Blank ID	Analyte	Maximum Concentration	Limit of Quantitation	Associated Samples
PB (prep blank)	Chloride Total organic carbon	0.18 mg/L 0.23 mg/L	1.0 mg/L 0.93 mg/L	All samples in SDG 87918
ICB/CCB	Chloride Total organic carbon Sulfate	0.227 mg/L 0.28 mg/L 0.090 mg/L	1.0 mg/L 0.93 mg/L 1.0 mg/L	All samples in SDG 87918

Data qualification by the laboratory blanks was based on the maximum contaminant concentration in the laboratory blanks in the analysis of each analyte. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated laboratory blanks with the following exceptions:

Sample	Analyte	Reported Concentration	Limit of Quantitation	Modified Final Concentration
ERH745	Total organic carbon	0.71 mg/L	0.93 mg/L	0.71U mg/L
ERH747	Total organic carbon	0.76 mg/L	0.93 mg/L	0.76U mg/L

## V. Field Blanks

No field blanks were identified in this SDG.

## **VI. Matrix Spike/Matrix Spike Duplicates**

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

## **VII. Duplicate Sample Analysis**

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

## **VIII. Laboratory Control Samples**

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## **IX. Field Duplicates**

No field duplicates were identified in this SDG.

## **X. Sample Result Verification**

Raw data were not reviewed for Level C validation.

## **XI. Overall Assessment of Data**

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to laboratory blank contamination, data were qualified as not detected in two samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Based upon the data validation all other results are considered valid and usable for all purposes.

**Red Hill Bulk Storage Facility, CTO 18F0126  
Wet Chemistry- Data Qualification Summary - SDG 87918**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 87918**

Sample	Analyte	Modified Final Concentration	A or P	Code
ERH745	Total organic carbon	0.71U mg/L	A	B
ERH747	Total organic carbon	0.76U mg/L	A	B

**Red Hill Bulk Storage Facility, CTO 18F0126  
Wet Chemistry - Field Blank Data Qualification Summary - SDG 87918**

No Sample Data Qualified in this SDG

LDC #: 44415A6  
 SDG #: 87918  
 Laboratory: APPL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**  
 Level C

Date: 2/22/19  
 Page: # of 1  
 Reviewer: JB  
 2nd Reviewer: A

**METHOD: (Analyte)** Alkalinity (SM2320B), Chloride, Nitrate, Sulfate (EPA Method 300.0), Ferrous Iron (SM3500-Fe B), Nitrate/Nitrite-N (EPA Method 353.2), TOC (EPA SW846 Method 9060A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	SW	
V	Field blanks	N	
VI.	Matrix Spike/Matrix Spike Duplicates	N	C.S.
VII.	Duplicate sample analysis	N	
VIII.	Laboratory control samples	A	LCSID
IX.	Field duplicates	N	
X.	Sample result verification	N	
XI.	Overall assessment of data	A	

Note: A = Acceptable      ND = No compounds detected      D = Duplicate      SB=Source blank  
 N = Not provided/applicable      R = Rinsate      TB = Trip blank      OTHER:  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

	Client ID	Lab ID	Matrix	Date
1	ERH745	AZ85418	Water	01/21/19
2	ERH747	AZ85420	Water	01/21/19
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				

Notes: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**VALIDATION FINDINGS WORKSHEET**  
**Sample Specific Analysis Reference**

All circled methods are applicable to each sample.

Sample ID	Parameter
1, 2	pH TDS <u>(Cl)</u> <u>F</u> <u>NO<sub>3</sub></u> <u>NO<sub>2</sub></u> <u>SO<sub>4</sub></u> O-PO <sub>4</sub> <u>Alk</u> CN NH <sub>3</sub> TKN <u>TOC</u> Cr6+ ClO <sub>4</sub> <u>FerrousFe</u> <u>NO<sub>3</sub>/NO<sub>2</sub></u>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>

Comments: \_\_\_\_\_

**VALIDATION FINDINGS WORKSHEET**

**Blanks**

CODE: B

Reviewer: JB

2nd Reviewer: *[Signature]*

**METHOD:** Inorganics, Method See Cover

**Conc. units:** mg/L **Associated Samples** All

Analyte	Blank ID	Blank ID	Blank Action Limit	Associated Samples												
				1	2											
	PB	ICB/CCB (mg/L)														
Chloride	0.18	0.227	1.135													
TOC	0.23	0.28	1.4	0.71	0.76											
SO4		0.090	0.45													

Cl LOQ = 1.0 mg/L (blank) / = 5.0 mg/L (1) / = 10.0 mg/L (2)  
 TOC LOQ = 0.93 mg/L  
 SO4 LOQ = 1.0 mg/L (blank & 1) / = 10.0 mg/L (2)

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:  
 All contaminants within five times the method blank concentration were qualified as not detected, "U".



## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** February 28, 2019

**Parameters:** Gasoline Range Organics

**Validation Level:** Level C

**Laboratory:** APPL, Inc.

**Sample Delivery Group (SDG):** 87918

<b>Sample Identification</b>	<b>Laboratory Sample Identification</b>	<b>Matrix</b>	<b>Collection Date</b>
ERH744	AZ85417	Water	01/21/19
ERH745	AZ85418	Water	01/21/19
ERH746	AZ85419	Water	01/21/19
ERH747	AZ85420	Water	01/21/19

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Gasoline Range Organics by Environmental Protection Agency (EPA) SW 846 Method 8260B

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered not detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## Qualification Code Reference

- H Holding times were exceeded.
- S Surrogate recovery was outside QC limits.
- C Calibration %RSD,  $r$ ,  $r^2$  or %D were noncompliant.
- R Calibration RRF was <0.05.
- B Presumed contamination from preparation (method blank).
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD was high.
- I Internal standard performance was unsatisfactory.
- M Instrument Performance Check (BFB or DFTPP) was noncompliant.
- T Presumed contamination from trip blank.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Instrument performance for pesticides was poor.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

A curve fit, based on the initial calibration, was established for quantitation. The coefficient of determination ( $r^2$ ) was greater than or equal to 0.990.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

## **III. Continuing Calibration**

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0%.

## **IV. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **V. Field Blanks**

Samples ERH744 and ERH746 were identified as trip blanks. No contaminants were found.

## **VI. Surrogates**

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

## **VII. Matrix Spike/Matrix Spike Duplicates**

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

## **VIII. Laboratory Control Samples**

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## **IX. Field Duplicates**

No field duplicates were identified in this SDG.

## **X. Compound Quantitation**

Raw data were not reviewed for Level C validation.

## **XI. Target Compound Identifications**

Raw data were not reviewed for Level C validation.

## **XII. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**Red Hill Bulk Storage Facility, CTO 18F0126  
Gasoline Range Organics - Data Qualification Summary - SDG 87918**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Gasoline Range Organics - Laboratory Blank Data Qualification Summary - SDG  
87918**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Gasoline Range Organics - Field Blank Data Qualification Summary - SDG 87918**

No Sample Data Qualified in this SDG

LDC #: 44415A7  
 SDG #: 87918  
 Laboratory: APPL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**  
 Level C

Date: 2/28/19  
 Page: 1 of 1  
 Reviewer: EJ  
 2nd Reviewer: [Signature]

**METHOD:** GC/MS Gasoline Range Organics (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	12 CV ≤ 20
IV.	Continuing calibration	A	CV ≤ 20
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	TB = 1,3
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	N	CS
IX.	Laboratory control samples	A	LOS 10
X.	Field duplicates	N	
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable  
 N = Not provided/applicable  
 SW = See worksheet  
 ND = No compounds detected  
 R = Rinsate  
 FB = Field blank  
 D = Duplicate  
 TB = Trip blank  
 EB = Equipment blank  
 SB=Source blank  
 OTHER:

	Client ID	Lab ID	Matrix	Date
1	ERH744 TB	AZ85417	Water	01/21/19
2	ERH745	AZ85418	Water	01/21/19
3	ERH746 TB	AZ85419	Water	01/21/19
4	ERH747	AZ85420	Water	01/21/19
5				
6				
7				
8				

Notes:

AL190123-BIK				



**Laboratory Data Consultants, Inc.**  
**Data Validation Report**

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** February 28, 2019

**Parameters:** Total Petroleum Hydrocarbons as Extractables

**Validation Level:** Level C

**Laboratory:** APPL, Inc.

**Sample Delivery Group (SDG):** 87918

<b>Sample Identification</b>	<b>Laboratory Sample Identification</b>	<b>Matrix</b>	<b>Collection Date</b>
ERH745	AZ85418	Water	01/21/19
ERH747	AZ85420	Water	01/21/19

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Total Petroleum Hydrocarbons (TPH) as Extractables by Environmental Protection Agency (EPA) SW 846 Method 8015B

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered not detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## Qualification Code Reference

- H Holding times were exceeded.
- S Surrogate recovery was outside QC limits.
- C Calibration %RSD,  $r$ ,  $r^2$  or %D were noncompliant.
- R Calibration RRF was <0.05.
- B Presumed contamination from preparation (method blank).
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD was high.
- I Internal standard performance was unsatisfactory.
- M Instrument Performance Check (BFB or DFTPP) was noncompliant.
- T Presumed contamination from trip blank.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Instrument performance for pesticides was poor.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

## **III. Continuing Calibration**

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

## **IV. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **V. Field Blanks**

No field blanks were identified in this SDG.

## **VI. Surrogates**

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

## **VII. Matrix Spike/Matrix Spike Duplicates**

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

## **VIII. Laboratory Control Samples**

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## **IX. Field Duplicates**

No field duplicates were identified in this SDG.

## **X. Compound Quantitation**

Raw data were not reviewed for Level C validation.

## **XI. Target Compound Identifications**

Raw data were not reviewed for Level C validation.

## **XII. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**Red Hill Bulk Storage Facility, CTO 18F0126  
Total Petroleum Hydrocarbons as Extractables - Data Qualification Summary -  
SDG 87918**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Total Petroleum Hydrocarbons as Extractables - Laboratory Blank Data  
Qualification Summary - SDG 87918**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Total Petroleum Hydrocarbons as Extractables - Field Blank Data Qualification  
Summary - SDG 87918**

No Sample Data Qualified in this SDG

LDC #: 44415A8  
 SDG #: 87918  
 Laboratory: APPL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**

Level C

Date: 2/20/19  
 Page: 1 of 1  
 Reviewer: FJ  
 2nd Reviewer: AE

**METHOD:** GC TPH as Extractables (EPA SW 846 Method 8015B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	Initial calibration/ICV	A/A	% PSD / $ICV \leq 20$
III.	Continuing calibration	A	$CON \leq 20$
IV.	Laboratory Blanks	A	
V.	Field blanks	N	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	N	CS
VIII.	Laboratory control samples	A	LCS 1P
IX.	Field duplicates	N	
X.	Compound quantitation RL/LOQ/LODs	N	
XI.	Target compound identification	N	
XII.	Overall assessment of data	A	

Note: A = Acceptable      ND = No compounds detected      D = Duplicate      SB=Source blank  
 N = Not provided/applicable      R = Rinsate      TB = Trip blank      OTHER:  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

	Client ID	Lab ID	Matrix	Date
1	ERH745	AZ85418	Water	01/21/19
2	ERH747	AZ85420	Water	01/21/19
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				

Notes:

190123A - BIK					



**Laboratory Data Consultants, Inc.  
Data Validation Report**

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** February 28, 2019

**Parameters:** Methane

**Validation Level:** Level C

**Laboratory:** APPL, Inc.

**Sample Delivery Group (SDG):** 87918

<b>Sample Identification</b>	<b>Laboratory Sample Identification</b>	<b>Matrix</b>	<b>Collection Date</b>
ERH744	AZ85417	Water	01/21/19
ERH745	AZ85418	Water	01/21/19
ERH746	AZ85419	Water	01/21/19
ERH747	AZ85420	Water	01/21/19

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Methane by Method RSK-175

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## Qualification Code Reference

- H Holding times were exceeded.
- S Surrogate recovery was outside QC limits.
- C Calibration %RSD,  $r$ ,  $r^2$  or %D were noncompliant.
- R Calibration RRF was  $<0.05$ .
- B Presumed contamination from preparation (method blank).
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD was high.
- I Internal standard performance was unsatisfactory.
- M Instrument Performance Check (BFB or DFTPP) was noncompliant.
- T Presumed contamination from trip blank.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Instrument performance for pesticides was poor.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

A curve fit, based on the initial calibration, was established for quantitation. The coefficient of determination ( $r^2$ ) was greater than or equal to 0.990.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

## **III. Continuing Calibration**

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 20.0%.

## **IV. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **V. Field Blanks**

Samples ERH744 and ERH746 were identified as trip blanks. No contaminants were found.

## **VI. Matrix Spike/Matrix Spike Duplicates**

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

## **VII. Laboratory Control Samples**

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## **VIII. Field Duplicates**

No field duplicates were identified in this SDG.

## **IX. Compound Quantitation**

Raw data were not reviewed for Level C validation.

## **X. Target Compound Identification**

Raw data were not reviewed for Level C validation.

## **XI. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**Red Hill Bulk Storage Facility, CTO 18F0126  
Methane - Data Qualification Summary - SDG 87918**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Methane - Laboratory Blank Data Qualification Summary - SDG 87918**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Methane - Field Blank Data Qualification Summary - SDG 87918**

No Sample Data Qualified in this SDG

LDC #: 44415A51  
 SDG #: 87918  
 Laboratory: APPL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**  
 Level C

Date: 2/28/19  
 Page: 1 of 1  
 Reviewer: [Signature]  
 2nd Reviewer: [Signature]

**METHOD:** GC Methane (Method RSK-175)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	Initial calibration/ICV	A/A	% R <sup>2</sup> ICV ≤ 20
III.	Continuing calibration	Δ	CCV ≤ 20
IV.	Laboratory Blanks	Δ	
V.	Field blanks	ND	TB = 1, 3
VI.	Matrix spike/Matrix spike duplicates	N	CS
VII.	Laboratory control samples	A	RESIP
VIII.	Field duplicates	N	
IX.	Compound quantitation RL/LOQ/LODs	N	
X.	Target compound identification	N	
XI.	Overall assessment of data	Δ	

Note: A = Acceptable      ND = No compounds detected      D = Duplicate      SB=Source blank  
 N = Not provided/applicable      R = Rinsate      TB = Trip blank      OTHER:  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

	Client ID	Lab ID	Matrix	Date
1	ERH744 TB	AZ85417	Water	01/21/19
2	ERH745	AZ85418	Water	01/21/19
3	ERH746 TB	AZ85419	Water	01/21/19
4	ERH747	AZ85420	Water	01/21/19
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11				
12				
13				

Notes:

190125B - BJK				



**Red Hill Bulk Storage Facility, CTO 18F0126 - SDG 87918  
LDC 44415**

AECOM

EPA_NO	LAB_IDDF	ANALYTE	COLL_DATE	ANAL_DATE	QCLev	RESULT	UNITS	LAB_Q	LOQ	LOD	REV	Q_C
<b>METHOD: 2320B</b>												
ERH745	AZ85418	1 ALKALINITY, TOTAL (AS CaCO3)	1/21/2019 8:45:00 AM	1/22/2019 5:05:00 PM	C	91.8	MG_L		2.0	1.70		
ERH745	AZ85418	1 BICARBONATE	1/21/2019 8:45:00 AM	1/22/2019 5:05:00 PM	C	91.8	MG_L		2.0	1.70		
ERH745	AZ85418	1 CARBONATE (AS CO3)	1/21/2019 8:45:00 AM	1/22/2019 5:05:00 PM	C	1.70	MG_L	U	2.0	1.70		U
ERH747	AZ85420	1 ALKALINITY, TOTAL (AS CaCO3)	1/21/2019 9:45:00 AM	1/22/2019 5:11:00 PM	C	108	MG_L		2.0	1.70		
ERH747	AZ85420	1 BICARBONATE	1/21/2019 9:45:00 AM	1/22/2019 5:11:00 PM	C	108	MG_L		2.0	1.70		
ERH747	AZ85420	1 CARBONATE (AS CO3)	1/21/2019 9:45:00 AM	1/22/2019 5:11:00 PM	C	1.70	MG_L	U	2.0	1.70		U
<b>METHOD: 300.0</b>												
ERH745	AZ85418	5 CHLORIDE (AS CL)	1/21/2019 8:45:00 AM	1/22/2019 2:55:00 PM	C	145	MG_L	D	5.0	1.00		
ERH745	AZ85418	1 NITROGEN, NITRATE (AS N)	1/21/2019 8:45:00 AM	1/22/2019 12:44:00 PM	C	3.3	MG_L		0.5	0.18		
ERH745	AZ85418	1 SULFATE (AS SO4)	1/21/2019 8:45:00 AM	1/22/2019 12:44:00 PM	C	41.4	MG_L		1.0	0.20		
ERH747	AZ85420	10 CHLORIDE (AS CL)	1/21/2019 9:45:00 AM	1/22/2019 3:02:00 PM	C	457	MG_L	D	10.0	2.00		
ERH747	AZ85420	1 NITROGEN, NITRATE (AS N)	1/21/2019 9:45:00 AM	1/22/2019 12:52:00 PM	C	2.5	MG_L		0.5	0.18		
ERH747	AZ85420	10 SULFATE (AS SO4)	1/21/2019 9:45:00 AM	1/22/2019 3:02:00 PM	C	92.1	MG_L	D	10.0	2.00		
<b>METHOD: 3500-FE-B</b>												
ERH745	AZ85418	1 Iron, Ion (Fe2+)	1/21/2019 8:45:00 AM	1/22/2019 12:35:00 PM	C	0.32	MG_L	U	1.0	0.32		U
ERH747	AZ85420	1 Iron, Ion (Fe2+)	1/21/2019 9:45:00 AM	1/22/2019 12:35:00 PM	C	0.32	MG_L	U	1.0	0.32		U
<b>METHOD: 353.2</b>												
ERH745	AZ85418	1 NITROGEN, NITRATE-NITRITE	1/21/2019 8:45:00 AM	1/28/2019 4:51:00 PM	C	0.77	MG_L		0.10	0.100		
ERH747	AZ85420	1 NITROGEN, NITRATE-NITRITE	1/21/2019 9:45:00 AM	1/28/2019 4:53:00 PM	C	0.53	MG_L		0.10	0.100		
<b>METHOD: 8015B_E</b>												
ERH745	AZ85418	1 C10-C24 DIESEL RANGE ORGANICS	1/21/2019 8:45:00 AM	1/24/2019 6:38:00 PM	C	25.00	UG_L	U	40.0	25.00		U
ERH745	AZ85418	1 C24-C40 TOTAL PETROLEUM HYDROCARBONS, OIL RANGE	1/21/2019 8:45:00 AM	1/24/2019 6:38:00 PM	C	40.00	UG_L	U	40.0	40.00		U
ERH747	AZ85420	1 C10-C24 DIESEL RANGE ORGANICS	1/21/2019 9:45:00 AM	1/24/2019 6:58:00 PM	C	25.00	UG_L	U	40.0	25.00		U
ERH747	AZ85420	1 C24-C40 TOTAL PETROLEUM HYDROCARBONS, OIL RANGE	1/21/2019 9:45:00 AM	1/24/2019 6:58:00 PM	C	40.00	UG_L	U	40.0	40.00		U
<b>METHOD: 8260B</b>												
ERH744	AZ85417	1 BENZENE	1/21/2019 8:20:00 AM	1/23/2019 4:58:00 PM	C	0.30	UG_L	U	1.0	0.30		U
ERH744	AZ85417	1 ETHYLBENZENE	1/21/2019 8:20:00 AM	1/23/2019 4:58:00 PM	C	0.50	UG_L	U	1.0	0.50		U

EPA_NO	LAB_IDDF	ANALYTE	COLL_DATE	ANAL_DATE	QCLev	RESULT	UNITS	LAB_Q	LOQ	LOD	REV	Q_C
<b>METHOD: 8260B</b>												
ERH744	AZ85417	1 PETROLEUM HYDROCARBONS C6-C10	1/21/2019 8:20:00 AM	1/23/2019 4:57:00 PM	C	18.0	UG_L	U	20	18.0	U	
ERH744	AZ85417	1 TOLUENE	1/21/2019 8:20:00 AM	1/23/2019 4:58:00 PM	C	0.30	UG_L	U	1.0	0.30	U	
ERH744	AZ85417	1 Xylenes	1/21/2019 8:20:00 AM	1/23/2019 4:58:00 PM	C	0.30	UG_L	U	2.0	0.30	U	
ERH745	AZ85418	1 BENZENE	1/21/2019 8:45:00 AM	1/23/2019 5:26:00 PM	C	0.30	UG_L	U	1.0	0.30	U	
ERH745	AZ85418	1 ETHYLBENZENE	1/21/2019 8:45:00 AM	1/23/2019 5:26:00 PM	C	0.50	UG_L	U	1.0	0.50	U	
ERH745	AZ85418	1 PETROLEUM HYDROCARBONS C6-C10	1/21/2019 8:45:00 AM	1/23/2019 5:27:00 PM	C	18.0	UG_L	U	20	18.0	U	
ERH745	AZ85418	1 TOLUENE	1/21/2019 8:45:00 AM	1/23/2019 5:26:00 PM	C	0.30	UG_L	U	1.0	0.30	U	
ERH745	AZ85418	1 Xylenes	1/21/2019 8:45:00 AM	1/23/2019 5:26:00 PM	C	0.30	UG_L	U	2.0	0.30	U	
ERH746	AZ85419	1 BENZENE	1/21/2019 8:35:00 AM	1/23/2019 5:55:00 PM	C	0.30	UG_L	U	1.0	0.30	U	
ERH746	AZ85419	1 ETHYLBENZENE	1/21/2019 8:35:00 AM	1/23/2019 5:55:00 PM	C	0.50	UG_L	U	1.0	0.50	U	
ERH746	AZ85419	1 PETROLEUM HYDROCARBONS C6-C10	1/21/2019 8:35:00 AM	1/23/2019 5:56:00 PM	C	18.0	UG_L	U	20	18.0	U	
ERH746	AZ85419	1 TOLUENE	1/21/2019 8:35:00 AM	1/23/2019 5:55:00 PM	C	0.30	UG_L	U	1.0	0.30	U	
ERH746	AZ85419	1 Xylenes	1/21/2019 8:35:00 AM	1/23/2019 5:55:00 PM	C	0.30	UG_L	U	2.0	0.30	U	
ERH747	AZ85420	1 BENZENE	1/21/2019 9:45:00 AM	1/23/2019 6:23:00 PM	C	0.30	UG_L	U	1.0	0.30	U	
ERH747	AZ85420	1 ETHYLBENZENE	1/21/2019 9:45:00 AM	1/23/2019 6:23:00 PM	C	0.50	UG_L	U	1.0	0.50	U	
ERH747	AZ85420	1 PETROLEUM HYDROCARBONS C6-C10	1/21/2019 9:45:00 AM	1/23/2019 6:24:00 PM	C	18.0	UG_L	U	20	18.0	U	
ERH747	AZ85420	1 TOLUENE	1/21/2019 9:45:00 AM	1/23/2019 6:23:00 PM	C	0.30	UG_L	U	1.0	0.30	U	
ERH747	AZ85420	1 Xylenes	1/21/2019 9:45:00 AM	1/23/2019 6:23:00 PM	C	0.30	UG_L	U	2.0	0.30	U	
<b>METHOD: 8270D</b>												
ERH745	AZ85418	1 2-(2-METHOXY ETHOXY)-ETHANOL	1/21/2019 8:45:00 AM	1/29/2019 10:25:00 AM	C	80.0	UG_L	U	100	80.0	U	
ERH745	AZ85418	1 MESITYL OXIDE	1/21/2019 8:45:00 AM	1/28/2019 8:08:00 PM	C	19	UG_L	T	0	0		
ERH745	AZ85418	1 PENTANEDIOIC ACID, DIMETHYL ESTER	1/21/2019 8:45:00 AM	1/28/2019 8:08:00 PM	C	11	UG_L	T	0	0		
ERH745	AZ85418	1 PHENOL	1/21/2019 8:45:00 AM	1/28/2019 8:08:00 PM	C	4.00	UG_L	U	5.0	4.00	U	
ERH747	AZ85420	1 2-(2-METHOXY ETHOXY)-ETHANOL	1/21/2019 9:45:00 AM	1/29/2019 10:49:00 AM	C	80.0	UG_L	U	100	80.0	U	
ERH747	AZ85420	1 MESITYL OXIDE	1/21/2019 9:45:00 AM	1/28/2019 8:35:00 PM	C	48	UG_L	T	0	0		
ERH747	AZ85420	1 PENTANEDIOIC ACID, DIMETHYL ESTER	1/21/2019 9:45:00 AM	1/28/2019 8:35:00 PM	C	9.6	UG_L	T	0	0		
ERH747	AZ85420	1 PHENOL	1/21/2019 9:45:00 AM	1/28/2019 8:35:00 PM	C	4.00	UG_L	U	5.0	4.00	U	

EPA_NO	LAB_IDDF	ANALYTE	COLL_DATE	ANAL_DATE	QCLev	RESULT	UNITS	LAB_Q	LOQ	LOD	REV	Q_C
<b>METHOD: 8270DSIM</b>												
ERH745	AZ85418	1 1-METHYLNAPHTHALENE	1/21/2019 8:45:00 AM	1/25/2019 2:41:00 PM	C	0.10	UG_L	U	0.2	0.10	U	
ERH745	AZ85418	1 2-METHYLNAPHTHALENE	1/21/2019 8:45:00 AM	1/25/2019 2:41:00 PM	C	0.10	UG_L	U	0.2	0.10	U	
ERH745	AZ85418	1 NAPHTHALENE	1/21/2019 8:45:00 AM	1/25/2019 2:41:00 PM	C	0.10	UG_L	U	0.2	0.10	U	
ERH747	AZ85420	1 1-METHYLNAPHTHALENE	1/21/2019 9:45:00 AM	1/25/2019 3:03:00 PM	C	0.10	UG_L	U	0.2	0.10	U	
ERH747	AZ85420	1 2-METHYLNAPHTHALENE	1/21/2019 9:45:00 AM	1/25/2019 3:03:00 PM	C	0.10	UG_L	U	0.2	0.10	U	
ERH747	AZ85420	1 NAPHTHALENE	1/21/2019 9:45:00 AM	1/25/2019 3:03:00 PM	C	0.10	UG_L	U	0.2	0.10	U	
<b>METHOD: 9060A</b>												
ERH745	AZ85418	1 TOTAL ORGANIC CARBON	1/21/2019 8:45:00 AM	2/12/2019 7:18:00 PM	C		MG_L	J	0.93	0.71	U	b
ERH747	AZ85420	1 TOTAL ORGANIC CARBON	1/21/2019 9:45:00 AM	2/12/2019 8:22:00 PM	C		MG_L	J	0.93	0.76	U	b
<b>METHOD: RSK175</b>												
ERH744	AZ85417	1 METHANE	1/21/2019 8:20:00 AM	1/25/2019 11:54:00 AM	C	1.00	UG_L	U	5.0	1.00	U	
ERH745	AZ85418	1 METHANE	1/21/2019 8:45:00 AM	1/25/2019 11:56:00 AM	C	1.00	UG_L	U	5.0	1.00	U	
ERH746	AZ85419	1 METHANE	1/21/2019 8:35:00 AM	1/25/2019 11:59:00 AM	C	1.00	UG_L	U	5.0	1.00	U	
ERH747	AZ85420	1 METHANE	1/21/2019 9:45:00 AM	1/25/2019 12:01:00 PM	C	1.00	UG_L	U	5.0	1.00	U	

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** February 28, 2019

**Parameters:** Volatiles

**Validation Level:** Level C & D

**Laboratory:** APPL, Inc.

**Sample Delivery Group (SDG):** 87932

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
ERH737	AZ85519	Water	01/21/19
ERH738	AZ85520	Water	01/21/19
ERH739	AZ85521	Water	01/21/19
ERH742	AZ85522	Water	01/21/19
ERH743**	AZ85523**	Water	01/21/19
ERH750	AZ85524	Water	01/21/19
ERH751	AZ85525	Water	01/21/19
ERH752	AZ85526	Water	01/22/19
ERH753	AZ85527	Water	01/22/19

\*\*Indicates sample underwent Level D validation

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) which are Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX) by Environmental Protection Agency (EPA) SW 846 Method 8260B

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level D data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## Qualification Code Reference

- H Holding times were exceeded.
- S Surrogate recovery was outside QC limits.
- C Calibration %RSD,  $r$ ,  $r^2$  or %D were noncompliant.
- R Calibration RRF was  $<0.05$ .
- B Presumed contamination from preparation (method blank).
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD was high.
- I Internal standard performance was unsatisfactory.
- M Instrument Performance Check (BFB or DFTPP) was noncompliant.
- T Presumed contamination from trip blank.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Instrument performance for pesticides was poor.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. GC/MS Instrument Performance Check**

A bromofluorobenzene (BFB) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

## **III. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0% for all compounds.

Average relative response factors (RRF) for all compounds were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

## **IV. Continuing Calibration**

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0% for all compounds.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

## **V. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **VI. Field Blanks**

Samples ERH737, ERH742, ERH750, and ERH752 were identified as trip blanks. No contaminants were found.



## VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits with the following exceptions:

Sample	Surrogate	%R (Limits)	Affected Compound	Flag	A or P
ERH738	Toluene-d8	87.8 (89-112)	All compounds	UJ (all non-detects)	P
ERH739	Toluene-d8	83.4 (89-112)	All compounds	UJ (all non-detects)	P
ERH753	Toluene-d8	85.7 (89-112)	All compounds	UJ (all non-detects)	P

## VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

## IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## X. Field Duplicates

Samples ERH738 and ERH739 were identified as field duplicates. No results were detected in any of the samples.

## XI. Internal Standards

All internal standard areas and retention times were within QC limits.

## XII. Compound Quantitation

All compound quantitations met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

## XIII. Target Compound Identifications

All target compound identifications met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

#### **XIV. System Performance**

The system performance was acceptable for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

#### **XV. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to surrogate %R, data were qualified as estimated in three samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

**Red Hill Bulk Storage Facility, CTO 18F0126  
Volatiles - Data Qualification Summary - SDG 87932**

Sample	Compound	Flag	A or P	Reason (Code)
ERH738 ERH739 ERH753	All compounds	UJ (all non-detects)	P	Surrogates (%R) (S)

**Red Hill Bulk Storage Facility, CTO 18F0126  
Volatiles - Laboratory Blank Data Qualification Summary - SDG 87932**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Volatiles - Field Blank Data Qualification Summary - SDG 87932**

No Sample Data Qualified in this SDG

LDC #: 44415B1a  
 SDG #: 87932  
 Laboratory: APPL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**  
 Level C/D

Date: 2/28/19  
 Page: 1 of 1  
 Reviewer: FJ  
 2nd Reviewer: E

**METHOD:** GC/MS Volatiles (BTEX)(EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	% PSD ≤ 15 ICV ≤ 20
IV.	Continuing calibration / dosing cvv	A	ccv ≤ 20/50
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	TB = 1, 4, 6, 8
VII.	Surrogate spikes	SW	
VIII.	Matrix spike/Matrix spike duplicates	N	CS
IX.	Laboratory control samples	A	CS/D
X.	Field duplicates	ND	D = 2, 3
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	A	Not reviewed for Level C validation.
XIII.	Target compound identification	A	Not reviewed for Level C validation.
XIV.	System performance	A	Not reviewed for Level C validation.
XV.	Overall assessment of data	A	

Note: A = Acceptable ND = No compounds detected D = Duplicate SB=Source blank  
 N = Not provided/applicable R = Rinsate TB = Trip blank OTHER:  
 SW = See worksheet FB = Field blank EB = Equipment blank

\*\* Indicates sample underwent Level D validation

	Client ID	Lab ID	Matrix	Date
1 →	ERH737 TB	AZ85519	Water	01/21/19
2 →	ERH738 D	AZ85520	Water	01/21/19
3 →	ERH739 D	AZ85521	Water	01/21/19
4 →	ERH742 TB	AZ85522	Water	01/21/19
5 +	ERH743**	AZ85523**	Water	01/21/19
6 →	ERH750 TB	AZ85524	Water	01/21/19
7 →	ERH751	AZ85525	Water	01/21/19
8 →	ERH752 TB	AZ85526	Water	01/22/19
9 →	ERH753	AZ85527	Water	01/22/19
10				
11				
12	AL19012B - Blk			
13				

LDC #: 44415B/a

**VALIDATION FINDINGS CHECKLIST**

Page: 1 of 2  
 Reviewer: FT  
 2nd Reviewer: JK

**Method:** Volatiles (EPA SW 846 Method 8260B)

Validation Area	Yes	No	NA	Findings/Comments
<b>I. Technical holding times</b>				
Were all technical holding times met?	/			
Was cooler temperature criteria met?	/			
<b>II. GC/MS Instrument performance check</b>				
Were the BFB performance results reviewed and found to be within the specified criteria?	/			
Were all samples analyzed within the 12 hour clock criteria?	/			
<b>IIIa. Initial calibration</b>				
Did the laboratory perform a 5 point calibration prior to sample analysis?	/			
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	/			
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of $> 0.990$ ?			/	
Were all percent relative standard deviations (%RSD) $\leq 30\%$ / <u>15%</u> and relative response factors (RRF) $\geq 0.05$ ?	/			
<b>IIIb. Initial Calibration Verification</b>				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	/			
Were all percent differences (%D) $< 20\%$ ?	/			
<b>IV. Continuing calibration</b>				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	/			
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	/			
Were all percent differences (%D) $\leq 20\%$ and relative response factors (RRF) $\geq 0.05$ ?	/			
<b>V. Laboratory Blanks</b>				
Was a laboratory blank associated with every sample in this SDG?	/			
Was a laboratory blank analyzed at least once every 12 hours for each matrix and concentration?	/			
Was there contamination in the laboratory blanks?			/	
<b>VI. Field blanks</b>				
Were field blanks were identified in this SDG?	/			
Were target compounds detected in the field blanks?			/	
<b>VII. Surrogate spikes</b>				
Were all surrogate percent recovery (%R) within QC limits?	.	/		
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?		/		

LDC #: 4441513/a

**VALIDATION FINDINGS CHECKLIST**

Page: 2 of 2  
 Reviewer: FT  
 2nd Reviewer: st

Validation Area	Yes	No	NA	Findings/Comments
<b>VIII: Matrix spike/Matrix spike duplicates</b>				
Were matrix spike (MS) and matrix spike duplicate (MSD) analyzed in this SDG?			/	
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			/	
<b>IX: Laboratory control samples</b>				
Was an LCS analyzed per analytical batch in this SDG?	/			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	/			
<b>X: Field duplicates</b>				
Were field duplicate pairs identified in this SDG?	/			
Were target compounds detected in the field duplicates?		/		
<b>XI: Internal standards</b>				
Were internal standard area counts within -50% to +100% of the associated calibration standard?	/			
Were retention times within + 30 seconds of the associated calibration standard?	/			
<b>XII: Compound quantitation</b>				
Did the laboratory LOQs/RLs meet the QAPP LOQs/RLs?	/			
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	/			
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	/			
<b>XIII: Target compound identification</b>				
Were relative retention times (RRT's) within + 0.06 RRT units of the standard?	/			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	/			
Were chromatogram peaks verified and accounted for?	/			
<b>XIV: System performance</b>				
System performance was found to be acceptable.	/			
<b>XV: Overall assessment of data</b>				
Overall assessment of data was found to be acceptable.	/			

## TARGET COMPOUND WORKSHEET

### METHOD: VOA

A. Chloromethane	AA. Tetrachloroethene	AAA. 1,3,5-Trimethylbenzene	AAAA. Ethyl tert-butyl ether	A1. 1,3-Butadiene
B. Bromomethane	BB. 1,1,2,2-Tetrachloroethane	BBB. 4-Chlorotoluene	BBBB. tert-Amyl methyl ether	B1. Hexane
C. Vinyl chloride	CC. Toluene	CCC. tert-Butylbenzene	CCCC. 1-Chlorohexane	C1. Heptane
D. Chloroethane	DD. Chlorobenzene	DDD. 1,2,4-Trimethylbenzene	DDDD. Isopropyl alcohol	D1. Propylene
E. Methylene chloride	EE. Ethylbenzene	EEE. sec-Butylbenzene	EEEE. Acetonitrile	E1. Freon 11
F. Acetone	FF. Styrene	FFF. 1,3-Dichlorobenzene	FFFF. Acrolein	F1. Freon 12
G. Carbon disulfide	GG. Xylenes, total	GGG. p-Isopropyltoluene	GGGG. Acrylonitrile	G1. Freon 113
H. 1,1-Dichloroethene	HH. Vinyl acetate	HHH. 1,4-Dichlorobenzene	HHHH. 1,4-Dioxane	H1. Freon 114
I. 1,1-Dichloroethane	II. 2-Chloroethylvinyl ether	III. n-Butylbenzene	IIII. Isobutyl alcohol	I1. 2-Nitropropane
J. 1,2-Dichloroethene, total	JJ. Dichlorodifluoromethane	JJJ. 1,2-Dichlorobenzene	JJJJ. Methacrylonitrile	J1. Dimethyl disulfide
K. Chloroform	KK. Trichlorofluoromethane	KKK. 1,2,4-Trichlorobenzene	KKKK. Propionitrile	K1. 2,3-Dimethyl pentane
L. 1,2-Dichloroethane	LL. Methyl-tert-butyl ether	LLL. Hexachlorobutadiene	LLLL. Ethyl ether	L1. 2,4-Dimethyl pentane
M. 2-Butanone	MM. 1,2-Dibromo-3-chloropropane	MMM. Naphthalene	MMMM. Benzyl chloride	M1. 3,3-Dimethyl pentane
N. 1,1,1-Trichloroethane	NN. Methyl ethyl ketone	NNN. 1,2,3-Trichlorobenzene	NNNN. Iodomethane	N1. 2-Methylpentane
O. Carbon tetrachloride	OO. 2,2-Dichloropropane	OOO. 1,3,5-Trichlorobenzene	OOOO. 1,1-Difluoroethane	O1. 3-Methylpentane
P. Bromodichloromethane	PP. Bromochloromethane	PPP. trans-1,2-Dichloroethene	PPPP. Tetrahydrofuran	P1. 3-Ethylpentane
Q. 1,2-Dichloropropane	QQ. 1,1-Dichloropropene	QQQ. cis-1,2-Dichloroethene	QQQQ. Methyl acetate	Q1. 2,2-Dimethylpentane
R. cis-1,3-Dichloropropene	RR. Dibromomethane	RRR. m,p-Xylenes	RRRR. Ethyl acetate	R1. 2,2,3-Trimethylbutane
S. Trichloroethene	SS. 1,3-Dichloropropane	SSS. o-Xylene	SSSS. Cyclohexane	S1. 2,2,4-Trimethylpentane
T. Dibromochloromethane	TT. 1,2-Dibromoethane	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	TTTT. Methyl cyclohexane	T1. 2-Methylhexane
U. 1,1,2-Trichloroethane	UU. 1,1,1,2-Tetrachloroethane	UUU. 1,2-Dichlorotetrafluoroethane	UUUU. Allyl chloride	U1. Nonanal
V. Benzene	VV. Isopropylbenzene	VVV. 4-Ethyltoluene	VVVV. Methyl methacrylate	V1. 2-Methylnaphthalene
W. trans-1,3-Dichloropropene	WW. Bromobenzene	WWW. Ethanol	WWWW. Ethyl methacrylate	W1. Methanol
X. Bromoform	XX. 1,2,3-Trichloropropane	XXX. Di-isopropyl ether	XXXX. cis-1,4-Dichloro-2-butene	X1. 1,2,3-Trimethylbenzene
Y. 4-Methyl-2-pentanone	YY. n-Propylbenzene	YYY. tert-Butanol	YYYY. trans-1,4-Dichloro-2-butene	Y1.
Z. 2-Hexanone	ZZ. 2-Chlorotoluene	ZZZ. tert-Butyl alcohol	ZZZZ. Pentachloroethane	Z1.

LDC #: 44415B/a

**VALIDATION FINDINGS WORKSHEET**  
**Surrogate Spikes**

Page: 1 of 1  
Reviewer: FT  
2nd Reviewer: JR

**METHOD:** GC/MS VOA (EPA SW 846 Method 8260B )

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(S)

- ~~N~~ N/A Were all surrogate %R within QC limits?
- ~~Y~~ N/A If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R out of outside of criteria?

#	Sample ID	Surrogate	%Recovery (Limits)	Qualifications
	2	Tol	87.8 ( 89 - 112 )	J/W/P ND
			( )	
	3	↓	83.4 ( ↓ )	↓
			( )	
	9	↓	85.7 ( ↓ )	↓
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	

SMC1 (TOL) = Toluene-d8  
 SMC2 (BFB) = Bromofluorobenzene  
 SMC3 (DCE) = 1,2-Dichloroethane-d4  
 SMC4 (DFM) = Dibromofluoromethane





**VALIDATION FINDINGS WORKSHEET**  
**Continuing Calibration Results Verification**

**METHOD:** GC/MS VOA (EPA SW 846 Method 8260B)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference =  $100 * (\text{ave. RRF} - \text{RRF}) / \text{ave. RRF}$   
 $\text{RRF} = (A_x)(C_{is}) / (A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF  
 RRF = continuing calibration RRF  
 $A_x$  = Area of compound,  $A_{is}$  = Area of associated internal standard  
 $C_x$  = Concentration of compound,  $C_{is}$  = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference internal Standard)	Average RRF (initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	10W 0128L14	1/28/19	Y (1st internal standard)	0.8179	0.8040	0.8040	1.7	1.7
			EE (2nd internal standard)	0.654	0.6303	0.6303	3.8	3.8
			(3rd internal standard)					
			(4th internal standard)					
2			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
			(4th internal standard)					
3			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
			(4th internal standard)					
4			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
			(4th internal standard)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

**VALIDATION FINDINGS WORKSHEET**  
**Surrogate Results Verification**

**METHOD:** GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS \* 100

Where: SF = Surrogate Found  
 SS = Surrogate Spiked

Sample ID: 5

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane	25.0	25.4056	102	102	0
1,2-Dichloroethane-d4	↓	24.9697	99.9	99.9	
Toluene-d8		22.8033	91.2	91.2	↓
Bromofluorobenzene	↓	25.5208	102	102	↓

Sample ID: \_\_\_\_\_

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

Sample ID: \_\_\_\_\_

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

Sample ID: \_\_\_\_\_

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

Sample ID: \_\_\_\_\_

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

LDC #: 44415 B/a

**VALIDATION FINDINGS WORKSHEET**  
**Laboratory Control Sample Results Verification**

Page: 1 of 1  
 Reviewer: FT  
 2nd Reviewer: [Signature]

**METHOD:** GC/MS VOA (EPA Method 8260B)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 \* SSC/SA

Where: SSC = Spiked sample concentration  
 SA = Spike added

RPD = |LCSC - LCSDC| \* 2 / (LCSC + LCSDC)

LCSC = Laboratory control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS ID: 190128LCS/D

Compound	Spike Added (ug/L)		Spiked Sample Concentration (ug/L)		LCS		LCSD		LCS/LCSD	
	LCS	LCSD	LCS	LCSD	Percent Recovery		Percent Recovery		RPD	
					Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
1,1-Dichloroethene										
Trichloroethene										
Benzene	10.0	10.0	10.8	10.3	108	108	103	103	4.7	4.7
Toluene	10.0	10.0	11.3	10.8	113	113	108	108	4.5	4.5
Chlorobenzene										

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

**VALIDATION FINDINGS WORKSHEET**  
**Sample Calculation Verification**

**METHOD:** GC/MS VOA (EPA SW 846 Method 8260B)

- Y N N/A Were all reported results recalculated and verified for all level IV samples?
- Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = 
$$\frac{(A_x)(I_s)(DF)}{(A_{is})(RRF)(V_o)(\%S)}$$

- $A_x$  = Area of the characteristic ion (EICP) for the compound to be measured
- $A_{is}$  = Area of the characteristic ion (EICP) for the specific internal standard
- $I_s$  = Amount of internal standard added in nanograms (ng)
- RRF = Relative response factor of the calibration standard.
- $V_o$  = Volume or weight of sample pruged in milliliters (ml) or grams (g).
- Df = Dilution factor.
- %S = Percent solids, applicable to soils and solid matrices only.

Example:

Sample I.D. #5 , GG

Conc. = 0 + 0.176

= 0.176 ug/l

#	Sample ID	Compound	Reported Concentration (ug/l)	Calculated Concentration (ug/l)	Qualification
	<u>#5</u>	<u>GG</u>	<u>0.18</u>	<u>0.176</u>	
	<u>RRR =</u>	<u><math>\frac{1799(25)}{0.8445(302592)}</math></u>			
		<u>= 0.176 ug/l</u>			
	<u>SSS =</u>	<u>0</u>			

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** February 28, 2019

**Parameters:** Phenol & Tentatively Identified Compounds

**Validation Level:** Level C & D

**Laboratory:** APPL, Inc.

**Sample Delivery Group (SDG):** 87932

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
ERH738**	AZ85520**	Water	01/21/19
ERH739	AZ85521	Water	01/21/19
ERH743	AZ85523	Water	01/21/19
ERH751	AZ85525	Water	01/21/19
ERH753	AZ85527	Water	01/22/19

\*\*Indicates sample underwent Level D validation

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Phenol & Tentatively Identified Compounds (TICs) by Environmental Protection Agency (EPA) SW 846 Method 8270D

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level D data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.



## Qualification Code Reference

- H Holding times were exceeded.
- S Surrogate recovery was outside QC limits.
- C Calibration %RSD,  $r$ ,  $r^2$  or %D were noncompliant.
- R Calibration RRF was  $<0.05$ .
- B Presumed contamination from preparation (method blank).
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD was high.
- I Internal standard performance was unsatisfactory.
- M Instrument Performance Check (BFB or DFTPP) was noncompliant.
- T Presumed contamination from trip blank.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Instrument performance for pesticides was poor.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

## I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## II. GC/MS Instrument Performance Check

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

## III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0%.

Average relative response factors (RRF) were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

## IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0%.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0%.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

## V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks with the following exceptions:

Blank ID	Extraction Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
190128A-BLK	01/28/19	Benzene, methyl- (2.19) Ethene, tetrachloro- (2.82) Butanedioic acid, dimethyl ester (5.54) Pentanedioic acid, dimethyl ester (6.38) Hexanedioic acid, dimethyl ester (7.16)	12.6 ug/L 105.1 ug/L 7.2 ug/L 17.4 ug/L 5.2 ug/L	All samples in SDG 87932

Sample concentrations were compared to concentrations detected in the laboratory blanks. The sample concentrations were either not detected or were significantly greater (>10X for TICs, >5X for other contaminants) than the concentrations found in the associated laboratory blanks.

## **VI. Field Blanks**

No field blanks were identified in this SDG.

## **VII. Surrogates**

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

## **VIII. Matrix Spike/Matrix Spike Duplicates**

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

## **IX. Laboratory Control Samples**

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## **X. Field Duplicates**

Samples ERH738\*\* and ERH739 were identified as field duplicates. No results were detected in any of the samples.

## **XI. Internal Standards**

All internal standard areas and retention times were within QC limits.

## **XII. Compound Quantitation**

All compound quantitations met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

## **XIII. Target Compound Identifications**

All target compound identifications met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

## **XIV. System Performance**

The system performance was acceptable for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

## **XV. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**Red Hill Bulk Storage Facility, CTO 18F0126  
Phenol & Tentatively Identified Compounds - Data Qualification Summary - SDG  
87932**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Phenol & Tentatively Identified Compounds - Laboratory Blank Data Qualification  
Summary - SDG 87932**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Phenol & Tentatively Identified Compounds - Field Blank Data Qualification  
Summary - SDG 87932**

No Sample Data Qualified in this SDG

LDC #: 44415B2a  
 SDG #: 87932  
 Laboratory: APPL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**

Level C/D

Date: 2/28/19

Page: 1 of 1

Reviewer: [Signature]  
 2nd Reviewer: [Signature]

**METHOD:** GC/MS Phenol & TICs (EPA SW 846 Method 8270D)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	GC/MS Instrument performance check	Δ	
III.	Initial calibration/ICV	A/A	% RSD ≤ 15      ICV ≤ 20
IV.	Continuing calibration /closing cv	Δ	CV ≤ 20/50
V.	Laboratory Blanks	SW	
VI.	Field blanks	N	
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	N	CS
IX.	Laboratory control samples	A	LOS 10
X.	Field duplicates	ND	D = 1,2
XI.	Internal standards	Δ	
XII.	Compound quantitation RL/LOQ/LODs	Δ	Not reviewed for Level C validation.
XIII.	Target compound identification	Δ	Not reviewed for Level C validation.
XIV.	System performance	A	Not reviewed for Level C validation.
XV.	Overall assessment of data	A	

Note: A = Acceptable      ND = No compounds detected      D = Duplicate      SB=Source blank  
 N = Not provided/applicable      R = Rinsate      TB = Trip blank      OTHER:  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

\*\* Indicates sample underwent Level D validation

	Client ID	Lab ID	Matrix	Date
1	ERH738 ** D	AZ85520 **	Water	01/21/19
2	ERH739 D	AZ85521	Water	01/21/19
3	ERH743	AZ85523	Water	01/21/19
4	ERH751	AZ85525	Water	01/21/19
5	ERH753	AZ85527	Water	01/22/19
6				
7				
8				
9				

Notes:

190128A - B11C				

Method: Semivolatiles (EPA SW 846 Method 8270D)

Validation Area	Yes	No	NA	Findings/Comments
<b>I. Technical holding times</b>				
Were all technical holding times met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was cooler temperature criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>II. GC/MS Instrument performance check</b>				
Were the DFTPP performance results reviewed and found to be within the specified criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all samples analyzed within the 12 hour clock criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>IIIa. Initial calibration</b>				
Did the laboratory perform a 5 point calibration prior to sample analysis?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent relative standard deviations (%RSD) ≤ 15% and relative response factors (RRF) within method criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>IIIb. Initial Calibration Verification</b>				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent differences (%D) < 20%?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>IV. Continuing calibration</b>				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent differences (%D) ≤ 20% and relative response factors (RRF) within method criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>V. Laboratory Blanks</b>				
Was a laboratory blank associated with every sample in this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was a laboratory blank analyzed at least once every 12 hours for each matrix and concentration?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was there contamination in the laboratory blanks? If yes, please see the blanks validation findings worksheet.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>VI. Field blanks</b>				
Were field blanks were identified in this SDG?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Were target compounds detected in the field blanks?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>VII. Surrogate spikes</b>				
Were all surrogate percent recovery (%R) within QC limits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If any percent recoveries (%R) was less than 10%, was a reanalysis performed to confirm %R?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>VIII. Matrix spike/Matrix spike duplicates</b>				
Were matrix spike (MS) and matrix spike duplicate (MSD) analyzed in this SDG?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

LDC #: 44415B2a

## VALIDATION FINDINGS CHECKLIST

Page: 2 of 2  
Reviewer: FJ  
2nd Reviewer: AC

Validation Area	Yes	No	NA	Findings/Comments
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			/	
<b>IX. Laboratory control samples</b>				
Was an LCS analyzed per extraction batch?	/			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	/			
<b>X. Field duplicates</b>				
Were field duplicate pairs identified in this SDG?	/			
Were target compounds detected in the field duplicates?		/		
<b>XI. Internal standards</b>				
Were internal standard area counts within -50% to +100% of the associated calibration standard?	/			
Were retention times within + 30 seconds of the associated calibration standard?	/			
<b>XII. Compound quantitation</b>				
Did the laboratory LOQs/RLs meet the QAPP LOQs/RLs?	/			
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	/			
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	/			
<b>XIII. Target compound identification</b>				
Were relative retention times (RRT's) within + 0.06 RRT units of the standard?	/			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	/			
Were chromatogram peaks verified and accounted for?	/			
<b>XIV. System performance</b>				
System performance was found to be acceptable.	/			
<b>XV. Overall assessment of data</b>				
Overall assessment of data was found to be acceptable.	/			



## VALIDATION FINDINGS WORKSHEET

**METHOD: GC/MS SVOA**

A. Phenol	CC. Dimethylphthalate	EEE. Bis(2-ethylhexyl)phthalate	GGGG. C30-Hopane	I1. Methyl methanesulfonate
B. Bis (2-chloroethyl) ether	DD. Acenaphthylene	FFF. Di-n-octylphthalate	HHHH. 1-Methylphenanthrene	J1. Ethyl methanesulfonate
C. 2-Chlorophenol	EE. 2,6-Dinitrotoluene	GGG. Benzo(b)fluoranthene	IIII. 1,4-Dioxane	K1. o,o',o''-Triethylphosphorothioate
D. 1,3-Dichlorobenzene	FF. 3-Nitroaniline	HHH. Benzo(k)fluoranthene	JJJJ. Acetophenone	L1. n-Phenylene diamine
E. 1,4-Dichlorobenzene	GG. Acenaphthene	III. Benzo(a)pyrene	KKKK. Atrazine	M1. 1,4-Naphthoquinone
F. 1,2-Dichlorobenzene	HH. 2,4-Dinitrophenol	JJJ. Indeno(1,2,3-cd)pyrene	LLLL. Benzaldehyde	N1. N-Nitro-o-toluidine
G. 2-Methylphenol	II. 4-Nitrophenol	KKK. Dibenz(a,h)anthracene	MMMM. Caprolactam	O1. 1,3,5-Trinitrobenzene
H. 2,2'-Oxybis(1-chloropropane)	JJ. Dibenzofuran	LLL. Benzo(g,h,i)perylene	NNNN. 2,6-Dichlorophenol	P1. Pentachlorobenzene
I. 4-Methylphenol	KK. 2,4-Dinitrotoluene	MMM. Bis(2-Chloroisopropyl)ether	OOOO. 1,2-Diphenylhydrazine	Q1. 4-Aminobiphenyl
J. N-Nitroso-di-n-propylamine	LL. Diethylphthalate	NNN. Aniline	PPPP. 3-Methylphenol	R1. 2-Naphthylamine
K. Hexachloroethane	MM. 4-Chlorophenyl-phenyl ether	OOO. N-Nitrosodimethylamine	QQQQ. 3&4-Methylphenol	S1. Triphenylene
L. Nitrobenzene	NN. Fluorene	PPP. Benzoic Acid	RRRR. 4-Dimethyldibenzothiophene (4MDT)	T1. Octachlorostyrene
M. Isophorone	OO. 4-Nitroaniline	QQQ. Benzyl alcohol	SSSS. 2/3-Dimethyldibenzothiophene (4MDT)	U1. Famphur
N. 2-Nitrophenol	PP. 4,6-Dinitro-2-methylphenol	RRR. Pyridine	TTTT. 1-Methyldibenzothiophene (1MDT)	V1. 1,4-phenylenediamine
O. 2,4-Dimethylphenol	QQ. N-Nitrosodiphenylamine	SSS. Benzidine	UUUU. 2,3,4,6-Tetrachlorophenol	W1. Methapyrilene
P. Bis(2-chloroethoxy)methane	RR. 4-Bromophenyl-phenylether	TTT. 1-Methylnaphthalene	VVVV. 1,2,4,5-Tetrachlorobenzene	X1. Pentachloroethane
Q. 2,4-Dichlorophenol	SS. Hexachlorobenzene	UUU. Benzo(b)thiophene	WWWWW. 2-Picoline	Y1. 3,3'-Dimethylbenzidine
R. 1,2,4-Trichlorobenzene	TT. Pentachlorophenol	VVV. Benzonaphthothiophene	XXXX. 3-Methylcholanthrene	Z1. o-Toluidine
S. Naphthalene	UU. Phenanthrene	WWW. Benzo(e)pyrene	YYYY. a,a-Dimethylphenethylamine	A2. 1-Naphthylamine
T. 4-Chloroaniline	VV. Anthracene	XXX. 2,6-Dimethylnaphthalene	ZZZZ. Hexachloropropene	B2. 4-Aminobiphenyl
U. Hexachlorobutadiene	WW. Carbazole	YYY. 2,3,5-Trimethylnaphthalene	A1. N-Nitrosodiethylamine	C2. 4-Nitroquinoline-1-oxide
V. 4-Chloro-3-methylphenol	XX. Di-n-butylphthalate	ZZZ. Perylene	B1. N-Nitrosodi-n-butylamine	D2. Hexachloropene
W. 2-Methylnaphthalene	YY. Fluoranthene	AAAA. Dibenzothiophene	C1. N-Nitrosomethylethylamine	E2. Bis (2-chloro-1-methylethyl) ether
X. Hexachlorocyclopentadiene	ZZ. Pyrene	BBBB. Benzo(a)fluoranthene	D1. N-Nitrosomorpholine	F2. Bifenthrin
Y. 2,4,6-Trichlorophenol	AAA. Butylbenzylphthalate	CCCC. Benzo(b)fluorene	E1. N-Nitrosopyrrolidine	G2. Cyfluthrin
Z. 2,4,5-Trichlorophenol	BBB. 3,3'-Dichlorobenzidine	DDDD. cis/trans-Decalin	F1. Phenacetin	H2. Cypermethrin
AA. 2-Chloronaphthalene	CCC. Benzo(a)anthracene	EEEE. Biphenyl	G1. 2-Acetylaminofluorene	I2. Permethrin (cis/trans)
BB. 2-Nitroaniline	DDD. Chrysene	FFFF. Retene	H1. Pronamide	J2. 5-Nitro-o-toluidine

LDC #: 44415B2a

### VALIDATION FINDINGS WORKSHEET Blanks

Page: 1 of 1  
Reviewer: FT  
2nd Reviewer: [Signature]

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

- Y N N/A Was a method blank analyzed for each matrix?
- Y N N/A Was a method blank analyzed for each concentration preparation level?
- Y N N/A Was a method blank associated with every sample?
- Y N N/A Was the blank contaminated? If yes, please see qualification below.

Blank extraction date: 1/28/19 Blank analysis date: 1/30/19

Conc. units: ug/L Associated Samples: All (ND)

Compound	Blank ID								
	190128A-BIK								
TIC	see following page								

Blank extraction date: \_\_\_\_\_ Blank analysis date: \_\_\_\_\_

Conc. units: \_\_\_\_\_ Associated Samples: \_\_\_\_\_

Compound	Blank ID								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:

Common contaminants such as the phthalates and TICs noted above that were detected in samples within ten times the associated method blank concentration were qualified as not detected, "U". Other contaminants within five times the method blank concentration were also qualified as not detected, "U".

Tentatively Identified Compound (LSC) summary

Operator ID: MA      Date Acquired: 30 Jan 19 14:56  
 Data File: M:\YODA\DATA\Y190124\0124Y055.D  
 Name: 190128A BLK 1/800  
 Misc:  
 Method: M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title: EPA 8270C  
 Library Searched: M:\DATABASE\WILEY138.L

TIC Top Hit name	RT	EstConc	Units	Area	IntStd	ISRT	ISArea	ISConc
Benzene, methyl-	2.19	12.6	ppb	589519	ISTD01	5.47	2340150	40.0
Ethene, tetrachloro-	2.82	105.1	ppb	4921080	ISTD01	5.47	2340150	40.0
Butanedioic acid, di	5.54	7.2	ppb	334891	ISTD01	5.47	2340150	40.0
Pentanedioic acid, d	6.38	17.4	ppb	1179470	ISTD02	6.90	3385010	40.0
Hexanedioic acid, di	7.16	5.2	ppb	355228	ISTD02	6.90	3385010	40.0

0124Y055.D Y0125NC.M      Mon Feb 11 09:51:17 2019

LDC #: 444/S B2a

**VALIDATION FINDINGS WORKSHEET**  
**Initial Calibration Calculation Verification**

Page: 1 of 1  
 Reviewer: FT  
 2nd Reviewer: [Signature]

METHOD: GCMS 8270D

The calibration factors (RRFF), average RRFF, and relative standard deviation (%RSD) were recalculated for compounds identified below using the following calculations:

$RRF = (Ax)(Cis)/(Ais)(Cx)$

average RRF = sum of the RRFs/number of standards

$\%RSD = 100 * (S/X)$

Where:

Ax = Area of compound

Cx = Concentration of compound

S = Standard deviation of the RRFs

X = Mean of the RRFs

Ais = Area of associated internal standard

Cis = Concentration of internal Standard

#	Standard ID	Calibration Date	Compound	Reported (RRF 40 std)	Recalculated (RRF40 std)	Reported AverageRRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
	ICAL	1/25/2019	A	3.089	3.089	3.026	3.026	9.90	9.90

## VALIDATION FINDINGS WORKSHEET Continuing Calibration Results Verification

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference =  $100 * (\text{ave. RRF} - \text{RRF}) / \text{ave. RRF}$   
 $\text{RRF} = (A_x)(C_{is}) / (A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF  
 RRF = continuing calibration RRF  
 $A_x$  = Area of compound,  $A_{is}$  = Area of associated internal standard  
 $C_x$  = Concentration of compound,  $C_{is}$  = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Internal Standard)	Average RRF (Initial)	Reported	Recalculated	Reported	Recalculated
					RRF (CC)	RRF (CC)	%D	%D
1	ceV 01244054	1/30/19	Pheno / (1st IS)	3.026	2.954	2.954	2.4	2.4
			(2nd IS)					
			(3rd IS)					
			(4th IS)					
			(5th IS)					
			(6th IS)					
2			(1st IS)					
			(2nd IS)					
			(3rd IS)					
			(4th IS)					
			(5th IS)					
			(6th IS)					
3			(1st IS)					
			(2nd IS)					
			(3rd IS)					
			(4th IS)					
			(5th IS)					
			(6th IS)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 44415 B2a

**VALIDATION FINDINGS WORKSHEET**  
**Surrogate Results Verification**

Page: 1 of 1  
 Reviewer: FT  
 2nd reviewer: RT

**METHOD:** GC/MS Semivolatiles (EPA SW 846 Method 8270D)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS \* 100

Where: SF = Surrogate Found  
 SS = Surrogate Spiked

Sample ID: #1

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5	125.0	108.8418	87.1	87.1	0
2-Fluorobiphenyl	↓	96.1014	76.9	76.9	↓
Terphenyl-d14		74.8169	59.9	59.9	
Phenol-d5	250.0	202.6785	81.1	81.1	↓
2-Fluorophenol	↓	205.8238	82.3	82.3	
2,4,6-Tribromophenol		229.0767	91.6	91.6	
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

LDC #: 44415 B2a

**VALIDATION FINDINGS WORKSHEET**

**Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification**

Reviewer: FT

2nd Reviewer: [Signature]

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery =  $100 * (SC/SA)$

Where: SSC = Spike concentration  
SA = Spike added

RPD =  $|LCS - LCSD| * 2 / (LCS + LCSD)$

LCS = Laboratory control sample concentration LCSD = Laboratory control sample duplicate concentration

LCS/LCSD samples: 190128A 1021P

Compound	Spike Added (ug/L)		Spike Concentration (ug/L)		LCS		LCSD		LCS/LCSD	
	LCS	LCSD	LCS	LCSD	Percent Recovery		Percent Recovery		RPD	
					Reported	Recalc	Reported	Recalc	Reported	Recalculated
Phenol	62.5	62.5	55.8	55.8	89.3	89.3	89.3	89.3	0	0
N-Nitroso-di-n-propylamine										
4-Chloro-3-methylphenol										
Acenaphthene										
Pentachlorophenol										
Pyrene										

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.





## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** February 28, 2019

**Parameters:** Polynuclear Aromatic Hydrocarbons

**Validation Level:** Level C & D

**Laboratory:** APPL, Inc.

**Sample Delivery Group (SDG):** 87932

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
ERH738**	AZ85520**	Water	01/21/19
ERH739	AZ85521	Water	01/21/19
ERH743	AZ85523	Water	01/21/19
ERH751	AZ85525	Water	01/21/19
ERH753	AZ85527	Water	01/22/19

\*\*Indicates sample underwent Level D validation

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polynuclear Aromatic Hydrocarbons (PAHs) which are 1-Methylnaphthalene, 2-Methylnaphthalene, and Naphthalene by Environmental Protection Agency (EPA) SW 846 Method 8270D in Selected Ion Monitoring (SIM) mode

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level D data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## Qualification Code Reference

- H Holding times were exceeded.
- S Surrogate recovery was outside QC limits.
- C Calibration %RSD,  $r$ ,  $r^2$  or %D were noncompliant.
- R Calibration RRF was  $<0.05$ .
- B Presumed contamination from preparation (method blank).
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD was high.
- I Internal standard performance was unsatisfactory.
- M Instrument Performance Check (BFB or DFTPP) was noncompliant.
- T Presumed contamination from trip blank.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Instrument performance for pesticides was poor.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. GC/MS Instrument Performance Check**

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

## **III. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0% for all compounds.

Average relative response factors (RRF) for all compounds were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

## **IV. Continuing Calibration**

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0% for all compounds.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

## **V. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **VI. Field Blanks**

No field blanks were identified in this SDG.

## VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits with the following exceptions:

Sample	Surrogate	%R (Limits)	Affected Compound	Flag	A or P
ERH753	2-Methylnaphthalene-d10 Fluoranthene-d10	130 (39-114) 122 (58-120)	All compounds	NA	-

## VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

## IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## X. Field Duplicates

Samples ERH738\*\* and ERH739 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD (Limits)
	ERH738**	ERH739	
1-Methylnaphthalene	11	9.6	14 (≤50)
2-Methylnaphthalene	8.8	7.2	20 (≤50)
Naphthalene	32	26	21 (≤50)

## XI. Internal Standards

All internal standard areas and retention times were within QC limits.

## XII. Compound Quantitation

All compound quantitations met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

### **XIII. Target Compound Identifications**

All target compound identifications met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

### **XIV. System Performance**

The system performance was acceptable for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

### **XV. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**Red Hill Bulk Storage Facility, CTO 18F0126  
Polynuclear Aromatic Hydrocarbons - Data Qualification Summary - SDG 87932**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Polynuclear Aromatic Hydrocarbons - Laboratory Blank Data Qualification  
Summary - SDG 87932**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Polynuclear Aromatic Hydrocarbons - Field Blank Data Qualification Summary -  
SDG 87932**

No Sample Data Qualified in this SDG



LDC #: 44415B2b  
 SDG #: 87932  
 Laboratory: APPL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**  
 Level C/D

Date: 2/28/19  
 Page: 1 of 1  
 Reviewer: FJ  
 2nd Reviewer: H

**METHOD:** GC/MS Polynuclear Aromatic Hydrocarbons (EPA SW 846 Method 8270D-SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/D	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/D	% PSD ≤ 15      ICV ≤ 20
IV.	Continuing calibration / closing CV	A	CV ≤ 20 / 50
V.	Laboratory Blanks	A	
VI.	Field blanks	N	
VII.	Surrogate spikes	SW	
VIII.	Matrix spike/Matrix spike duplicates	N	CS
IX.	Laboratory control samples	A	CV 10
X.	Field duplicates	SW	D = 1, 2
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	A	Not reviewed for Level C validation.
XIII.	Target compound identification	A	Not reviewed for Level C validation.
XIV.	System performance	A	Not reviewed for Level C validation.
XV.	Overall assessment of data	A	

Note: A = Acceptable      ND = No compounds detected      D = Duplicate      SB=Source blank  
 N = Not provided/applicable      R = Rinsate      TB = Trip blank      OTHER:  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

\*\* Indicates sample underwent Level D validation

	Client ID	Lab ID	Matrix	Date
+	1 ERH738      **      D	AZ85520      **	Water	01/21/19
+	2 ERH739      D	AZ85521	Water	01/21/19
-	3 ERH743 <sup>m</sup>	AZ85523 <sup>m</sup>	Water	01/21/19
	4 ERH751	AZ85525	Water	01/21/19
	5 ERH753	AZ85527	Water	01/22/19
	6			
	7			
	8			

Notes:

190129A - B1K				

TTT, W, S

**Method:** Semivolatiles (EPA SW 846 Method 8270D)

Validation Area	Yes	No	NA	Findings/Comments
<b>I. Technical holding times</b>				
Were all technical holding times met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was cooler temperature criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>II. GC/MS Instrument performance check</b>				
Were the DFTPP performance results reviewed and found to be within the specified criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all samples analyzed within the 12 hour clock criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>IIIa. Initial calibration</b>				
Did the laboratory perform a 5 point calibration prior to sample analysis?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent relative standard deviations (%RSD) ≤ 15% and relative response factors (RRF) within method criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>IIIb. Initial Calibration Verification</b>				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent differences (%D) ≤ 20%?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>IV. Continuing calibration</b>				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent differences (%D) ≤ 20% and relative response factors (RRF) within method criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>V. Laboratory Blanks</b>				
Was a laboratory blank associated with every sample in this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was a laboratory blank analyzed at least once every 12 hours for each matrix and concentration?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was there contamination in the laboratory blanks? If yes, please see the blanks validation findings worksheet.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>VI. Field blanks</b>				
Were field blanks were identified in this SDG?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Were target compounds detected in the field blanks?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>VII. Surrogate spikes</b>				
Were all surrogate percent recovery (%R) within QC limits?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
If any percent recoveries (%R) was less than 10%, was a reanalysis performed to confirm %R ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>VIII. Matrix spike/Matrix spike duplicates</b>				
Were matrix spike (MS) and matrix spike duplicate (MSD) analyzed in this SDG?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

LDC #: 4441S B2b

**VALIDATION FINDINGS CHECKLIST**

Page: 2 of 2  
 Reviewer: FJ  
 2nd Reviewer: KE

Validation Area	Yes	No	NA	Findings/Comments
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			/	
<b>IX. Laboratory control samples</b>				
Was an LCS analyzed per extraction batch?	/			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	/			
<b>X. Field duplicates</b>				
Were field duplicate pairs identified in this SDG?	/			
Were target compounds detected in the field duplicates?	/			
<b>XI. Internal standards</b>				
Were internal standard area counts within -50% to +100% of the associated calibration standard?	/			
Were retention times within + 30 seconds of the associated calibration standard?	/			
<b>XII. Compound quantitation</b>				
Did the laboratory LOQs/RLs meet the QAPP LOQs/RLs?	/			
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	/			
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	/			
<b>XIII. Target compound identification</b>				
Were relative retention times (RRT's) within + 0.06 RRT units of the standard?	/			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	/			
Were chromatogram peaks verified and accounted for?	/			
<b>XIV. System performance</b>				
System performance was found to be acceptable.	/			
<b>XV. Overall assessment of data</b>				
Overall assessment of data was found to be acceptable.	/			

## VALIDATION FINDINGS WORKSHEET

**METHOD: GC/MS SVOA**

A. Phenol	CC. Dimethylphthalate	EEE. Bis(2-ethylhexyl)phthalate	GGGG. C30-Hopane	I1. Methyl methanesulfonate
B. Bis (2-chloroethyl) ether	DD. Acenaphthylene	FFF. Di-n-octylphthalate	HHHH. 1-Methylphenanthrene	J1. Ethyl methanesulfonate
C. 2-Chlorophenol	EE. 2,6-Dinitrotoluene	GGG. Benzo(b)fluoranthene	IIII. 1,4-Dioxane	K1. o,o',o''-Triethylphosphorothioate
D. 1,3-Dichlorobenzene	FF. 3-Nitroaniline	HHH. Benzo(k)fluoranthene	JJJJ. Acetophenone	L1. n-Phenylene diamine
E. 1,4-Dichlorobenzene	GG. Acenaphthene	III. Benzo(a)pyrene	KKKK. Atrazine	M1. 1,4-Naphthoquinone
F. 1,2-Dichlorobenzene	HH. 2,4-Dinitrophenol	JJJ. Indeno(1,2,3-cd)pyrene	LLLL. Benzaldehyde	N1. N-Nitro-o-toluidine
G. 2-Methylphenol	II. 4-Nitrophenol	KKK. Dibenz(a,h)anthracene	MMMM. Caprolactam	O1. 1,3,5-Trinitrobenzene
H. 2,2'-Oxybis(1-chloropropane)	JJ. Dibenzofuran	LLL. Benzo(g,h,i)perylene	NNNN. 2,6-Dichlorophenol	P1. Pentachlorobenzene
I. 4-Methylphenol	KK. 2,4-Dinitrotoluene	MMM. Bis(2-Chloroisopropyl)ether	OOOO. 1,2-Diphenylhydrazine	Q1. 4-Aminobiphenyl
J. N-Nitroso-di-n-propylamine	LL. Diethylphthalate	NNN. Aniline	PPPP. 3-Methylphenol	R1. 2-Naphthylamine
K. Hexachloroethane	MM. 4-Chlorophenyl-phenyl ether	OOO. N-Nitrosodimethylamine	QQQQ. 3&4-Methylphenol	S1. Triphenylene
L. Nitrobenzene	NN. Fluorene	PPP. Benzoic Acid	RRRR. 4-Dimethyldibenzothiophene (4MDT)	T1. Octachlorostyrene
M. Isophorone	OO. 4-Nitroaniline	QQQ. Benzyl alcohol	SSSS. 2/3-Dimethyldibenzothiophene (4MDT)	U1. Famphur
N. 2-Nitrophenol	PP. 4,6-Dinitro-2-methylphenol	RRR. Pyridine	TTTT. 1-Methyldibenzothiophene (1MDT)	V1. 1,4-phenylenediamine
O. 2,4-Dimethylphenol	QQ. N-Nitrosodiphenylamine	SSS. Benzidine	UUUU. 2,3,4,6-Tetrachlorophenol	W1. Methapyrilene
P. Bis(2-chloroethoxy)methane	RR. 4-Bromophenyl-phenylether	TTT. 1-Methylnaphthalene	VVVV. 1,2,4,5-Tetrachlorobenzene	X1. Pentachloroethane
Q. 2,4-Dichlorophenol	SS. Hexachlorobenzene	UUU. Benzo(b)thiophene	WWWW. 2-Picoline	Y1. 3,3'-Dimethylbenzidine
R. 1,2,4-Trichlorobenzene	TT. Pentachlorophenol	VVV. Benzonaphthothiophene	XXXX. 3-Methylcholanthrene	Z1. o-Toluidine
S. Naphthalene	UU. Phenanthrene	WWW. Benzo(e)pyrene	YYYY. a,a-Dimethylphenethylamine	A2. 1-Naphthylamine
T. 4-Chloroaniline	VV. Anthracene	XXX. 2,6-Dimethylnaphthalene	ZZZZ. Hexachloropropene	B2. 4-Aminobiphenyl
U. Hexachlorobutadiene	WW. Carbazole	YYY. 2,3,5-Trimethylnaphthalene	A1. N-Nitrosodiethylamine	C2. 4-Nitroquinoline-1-oxide
V. 4-Chloro-3-methylphenol	XX. Di-n-butylphthalate	ZZZ. Perylene	B1. N-Nitrosodi-n-butylamine	D2. Hexachloropene
W. 2-Methylnaphthalene	YY. Fluoranthene	AAAA. Dibenzothiophene	C1. N-Nitrosomethylethylamine	E2. Bis (2-chloro-1-methylethyl) ether
X. Hexachlorocyclopentadiene	ZZ. Pyrene	BBBB. Benzo(a)fluoranthene	D1. N-Nitrosomorpholine	F2. Bifenthrin
Y. 2,4,6-Trichlorophenol	AAA. Butylbenzylphthalate	CCCC. Benzo(b)fluorene	E1. N-Nitrosopyrrolidine	G2. Cyfluthrin
Z. 2,4,5-Trichlorophenol	BBB. 3,3'-Dichlorobenzidine	DDDD. cis/trans-Decalin	F1. Phenacetin	H2. Cypermethrin
AA. 2-Chloronaphthalene	CCC. Benzo(a)anthracene	EEEE. Biphenyl	G1. 2-Acetylaminofluorene	I2. Permethrin (cis/trans)
BB. 2-Nitroaniline	DDD. Chrysene	FFFF. Retene	H1. Pronamide	J2. 5-Nitro-o-toluidine



LDC #: 44415 B2b

**VALIDATION FINDINGS WORKSHEET**  
**Field Duplicates**

Page: 1 of 1  
Reviewer: FR  
2nd reviewer: FR

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

Y N N/A  
Y N N/A

Were field duplicate pairs identified in this SDG?

Were target compounds identified in the field duplicate pairs?

Compound	Concentration ( <u>ug/L</u> )		RPD ( ≤ <u>50</u> % )	QUAL
	1	2		
TTT	11	9.6	14	/
W	8.8	7.2	20	
S	32	26	21	

Compound	Concentration (                    )		RPD ( ≤        % )	QUAL

Compound	Concentration (                    )		RPD ( ≤        % )	QUAL

LDC #: 44415B26

**VALIDATION FINDINGS WORKSHEET**  
**Initial Calibration Calculation Verification**

Page: 1 of 1  
 Reviewer: FT  
 2nd Reviewer: AC

METHOD: GCMS 8270 D

The calibration factors (RRFF), average RRFF, and relative standard deviation (%RSD) were recalculated for compounds identified below using the following calculations:

$RRF = (A_x)(C_{is}) / (A_{is})(C_x)$

average RRF = sum of the RRFs/number of standards

$\%RSD = 100 * (S/X)$

Where:

A<sub>x</sub> = Area of compound

C<sub>x</sub> = Concentration of compound

S = Standard deviation of the RRFs

X = Mean of the RRFs

A<sub>is</sub> = Area of associated internal standard

C<sub>is</sub> = Concentration of internal Standard

#	Standard ID	Calibration Date	Compound	Reported (RRF 5 ppb std)	Recalculated (RRF 5 ppb std)	Reported AverageRRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
	ICAL Linus	1/22/2019	S	1.383	1.383	1.259	1.259	13.00	13.00

### VALIDATION FINDINGS WORKSHEET Continuing Calibration Results Verification

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference =  $100 * (\text{ave. RRF} - \text{RRF}) / \text{ave. RRF}$   
 $\text{RRF} = (A_x)(C_{is}) / (A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF  
 RRF = continuing calibration RRF  
 $A_x$  = Area of compound,  $A_{is}$  = Area of associated internal standard  
 $C_x$  = Concentration of compound,  $C_{is}$  = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Internal Standard)	Average RRF (Initial)	Reported	Recalculated	Reported	Recalculated
					RRF (CC)	RRF (CC)	%D	%D
1	CCV 01221037	1/30/19	S (1st IS)	1.259	1.293	1.293	2.7	2.7
			(2nd IS)					
			(3rd IS)					
			(4th IS)					
			(5th IS)					
			(6th IS)					
2			(1st IS)					
			(2nd IS)					
			(3rd IS)					
			(4th IS)					
			(5th IS)					
			(6th IS)					
3			(1st IS)					
			(2nd IS)					
			(3rd IS)					
			(4th IS)					
			(5th IS)					
			(6th IS)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.



LDC #: 44415 B2 b

**VALIDATION FINDINGS WORKSHEET**  
**Surrogate Results Verification**

Page: 1 of 1  
 Reviewer: FT  
 2nd reviewer: [Signature]

**METHOD:** GC/MS Semivolatiles (EPA SW 846 Method 8270D)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS \* 100

Where: SF = Surrogate Found  
 SS = Surrogate Spiked

Sample ID: # 1

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5	W-d10	6.250	113	113	0
2-Fluorobiphenyl	YY-d10	✓	6.2783	100	0
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID: \_\_\_\_\_

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID: \_\_\_\_\_

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

LDC #: 44415B26

**VALIDATION FINDINGS WORKSHEET**

**Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification**

Reviewer: FT  
 2nd Reviewer: [Signature]

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 \* (SC/SA)

Where: SSC = Spike concentration  
 SA = Spike added

RPD = | LCSC - LCSDC | \* 2 / (LCSC + LCSDC)

LCSC = Laboratory control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS/LCSD samples: 190128A LCS

Compound	Spike Added (ug/L)		Spike Concentration (ug/L)		LCS		LCSD		LCS/LCSD	
	LCS	LCSD	LCS	LCSD	Percent Recovery		Percent Recovery		RPD	
					Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
Phenol										
N-Nitroso-di-n-propylamine										
4-Chloro-3-methylphenol										
Acenaphthene										
Pentachlorophenol										
Pyrene										
S	6.25	6.25	6.12	5.39	97.9	97.9	86.2	86.2	12.7	12.7

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

**VALIDATION FINDINGS WORKSHEET**  
**Sample Calculation Verification**

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

- Y N N/A Were all reported results recalculated and verified for all level IV samples?
- Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration =  $\frac{(A_x)(I_s)(V_i)(DF)(2.0)}{(A_s)(RRF)(V_o)(V_i)(\%S)}$

- A<sub>x</sub> = Area of the characteristic ion (EICP) for the compound to be measured
- A<sub>s</sub> = Area of the characteristic ion (EICP) for the specific internal standard
- I<sub>s</sub> = Amount of internal standard added in nanograms (ng)
- V<sub>o</sub> = Volume or weight of sample extract in milliliters (ml) or grams (g).
- V<sub>i</sub> = Volume of extract injected in microliters (ul)
- V<sub>t</sub> = Volume of the concentrated extract in microliters (ul)
- Df = Dilution Factor.
- %S = Percent solids, applicable to soil and solid matrices only.
- 2.0 = Factor of 2 to account for GPC cleanup

Example:

Sample I.D. # 1, S:

Conc. =  $\frac{(193176) (2.5) (1) (1000)}{(15217) (1.259) (800)}$

=

31.51 ug/L

#	Sample ID	Compound	Reported Concentration (ug/L)	Calculated Concentration (ug/L)	Qualification
	<u>#1</u>	<u>S</u>	<u>32</u>	<u>31.51</u>	

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** February 28, 2019

**Parameters:** 2-(2-Methoxyethoxy)-ethanol

**Validation Level:** Level C & D

**Laboratory:** APPL, Inc.

**Sample Delivery Group (SDG):** 87932

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
ERH738**	AZ85520**	Water	01/21/19
ERH739	AZ85521	Water	01/21/19
ERH743	AZ85523	Water	01/21/19
ERH751	AZ85525	Water	01/21/19
ERH753	AZ85527	Water	01/22/19

\*\*Indicates sample underwent Level D validation

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

2-(2-Methoxyethoxy)-ethanol by Environmental Protection Agency (EPA) SW 846 Method 8270D Modified

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level D data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## Qualification Code Reference

- H Holding times were exceeded.
- S Surrogate recovery was outside QC limits.
- C Calibration %RSD,  $r$ ,  $r^2$  or %D were noncompliant.
- R Calibration RRF was  $<0.05$ .
- B Presumed contamination from preparation (method blank).
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD was high.
- I Internal standard performance was unsatisfactory.
- M Instrument Performance Check (BFB or DFTPP) was noncompliant.
- T Presumed contamination from trip blank.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Instrument performance for pesticides was poor.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. GC/MS Instrument Performance Check**

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

## **III. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0%.

Average relative response factors (RRF) were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

## **IV. Continuing Calibration**

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0%.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0%.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

## **V. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **VI. Field Blanks**

No field blanks were identified in this SDG.



## VII. Surrogates

Surrogates were not added to all samples as required by the method. Using professional judgment, no data were qualified, since the LCS/LCSD percent recoveries were within QC limits. Additionally, all base surrogate percent recoveries were within QC limits in the phenol analysis.

## VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

## IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

Relative percent differences (RPD) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
190128A LCS/D (All samples in SDG 87932)	2-(2-Methoxyethoxy)-ethanol	41.0 (≤20)	UJ (all non-detects)	P

## X. Field Duplicates

Samples ERH738\*\* and ERH739 were identified as field duplicates. No results were detected in any of the samples.

## XI. Internal Standards

All internal standard areas and retention times were within QC limits.

## XII. Compound Quantitation

All compound quantitations met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

## XIII. Target Compound Identifications

All target compound identifications met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

#### **XIV. System Performance**

The system performance was acceptable for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

#### **XV. Overall Assessment of Data**

The analysis was conducted within all specifications of the method with the exception noted in Section VII. No results were rejected in this SDG.

Due to LCS/LCSD RPD, data were qualified as estimated in five samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

**Red Hill Bulk Storage Facility, CTO 18F0126  
2-(2-Methoxyethoxy)-ethanol - Data Qualification Summary - SDG 87932**

Sample	Compound	Flag	A or P	Reason (Code)
ERH738** ERH739 ERH743 ERH751 ERH753	2-(2-Methoxyethoxy)-ethanol	UJ (all non-detects)	P	Laboratory control samples (RPD) (L)

**Red Hill Bulk Storage Facility, CTO 18F0126  
2-(2-Methoxyethoxy)-ethanol - Laboratory Blank Data Qualification Summary - SDG 87932**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
2-(2-Methoxyethoxy)-ethanol - Field Blank Data Qualification Summary - SDG 87932**

No Sample Data Qualified in this SDG

LDC #: 44415B2c  
 SDG #: 87932  
 Laboratory: APPL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**  
 Level C/D

Date: 2/22/19  
 Page: 1 of 1  
 Reviewer: [Signature]  
 2nd Reviewer: [Signature]

**METHOD:** GC/MS 2-(2-Methoxyethoxy)-Ethanol (EPA SW 846 Method 8270D-SM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	GC/MS Instrument performance check	Δ	
III.	Initial calibration/ICV	A/A	0% PSD ≤ 15      101 ≤ 20
IV.	Continuing calibration /closing cov	Δ	COV ≤ 20 / 50
V.	Laboratory Blanks	Δ	
VI.	Field blanks	N	
VII.	Surrogate spikes	SW	
VIII.	Matrix spike/Matrix spike duplicates	N	CS
IX.	Laboratory control samples	SW	LOS ID
X.	Field duplicates	ND	D = 1, 2
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	Δ	Not reviewed for Level C validation.
XIII.	Target compound identification	Δ	Not reviewed for Level C validation.
XIV.	System performance	A	Not reviewed for Level C validation.
XV.	Overall assessment of data	Δ	

Note: A = Acceptable      ND = No compounds detected      D = Duplicate      SB=Source blank  
 N = Not provided/applicable      R = Rinsate      TB = Trip blank      OTHER:  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

\*\* Indicates sample underwent Level D validation

	Client ID	Lab ID	Matrix	Date
1	ERH738 ** D	AZ85520 **	Water	01/21/19
2	ERH739 D	AZ85521	Water	01/21/19
3	ERH743	AZ85523	Water	01/21/19
4	ERH751	AZ85525	Water	01/21/19
5	ERH753	AZ85527	Water	01/22/19
6				
7				
8				

Notes:

190128A BIK				

Method: Semivolatiles (EPA SW 846 Method 8270D)

Validation Area	Yes	No	NA	Findings/Comments
<b>I. Technical holding times</b>				
Were all technical holding times met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was cooler temperature criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>II. GC/MS Instrument performance check</b>				
Were the DFTPP performance results reviewed and found to be within the specified criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all samples analyzed within the 12 hour clock criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>IIIa. Initial calibration</b>				
Did the laboratory perform a 5 point calibration prior to sample analysis?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent relative standard deviations (%RSD) $\leq$ 15% and relative response factors (RRF) within method criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of $\geq$ 0.990?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>IIIb. Initial Calibration Verification</b>				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent differences (%D) $\leq$ 20%?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>IV. Continuing calibration</b>				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent differences (%D) $\leq$ 20% and relative response factors (RRF) within method criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>V. Laboratory Blanks</b>				
Was a laboratory blank associated with every sample in this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was a laboratory blank analyzed at least once every 12 hours for each matrix and concentration?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was there contamination in the laboratory blanks? If yes, please see the blanks validation findings worksheet.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>VI. Field blanks</b>				
Were field blanks were identified in this SDG?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Were target compounds detected in the field blanks?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>VII. Surrogate spikes</b>				
Were all surrogate percent recovery (%R) within QC limits?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If any percent recoveries (%R) was less than 10%, was a reanalysis performed to confirm %R?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>VIII. Matrix spike/Matrix spike duplicates</b>				
Were matrix spike (MS) and matrix spike duplicate (MSD) analyzed in this SDG?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

LDC #: 44415 B2c

**VALIDATION FINDINGS CHECKLIST**

Page: 36<sup>2</sup>  
 Reviewer: FR  
 2nd Reviewer: RE

Validation Area	Yes	No	NA	Findings/Comments
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			/	
<b>IX. Laboratory control samples</b>				
Was an LCS analyzed per extraction batch?	/			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?		/		
<b>X. Field duplicates</b>				
Were field duplicate pairs identified in this SDG?	/			
Were target compounds detected in the field duplicates?		/		
<b>XI. Internal standards</b>				
Were internal standard area counts within -50% to +100% of the associated calibration standard?	/			
Were retention times within + 30 seconds of the associated calibration standard?	/			
<b>XII. Compound quantitation</b>				
Did the laboratory LOQs/RLs meet the QAPP LOQs/RLs?	/			
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	/			
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	/			
<b>XIII. Target compound identification</b>				
Were relative retention times (RRT's) within + 0.06 RRT units of the standard?	/			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	/			
Were chromatogram peaks verified and accounted for?	/			
<b>XIV. System performance</b>				
System performance was found to be acceptable.	/			
<b>XV. Overall assessment of data</b>				
Overall assessment of data was found to be acceptable.	/			

## VALIDATION FINDINGS WORKSHEET

**METHOD: GC/MS SVOA**

A. Phenol	CC. Dimethylphthalate	EEE. Bis(2-ethylhexyl)phthalate	GGGG. C30-Hopane	I1. Methyl methanesulfonate
B. Bis (2-chloroethyl) ether	DD. Acenaphthylene	FFF. Di-n-octylphthalate	HHHH. 1-Methylphenanthrene	J1. Ethyl methanesulfonate
C. 2-Chlorophenol	EE. 2,6-Dinitrotoluene	GGG. Benzo(b)fluoranthene	IIII. 1,4-Dioxane	K1. o,o',o"-Triethylphosphorothioate
D. 1,3-Dichlorobenzene	FF. 3-Nitroaniline	HHH. Benzo(k)fluoranthene	JJJJ. Acetophenone	L1. n-Phenylene diamine
E. 1,4-Dichlorobenzene	GG. Acenaphthene	III. Benzo(a)pyrene	KKKK. Atrazine	M1. 1,4-Naphthoquinone
F. 1,2-Dichlorobenzene	HH. 2,4-Dinitrophenol	JJJ. Indeno(1,2,3-cd)pyrene	LLLL. Benzaldehyde	N1. N-Nitro-o-toluidine
G. 2-Methylphenol	II. 4-Nitrophenol	KKK. Dibenz(a,h)anthracene	MMMM. Caprolactam	O1. 1,3,5-Trinitrobenzene
H. 2,2'-Oxybis(1-chloropropane)	JJ. Dibenzofuran	LLL. Benzo(g,h,i)perylene	NNNN. 2,6-Dichlorophenol	P1. Pentachlorobenzene
I. 4-Methylphenol	KK. 2,4-Dinitrotoluene	MMM. Bis(2-Chloroisopropyl)ether	OOOO. 1,2-Diphenylhydrazine	Q1. 4-Aminobiphenyl
J. N-Nitroso-di-n-propylamine	LL. Diethylphthalate	NNN. Aniline	PPPP. 3-Methylphenol	R1. 2-Naphthylamine
K. Hexachloroethane	MM. 4-Chlorophenyl-phenyl ether	OOO. N-Nitrosodimethylamine	QQQQ. 3&4-Methylphenol	S1. Triphenylene
L. Nitrobenzene	NN. Fluorene	PPP. Benzoic Acid	RRRR. 4-Dimethyldibenzothiophene (4MDT)	T1. Octachlorostyrene
M. Isophorone	OO. 4-Nitroaniline	QQQ. Benzyl alcohol	SSSS. 2/3-Dimethyldibenzothiophene (4MDT)	U1. Famphur
N. 2-Nitrophenol	PP. 4,6-Dinitro-2-methylphenol	RRR. Pyridine	TTTT. 1-Methyldibenzothiophene (1MDT)	V1. 1,4-phenylenediamine
O. 2,4-Dimethylphenol	QQ. N-Nitrosodiphenylamine	SSS. Benzidine	UUUU. 2,3,4,6-Tetrachlorophenol	W1. Methapyrilene
P. Bis(2-chloroethoxy)methane	RR. 4-Bromophenyl-phenylether	TTT. 1-Methylnaphthalene	VVVV. 1,2,4,5-Tetrachlorobenzene	X1. Pentachloroethane
Q. 2,4-Dichlorophenol	SS. Hexachlorobenzene	UUU. Benzo(b)thiophene	WWWW. 2-Picoline	Y1. 3,3'-Dimethylbenzidine
R. 1,2,4-Trichlorobenzene	TT. Pentachlorophenol	VVV. Benzonaphthothiophene	XXXX. 3-Methylcholanthrene	Z1. o-Toluidine
S. Naphthalene	UU. Phenanthrene	WWW. Benzo(e)pyrene	YYYY. a,a-Dimethylphenethylamine	A2. 1-Naphthylamine
T. 4-Chloroaniline	VV. Anthracene	XXX. 2,6-Dimethylnaphthalene	ZZZZ. Hexachloropropene	B2. 4-Aminobiphenyl
U. Hexachlorobutadiene	WW. Carbazole	YYY. 2,3,5-Trimethylnaphthalene	A1. N-Nitrosodiethylamine	C2. 4-Nitroquinoline-1-oxide
V. 4-Chloro-3-methylphenol	XX. Di-n-butylphthalate	ZZZ. Perylene	B1. N-Nitrosodi-n-butylamine	D2. Hexachloropene
W. 2-Methylnaphthalene	YY. Fluoranthene	AAAA. Dibenzothiophene	C1. N-Nitrosomethylethylamine	E2. Bis (2-chloro-1-methylethyl) ether
X. Hexachlorocyclopentadiene	ZZ. Pyrene	BBBB. Benzo(a)fluoranthene	D1. N-Nitrosomorpholine	F2. Bifenthrin
Y. 2,4,6-Trichlorophenol	AAA. Butylbenzylphthalate	CCCC. Benzo(b)fluorene	E1. N-Nitrosopyrrolidine	G2. Cyfluthrin
Z. 2,4,5-Trichlorophenol	BBB. 3,3'-Dichlorobenzidine	DDDD. cis/trans-Decalin	F1. Phenacetin	H2. Cypermethrin
AA. 2-Chloronaphthalene	CCC. Benzo(a)anthracene	EEEE. Biphenyl	G1. 2-Acetylaminofluorene	I2. Permethrin (cis/trans)
BB. 2-Nitroaniline	DDD. Chrysene	FFFF. Retene	H1. Pronamide	J2. 5-Nitro-o-toluidine

LDC #: 44415B2C

### VALIDATION FINDINGS WORKSHEET Surrogate Recovery

Page: 1 of 7  
Reviewer: FT  
2nd Reviewer: AC

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualification below for all questions answered "N". Not applicable questions are identified as "N/A".

- Y N N/A Were percent recoveries (%R) for surrogates within QC limits?
- Y N N/A If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?
- Y N N/A If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Sample ID	Surrogate	%R (Limits)	Qualifications
	all	Surrogates were not added to all samples as required by the method. Using professional judgment, no data were qualified, since the LCS/LCSD percent recoveries were within QC limits. Additionally, all base surrogate percent recoveries were within QC limits in the phenol analysis.		Text
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
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			( )	
			( )	
			( )	

(NBZ) = Nitrobenzene - d5                      (2FP) = 2-Fluorophenol  
(FBP) = 2-Fluorobiphenyl                    (TBP) = 2,4,6 -Tribromophenol  
(TPH) = Terphenyl - d14                        (2CP) = 2-Chlorophenol - d4



LDC #: 44415B2C

### VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

Page: 6 of 7  
Reviewer: FT  
2nd Reviewer: [Signature]

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A

Was a LCS required?

Y N N/A

Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

(L)

#	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	190128A w/d	*	( )	( )	41.0 ( 20 )	All	↓/u/p MO
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
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			( )	( )	( )		
			( )	( )	( )		

**VALIDATION FINDINGS WORKSHEET**  
**Initial Calibration Calculation Verification**

METHOD: GCMS 8270 

The calibration factors (RRFF), average RRFF, and relative standard deviation (%RSD) were recalculated for compounds identified below using the following calculations:

$RRF = (Ax)(Cis)/(Ais)(Cx)$

average RRF = sum of the RRFs/number of standards

$\%RSD = 100 * (S/X)$

Where:

Ax = Area of compound

Cx = Concentration of compound

S = Standard deviation of the RRFs

X = Mean of the RRFs

Ais = Area of associated internal standard

Cis = Concentration of internal Standard

#	Standard ID	Calibration Date	Compound	Reported (RRF 400 std)	Recalculated (RRF400 std)	Reported AverageRRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
	ICAL	11/28/2018	2-(2-Methoxyethoxy) Ethanol	0.2070	0.2070	0.2402	0.2402	7.90	7.90
	Yoda								

LDC #: 44415B2C

## VALIDATION FINDINGS WORKSHEET Continuing Calibration Results Verification

Page: 1 of 1

Reviewer: FT

2nd Reviewer: 

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 \* (ave. RRF - RRF)/ave. RRF

RRF =  $(A_x)(C_{is}) / (A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF

RRF = continuing calibration RRF

A<sub>x</sub> = Area of compound,

C<sub>x</sub> = Concentration of compound,

A<sub>is</sub> = Area of associated internal standard

C<sub>is</sub> = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Internal Standard)	Average RRF (Initial)	Reported	Recalculated	Reported	Recalculated
					RRF (CC)	RRF (CC)	%D	%D
1	COV 11281057	1/29/18	2-(2-MEE)-E (1st IS)	0.2402	0.2337	0.2337	2.7	2.7
			(2nd IS)					
			(3rd IS)					
			(4th IS)					
			(5th IS)					
			(6th IS)					
2			(1st IS)					
			(2nd IS)					
			(3rd IS)					
			(4th IS)					
			(5th IS)					
			(6th IS)					
3			(1st IS)					
			(2nd IS)					
			(3rd IS)					
			(4th IS)					
			(5th IS)					
			(6th IS)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 44415B2C

**VALIDATION FINDINGS WORKSHEET**

**Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification**

Reviewer: FT  
 2nd Reviewer: [Signature]

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 \* (SC/SA)

Where: SSC = Spike concentration  
 SA = Spike added

RPD = |LCSC - LCSDC| \* 2 / (LCSC + LCSDC)

LCSC = Laboratory control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS/LCSD samples: 190128A LCSD

Compound	Spike Added (ug/L)		Spike Concentration (ug/L)		LCS		LCSD		LCS/LCSD	
	LCS	LCSD	LCS	LCSD	Percent Recovery		Percent Recovery		RPD	
					Reported	Recalc	Reported	Recalc	Reported	Recalculated
Phenol										
N-Nitroso-di-n-propylamine										
4-Chloro-3-methylphenol										
Acenaphthene										
Pentachlorophenol										
Pyrene										
<u>2-(p-ME)-E</u>	<u>80.0</u>	<u>80.0</u>	<u>88.7</u>	<u>58.5</u>	<u>111</u>	<u>111</u>	<u>73.1</u>	<u>73.1</u>	<u>41.0</u>	<u>41.0</u>

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 44415 B2C

VALIDATION FINDINGS WORKSHEET  
Sample Calculation Verification

Page: 1 of 1  
 Reviewer: FT  
 2nd reviewer: [Signature]

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

(Y) N N/A  
 (Y) N N/A

Were all reported results recalculated and verified for all level IV samples?  
 Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

$$\text{Concentration} = \frac{(A_x)(I_s)(V_s)(DF)(2.0)}{(A_{is})(RRF)(V_o)(V_i)(\%S)}$$

- A<sub>x</sub> = Area of the characteristic ion (EICP) for the compound to be measured
- A<sub>is</sub> = Area of the characteristic ion (EICP) for the specific internal standard
- I<sub>s</sub> = Amount of internal standard added in nanograms (ng)
- V<sub>o</sub> = Volume or weight of sample extract in milliliters (ml) or grams (g).
- V<sub>i</sub> = Volume of extract injected in microliters (ul)
- V<sub>t</sub> = Volume of the concentrated extract in microliters (ul)
- Df = Dilution Factor.
- %S = Percent solids, applicable to soil and solid matrices only.
- 2.0 = Factor of 2 to account for GPC cleanup

Example:

Sample I.D. 190128A ves: 2, - (-2 ME) - E

$$\text{Conc.} = \frac{(163673)(40)}{(307091)(0.2402)}$$

= 88.7 ug/l

#	Sample ID	Compound	Reported Concentration (ug/l)	Calculated Concentration (ug/l)	Qualification
	190128A ves	2 - (-2 ME) - E	88.7	88.7	

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** February 25, 2019

**Parameters:** Wet Chemistry

**Validation Level:** Level C & D

**Laboratory:** APPL, Inc.

**Sample Delivery Group (SDG):** 87932

<b>Sample Identification</b>	<b>Laboratory Sample Identification</b>	<b>Matrix</b>	<b>Collection Date</b>
ERH738	AZ85520	Water	01/21/19
ERH743**	AZ85523**	Water	01/21/19
ERH751	AZ85525	Water	01/21/19
ERH753	AZ85527	Water	01/22/19

\*\*Indicates sample underwent Level D validation

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Alkalinity by Standard Method 2320B

Chloride, Nitrate, and Sulfate by Environmental Protection Agency (EPA) Method 300.0

Ferrous Iron by Standard Method 3500-Fe B

Nitrate/Nitrite as Nitrogen by EPA Method 353.2

Total Organic Carbon by EPA SW 846 Method 9060A

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level D data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.



## Qualification Code Reference

- H Holding times were exceeded.
- S The sequence or number of standards used for the calibration was incorrect.
- C Correlation coefficient is  $<0.995$ .
- R %R for calibration is not within control limits.
- B Presumed contamination from preparation (method) blank or calibration blank.
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD or difference was high.
- I ICP ICS results were unsatisfactory.
- A ICP Serial Dilution %D were not within control limits.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Post Digestion Spike recovery was not within control limits.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

## I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
ERH738	Nitrate	55 hours	48 hours	UJ (all non-detects)	P
ERH743**	Nitrate	52 hours	48 hours	J (all detects)	P
ERH751	Nitrate	50 hours	48 hours	J (all detects)	P

## II. Initial Calibration

All criteria for the initial calibration of each method were met.

## III. Continuing Calibration

Continuing calibration frequency and analysis criteria were met for each method when applicable.

## IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks with the following exceptions:

Blank ID	Analyte	Maximum Concentration	Limit of Quantitation	Associated Samples
PB (prep blank)	Chloride	0.26 mg/L	1.0 mg/L	ERH738
ICB/CCB	Chloride	0.293 mg/L	1.0 mg/L	ERH738
PB (prep blank)	Chloride	0.13 mg/L	1.0 mg/L	ERH743** ERH751 ERH753
ICB/CCB	Chloride	0.145 mg/L	1.0 mg/L	ERH743** ERH751 ERH753
PB (prep blank)	Total alkalinity Bicarbonate alkalinity Total organic carbon	1.5 mg/L 1.5 mg/L 0.23 mg/L	2.0 mg/L 2.0 mg/L 0.93 mg/L	All samples in SDG 87932

Blank ID	Analyte	Maximum Concentration	Limit of Quantitation	Associated Samples
ICB/CCB	Sulfate	0.090 mg/L	1.0 mg/L	ERH738 ERH743** ERH753
ICB/CCB	Total organic carbon	0.28 mg/L	0.93 mg/L	ERH738 ERH743** ERH751
ICB/CCB	Total organic carbon	0.31 mg/L	0.93 mg/L	ERH753

Data qualification by the laboratory blanks was based on the maximum contaminant concentration in the laboratory blanks in the analysis of each analyte. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated laboratory blanks with the following exceptions:

Sample	Analyte	Reported Concentration	Limit of Quantitation	Modified Final Concentration
ERH738	Sulfate	0.38 mg/L	1.0 mg/L	0.38U mg/L
ERH743**	Total organic carbon	0.67 mg/L	0.93 mg/L	0.67U mg/L
ERH751	Total organic carbon	0.92 mg/L	0.93 mg/L	0.92U mg/L
ERH753	Total organic carbon	0.55 mg/L	0.93 mg/L	0.55U mg/L

## V. Field Blanks

No field blanks were identified in this SDG.

## VI. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

## VII. Duplicate Sample Analysis

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

### **VIII. Laboratory Control Samples**

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

### **IX. Field Duplicates**

No field duplicates were identified in this SDG.

### **X. Sample Result Verification**

All sample result verifications were acceptable for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

### **XI. Overall Assessment of Data**

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to technical holding time, data were qualified as estimated in three samples.

Due to laboratory blank contamination, data were qualified as not detected in four samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

**Red Hill Bulk Storage Facility, CTO 18F0126  
Wet Chemistry - Data Qualification Summary - SDG 87932**

Sample	Analyte	Flag	A or P	Reason (Code)
ERH738 ERH743** ERH751	Nitrate	J (all detects) UJ (all non-detects)	P	Technical holding times (H)

**Red Hill Bulk Storage Facility, CTO 18F0126  
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 87932**

Sample	Analyte	Modified Final Concentration	A or P	Code
ERH738	Sulfate	0.38U mg/L	A	B
ERH743**	Total organic carbon	0.67U mg/L	A	B
ERH751	Total organic carbon	0.92U mg/L	A	B
ERH753	Total organic carbon	0.55U mg/L	A	B

**Red Hill Bulk Storage Facility, CTO 18F0126  
Wet Chemistry - Field Blank Data Qualification Summary - SDG 87932**

No Sample Data Qualified in this SDG

LDC #: 44415B6  
 SDG #: 87932  
 Laboratory: APPL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**

Level C/D

Date: 2/22/19  
 Page: 1 of 1  
 Reviewer: B  
 2nd Reviewer: IT

**METHOD: (Analyte)** Alkalinity (SM2320B), Chloride, Nitrate, Sulfate (EPA Method 300.0), Ferrous Iron (SM3500-Fe B), Nitrate/Nitrite-N (EPA Method 353.2), TOC (EPA SW846 Method 9060A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / SW	
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	SW	
V	Field blanks	N	
VI.	Matrix Spike/Matrix Spike Duplicates	N	C.S.
VII.	Duplicate sample analysis	N	
VIII.	Laboratory control samples	A	LCS ID
IX.	Field duplicates	N	
X.	Sample result verification	A	Not reviewed for Level C validation.
XI.	Overall assessment of data	A	

Note: A = Acceptable      ND = No compounds detected      D = Duplicate      SB=Source blank  
 N = Not provided/applicable      R = Rinsate      TB = Trip blank      OTHER:  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

\*\* Indicates sample underwent Level D validation

	Client ID	Lab ID	Matrix	Date
1	ERH738	AZ85520	Water	01/21/19
2	ERH743**	AZ85523**	Water	01/21/19
3	ERH751	AZ85525	Water	01/21/19
4	ERH753	AZ85527	Water	01/22/19
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				

Notes: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Method: Inorganics (EPA Method See CoreV)

Validation Area	Yes	No	NA	Findings/Comments
<b>I. Technical holding times</b>				
All technical holding times were met.		✓		
<b>II. Calibration</b>				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial calibration correlation coefficients > 0.995?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% QC limits?	✓			
Were titrant checks performed as required? (Level IV only)	✓			
Were balance checks performed as required? (Level IV only)			✓	
<b>III. Blanks</b>				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.	✓			
<b>IV. Matrix spike/Matrix spike duplicates and Duplicates</b>				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.			✓	
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.			✓	
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of ≤ CRDL (≤ 2X CRDL for soil) was used for samples that were ≤ 5X the CRDL, including when only one of the duplicate sample values were ≤ 5X the CRDL.			✓	
<b>V. Laboratory control samples</b>				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	✓			
<b>VI. Regional Quality Assurance and Quality Control</b>				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

LDC #: 44415B6

**VALIDATION FINDINGS CHECKLIST**

Page: 1 of 2  
 Reviewer: JB  
 2nd Reviewer: TC

Validation Area	Yes	No	NA	Findings/Comments
<b>VII. Sample Result Verification</b>				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
Were detection limits < RL?	✓			
<b>VIII. Overall assessment of data</b>				
Overall assessment of data was found to be acceptable.	✓			
<b>IX. Field duplicates</b>				
Field duplicate pairs were identified in this SDG.		✓		
Target analytes were detected in the field duplicates.			✓	
<b>X. Field blanks</b>				
Field blanks were identified in this SDG.		✓		
Target analytes were detected in the field blanks.			✓	



### VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

All circled methods are applicable to each sample.

Sample ID	Parameter
<u>1-4</u>	pH TDS <u>Cl</u> <u>F</u> <u>NO<sub>3</sub></u> <u>NO<sub>2</sub></u> <u>SO<sub>4</sub></u> O-PO <sub>4</sub> <u>Alk</u> <u>CN</u> <u>NH<sub>3</sub></u> <u>TKN</u> <u>TOC</u> Cr6+ ClO <sub>4</sub> <i>Ferrous Fe</i> <i>NO<sub>3</sub>/NO<sub>2</sub></i>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
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	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
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Comments: \_\_\_\_\_

### VALIDATION FINDINGS WORKSHEET Technical Holding Times

All circled dates have exceeded the technical holding time.

Y N N/A Were all samples preserved as applicable to each method?

CODE: H

Y N N/A Were all cooler temperatures within validation criteria?

Method:		EPA 300.0					
Parameters:		Nitrate					
Technical holding time:		48 hours.					
Sample ID	Sampling date	Analysis date	Total Time	Qualifier	Analysis date	Total Time	Qualifier
1	1/21/19 10:45	1/23/19 17:35	55 hrs.	J/WMP (ND)			
2	1/21/19 1:20	1/23/19 17:43	52 hrs.	J/WMP (Det)			
3	1/21/19 3:45	1/23/19 17:50	50 hrs.	↓			

**VALIDATION FINDINGS WORKSHEET**

**Blanks**

CODE: B

Reviewer: JB

2nd Reviewer: 

METHOD: Inorganics, Method See Cover

Conc. units: mg/L Associated Samples 1

Analyte	Blank ID	Blank ID	Blank Action Limit											
	PB	ICB/CCB (mg/L)		No Qualifiers (> 5x)										
Chloride	0.26	0.293	1.465											

Cl LOQ = 1.0 mg/L

Conc. units: mg/L Associated Samples: 2 - 4

Analyte	Blank ID	Blank ID	Blank Action Limit											
	PB	ICB/CCB (mg/L)		No Qualifiers (> 5x)										
Chloride	0.13	0.145	0.725											

Cl LOQ Blank = 1.0 mg/L

Cl LOQ sample 2 - 4 = 5.0 mg/L

Conc. units: mg/L Associated Samples: All

Analyte	Blank ID	Blank ID	Blank Action Limit											
	PB	ICB/CCB (mg/L)		2	3	4								
Alkalinity, Total	1.5		7.5											
Bicarbonate as CaCO3	1.5		7.5											
TOC	0.23		1.15	0.67	0.92	0.55								

Alk LOQ = 2.0 mg/L

TOC LOQ = 0.93 mg/L

**VALIDATION FINDINGS WORKSHEET**

**Blanks**

CODE: B

Reviewer: JB

2nd Reviewer: AC

Conc. units: mg/L

Associated Samples: 1, 2, 4

Analyte	Blank ID	Blank ID	Blank Action Limit											
	PB	ICB/CCB (mg/L)		1										
SO4		0.090	0.45	0.38										

SO4 LOQ = 1.0 mg/L

Conc. units: mg/L

Associated Samples: 1 - 3

Analyte	Blank ID	Blank ID	Blank Action Limit											
	PB	ICB/CCB (mg/L)		2	3									
TOC		0.28	1.4	0.67	0.92									

TOC LOQ = 0.93 mg/L

Conc. units: mg/L

Associated Samples: 4

Analyte	Blank ID	Blank ID	Blank Action Limit											
	PB	ICB/CCB (mg/L)		4										
TOC		0.31	1.55	0.55										

TOC LOQ = 0.93 mg/L

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:

All contaminants within five times the method blank concentration were qualified as not detected, "U".

LDC #: 4441584

## Validation Findings Worksheet Initial and Continuing Calibration Calculation Verification

Page: 1 of 1  
 Reviewer: JB  
 2nd Reviewer: [Signature]

Method: Inorganics, Method See Cover

The correlation coefficient (r) for the calibration of TOC was recalculated. Calibration date: 2/11/19

An initial or continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

$$\%R = \frac{\text{Found} \times 100}{\text{True}}$$
 Where, Found = concentration of each analyte measured in the analysis of the ICV or CCV solution  
 True = concentration of each analyte in the ICV or CCV source

Type of analysis	Analyte	Standard	Conc. (ug/L)	Area	Recalculated	Reported	Acceptable (Y/N)
					r or r <sup>2</sup>	r or r <sup>2</sup>	
Initial calibration	TOC	s1	0	687345	0.9977	0.9980	Y
		s2	0.5	4824475			
		s3	1.25	11614102			
		s4	2.5	21449626			
		s5	3.75	30466521			
		s6	5	38946896			
Calibration verification	NO <sub>3</sub> /NO <sub>2</sub>	ICV	FOUND: 3.009 mg/L TRUE: 3 mg/L		100%	100%	Y
Calibration verification	Ferrous Fe	CCV	FOUND: 3.95 mg/L TRUE: 4 mg/L		98.87%	98.77%	Y
Calibration verification							

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 444156

## VALIDATION FINDINGS WORKSHEET Level IV Recalculation Worksheet

Page: 1 of 1  
Reviewer: JB  
2nd Reviewer: AC

METHOD: Inorganics, Method See Cover

Percent recoveries (%R) for a laboratory control sample and a matrix spike sample were recalculated using the following formula:

$\%R = \frac{\text{Found}}{\text{True}} \times 100$       Where,      Found = concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).  
True = concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$RPD = \frac{|S-D|}{(S+D)/2} \times 100$       Where,      S = Original sample concentration  
D = Duplicate sample concentration

Sample ID	Type of Analysis	Element	Found / S (units)	True / D (units)	Recalculated	Reported	Acceptable (Y/N)
					%R / RPD	%R / RPD	
LCS	Laboratory control sample	Ferrous Fe	3.066 mg/L	3.00 mg/L	102%	102%	Y
	Matrix spike sample		(SSR-SR)				
	Duplicate sample						

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**VALIDATION FINDINGS WORKSHEET**  
**Sample Calculation Verification**

METHOD: Inorganics, Method See Cover

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

- Y  N  N/A Have results been reported and calculated correctly?
- Y  N  N/A Are results within the calibrated range of the instruments?
- Y  N  N/A Are all detection limits below the CRQL?

Compound (analyte) results for NO<sub>3</sub>/NO<sub>2</sub> reported with a positive detect were recalculated and verified using the following equation:

Concentration =

Recalculation:

$$\begin{aligned}
 \text{NO}_3/\text{NO}_2 &= 18.87621 \times \text{Area} - 0.2940597 \\
 &= 18.87621 \times 0.040938 - 0.2940597 \\
 &= 0.47869 \text{ mg/L}
 \end{aligned}$$

#	Sample ID	Analyte	Reported Concentration (mg/L)	Calculated Concentration (mg/L)	Acceptable (Y/N)
	<u>2</u>	<u>NO<sub>3</sub></u>	<u>2.3</u>	<u>2.1</u>	<u>Y</u>
		<u>NO<sub>3</sub>/NO<sub>2</sub></u>	<u>0.48</u>	<u>0.48</u>	<u>Y</u>
		<u>AH<sup>-</sup></u>	<u>75.0</u>	<u>74.9</u>	<u>Y</u>
		<u>TOC</u>	<u>0.67</u>	<u>0.67</u>	<u>Y</u>

Note: \_\_\_\_\_

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** February 28, 2019

**Parameters:** Gasoline Range Organics

**Validation Level:** Level C & D

**Laboratory:** APPL. Inc

**Sample Delivery Group (SDG):** 87932

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
ERH737	AZ85519	Water	01/21/19
ERH738**	AZ85520**	Water	01/21/19
ERH739	AZ85521	Water	01/21/19
ERH742	AZ85522	Water	01/21/19
ERH743	AZ85523	Water	01/21/19
ERH750	AZ85524	Water	01/21/19
ERH751	AZ85525	Water	01/21/19
ERH752	AZ85526	Water	01/22/19
ERH753	AZ85527	Water	01/22/19

\*\*Indicates sample underwent Level D validation



## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Gasoline Range Organics by Environmental Protection Agency (EPA) SW 846 Method 8260B

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level D data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered not detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## Qualification Code Reference

- H Holding times were exceeded.
- S Surrogate recovery was outside QC limits.
- C Calibration %RSD,  $r$ ,  $r^2$  or %D were noncompliant.
- R Calibration RRF was  $<0.05$ .
- B Presumed contamination from preparation (method blank).
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD was high.
- I Internal standard performance was unsatisfactory.
- M Instrument Performance Check (BFB or DFTPP) was noncompliant.
- T Presumed contamination from trip blank.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Instrument performance for pesticides was poor.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

A curve fit, based on the initial calibration, was established for quantitation. The coefficient of determination ( $r^2$ ) was greater than or equal to 0.990.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

## **III. Continuing Calibration**

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0%.

## **IV. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **V. Field Blanks**

Samples ERH737, ERH742, ERH750, and ERH752 were identified as trip blanks. No contaminants were found.

## **VI. Surrogates**

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

## **VII. Matrix Spike/Matrix Spike Duplicates**

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

## **VIII. Laboratory Control Samples**

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## IX. Field Duplicates

Samples ERH738\*\* and ERH739 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD (Limits)
	ERH738**	ERH739	
Gasoline Range Organics	48	22	74 (≤50)

## X. Compound Quantitation

All compound quantitations met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

## XI. Target Compound Identifications

All target compound identifications met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

## XII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**Red Hill Bulk Storage Facility, CTO 18F0126  
Gasoline Range Organics - Data Qualification Summary - SDG 87932**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Gasoline Range Organics - Laboratory Blank Data Qualification Summary - SDG  
87932**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Gasoline Range Organics - Field Blank Data Qualification Summary - SDG 87932**

No Sample Data Qualified in this SDG

LDC #: 44415B7  
 SDG #: 87932  
 Laboratory: APPL, Inc.

### VALIDATION COMPLETENESS WORKSHEET

Level C/D

Date: 2/28/19  
 Page: 1 of 1  
 Reviewer: PJ  
 2nd Reviewer: AE

**METHOD:** GC/MS Gasoline Range Organics (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	ΔΔ	12 ICV ≤ 20
IV.	Continuing calibration	A	CV ≤ 20
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	TB = 1, 4, 6, 8
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	N	CS
IX.	Laboratory control samples	Δ	CS 1P
X.	Field duplicates	SW	D = 2, 3
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	A	Not reviewed for Level C validation.
XIII.	Target compound identification	A	Not reviewed for Level C validation.
XIV.	System performance	Δ	Not reviewed for Level C validation.
XV.	Overall assessment of data	A	

Note: A = Acceptable      ND = No compounds detected      D = Duplicate      SB=Source blank  
 N = Not provided/applicable      R = Rinsate      TB = Trip blank      OTHER:  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

\*\* Indicates sample underwent Level D validation

	Client ID	Lab ID	Matrix	Date
1	ERH737 TB	AZ85519	Water	01/21/19
2	ERH738 ** D	AZ85520 **	Water	01/21/19
3	ERH739 D	AZ85521	Water	01/21/19
4	ERH742 TB	AZ85522	Water	01/21/19
5	ERH743	AZ85523	Water	01/21/19
6	ERH750 TB	AZ85524	Water	01/21/19
7	ERH751	AZ85525	Water	01/21/19
8	ERH752 TB	AZ85526	Water	01/22/19
9	ERH753	AZ85527	Water	01/22/19
10				
11				
12	AL190128-B11C			
13				

LDC #: 44415 B7

## VALIDATION FINDINGS CHECKLIST

Page: 1 of 2  
Reviewer: FT  
2nd Reviewer: AE

Method: Volatiles (EPA SW 846 Method 8260B)

Validation Area	Yes	No	NA	Findings/Comments
<b>I. Technical holding times</b>				
Were all technical holding times met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was cooler temperature criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>II. GC/MS Instrument performance check</b>				
Were the BFB performance results reviewed and found to be within the specified criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all samples analyzed within the 12 hour clock criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>IIIa. Initial calibration</b>				
Did the laboratory perform a 5 point calibration prior to sample analysis?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of > 0.990?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent relative standard deviations (%RSD) ≤ 30%/15% and relative response factors (RRF) > 0.05?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>IIIb. Initial Calibration Verification</b>				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent differences (%D) ≤ 20%?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>IV. Continuing calibration</b>				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Were all percent differences (%D) ≤ 20% and relative response factors (RRF) ≥ 0.05?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>V. Laboratory Blanks</b>				
Was a laboratory blank associated with every sample in this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was a laboratory blank analyzed at least once every 12 hours for each matrix and concentration?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was there contamination in the laboratory blanks?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>VI. Field blanks</b>				
Were field blanks were identified in this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were target compounds detected in the field blanks?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>VII. Surrogate spikes</b>				
Were all surrogate percent recovery (%R) within QC limits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	



LDC #: 44415 B7

**VALIDATION FINDINGS CHECKLIST**

Page: 2 of 2  
 Reviewer: FT  
 2nd Reviewer: TC

Validation Area	Yes	No	NA	Findings/Comments
<b>VIII. Matrix spike/Matrix spike duplicates</b>				
Were matrix spike (MS) and matrix spike duplicate (MSD) analyzed in this SDG?			/	
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			/	
<b>IX. Laboratory control samples</b>				
Was an LCS analyzed per analytical batch in this SDG?	/			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	/			
<b>X. Field duplicates</b>				
Were field duplicate pairs identified in this SDG?	/			
Were target compounds detected in the field duplicates?	/			
<b>XI. Internal standards</b>				
Were internal standard area counts within -50% to +100% of the associated calibration standard?	/			
Were retention times within + 30 seconds of the associated calibration standard?	/			
<b>XII. Compound quantitation</b>				
Did the laboratory LOQs/RLs meet the QAPP LOQs/RLs?	/			
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	/			
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	/			
<b>XIII. Target compound identification</b>				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	/			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	/			
Were chromatogram peaks verified and accounted for?	/			
<b>XIV. System performance</b>				
System performance was found to be acceptable.	/			
<b>XV. Overall assessment of data</b>				
Overall assessment of data was found to be acceptable.	/			

## TARGET COMPOUND WORKSHEET

### METHOD: VOA

A. Chloromethane	AA. Tetrachloroethene	AAA. 1,3,5-Trimethylbenzene	AAAA. Ethyl tert-butyl ether	A1. 1,3-Butadiene
B. Bromomethane	BB. 1,1,2,2-Tetrachloroethane	BBB. 4-Chlorotoluene	BBBB. tert-Amyl methyl ether	B1. Hexane
C. Vinyl chloride	CC. Toluene	CCC. tert-Butylbenzene	CCCC. 1-Chlorohexane	C1. Heptane
D. Chloroethane	DD. Chlorobenzene	DDD. 1,2,4-Trimethylbenzene	DDDD. Isopropyl alcohol	D1. Propylene
E. Methylene chloride	EE. Ethylbenzene	EEE. sec-Butylbenzene	EEEE. Acetonitrile	E1. Freon 11
F. Acetone	FF. Styrene	FFF. 1,3-Dichlorobenzene	FFFF. Acrolein	F1. Freon 12
G. Carbon disulfide	GG. Xylenes, total	GGG. p-Isopropyltoluene	GGGG. Acrylonitrile	G1. Freon 113
H. 1,1-Dichloroethene	HH. Vinyl acetate	HHH. 1,4-Dichlorobenzene	HHHH. 1,4-Dioxane	H1. Freon 114
I. 1,1-Dichloroethane	II. 2-Chloroethylvinyl ether	III. n-Butylbenzene	IIII. Isobutyl alcohol	I1. 2-Nitropropane
J. 1,2-Dichloroethene, total	JJ. Dichlorodifluoromethane	JJJ. 1,2-Dichlorobenzene	JJJJ. Methacrylonitrile	J1. Dimethyl disulfide
K. Chloroform	KK. Trichlorofluoromethane	KKK. 1,2,4-Trichlorobenzene	KKKK. Propionitrile	K1. 2,3-Dimethyl pentane
L. 1,2-Dichloroethane	LL. Methyl-tert-butyl ether	LLL. Hexachlorobutadiene	LLLL. Ethyl ether	L1. 2,4-Dimethyl pentane
M. 2-Butanone	MM. 1,2-Dibromo-3-chloropropane	MMM. Naphthalene	MMMM. Benzyl chloride	M1. 3,3-Dimethyl pentane
N. 1,1,1-Trichloroethane	NN. Methyl ethyl ketone	NNN. 1,2,3-Trichlorobenzene	NNNN. Iodomethane	N1. 2-Methylpentane
O. Carbon tetrachloride	OO. 2,2-Dichloropropane	OOO. 1,3,5-Trichlorobenzene	OOOO. 1,1-Difluoroethane	O1. 3-Methylpentane
P. Bromodichloromethane	PP. Bromochloromethane	PPP. trans-1,2-Dichloroethene	PPPP. Tetrahydrofuran	P1. 3-Ethylpentane
Q. 1,2-Dichloropropane	QQ. 1,1-Dichloropropene	QQQ. cis-1,2-Dichloroethene	QQQQ. Methyl acetate	Q1. 2,2-Dimethylpentane
R. cis-1,3-Dichloropropene	RR. Dibromomethane	RRR. m,p-Xylenes	RRRR. Ethyl acetate	R1. 2,2,3-Trimethylbutane
S. Trichloroethene	SS. 1,3-Dichloropropane	SSS. o-Xylene	SSSS. Cyclohexane	S1. 2,2,4-Trimethylpentane
T. Dibromochloromethane	TT. 1,2-Dibromoethane	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	TTTT. Methyl cyclohexane	T1. 2-Methylhexane
U. 1,1,2-Trichloroethane	UU. 1,1,1,2-Tetrachloroethane	UUU. 1,2-Dichlorotetrafluoroethane	UUUU. Allyl chloride	U1. Nonanal
V. Benzene	VV. Isopropylbenzene	VVV. 4-Ethyltoluene	VVVV. Methyl methacrylate	V1. 2-Methylnaphthalene
W. trans-1,3-Dichloropropene	WW. Bromobenzene	WWW. Ethanol	WWWW. Ethyl methacrylate	W1. Methanol
X. Bromoform	XX. 1,2,3-Trichloropropane	XXX. Di-isopropyl ether	XXXX. cis-1,4-Dichloro-2-butene	X1. 1,2,3-Trimethylbenzene
Y. 4-Methyl-2-pentanone	YY. n-Propylbenzene	YYY. tert-Butanol	YYYY. trans-1,4-Dichloro-2-butene	Y1.
Z. 2-Hexanone	ZZ. 2-Chlorotoluene	ZZZ. tert-Butyl alcohol	ZZZZ. Pentachloroethane	Z1.

LDC #: 44415B7

**VALIDATION FINDINGS WORKSHEET**  
**Field Duplicates**

Page: 1 of 1

Reviewer: FT

2nd reviewer: [Signature]

METHOD:  GC  HPLC

Y N N/A Were field duplicate pairs identified in this SDG?

Y N N/A Were target compounds detected in the field duplicate pairs?

Compound	Concentration ( <u>ug/L</u> )		%RPD Limit (≤ <u>52</u> %)	Qualification (Parent only)
	<u>2</u>	<u>3</u>		
<u>Gasoline Range Organics</u>	<u>48</u>	<u>22</u>	<u>74</u>	<u>/</u>

Compound	Concentration ( )		%RPD Limit (≤ _____%)	Qualification (Parent only)

Compound	Concentration ( )		%RPD Limit (≤ _____%)	Qualification (Parent only)

LDC#: 444/5B7  
 SDG#: mu cones

**VALIDATION FINDINGS WORKSHEET**  
**Initial Calibration Calculation Verification**

Page: 1 of 1  
 Reviewer: FJ  
 2nd Reviewer: [Signature]

Method: Gasoline (EPA SW 846 Method 8260B)

Calibration Date	System	Compound	Standard	(Y) Response	(X) Concentration
1/22/2019	GCMS Loki	GRO	1	11.35443384	0.8
			2	11.98163237	2.0
			3	12.62207542	4.0
			4	18.11436978	12.0
			5	23.78842851	24.0
			6	28.60722789	32.0
			7	33.12981030	40.0

**Regression Output** **Reported**

Constant	10.834137	10.800000
Std Err of Y Est		
R Squared	0.998425	0.998000
Degrees of Freedom		
X Coefficient(s)	0.555392	0.555000
Std Err of Coef.		
Correlation Coefficient	0.999212	
Coefficient of Determination (r <sup>2</sup> )	0.998425	0.998000

**VALIDATION FINDINGS WORKSHEET**  
**Continuing Calibration Results Verification**

**METHOD:** GC/MS VOA (EPA SW 846 Method 8260B)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 \* (ave. RRF - RRF)/ave. RRF  
 $RRF = (A_x)(C_{is}) / (A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF  
 RRF = continuing calibration RRF  
 $A_x$  = Area of compound,  $A_{is}$  = Area of associated internal standard  
 $C_x$  = Concentration of compound,  $C_{is}$  = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference internal Standard)	Average RRF (Initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	COV 012 8418	1/28/19	gasoline 9-90 (1st internal standard)	300.0	287.0673	287.0673	4.3	4.3
			(2nd internal standard)					
			(3rd internal standard)					
			(4th internal standard)					
2			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
			(4th internal standard)					
3			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
			(4th internal standard)					
4			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
			(4th internal standard)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

**VALIDATION FINDINGS WORKSHEET**  
**Surrogate Results Verification**

**METHOD:** GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery:  $SF/SS * 100$

Where: SF = Surrogate Found  
 SS = Surrogate Spiked

Sample ID: # 2

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene	<u>25.0</u>	<u>23.9353</u>	<u>95.7</u>	<u>95.7</u>	<u>0</u>

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

LDC #: 44415B7

**VALIDATION FINDINGS WORKSHEET**  
**Laboratory Control Sample Results Verification**

Page: 1 of 1  
 Reviewer: FT  
 2nd Reviewer: [Signature]

**METHOD:** GC/MS VOA (EPA Method 8260B)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 \* SSC/SA

Where: SSC = Spiked sample concentration  
 SA = Spike added

RPD = | LCSC - LCSDC | \* 2 / (LCSC + LCSDC)

LCSC = Laboratory control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS ID: AL190128 LCSD

Compound	Spike Added (ug/L)		Spiked Sample Concentration (ug/L)		LCS		LCSD		LCS/LCSD	
	LCS	LCSD	LCS	LCSD	Percent Recovery		Percent Recovery		RPD	
					Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
Gasoline Range 4,4-Dichloroethene Trichloroethene Benzene Toluene Chlorobenzene	300	300	261	291	87.0	87.0	97.0	97.0	10.9	10.9

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

**VALIDATION FINDINGS WORKSHEET**  
**Sample Calculation Verification**

**METHOD:** GC/MS VOA (EPA SW 846 Method 8260B)

- Y N N/A Were all reported results recalculated and verified for all level IV samples?  
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

$$\text{Concentration} = \frac{(A_x)(I_s)(DF)}{(A_{is})(RRF)(V_o)(\%S)}$$

- $A_x$  = Area of the characteristic ion (EICP) for the compound to be measured
- $A_{is}$  = Area of the characteristic ion (EICP) for the specific internal standard
- $I_s$  = Amount of internal standard added in nanograms (ng)
- RRF = Relative response factor of the calibration standard.
- $V_o$  = Volume or weight of sample pruged in milliliters (ml) or grams (g).
- Df = Dilution factor.
- %S = Percent solids, applicable to soils and solid matrices only.

Example:

Sample I.D. #2 , GRO

$$\text{Conc.} = \frac{\left(\frac{9650229}{811409} - 10.834137\right)(25.0)}{(0.555392)}$$

$$= 47.67 \text{ ug/L}$$

#	Sample ID	Compound	Reported Concentration (ug/L)	Calculated Concentration (ug/L)	Qualification
	#2	GRO	48	47.67	



## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** March 4, 2019

**Parameters:** Total Petroleum Hydrocarbons as Extractables

**Validation Level:** Level C & D

**Laboratory:** APPL, Inc.

**Sample Delivery Group (SDG):** 87932

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
ERH738**	AZ85520**	Water	01/21/19
ERH739	AZ85521	Water	01/21/19
ERH743	AZ85523	Water	01/21/19
ERH751	AZ85525	Water	01/21/19
ERH753	AZ85527	Water	01/22/19
ERH738(SGCU)**	AZ85520(SGCU)**	Water	01/21/19
ERH739(SGCU)	AZ85521(SGCU)	Water	01/21/19

Samples ending in "SGCU" underwent Silica Gel cleanup

\*\*Indicates sample underwent Level D validation

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Total Petroleum Hydrocarbons (TPH) as Extractables by Environmental Protection Agency (EPA) SW 846 Method 8015B

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level D data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered not detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## Qualification Code Reference

- H Holding times were exceeded.
- S Surrogate recovery was outside QC limits.
- C Calibration %RSD,  $r$ ,  $r^2$  or %D were noncompliant.
- R Calibration RRF was  $<0.05$ .
- B Presumed contamination from preparation (method blank).
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD was high.
- I Internal standard performance was unsatisfactory.
- M Instrument Performance Check (BFB or DFTPP) was noncompliant.
- T Presumed contamination from trip blank.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Instrument performance for pesticides was poor.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

## **III. Continuing Calibration**

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

## **IV. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **V. Field Blanks**

No field blanks were identified in this SDG.

## **VI. Surrogates**

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

## **VII. Matrix Spike/Matrix Spike Duplicates**

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

## **VIII. Laboratory Control Samples**

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

### IX. Field Duplicates

Samples ERH738\*\* and ERH739 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD (Limits)
	ERH738**	ERH739	
Disel (C10-C24)	2400	2700	12 (≤50)

### X. Compound Quantitation

All compound quantitations met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

### XI. Target Compound Identifications

All target compound identifications met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

### XII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**Red Hill Bulk Storage Facility, CTO 18F0126  
Total Petroleum Hydrocarbons as Extractables - Data Qualification Summary -  
SDG 87932**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Total Petroleum Hydrocarbons as Extractables - Laboratory Blank Data  
Qualification Summary - SDG 87932**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Total Petroleum Hydrocarbons as Extractables - Field Blank Data Qualification  
Summary - SDG 87932**

No Sample Data Qualified in this SDG

LDC #: 44415B8

**VALIDATION COMPLETENESS WORKSHEET**

Date: 2/28/19

SDG #: 87932

Level C/D

Page: 1 of 1

Laboratory: APPL, Inc.

Reviewer: FJ  
2nd Reviewer: [Signature]

**METHOD:** GC TPH as Extractables (EPA SW 846 Method 8015B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	Δ Δ	
II.	Initial calibration/ICV	A Δ	% PSD/ICV ≤ 20
III.	Continuing calibration	Δ	CW ≤ 20
IV.	Laboratory Blanks	Δ	
V.	Field blanks	N	
VI.	Surrogate spikes	Δ	
VII.	Matrix spike/Matrix spike duplicates	N	CS
VIII.	Laboratory control samples	A	LOQ/D
IX.	Field duplicates	SW	D = 1, 2
X.	Compound quantitation RL/LOQ/LODs	A	Not reviewed for Level C validation.
XI.	Target compound identification	Δ	Not reviewed for Level C validation.
XII.	Overall assessment of data	Δ	

Note: A = Acceptable      ND = No compounds detected      D = Duplicate      SB=Source blank  
 N = Not provided/applicable      R = Rinsate      TB = Trip blank      OTHER:  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

\*\* Indicates sample underwent Level D validation

	Client ID	Lab ID	Matrix	Date
1	ERH738 ** D	AZ85520 **	Water	01/21/19
2	ERH739 D	AZ85521	Water	01/21/19
3	ERH743 <sup>w</sup>	AZ85523 <sup>w</sup>	Water	01/21/19
4	ERH751	AZ85525	Water	01/21/19
5	ERH753	AZ85527	Water	01/22/19
6	ERH738(SGCU) **	AZ85520(SGCU) **	Water	01/21/19
7	ERH739(SGCU)	AZ85521(SGCU)	Water	01/21/19
8				
9				
10				
11				
12				

Notes:

1	190124A <sup>*</sup> - BIK			
2	190124A2 - BIK			
3	190128A - BIK			
4	190128A1 - BIK			



LDC #: 44415 BX

## VALIDATION FINDINGS CHECKLIST

Page: 1 of 2  
Reviewer: FT  
2nd Reviewer: ACMethod:  GC  HPLC

Validation Area	Yes	No	NA	Findings/Comments
<b>I. Technical holding times</b>				
Were all technical holding times met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was cooler temperature criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>IIa. Initial calibration</b>				
Did the laboratory perform a 5 point calibration prior to sample analysis?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent relative standard deviations (%RSD) < 20%?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of $\geq 0.990$ ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Were the RT windows properly established?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>IIb. Initial calibration verification</b>				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent differences (%D) < 20%?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>III. Continuing calibration</b>				
Was a continuing calibration analyzed daily?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent differences (%D) < 20%?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all the retention times within the acceptance windows?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>IV. Laboratory Blanks</b>				
Was a laboratory blank associated with every sample in this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was a laboratory blank analyzed for each matrix and concentration?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was there contamination in the laboratory blanks?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>V. Field Blanks</b>				
Were field blanks identified in this SDG?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Were target compounds detected in the field blanks?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>VI. Surrogate spikes</b>				
Were all surrogate percent recovery (%R) within the QC limits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If the percent recovery (%R) of one or more surrogates was outside QC limits, was a reanalysis performed to confirm %R?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>VII. Matrix spike/Matrix spike duplicates</b>				
Were matrix spike (MS) and matrix spike duplicate (MSD) analyzed in this SDG?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>VIII. Laboratory control samples</b>				
Was an LCS analyzed per analytical or extraction batch?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

LDC #: 44415 BX

**VALIDATION FINDINGS CHECKLIST**

Page: 2 of 2  
Reviewer: FT  
2nd Reviewer: [Signature]

Validation Area	Yes	No	NA	Findings/Comments
<b>IX. Field duplicates</b>				
Were field duplicate pairs identified in this SDG?	/			
Were target compounds detected in the field duplicates?	/			
<b>X. Compound quantitation</b>				
Did the laboratory LOQs/RLs meet the QAPP LOQs/RLs?	/			
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	/			
<b>XI. Target compound identification</b>				
Were the retention times of reported detects within the RT windows?	/			
<b>XIII. Overall assessment of data</b>				
Overall assessment of data was found to be acceptable.	/			

LDC #: 44415B8

**VALIDATION FINDINGS WORKSHEET**  
**Field Duplicates**

Page: 1 of 1

Reviewer: FT

2nd reviewer: [Signature]

METHOD:  GC  HPLC

Y N N/A Were field duplicate pairs identified in this SDG?

Y N N/A Were target compounds detected in the field duplicate pairs?

Compound	Concentration ( <u>ug/l</u> )		%RPD Limit (≤ <u>50</u> %)	Qualification (Parent only)
	1	2		
Diesel (C10-C24)	2400	2700	12	/
<del>Dil (C24-C40)</del> F1				

Compound	Concentration ( )		%RPD Limit (≤ _____%)	Qualification (Parent only)

Compound	Concentration ( )		%RPD Limit (≤ _____%)	Qualification (Parent only)



LDC #: 444/5138

## VALIDATION FINDINGS WORKSHEET

### Continuing Calibration Results Verification

Page: 6 of 7Reviewer: FT2nd Reviewer: [Signature]METHOD: GC ✓ HPLC \_\_\_\_\_

The percent difference (%D) of the initial calibration average Calibration Factors (CF) and the continuing calibration CF were recalculated for the compounds identified below using the following calculation:

$$\% \text{ Difference} = 100 * (\text{ave. CF} - \text{CF}) / \text{ave. CF}$$

Where: ave. CF = initial calibration average CF

CF = continuing calibration CF

A = Area of compound

C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(ICAL)/ CCV Conc.	Reported	Recalculated	Reported	Recalculated
					CF/ Conc. CCV	CF/ Conc. CCV	%D	%D
1	CCV 124022	1/25/19	Diesel (c10-c24)	1187890	1105330	1105330	7.0	7.0
2	CCV 201002	2/1/19	↓	↓	1159300	1159300	2.4	2.4
3								
4								

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 44415B8

**VALIDATION FINDINGS WORKSHEET**  
**Surrogate Results Verification**

Page: 1 of 1

Reviewer: FT

2nd reviewer: K

METHOD: GC HPLC

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS \* 100

Where: SF = Surrogate Found  
SS = Surrogate Spiked

Sample ID: 1

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
octacosane	-	75.0	77.488	103	103	0
o-Terphenyl	-	↓	75.335	100	100	0

Sample ID: \_\_\_\_\_

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

	Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound
A	Chlorobenzene (CBZ)	G	Octacosane	M	Benzo(e)Pyrene	S	1-Chloro-3-Nitrobenzene	Y	Tetrachloro-m- xylene
B	4-Bromofluorobenzene (BFB)	H	Ortho-Terphenyl	N	Terphenyl-D14	T	3,4-Dinitrotoluene	Z	2-Bromonaphthalene
C	a,a,a-Trifluorotoluene	I	Fluorobenzene (FBZ)	O	Decachlorobiphenyl (DCB)	U	Triphenyltin	AA	Chloro-octadecane
D	Bromochlorobenzene	J	n-Triacontane	P	1-methylnaphthalene	V	Tri-n-propyltin	BB	2,4-Dichlorophenylacetic acid
E	1,4-Dichlorobutane	K	Hexacosane	Q	Dichlorophenyl Acetic Acid (DCAA)	W	Tributyl Phosphate	CC	2,5-Dibromotoluene
F	1,4-Difluorobenzene (DFB)	L	Bromobenzene	R	4-Nitrophenol	X	Triphenyl Phosphate		

LDC #: 444/5B8

**VALIDATION FINDINGS WORKSHEET**

**Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification**

Page: 1 of 1

Reviewer: FT

2nd Reviewer: [Signature]

METHOD: GC HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

$\% \text{Recovery} = 100 * (\text{SSC}/\text{SA})$

$\text{RPD} = ((\text{SSCLCS} - \text{SSCLCSD}) * 2) / (\text{SSCLCS} + \text{SSCLCSD}) * 100$

Where SSC = Spiked sample concentration

LCS = Laboratory Control Sample

SA = Spike added

LCSD = Laboratory Control Sample duplicate

LCS/LCSD samples: 190124A vs 1D

Compound	Spike Added (ug/L)		Spike Sample Concentration (ug/L)		LCS		LCSD		LCS/LCSD	
	LCS	LCSD	LCS	LCSD	Percent Recovery		Percent Recovery		RPD	
					Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)										
Diesel (8015)	1250	1250	1330	1310	106	106	105	105	1.5	1.5
Benzene (8021B)										
Methane (RSK-175)										
2,4-D (8151)										
Dinoseb (8151)										
Naphthalene (8310)										
Anthracene (8310)										
HMX (8330)										
2,4,6-Trinitrotoluene (8330)										
Phorate (8141A)										
Malathion (8141A)										
Formaldehyde (8315A)										

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.





## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** February 28, 2019

**Parameters:** Methane

**Validation Level:** Level C & D

**Laboratory:** APPL, Inc.

**Sample Delivery Group (SDG):** 87932

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
ERH737	AZ85519	Water	01/21/19
ERH738**	AZ85520**	Water	01/21/19
ERH738DL**	AZ85520DL**	Water	01/21/19
ERH742	AZ85522	Water	01/21/19
ERH743	AZ85523	Water	01/21/19
ERH750	AZ85524	Water	01/21/19
ERH751	AZ85525	Water	01/21/19
ERH752	AZ85526	Water	01/22/19
ERH753	AZ85527	Water	01/22/19

\*\*Indicates sample underwent Level D validation

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Methane by Method RSK-175

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level D data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## Qualification Code Reference

- H Holding times were exceeded.
- S Surrogate recovery was outside QC limits.
- C Calibration %RSD,  $r$ ,  $r^2$  or %D were noncompliant.
- R Calibration RRF was  $<0.05$ .
- B Presumed contamination from preparation (method blank).
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD was high.
- I Internal standard performance was unsatisfactory.
- M Instrument Performance Check (BFB or DFTPP) was noncompliant.
- T Presumed contamination from trip blank.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Instrument performance for pesticides was poor.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

A curve fit, based on the initial calibration, was established for quantitation. The coefficient of determination ( $r^2$ ) was greater than or equal to 0.990.

Retention time windows were established as required by the method for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

## **III. Continuing Calibration**

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 20.0%.

Retention times of all compounds in the calibration standards were within the established retention time windows for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

## **IV. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **V. Field Blanks**

Samples ERH737, ERH742, ERH750, and ERH752 were identified as trip blanks. No contaminants were found.

## **VI. Matrix Spike/Matrix Spike Duplicates**

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

## VII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## VIII. Field Duplicates

No field duplicates were identified in this SDG.

## IX. Compound Quantitation

All compound quantitations met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

## X. Target Compound Identification

All target compound identifications met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

## XI. Overall Assessment of Data

The analysis was conducted within all specifications of the method.

In the case where more than one result was reported for an individual sample, the least technically acceptable results were deemed unusable as follows:

Sample	Compound	Reason	Flag	A or P
ERH738**	Methane	Results exceeded calibration range.	R	A

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Based upon the data validation all other results are considered valid and usable for all purposes.

**Red Hill Bulk Storage Facility, CTO 18F0126  
Methane - Data Qualification Summary - SDG 87932**

Sample	Compound	Flag	A or P	Reason (Code)
ERH738**	Methane	R	A	Overall assessment of data (D)

**Red Hill Bulk Storage Facility, CTO 18F0126  
Methane - Laboratory Blank Data Qualification Summary - SDG 87932**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Methane - Field Blank Data Qualification Summary - SDG 87932**

No Sample Data Qualified in this SDG

LDC #: 44415B51  
 SDG #: 87932  
 Laboratory: APPL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**

Level C/D

Date: 2/28/19  
 Page: 1 of 1  
 Reviewer: F7  
 2nd Reviewer: R

**METHOD:** GC Methane (Method RSK-175)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A Δ	
II.	Initial calibration/ICV	A Δ	12 ICV ≤ 20
III.	Continuing calibration	Δ	CCV ≤ 20
IV.	Laboratory Blanks	A	
V.	Field blanks	NP	TB = 1, 4, 6, 8
VI.	Matrix spike/Matrix spike duplicates	N	
VII.	Laboratory control samples	Δ	LCS 10
VIII.	Field duplicates	N	
IX.	Compound quantitation RL/LOQ/LODs	A	Not reviewed for Level C validation.
X.	Target compound identification	Δ	Not reviewed for Level C validation.
XI.	Overall assessment of data	Δ	

Note: A = Acceptable ND = No compounds detected D = Duplicate SB=Source blank  
 N = Not provided/applicable R = Rinsate TB = Trip blank OTHER:  
 SW = See worksheet FB = Field blank EB = Equipment blank

\*\* Indicates sample underwent Level D validation

	Client ID	Lab ID	Matrix	Date
1	ERH737 TB	AZ85519	Water	01/21/19
2	ERH738 * *	AZ85520 **	Water	01/21/19
3	ERH738DL * *	AZ85520DL **	Water	01/21/19
4	ERH742 TB	AZ85522	Water	01/21/19
5	ERH743	AZ85523	Water	01/21/19
6	ERH750 TB	AZ85524	Water	01/21/19
7	ERH751	AZ85525	Water	01/21/19
8	ERH752 TB	AZ85526	Water	01/22/19
9	ERH753	AZ85527	Water	01/22/19
10				
11				
12				
13				

Notes:

190128A - BIK					



Method:  GC  HPLC

Validation Area	Yes	No	NA	Findings/Comments
<b>I. Technical holding times</b>				
Were all technical holding times met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was cooler temperature criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>IIa. Initial calibration</b>				
Did the laboratory perform a 5 point calibration prior to sample analysis?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent relative standard deviations (%RSD) < 20%?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of $\geq 0.990$ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were the RT windows properly established?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>IIb. Initial calibration verification</b>				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent differences (%D) < 20%?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>III. Continuing calibration</b>				
Was a continuing calibration analyzed daily?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent differences (%D) < 20%?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all the retention times within the acceptance windows?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>IV. Laboratory Blanks</b>				
Was a laboratory blank associated with every sample in this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was a laboratory blank analyzed for each matrix and concentration?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was there contamination in the laboratory blanks?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>V. Field Blanks</b>				
Were field blanks identified in this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were target compounds detected in the field blanks?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>VI. Surrogate spikes</b>				
Were all surrogate percent recovery (%R) within the QC limits?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If the percent recovery (%R) of one or more surrogates was outside QC limits, was a reanalysis performed to confirm %R?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>VII. Matrix spike/Matrix spike duplicates</b>				
Were matrix spike (MS) and matrix spike duplicate (MSD) analyzed in this SDG?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>VIII. Laboratory control samples</b>				
Was an LCS analyzed per analytical or extraction batch?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

LDC #: 4415BS1

**VALIDATION FINDINGS CHECKLIST**

Page: 2 of 2  
 Reviewer: FT  
 2nd Reviewer: K

Validation Area	Yes	No	NA	Findings/Comments
<b>IX. Field duplicates</b>				
Were field duplicate pairs identified in this SDG?		/		
Were target compounds detected in the field duplicates?			/	
<b>X. Compound quantitation</b>				
Did the laboratory LOQs/RLs meet the QAPP LOQs/RLs?	/			
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	/			
<b>XI. Target compound identification</b>				
Were the retention times of reported detects within the RT windows?	/			
<b>XIII. Overall assessment of data</b>				
Overall assessment of data was found to be acceptable.	/			

LDC #: 44415 BS1

**VALIDATION FINDINGS WORKSHEET**  
**Compound Quantitation and Reported CRQLs**

Page: 1 of 1  
Reviewer: FT  
2nd Reviewer: [Signature]

METHOD:  GC  HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

**Level IV/D Only**

- Y  N  N/A Were CRQLs adjusted for sample dilutions, dry weight factors, etc.?
- Y  N  N/A Did the reported results for detected target compounds agree within 10.0% of the recalculated results?
- Y  N  N/A Did the percent difference of detected compounds between two columns./detectors  $\leq$ 40%?  
If no, please see findings bellow.

(V)

#	Sample ID	Compound name	Findings	Qualifications
	<del>#1</del> # 2	Methane	x'd cal Range	Idet / A

Comments: See sample calculation verification worksheet for recalculations

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LDC #: 444151351

**VALIDATION FINDINGS WORKSHEET**  
**Overall Assessment of Data**

Page: 1 of 1  
Reviewer: FT  
2nd Reviewer: [Signature]

METHOD:  GC  HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

All available information pertaining to the data were reviewed using professional judgement to compliment the determination of the overall quality of the data.

Y  N  N/A Was the overall quality and usability of the data acceptable?

(D)

#	Associated samples	Compounds	Findings	Qualifications
	# 2	Methane	x'd cal Range	R/A

Comments: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

LDC#: 44415 B51  
 SDG#: pu cover

**VALIDATION FINDINGS WORKSHEET**  
**Initial Calibration Calculation Verification**

Page: 1 of 1  
 Reviewer: FJ  
 2nd Reviewer: EC

Method: RSK 175

Calibration Date	System	Compound	Standard	(Y) Response	(X) Concentration
1/20/2019	Ints 7890	Methane	1	32996	2.080
			2	31584	4.160
			3	41402	8.340
			4	156731	20.850
			5	505025	83.400
			6	1190356	208.500
			7	3646926	834.000

**Regression Output**

**Reported**

Constant	80065.011707	80100.00
Std Err of Y Est		
R Squared	0.994074	0.994000
Degrees of Freedom		
X Coefficient(s)	4343.782489	4340.00
Std Err of Coef.		
Correlation Coefficient	0.997033	
Coefficient of Determination (r <sup>2</sup> )	0.994074	0.994000

LDC #: 44415 B51

**VALIDATION FINDINGS WORKSHEET**  
**Continuing Calibration Results Verification**

Page: 1 of 1  
Reviewer: FT  
2nd Reviewer: [Signature]

METHOD: GC        HPLC       

The percent difference (%D) of the initial calibration average Calibration Factors (CF) and the continuing calibration CF were recalculated for the compounds identified below using the following calculation:

% Difference =  $100 * (\text{ave. CF} - \text{CF}) / \text{ave. CF}$       Where: ave. CF = initial calibration average CF  
CF = continuing calibration CF  
A = Area of compound  
C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(ICAL)/ CCV Conc.	Reported	Recalculated	Reported	Recalculated
					CF/ Conc. CCV	CF/ Conc. CCV	%D	%D
1	<i>CCV 19012800</i>	<i>1/28/19</i>	<i>Methane</i>	<i>83.400</i>	<i>97.452</i>	<i>97.452</i>	<i>17</i>	<i>17</i>
2								
3								
4								

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 44415BS/

**VALIDATION FINDINGS WORKSHEET**

Page: 6 of 7

**Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification**

Reviewer: FT

2nd Reviewer: [Signature]

METHOD: GC HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

$\% \text{Recovery} = 100 * (\text{SSC}/\text{SA})$

$\text{RPD} = ((\text{SSCLCS} - \text{SSCLCSD}) * 2) / (\text{SSCLCS} + \text{SSCLCSD}) * 100$

Where SSC = Spiked sample concentration  
LCS = Laboratory Control Sample

SA = Spike added  
LCSD = Laboratory Control Sample duplicate

LCS/LCSD samples: 190128A vs 10

Compound	Spike Added (ng/L)		Spike Sample Concentration (ng/L)		LCS		LCSD		LCS/LCSD	
	LCS	LCSD	LCS	LCSD	Percent Recovery		Percent Recovery		RPD	
					Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)										
Diesel (8015)										
Benzene (8021B)										
Methane (RSK-175)	83.4	83.4	97.5	98.5	117	117	118	118	1.0	1.0
2,4-D (8151)										
Dinoseb (8151)										
Naphthalene (8310)										
Anthracene (8310)										
HMX (8330)										
2,4,6-Trinitrotoluene (8330)										
Phorate (8141A)										
Malathion (8141A)										
Formaldehyde (8315A)										

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.





**Red Hill Bulk Storage Facility, CTO 18F0126 - SDG 87932  
LDC 44415**

AECOM

EPA_NO	LAB_IDDF	ANALYTE	COLL_DATE	ANAL_DATE	QCLev	RESULT	UNITS	LAB_Q	LOQ	LOD	REV	Q_C
<b>METHOD: 2320B</b>												
ERH738	AZ85520	1 ALKALINITY, TOTAL (AS CaCO3)	1/21/2019 10:45:00 AM	1/30/2019 1:55:00 PM	C	190	MG_L		2.0	1.70		
ERH738	AZ85520	1 BICARBONATE	1/21/2019 10:45:00 AM	1/30/2019 1:55:00 PM	C	190	MG_L		2.0	1.70		
ERH738	AZ85520	1 CARBONATE (AS CO3)	1/21/2019 10:45:00 AM	1/30/2019 1:55:00 PM	C	1.70	MG_L	U	2.0	1.70		U
ERH743	AZ85523	1 ALKALINITY, TOTAL (AS CaCO3)	1/21/2019 1:20:00 PM	1/30/2019 2:04:00 PM	D	75.0	MG_L		2.0	1.70		
ERH743	AZ85523	1 BICARBONATE	1/21/2019 1:20:00 PM	1/30/2019 2:04:00 PM	D	75.0	MG_L		2.0	1.70		
ERH743	AZ85523	1 CARBONATE (AS CO3)	1/21/2019 1:20:00 PM	1/30/2019 2:04:00 PM	D	1.70	MG_L	U	2.0	1.70		U
ERH751	AZ85525	1 ALKALINITY, TOTAL (AS CaCO3)	1/21/2019 3:45:00 PM	1/30/2019 2:10:00 PM	C	91.2	MG_L		2.0	1.70		
ERH751	AZ85525	1 BICARBONATE	1/21/2019 3:45:00 PM	1/30/2019 2:10:00 PM	C	91.2	MG_L		2.0	1.70		
ERH751	AZ85525	1 CARBONATE (AS CO3)	1/21/2019 3:45:00 PM	1/30/2019 2:10:00 PM	C	1.70	MG_L	U	2.0	1.70		U
ERH753	AZ85527	1 ALKALINITY, TOTAL (AS CaCO3)	1/22/2019 9:45:00 AM	1/30/2019 2:15:00 PM	C	62.9	MG_L		2.0	1.70		
ERH753	AZ85527	1 BICARBONATE	1/22/2019 9:45:00 AM	1/30/2019 2:15:00 PM	C	62.9	MG_L		2.0	1.70		
ERH753	AZ85527	1 CARBONATE (AS CO3)	1/22/2019 9:45:00 AM	1/30/2019 2:15:00 PM	C	1.70	MG_L	U	2.0	1.70		U
<b>METHOD: 300.0</b>												
ERH738	AZ85520	1 CHLORIDE (AS CL)	1/21/2019 10:45:00 AM	1/23/2019 5:35:00 PM	C	42.0	MG_L		1.0	0.20		
ERH738	AZ85520	1 NITROGEN, NITRATE (AS N)	1/21/2019 10:45:00 AM	1/23/2019 5:35:00 PM	C	0.18	MG_L	U	0.5	0.18	UJ	h
ERH738	AZ85520	1 SULFATE (AS SO4)	1/21/2019 10:45:00 AM	1/23/2019 5:35:00 PM	C		MG_L	J	1.0	0.38	U	b
ERH743	AZ85523	5 CHLORIDE (AS CL)	1/21/2019 1:20:00 PM	1/28/2019 2:41:00 PM	D	68.7	MG_L	D	5.0	1.00	D	
ERH743	AZ85523	1 NITROGEN, NITRATE (AS N)	1/21/2019 1:20:00 PM	1/23/2019 5:43:00 PM	D	2.3	MG_L		0.5	0.18	J	h
ERH743	AZ85523	1 SULFATE (AS SO4)	1/21/2019 1:20:00 PM	1/23/2019 5:43:00 PM	D	10.6	MG_L		1.0	0.20		
ERH751	AZ85525	5 CHLORIDE (AS CL)	1/21/2019 3:45:00 PM	1/28/2019 2:48:00 PM	C	143	MG_L	D	5.0	1.00	D	
ERH751	AZ85525	1 NITROGEN, NITRATE (AS N)	1/21/2019 3:45:00 PM	1/23/2019 5:50:00 PM	C	4.7	MG_L		0.5	0.18	J	h
ERH751	AZ85525	5 SULFATE (AS SO4)	1/21/2019 3:45:00 PM	1/28/2019 2:48:00 PM	C	45.7	MG_L	D	5.0	1.00	D	
ERH753	AZ85527	5 CHLORIDE (AS CL)	1/22/2019 9:45:00 AM	1/28/2019 2:55:00 PM	C	45.4	MG_L	D	5.0	1.00	D	
ERH753	AZ85527	1 NITROGEN, NITRATE (AS N)	1/22/2019 9:45:00 AM	1/23/2019 5:28:00 PM	C	2.0	MG_L		0.5	0.18		
ERH753	AZ85527	1 SULFATE (AS SO4)	1/22/2019 9:45:00 AM	1/23/2019 5:28:00 PM	C	9.5	MG_L		1.0	0.20		
<b>METHOD: 3500-FE-B</b>												

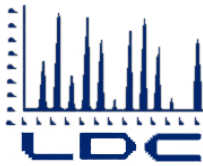
EPA_NO	LAB_IDDF	ANALYTE	COLL_DATE	ANAL_DATE	QCLev	RESULT	UNITS	LAB_Q	LOQ	LOD	REV	Q_C
<b>METHOD: 3500-FE-B</b>												
ERH738	AZ85520	1 Iron, Ion (Fe2+)	1/21/2019 10:45:00 AM	1/23/2019 4:48:00 PM	C	2.2	MG_L		1.0	0.32		
ERH743	AZ85523	1 Iron, Ion (Fe2+)	1/21/2019 1:20:00 PM	1/23/2019 4:47:00 PM	D	0.32	MG_L	U	1.0	0.32		U
ERH751	AZ85525	1 Iron, Ion (Fe2+)	1/21/2019 3:45:00 PM	1/23/2019 4:50:00 PM	C	0.32	MG_L	U	1.0	0.32		U
ERH753	AZ85527	1 Iron, Ion (Fe2+)	1/22/2019 9:45:00 AM	1/23/2019 4:49:00 PM	C	0.32	MG_L	U	1.0	0.32		U
<b>METHOD: 353.2</b>												
ERH738	AZ85520	1 NITROGEN, NITRATE-NITRITE	1/21/2019 10:45:00 AM	1/28/2019 4:55:00 PM	C	0.100	MG_L	U	0.10	0.100		U
ERH743	AZ85523	1 NITROGEN, NITRATE-NITRITE	1/21/2019 1:20:00 PM	1/28/2019 4:57:00 PM	D	0.48	MG_L		0.10	0.100		
ERH751	AZ85525	1 NITROGEN, NITRATE-NITRITE	1/21/2019 3:45:00 PM	1/28/2019 5:04:00 PM	C	1.1	MG_L		0.10	0.100		
ERH753	AZ85527	1 NITROGEN, NITRATE-NITRITE	1/22/2019 9:45:00 AM	1/28/2019 5:06:00 PM	C	0.38	MG_L		0.10	0.100		
<b>METHOD: 8015B_E</b>												
ERH738	AZ85520	1 C10-C24 DIESEL RANGE ORG SILICA GEL CLEAN UP	1/21/2019 10:45:00 AM	2/1/2019 1:28:00 PM	D	420	UG_L	T6D	40.0	25.00		
ERH738	AZ85520	1 C10-C24 DIESEL RANGE ORGANICS	1/21/2019 10:45:00 AM	1/25/2019 6:43:00 PM	D	2400	UG_L	T6	40.0	25.00		
ERH738	AZ85520	1 C24-C40 OIL RANGE ORGANICS SILICA GEL CLEAN UP	1/21/2019 10:45:00 AM	2/1/2019 1:28:00 PM	D	40.00	UG_L	U	40.0	40.00		U
ERH738	AZ85520	1 C24-C40 TOTAL PETROLEUM HYDROCARBONS, OIL RANGE	1/21/2019 10:45:00 AM	1/25/2019 6:43:00 PM	D	40.00	UG_L	U	40.0	40.00		U
ERH739	AZ85521	1 C10-C24 DIESEL RANGE ORG SILICA GEL CLEAN UP	1/21/2019 10:45:00 AM	2/1/2019 11:48:00 AM	C	430	UG_L	T6D	40.0	25.00		
ERH739	AZ85521	1 C10-C24 DIESEL RANGE ORGANICS	1/21/2019 10:45:00 AM	1/29/2019 7:20:00 PM	C	2700	UG_L	T6	40.0	25.00		
ERH739	AZ85521	1 C24-C40 OIL RANGE ORGANICS SILICA GEL CLEAN UP	1/21/2019 10:45:00 AM	2/1/2019 11:48:00 AM	C	40.00	UG_L	U	40.0	40.00		U
ERH739	AZ85521	1 C24-C40 TOTAL PETROLEUM HYDROCARBONS, OIL RANGE	1/21/2019 10:45:00 AM	1/29/2019 7:20:00 PM	C	40.00	UG_L	U	40.0	40.00		U
ERH743	AZ85523	1 C10-C24 DIESEL RANGE ORGANICS	1/21/2019 1:20:00 PM	1/25/2019 7:03:00 PM	C	25.00	UG_L	U	40.0	25.00		U
ERH743	AZ85523	1 C24-C40 TOTAL PETROLEUM HYDROCARBONS, OIL RANGE	1/21/2019 1:20:00 PM	1/25/2019 7:03:00 PM	C	40.00	UG_L	U	40.0	40.00		U
ERH751	AZ85525	1 C10-C24 DIESEL RANGE ORGANICS	1/21/2019 3:45:00 PM	1/25/2019 7:23:00 PM	C	25.00	UG_L	U	40.0	25.00		U
ERH751	AZ85525	1 C24-C40 TOTAL PETROLEUM HYDROCARBONS, OIL RANGE	1/21/2019 3:45:00 PM	1/25/2019 7:23:00 PM	C	40.00	UG_L	U	40.0	40.00		U
ERH753	AZ85527	1 C10-C24 DIESEL RANGE ORGANICS	1/22/2019 9:45:00 AM	1/25/2019 7:42:00 PM	C	25.00	UG_L	U	40.0	25.00		U
ERH753	AZ85527	1 C24-C40 TOTAL PETROLEUM HYDROCARBONS, OIL RANGE	1/22/2019 9:45:00 AM	1/25/2019 7:42:00 PM	C	40.00	UG_L	U	40.0	40.00		U
<b>METHOD: 8260B</b>												
ERH737	AZ85519	1 BENZENE	1/21/2019 10:25:00 AM	1/29/2019 1:32:00 AM	C	0.30	UG_L	U	1.0	0.30		U
ERH737	AZ85519	1 ETHYLBENZENE	1/21/2019 10:25:00 AM	1/29/2019 1:32:00 AM	C	0.50	UG_L	U	1.0	0.50		U
ERH737	AZ85519	1 PETROLEUM HYDROCARBONS C6-C10	1/21/2019 10:25:00 AM	1/29/2019 1:33:00 AM	C	18.0	UG_L	U	20	18.0		U

EPA_NO	LAB_IDDF	ANALYTE	COLL_DATE	ANAL_DATE	QCLev	RESULT	UNITS	LAB_Q	LOQ	LOD	REV	Q_C
<b>METHOD: 8260B</b>												
ERH737	AZ85519	1 TOLUENE	1/21/2019 10:25:00 AM	1/29/2019 1:32:00 AM	C	0.30	UG_L	U	1.0	0.30	U	
ERH737	AZ85519	1 Xylenes	1/21/2019 10:25:00 AM	1/29/2019 1:32:00 AM	C	0.30	UG_L	U	2.0	0.30	U	
ERH738	AZ85520	1 BENZENE	1/21/2019 10:45:00 AM	1/29/2019 2:58:00 AM	C	0.30	UG_L	U	1.0	0.30	UJ	s
ERH738	AZ85520	1 ETHYLBENZENE	1/21/2019 10:45:00 AM	1/29/2019 2:58:00 AM	C	0.50	UG_L	U	1.0	0.50	UJ	s
ERH738	AZ85520	1 PETROLEUM HYDROCARBONS C6-C10	1/21/2019 10:45:00 AM	1/29/2019 2:59:00 AM	D	48	UG_L	G1D	20	18.0		
ERH738	AZ85520	1 TOLUENE	1/21/2019 10:45:00 AM	1/29/2019 2:58:00 AM	C	0.30	UG_L	U	1.0	0.30	UJ	s
ERH738	AZ85520	1 Xylenes	1/21/2019 10:45:00 AM	1/29/2019 2:58:00 AM	C	0.30	UG_L	U	2.0	0.30	UJ	s
ERH739	AZ85521	1 BENZENE	1/21/2019 10:45:00 AM	1/29/2019 3:27:00 AM	C	0.30	UG_L	U	1.0	0.30	UJ	s
ERH739	AZ85521	1 ETHYLBENZENE	1/21/2019 10:45:00 AM	1/29/2019 3:27:00 AM	C	0.50	UG_L	U	1.0	0.50	UJ	s
ERH739	AZ85521	1 PETROLEUM HYDROCARBONS C6-C10	1/21/2019 10:45:00 AM	1/29/2019 3:28:00 AM	C	22	UG_L	G1D	20	18.0		
ERH739	AZ85521	1 TOLUENE	1/21/2019 10:45:00 AM	1/29/2019 3:27:00 AM	C	0.30	UG_L	U	1.0	0.30	UJ	s
ERH739	AZ85521	1 Xylenes	1/21/2019 10:45:00 AM	1/29/2019 3:27:00 AM	C	0.30	UG_L	U	2.0	0.30	UJ	s
ERH742	AZ85522	1 BENZENE	1/21/2019 11:35:00 AM	1/29/2019 2:01:00 AM	C	0.30	UG_L	U	1.0	0.30	U	
ERH742	AZ85522	1 ETHYLBENZENE	1/21/2019 11:35:00 AM	1/29/2019 2:01:00 AM	C	0.50	UG_L	U	1.0	0.50	U	
ERH742	AZ85522	1 PETROLEUM HYDROCARBONS C6-C10	1/21/2019 11:35:00 AM	1/29/2019 2:02:00 AM	C	18.0	UG_L	U	20	18.0	U	
ERH742	AZ85522	1 TOLUENE	1/21/2019 11:35:00 AM	1/29/2019 2:01:00 AM	C	0.30	UG_L	U	1.0	0.30	U	
ERH742	AZ85522	1 Xylenes	1/21/2019 11:35:00 AM	1/29/2019 2:01:00 AM	C	0.30	UG_L	U	2.0	0.30	U	
ERH743	AZ85523	1 BENZENE	1/21/2019 1:20:00 PM	1/29/2019 3:55:00 AM	D	0.30	UG_L	U	1.0	0.30	U	
ERH743	AZ85523	1 ETHYLBENZENE	1/21/2019 1:20:00 PM	1/29/2019 3:55:00 AM	D	0.50	UG_L	U	1.0	0.50	U	
ERH743	AZ85523	1 PETROLEUM HYDROCARBONS C6-C10	1/21/2019 1:20:00 PM	1/29/2019 3:56:00 AM	C	18.0	UG_L	U	20	18.0	U	
ERH743	AZ85523	1 TOLUENE	1/21/2019 1:20:00 PM	1/29/2019 3:55:00 AM	D	0.30	UG_L	U	1.0	0.30	U	
ERH743	AZ85523	1 Xylenes	1/21/2019 1:20:00 PM	1/29/2019 3:55:00 AM	D	0.18	UG_L	J	2.0	0.30	J	
ERH750	AZ85524	1 BENZENE	1/21/2019 3:30:00 PM	1/29/2019 4:25:00 AM	C	0.30	UG_L	U	1.0	0.30	U	
ERH750	AZ85524	1 ETHYLBENZENE	1/21/2019 3:30:00 PM	1/29/2019 4:25:00 AM	C	0.50	UG_L	U	1.0	0.50	U	
ERH750	AZ85524	1 PETROLEUM HYDROCARBONS C6-C10	1/21/2019 3:30:00 PM	1/29/2019 4:24:00 AM	C	18.0	UG_L	U	20	18.0	U	
ERH750	AZ85524	1 TOLUENE	1/21/2019 3:30:00 PM	1/29/2019 4:25:00 AM	C	0.30	UG_L	U	1.0	0.30	U	
ERH750	AZ85524	1 Xylenes	1/21/2019 3:30:00 PM	1/29/2019 4:25:00 AM	C	0.30	UG_L	U	2.0	0.30	U	

EPA_NO	LAB_IDDF	ANALYTE	COLL_DATE	ANAL_DATE	QCLev	RESULT	UNITS	LAB_Q	LOQ	LOD	REV	Q_C
<b>METHOD: 8260B</b>												
ERH751	AZ85525	1 BENZENE	1/21/2019 3:45:00 PM	1/29/2019 4:52:00 AM	C	0.30	UG_L	U	1.0	0.30	U	
ERH751	AZ85525	1 ETHYLBENZENE	1/21/2019 3:45:00 PM	1/29/2019 4:52:00 AM	C	0.50	UG_L	U	1.0	0.50	U	
ERH751	AZ85525	1 PETROLEUM HYDROCARBONS C6-C10	1/21/2019 3:45:00 PM	1/29/2019 4:53:00 AM	C	18.0	UG_L	U	20	18.0	U	
ERH751	AZ85525	1 TOLUENE	1/21/2019 3:45:00 PM	1/29/2019 4:52:00 AM	C	0.30	UG_L	U	1.0	0.30	U	
ERH751	AZ85525	1 Xylenes	1/21/2019 3:45:00 PM	1/29/2019 4:52:00 AM	C	0.30	UG_L	U	2.0	0.30	U	
ERH752	AZ85526	1 BENZENE	1/22/2019 7:40:00 AM	1/29/2019 2:30:00 AM	C	0.30	UG_L	U	1.0	0.30	U	
ERH752	AZ85526	1 ETHYLBENZENE	1/22/2019 7:40:00 AM	1/29/2019 2:30:00 AM	C	0.50	UG_L	U	1.0	0.50	U	
ERH752	AZ85526	1 PETROLEUM HYDROCARBONS C6-C10	1/22/2019 7:40:00 AM	1/29/2019 2:29:00 AM	C	18.0	UG_L	U	20	18.0	U	
ERH752	AZ85526	1 TOLUENE	1/22/2019 7:40:00 AM	1/29/2019 2:30:00 AM	C	0.30	UG_L	U	1.0	0.30	U	
ERH752	AZ85526	1 Xylenes	1/22/2019 7:40:00 AM	1/29/2019 2:30:00 AM	C	0.30	UG_L	U	2.0	0.30	U	
ERH753	AZ85527	1 BENZENE	1/22/2019 9:45:00 AM	1/29/2019 5:21:00 AM	C	0.30	UG_L	U	1.0	0.30	UJ	s
ERH753	AZ85527	1 ETHYLBENZENE	1/22/2019 9:45:00 AM	1/29/2019 5:21:00 AM	C	0.50	UG_L	U	1.0	0.50	UJ	s
ERH753	AZ85527	1 PETROLEUM HYDROCARBONS C6-C10	1/22/2019 9:45:00 AM	1/29/2019 5:22:00 AM	C	18.0	UG_L	U	20	18.0	U	
ERH753	AZ85527	1 TOLUENE	1/22/2019 9:45:00 AM	1/29/2019 5:21:00 AM	C	0.30	UG_L	U	1.0	0.30	UJ	s
ERH753	AZ85527	1 Xylenes	1/22/2019 9:45:00 AM	1/29/2019 5:21:00 AM	C	0.30	UG_L	U	2.0	0.30	UJ	s
<b>METHOD: 8270D</b>												
ERH738	AZ85520	1 2-(2-METHOXY ETHOXY)-ETHANOL	1/21/2019 10:45:00 AM	1/29/2019 1:31:00 PM	D	80.0	UG_L	U	100	80.0	UJ	1
ERH738	AZ85520	1 DIACETONE ALCOHOL	1/21/2019 10:45:00 AM	1/30/2019 4:20:00 PM	D	43	UG_L	T	0	0		
ERH738	AZ85520	1 PHENOL	1/21/2019 10:45:00 AM	1/30/2019 4:20:00 PM	D	4.00	UG_L	U	5.0	4.00	U	
ERH739	AZ85521	1 2-(2-METHOXY ETHOXY)-ETHANOL	1/21/2019 10:45:00 AM	1/29/2019 1:54:00 PM	C	80.0	UG_L	U	100	80.0	UJ	1
ERH739	AZ85521	1 PHENOL	1/21/2019 10:45:00 AM	1/30/2019 4:48:00 PM	C	4.00	UG_L	U	5.0	4.00	U	
ERH743	AZ85523	1 2-(2-METHOXY ETHOXY)-ETHANOL	1/21/2019 1:20:00 PM	1/29/2019 2:18:00 PM	C	80.0	UG_L	U	100	80.0	UJ	1
ERH743	AZ85523	1 DIACETONE ALCOHOL	1/21/2019 1:20:00 PM	1/30/2019 5:16:00 PM	C	12	UG_L	T	0	0		
ERH743	AZ85523	1 MESITYL OXIDE	1/21/2019 1:20:00 PM	1/30/2019 5:16:00 PM	C	84	UG_L	T	0	0		
ERH743	AZ85523	1 OCTAMETHYLCYCLOTETRASILOXANE	1/21/2019 1:20:00 PM	1/30/2019 5:16:00 PM	C	12	UG_L	T	0	0		
ERH743	AZ85523	1 PHENOL	1/21/2019 1:20:00 PM	1/30/2019 5:16:00 PM	C	4.00	UG_L	U	5.0	4.00	U	
ERH751	AZ85525	1 2-(2-METHOXY ETHOXY)-ETHANOL	1/21/2019 3:45:00 PM	1/29/2019 2:41:00 PM	C	80.0	UG_L	U	100	80.0	UJ	1

EPA_NO	LAB_IDDF	ANALYTE	COLL_DATE	ANAL_DATE	QCLev	RESULT	UNITS	LAB_Q	LOQ	LOD	REV	Q_C
<b>METHOD: 8270D</b>												
ERH751	AZ85525	1 4H-PYRAN-4-ONE, TETRAHYDRO-	1/21/2019 3:45:00 PM	1/30/2019 5:44:00 PM	C	32	UG_L	T	0	0		
ERH751	AZ85525	1 OCTAMETHYLCYCLOTETRASIOXANE	1/21/2019 3:45:00 PM	1/30/2019 5:44:00 PM	C	22	UG_L	T	0	0		
ERH751	AZ85525	1 PHENOL	1/21/2019 3:45:00 PM	1/30/2019 5:44:00 PM	C	4.00	UG_L	U	5.0	4.00	U	
ERH753	AZ85527	1 2-(2-METHOXY ETHOXY)-ETHANOL	1/22/2019 9:45:00 AM	1/30/2019 9:17:00 AM	C	80.0	UG_L	U	100	80.0	UJ	1
ERH753	AZ85527	1 MESITYL OXIDE	1/22/2019 9:45:00 AM	1/30/2019 6:11:00 PM	C	68	UG_L	T	0	0		
ERH753	AZ85527	1 OCTAMETHYLCYCLOTETRASIOXANE	1/22/2019 9:45:00 AM	1/30/2019 6:11:00 PM	C	12	UG_L	T	0	0		
ERH753	AZ85527	1 PHENOL	1/22/2019 9:45:00 AM	1/30/2019 6:11:00 PM	C	4.00	UG_L	U	5.0	4.00	U	
<b>METHOD: 8270DSIM</b>												
ERH738	AZ85520	1 1-METHYLNAPHTHALENE	1/21/2019 10:45:00 AM	1/30/2019 11:56:00 AM	D	11	UG_L		0.2	0.10		
ERH738	AZ85520	1 2-METHYLNAPHTHALENE	1/21/2019 10:45:00 AM	1/30/2019 11:56:00 AM	D	8.8	UG_L		0.2	0.10		
ERH738	AZ85520	1 NAPHTHALENE	1/21/2019 10:45:00 AM	1/30/2019 11:56:00 AM	D	32	UG_L		0.2	0.10		
ERH739	AZ85521	1 1-METHYLNAPHTHALENE	1/21/2019 10:45:00 AM	1/30/2019 12:18:00 PM	C	9.6	UG_L		0.2	0.10		
ERH739	AZ85521	1 2-METHYLNAPHTHALENE	1/21/2019 10:45:00 AM	1/30/2019 12:18:00 PM	C	7.2	UG_L		0.2	0.10		
ERH739	AZ85521	1 NAPHTHALENE	1/21/2019 10:45:00 AM	1/30/2019 12:18:00 PM	C	26	UG_L		0.2	0.10		
ERH743	AZ85523	1 1-METHYLNAPHTHALENE	1/21/2019 1:20:00 PM	1/30/2019 12:41:00 PM	C	0.10	UG_L	U	0.2	0.10	U	
ERH743	AZ85523	1 2-METHYLNAPHTHALENE	1/21/2019 1:20:00 PM	1/30/2019 12:41:00 PM	C	0.10	UG_L	U	0.2	0.10	U	
ERH743	AZ85523	1 NAPHTHALENE	1/21/2019 1:20:00 PM	1/30/2019 12:41:00 PM	C	0.10	UG_L	U	0.2	0.10	U	
ERH751	AZ85525	1 1-METHYLNAPHTHALENE	1/21/2019 3:45:00 PM	1/30/2019 1:03:00 PM	C	0.10	UG_L	U	0.2	0.10	U	
ERH751	AZ85525	1 2-METHYLNAPHTHALENE	1/21/2019 3:45:00 PM	1/30/2019 1:03:00 PM	C	0.10	UG_L	U	0.2	0.10	U	
ERH751	AZ85525	1 NAPHTHALENE	1/21/2019 3:45:00 PM	1/30/2019 1:03:00 PM	C	0.10	UG_L	U	0.2	0.10	U	
ERH753	AZ85527	1 1-METHYLNAPHTHALENE	1/22/2019 9:45:00 AM	1/30/2019 1:25:00 PM	C	0.10	UG_L	U	0.2	0.10	U	
ERH753	AZ85527	1 2-METHYLNAPHTHALENE	1/22/2019 9:45:00 AM	1/30/2019 1:25:00 PM	C	0.10	UG_L	U	0.2	0.10	U	
ERH753	AZ85527	1 NAPHTHALENE	1/22/2019 9:45:00 AM	1/30/2019 1:25:00 PM	C	0.10	UG_L	U	0.2	0.10	U	
<b>METHOD: 9060A</b>												
ERH738	AZ85520	1 TOTAL ORGANIC CARBON	1/21/2019 10:45:00 AM	2/12/2019 9:27:00 PM	C	3.9	MG_L		0.93	0.350		
ERH743	AZ85523	1 TOTAL ORGANIC CARBON	1/21/2019 1:20:00 PM	2/12/2019 10:32:00 PM	D		MG_L	J	0.93	0.67	U	b
ERH751	AZ85525	1 TOTAL ORGANIC CARBON	1/21/2019 3:45:00 PM	2/12/2019 11:36:00 PM	C		MG_L	J	0.93	0.92	U	b

EPA_NO	LAB_IDDF	ANALYTE	COLL_DATE	ANAL_DATE	QCLev	RESULT	UNITS	LAB_Q	LOQ	LOD	REV	Q_C
<b>METHOD: 9060A</b>												
ERH753	AZ85527	1 TOTAL ORGANIC CARBON	1/22/2019 9:45:00 AM	2/13/2019 1:50:00 AM	C		MG_L	J	0.93	0.55	U	b
<b>METHOD: RSK175</b>												
ERH737	AZ85519	1 METHANE	1/21/2019 10:25:00 AM	1/28/2019 10:31:00 AM	C	1.00	UG_L	U	5.0	1.00	U	
ERH738	AZ85520	10 METHANE	1/21/2019 10:45:00 AM	1/28/2019 10:39:00 AM	D	5000	UG_L	D	50.0	10.00	D	
ERH738	AZ85520	1 METHANE	1/21/2019 10:45:00 AM	1/28/2019 10:33:00 AM	D	1600	UG_L	E	5.0	1.00	R	d
ERH742	AZ85522	1 METHANE	1/21/2019 11:35:00 AM	1/28/2019 10:41:00 AM	C	1.00	UG_L	U	5.0	1.00	U	
ERH743	AZ85523	1 METHANE	1/21/2019 1:20:00 PM	1/28/2019 10:44:00 AM	C	1.00	UG_L	U	5.0	1.00	U	
ERH750	AZ85524	1 METHANE	1/21/2019 3:30:00 PM	1/28/2019 10:47:00 AM	C	1.00	UG_L	U	5.0	1.00	U	
ERH751	AZ85525	1 METHANE	1/21/2019 3:45:00 PM	1/28/2019 10:49:00 AM	C	1.00	UG_L	U	5.0	1.00	U	
ERH752	AZ85526	1 METHANE	1/22/2019 7:40:00 AM	1/28/2019 10:52:00 AM	C	1.00	UG_L	U	5.0	1.00	U	
ERH753	AZ85527	1 METHANE	1/22/2019 9:45:00 AM	1/28/2019 10:54:00 AM	C	1.00	UG_L	U	5.0	1.00	U	



## LABORATORY DATA CONSULTANTS, INC.

2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

AECOM  
1001 Bishop Street Suite 1600  
Honolulu, HI 96813  
ATTN: Ms. Margie Pascua  
[Margie.Pascua@aecom.com](mailto:Margie.Pascua@aecom.com)

March 15, 2019

SUBJECT: Red Hill Bulk Storage Facility, CTO 18F0126, Data Validation

Dear Ms. Pascua,

Enclosed are the final validation reports for the fractions listed below. This SDG was received on February 25, 2019. Attachment 1 is a summary of the samples that were reviewed for each analysis.

### LDC Project #44457:

<u>SDG #</u>	<u>Fraction</u>
87956	Volatiles, Phenol & Tentatively Identified Compounds, Polynuclear Aromatic Hydrocarbons, 2-(2-Methoxyethoxy)-ethanol, Wet Chemistry, Gasoline Range Organics, Total Petroleum Hydrocarbons as Extractables, Methane

The data validation was performed under Level C & D validation guidelines. The analyses were validated using the following documents and variances, as applicable to each method:

- Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i, Revision 02; January 2017
- Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i, Revision 01, April 2017
- Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i, Revision 00, September 2017
- Sampling and Analysis Plan, Addendum 03 Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i, Revision 00; June 2018
- Project Procedures Manual, U.S. Naval Facilities Engineering Command Environmental Restoration Program, NAVFAC Pacific, DON 2015
- U.S. Department of Defense Quality Systems Manual for Environmental Laboratories, Version 5.1, 2017
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIB, November 2004; update IV, February 2007; update V, July 2014

Please feel free to contact us if you have any questions.

Sincerely,

Stella Cuenco  
[scuenco@lab-data.com](mailto:scuenco@lab-data.com)  
Operations Manager/Senior Chemist





## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** March 4, 2019

**Parameters:** Volatiles

**Validation Level:** Level C & D

**Laboratory:** APPL, Inc.

**Sample Delivery Group (SDG):** 87956

<b>Sample Identification</b>	<b>Laboratory Sample Identification</b>	<b>Matrix</b>	<b>Collection Date</b>
ERH732	AZ85642	Water	01/24/19
ERH733**	AZ85643**	Water	01/24/19
ERH734	AZ85644	Water	01/24/19
ERH756	AZ85645	Water	01/23/19
ERH757	AZ85646	Water	01/23/19
ERH754	AZ85652	Water	01/24/19
ERH755	AZ85653	Water	01/24/19
ERH733MS	AZ85643MS	Water	01/24/19
ERH733MSD	AZ85643MSD	Water	01/24/19

\*\*Indicates sample underwent Level D validation

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) which are Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX) by Environmental Protection Agency (EPA) SW 846 Method 8260B

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level D data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## Qualification Code Reference

- H Holding times were exceeded.
- S Surrogate recovery was outside QC limits.
- C Calibration %RSD,  $r$ ,  $r^2$  or %D were noncompliant.
- R Calibration RRF was  $<0.05$ .
- B Presumed contamination from preparation (method blank).
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD was high.
- I Internal standard performance was unsatisfactory.
- M Instrument Performance Check (BFB or DFTPP) was noncompliant.
- T Presumed contamination from trip blank.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Instrument performance for pesticides was poor.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. GC/MS Instrument Performance Check**

A bromofluorobenzene (BFB) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

## **III. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0% for all compounds.

Average relative response factors (RRF) for all compounds were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

## **IV. Continuing Calibration**

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0% for all compounds.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

## **V. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **VI. Field Blanks**

Samples ERH732, ERH756, and ERH754 were identified as trip blanks. No contaminants were found.

## VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits with the following exceptions:

Sample	Surrogate	%R (Limits)	Affected Compound	Flag	A or P
ERH757	Toluene-d8	88.1 (89-112)	All compounds	UJ (all non-detects)	P

## VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
ERH733MS/MSD (ERH733**)	Toluene	124 (80-121)	125 (80-121)	NA	-

Relative percent differences (RPD) were within QC limits.

## IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## X. Field Duplicates

Samples ERH733\*\* and ERH734 were identified as field duplicates. No results were detected in any of the samples.

## XI. Internal Standards

All internal standard areas and retention times were within QC limits.

## XII. Compound Quantitation

All compound quantitations met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

## XIII. Target Compound Identifications

All target compound identifications met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

#### **XIV. System Performance**

The system performance was acceptable for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

#### **XV. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to surrogate %R, data were qualified as estimated in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

**Red Hill Bulk Storage Facility, CTO 18F0126  
Volatiles - Data Qualification Summary - SDG 87956**

Sample	Compound	Flag	A or P	Reason (Code)
ERH757	All compounds	UJ (all non-detects)	P	Surrogates (%R) (S)

**Red Hill Bulk Storage Facility, CTO 18F0126  
Volatiles - Laboratory Blank Data Qualification Summary - SDG 87956**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Volatiles - Field Blank Data Qualification Summary - SDG 87956**

No Sample Data Qualified in this SDG



LDC #: 44457A1a  
 SDG #: 87956  
 Laboratory: APPL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**

Level C/D

Date: 3/1/19  
 Page: 1 of 1  
 Reviewer: [Signature]  
 2nd Reviewer: [Signature]

**METHOD:** GC/MS Volatiles (BTEX)(EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A 1A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A LA	% PSD ≤ 15    1CV ≤ 20
IV.	Continuing calibration / closing CV	Δ	CCV ≤ 20/50
V.	Laboratory Blanks	SW	
VI.	Field blanks	ND	TB = 1, 4, 6
VII.	Surrogate spikes	SW	
VIII.	Matrix spike/Matrix spike duplicates	SW	
IX.	Laboratory control samples	A	LCs 10
X.	Field duplicates	ND	D = 2, 3
XI.	Internal standards	Δ	
XII.	Compound quantitation RL/LOQ/LODs	Δ	Not reviewed for Level C validation.
XIII.	Target compound identification	Δ	Not reviewed for Level C validation.
XIV.	System performance	Δ	Not reviewed for Level C validation.
XV.	Overall assessment of data	A	

Note: A = Acceptable      ND = No compounds detected      D = Duplicate      SB=Source blank  
 N = Not provided/applicable      R = Rinsate      TB = Trip blank      OTHER:  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

\*\* Indicates sample underwent Level D validation

	Client ID	Lab ID	Matrix	Date
1	ERH732 TB	AZ85642	Water	01/24/19
2	ERH733** D	AZ85643**	Water	01/24/19
3	ERH734 D	AZ85644	Water	01/24/19
4	ERH756 TB	AZ85645	Water	01/24/19
5	ERH757	AZ85646	Water	01/24/19
6	ERH754 TB	AZ85652	Water	01/24/19
7	ERH755	AZ85653	Water	01/24/19
8	ERH733MS	AZ85643MS	Water	01/24/19
9	ERH733MSD	AZ85643MSD	Water	01/24/19
10				

Notes:

1	AL 190128-B114			
2	190130AL-B114			

LDC #: 4445 7A 1a

**VALIDATION FINDINGS CHECKLIST**

Page: 1 of 2  
 Reviewer: FT  
 2nd Reviewer: A

**Method:** Volatiles (EPA SW 846 Method 8260B)

Validation Area	Yes	No	NA	Findings/Comments
<b>I. Technical holding times</b>				
Were all technical holding times met?	/			
Was cooler temperature criteria met?	/			
<b>II. GC/MS Instrument performance check</b>				
Were the BFB performance results reviewed and found to be within the specified criteria?	/			
Were all samples analyzed within the 12 hour clock criteria?	/			
<b>IIIa. Initial calibration</b>				
Did the laboratory perform a 5 point calibration prior to sample analysis?	/			
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	/			
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of > 0.990?			/	
Were all percent relative standard deviations (%RSD) ≤ 30% <u>15%</u> and relative response factors (RRF) > 0.05?	/			
<b>IIIb. Initial Calibration Verification</b>				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	/			
Were all percent differences (%D) ≤ 20%?	/			
<b>IV. Continuing calibration</b>				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	/			
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	/			
Were all percent differences (%D) ≤ 20% and relative response factors (RRF) ≥ 0.05?	/			
<b>V. Laboratory Blanks</b>				
Was a laboratory blank associated with every sample in this SDG?	/			
Was a laboratory blank analyzed at least once every 12 hours for each matrix and concentration?	/			
Was there contamination in the laboratory blanks?		/		
<b>VI. Field blanks</b>				
Were field blanks were identified in this SDG?	/			
Were target compounds detected in the field blanks?		/		
<b>VII. Surrogate spikes</b>				
Were all surrogate percent recovery (%R) within QC limits?		/		
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?		/		

LDC #: 44457A 1a

**VALIDATION FINDINGS CHECKLIST**

Page: 2 of 2  
 Reviewer: FT  
 2nd Reviewer: A

Validation Area	Yes	No	NA	Findings/Comments
<b>VIII. Matrix spike/Matrix spike duplicates</b>				
Were matrix spike (MS) and matrix spike duplicate (MSD) analyzed in this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>IX. Laboratory control samples</b>				
Was an LCS analyzed per analytical batch in this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>X. Field duplicates</b>				
Were field duplicate pairs identified in this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were target compounds detected in the field duplicates?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>XI. Internal standards</b>				
Were internal standard area counts within -50% to +100% of the associated calibration standard?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were retention times within + 30 seconds of the associated calibration standard?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XII. Compound quantitation</b>				
Did the laboratory LOQs/RLs meet the QAPP LOQs/RLs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XIII. Target compound identification</b>				
Were relative retention times (RRT's) within + 0.06 RRT units of the standard?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were chromatogram peaks verified and accounted for?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XIV. System performance</b>				
System performance was found to be acceptable.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XV. Overall assessment of data</b>				
Overall assessment of data was found to be acceptable.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

## TARGET COMPOUND WORKSHEET

### METHOD: VOA

A. Chloromethane	AA. Tetrachloroethene	AAA. 1,3,5-Trimethylbenzene	AAAA. Ethyl tert-butyl ether	A1. 1,3-Butadiene
B. Bromomethane	BB. 1,1,2,2-Tetrachloroethane	BBB. 4-Chlorotoluene	BBBB. tert-Amyl methyl ether	B1. Hexane
C. Vinyl choride	CC. Toluene	CCC. tert-Butylbenzene	CCCC. 1-Chlorohexane	C1. Heptane
D. Chloroethane	DD. Chlorobenzene	DDD. 1,2,4-Trimethylbenzene	DDDD. Isopropyl alcohol	D1. Propylene
E. Methylene chloride	EE. Ethylbenzene	EEE. sec-Butylbenzene	EEEE. Acetonitrile	E1. Freon 11
F. Acetone	FF. Styrene	FFF. 1,3-Dichlorobenzene	FFFF. Acrolein	F1. Freon 12
G. Carbon disulfide	GG. Xylenes, total	GGG. p-Isopropyltoluene	GGGG. Acrylonitrile	G1. Freon 113
H. 1,1-Dichloroethene	HH. Vinyl acetate	HHH. 1,4-Dichlorobenzene	HHHH. 1,4-Dioxane	H1. Freon 114
I. 1,1-Dichloroethane	II. 2-Chloroethylvinyl ether	III. n-Butylbenzene	IIII. Isobutyl alcohol	I1. 2-Nitropropane
J. 1,2-Dichloroethene, total	JJ. Dichlorodifluoromethane	JJJ. 1,2-Dichlorobenzene	JJJJ. Methacrylonitrile	J1. Dimethyl disulfide
K. Chloroform	KK. Trichlorofluoromethane	KKK. 1,2,4-Trichlorobenzene	KKKK. Propionitrile	K1. 2,3-Dimethyl pentane
L. 1,2-Dichloroethane	LL. Methyl-tert-butyl ether	LLL. Hexachlorobutadiene	LLLL. Ethyl ether	L1. 2,4-Dimethyl pentane
M. 2-Butanone	MM. 1,2-Dibromo-3-chloropropane	MMM. Naphthalene	MMMM. Benzyl chloride	M1. 3,3-Dimethyl pentane
N. 1,1,1-Trichloroethane	NN. Methyl ethyl ketone	NNN. 1,2,3-Trichlorobenzene	NNNN. Iodomethane	N1. 2-Methylpentane
O. Carbon tetrachloride	OO. 2,2-Dichloropropane	OOO. 1,3,5-Trichlorobenzene	OOOO. 1,1-Difluoroethane	O1. 3-Methylpentane
P. Bromodichloromethane	PP. Bromochloromethane	PPP. trans-1,2-Dichloroethene	PPPP. Tetrahydrofuran	P1. 3-Ethylpentane
Q. 1,2-Dichloropropane	QQ. 1,1-Dichloropropene	QQQ. cis-1,2-Dichloroethene	QQQQ. Methyl acetate	Q1. 2,2-Dimethylpentane
R. cis-1,3-Dichloropropene	RR. Dibromomethane	RRR. m,p-Xylenes	RRRR. Ethyl acetate	R1. 2,2,3- Trimethylbutane
S. Trichloroethene	SS. 1,3-Dichloropropane	SSS. o-Xylene	SSSS. Cyclohexane	S1. 2,2,4-Trimethylpentane
T. Dibromochloromethane	TT. 1,2-Dibromoethane	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	TTTT. Methyl cyclohexane	T1. 2-Methylhexane
U. 1,1,2-Trichloroethane	UU. 1,1,1,2-Tetrachloroethane	UUU. 1,2-Dichlorotetrafluoroethane	UUUU. Allyl chloride	U1. Nonanal
V. Benzene	VV. Isopropylbenzene	VVV. 4-Ethyltoluene	VVVV. Methyl methacrylate	V1. 2-Methylnaphthalene
W. trans-1,3-Dichloropropene	WW. Bromobenzene	WWW. Ethanol	WWWW. Ethyl methacrylate	W1. Methanol
X. Bromoform	XX. 1,2,3-Trichloropropane	XXX. Di-isopropyl ether	XXXX. cis-1,4-Dichloro-2-butene	X1. 1,2,3-Trimethylbenzene
Y. 4-Methyl-2-pentanone	YY. n-Propylbenzene	YYY. tert-Butanol	YYYY. trans-1,4-Dichloro-2-butene	Y1.
Z. 2-Hexanone	ZZ. 2-Chlorotoluene	ZZZ. tert-Butyl alcohol	ZZZZ. Pentachloroethane	Z1.

VALIDATION FINDINGS WORKSHEET  
Surrogate Spikes

METHOD: GC/MS VOA (EPA SW 846 Method 8260B )

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y (N) N/A Were all surrogate %R within QC limits?

Y (N) N/A If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R out of outside of criteria? (3)

#	Sample ID	Surrogate	%Recovery (Limits)	Qualifications
	5	Tol	88.1 (89-112)	J/US/P NP
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	

- SMC1 (TOL) = Toluene-d8
- SMC2 (BFB) = Bromofluorobenzene
- SMC3 (DCE) = 1,2-Dichloroethane-d4
- SMC4 (DFM) = Dibromofluoromethane

|

LDC #: 44457A/a

### VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1  
Reviewer: FT  
2nd Reviewer: [Signature]

METHOD : GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

- Y N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.
- Y N N/A Was a MS/MSD analyzed every 20 samples of each matrix?
- Y N N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits? (0)

#	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	8 + 9	CC	124 (80-121)	125 (80-121)	( )	2	Jdw/A (NO)
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
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			( )	( )	( )		



### VALIDATION FINDINGS WORKSHEET Continuing Calibration Results Verification

**METHOD:** GC/MS VOA (EPA SW 846 Method 8260B)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference =  $100 * (\text{ave. RRF} - \text{RRF}) / \text{ave. RRF}$   
 $\text{RRF} = (A_x)(C_{is}) / (A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF  
 RRF = continuing calibration RRF  
 $A_x$  = Area of compound,                       $A_{is}$  = Area of associated internal standard  
 $C_x$  = Concentration of compound,         $C_{is}$  = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference internal Standard)	Average RRF (Initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	cov 0130204	1/30/19	Y (1st internal standard)	0.8179	0.8138	0.8138	0.51	0.51
			EE (2nd internal standard)	0.6554	0.6496	0.6496	0.89	0.89
			(3rd internal standard)					
			(4th internal standard)					
2			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
			(4th internal standard)					
3			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
			(4th internal standard)					
4			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
			(4th internal standard)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.



LDC #: 44457A/a

**VALIDATION FINDINGS WORKSHEET**  
**Surrogate Results Verification**

Page: 1 of 1  
 Reviewer: FT  
 2nd reviewer: RT

**METHOD:** GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS \* 100

Where: SF = Surrogate Found  
 SS = Surrogate Spiked

Sample ID: 2

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane	25.0	25.7053	103	103	0
1,2-Dichloroethane-d4		25.0772	100	100	
Toluene-d8	↓	22.3934	89.6	89.6	↓
Bromofluorobenzene	↓	27.3903	110	110	↓

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

LDC #: 44457A/2

**VALIDATION FINDINGS WORKSHEET**  
**Matrix Spike/Matrix Spike Duplicates Results Verification**

Page: 1 of 1  
 Reviewer: FT  
 2nd Reviewer: AC

**METHOD:** GC/MS VOA (EPA Method 8260B)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery =  $100 * (SSC - SC) / SA$

Where: SSC = Spiked sample concentration  
 SA = Spike added

SC = Sample concentration

RPD =  $|MSC - MSC1| * 2 / (MSC + MSC1)$

MSC = Matrix spike concentration

MSC1 = Matrix spike duplicate concentration

MS/MSD sample: 8 + 9

Compound	Spike Added (ug/L)		Sample Concentration (ug/L)	Spiked Sample Concentration (ug/L)		Matrix Spike		Matrix Spike Duplicate		MS/MSD	
	MS	MSD		MS	MSD	Percent Recovery		Percent Recovery		RPD	
						Reported	Recalc	Reported	Recalc	Reported	Recalculated
1,1-Dichloroethene											
Trichloroethene											
Benzene	10.0	10.0	ND	10.9	11.1	109	109	111	111	1.8	1.8
Toluene	↓	↓	ND	12.4	12.5	124	124	125	125	0.80	0.80
Chlorobenzene											

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 44457A/a

### VALIDATION FINDINGS WORKSHEET Laboratory Control Sample Results Verification

Page: 1 of 1  
Reviewer: FT  
2nd Reviewer: AC

**METHOD:** GC/MS VOA (EPA Method 8260B)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 \* SSC/SA

Where: SSC = Spiked sample concentration  
SA = Spike added

RPD = | LCSC - LCSDC | \* 2 / (LCSC + LCSDC)

LCSC = Laboratory control sample concentration    LCSDC = Laboratory control sample duplicate concentration

LCS ID: 190130AL LCS1P

Compound	Spike Added <i>(ug/L)</i>		Spiked Sample Concentration <i>(ug/L)</i>		LCS		LCSD		LCS/LCSD	
	LCS	LCSD	LCS	LCSD	Percent Recovery		Percent Recovery		RPD	
					Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
1,1-Dichloroethene										
Trichloroethene										
Benzene	<i>10.0</i>	<i>10.0</i>	<i>10.1</i>	<i>10.3</i>	<i>101</i>	<i>101</i>	<i>103</i>	<i>103</i>	<i>2.0</i>	<i>2.0</i>
Toluene	<i>10.0</i>	<i>10.0</i>	<i>10.8</i>	<i>11.2</i>	<i>108</i>	<i>108</i>	<i>112</i>	<i>112</i>	<i>3.6</i>	<i>3.6</i>
Chlorobenzene										

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 44457A/a

**VALIDATION FINDINGS WORKSHEET**  
**Sample Calculation Verification**

Page: 1 of 1

Reviewer: FT

2nd reviewer: π

**METHOD:** GC/MS VOA (EPA SW 846 Method 8260B)

Y / N / N/A      Were all reported results recalculated and verified for all level IV samples?

Y / N / N/A      Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

$$\text{Concentration} = \frac{(A_x)(I_s)(DF)}{(A_{is})(RRF)(V_o)(\%S)}$$

- $A_x$     =    Area of the characteristic ion (EICP) for the compound to be measured
- $A_{is}$    =    Area of the characteristic ion (EICP) for the specific internal standard
- $I_s$     =    Amount of internal standard added in nanograms (ng)
- RRF    =    Relative response factor of the calibration standard.
- $V_o$     =    Volume or weight of sample pruged in milliliters (ml) or grams (g).
- Df      =    Dilution factor.
- %S     =    Percent solids, applicable to soils and solid matrices only.

Example:

Sample I.D. 190130AL : LC5      ✓

$$\text{Conc.} = \frac{123217 (25.0)}{373120 (0.8179)}$$

$$= 10.01 \text{ ug/L}$$

#	Sample ID	Compound	Reported Concentration (ug/L)	Calculated Concentration (ug/L)	Qualification
	LC5	✓	10.1	10.01	

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** March 4, 2019

**Parameters:** Phenol & Tentatively Identified Compounds

**Validation Level:** Level C & D

**Laboratory:** APPL, Inc.

**Sample Delivery Group (SDG):** 87956

<b>Sample Identification</b>	<b>Laboratory Sample Identification</b>	<b>Matrix</b>	<b>Collection Date</b>
ERH733**	AZ85643**	Water	01/24/19
ERH734	AZ85644	Water	01/24/19
ERH757	AZ85646	Water	01/23/19
ERH755	AZ85653	Water	01/24/19
ERH733MS	AZ85643MS	Water	01/24/19
ERH733MSD	AZ85643MSD	Water	01/24/19

\*\*Indicates sample underwent Level D validation

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Phenol & Tentatively Identified Compounds (TICs) by Environmental Protection Agency (EPA) SW 846 Method 8270D

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level D data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## Qualification Code Reference

- H Holding times were exceeded.
- S Surrogate recovery was outside QC limits.
- C Calibration %RSD,  $r$ ,  $r^2$  or %D were noncompliant.
- R Calibration RRF was  $<0.05$ .
- B Presumed contamination from preparation (method blank).
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD was high.
- I Internal standard performance was unsatisfactory.
- M Instrument Performance Check (BFB or DFTPP) was noncompliant.
- T Presumed contamination from trip blank.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Instrument performance for pesticides was poor.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.



## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. GC/MS Instrument Performance Check**

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

## **III. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0%.

Average relative response factors (RRF) were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

## **IV. Continuing Calibration**

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0%.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0%.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

## V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks with the following exceptions:

Blank ID	Extraction Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
190130ABLK	01/30/19	Benzene, methyl- (2.18) Ethene, Tetrachloro- (2.80) Nonane (4.20) Decane (5.25) Butanedioic acid, dimethyl ester (5.53) Pentanedioic acid, dimethyl ester (6.37) Hexanedioic acid, dimethyl ester (7.15)	218.0 ppb 84.6 ppb 8.0 ppb 14.5 ppb 7.7 ppb 18.4 ppb 5.3 ppb	All samples in SDG 87650

Sample concentrations were compared to concentrations detected in the laboratory blanks. The sample concentrations were either not detected or were significantly greater (>10X for TICs, >5X for other contaminants) than the concentrations found in the associated laboratory blanks.

Sample	Compound TIC (RT in minutes)	Reported Concentration	Modified Final Concentration
ERH755	Pentanedioic acid, dimethyl ester (6.38)	24 ug/L	24U ug/L

## VI. Field Blanks

No field blanks were identified in this SDG.

## VII. Surrogates

Surrogates were added to all samples as required by the method. Surrogate recoveries (%R) were not within QC limits for sample ERH733\*\*. Using professional judgment, no data were qualified when one base or one acid surrogate %R was outside the QC limits and the %R was greater than or equal to 10%.

## VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## IX. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

## **X. Field Duplicates**

Samples ERH733\*\* and ERH734 were identified as field duplicates. No results were detected in any of the samples.

## **XI. Internal Standards**

All internal standard areas and retention times were within QC limits.

## **XII. Compound Quantitation**

All compound quantitations met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

## **XIII. Target Compound Identifications**

All target compound identifications met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

## **XIV. System Performance**

The system performance was acceptable for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

## **XV. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to laboratory blank contamination, data were qualified as not detected in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Based upon the data validation all other results are considered valid and usable for all purposes.

**Red Hill Bulk Storage Facility, CTO 18F0126  
Phenol & Tentatively Identified Compounds - Data Qualification Summary - SDG  
87956**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Phenol & Tentatively Identified Compounds - Laboratory Blank Data Qualification  
Summary - SDG 87956**

Sample	Compound	Modified Final Concentration	A or P	Code
ERH755	Pentanedioic acid, dimethyl ester (6.38)	24U ug/L	A	B

**Red Hill Bulk Storage Facility, CTO 18F0126  
Phenol & Tentatively Identified Compounds - Field Blank Data Qualification  
Summary - SDG 87956**

No Sample Data Qualified in this SDG

LDC #: 44457A2a  
 SDG #: 87956  
 Laboratory: APPL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**

Level C/D

Date: 3/1/19  
 Page: 1 of 1  
 Reviewer: [Signature]  
 2nd Reviewer: [Signature]

**METHOD:** GC/MS Phenol & TICs (EPA SW 846 Method 8270D)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/Δ	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/Δ	% PSD ≤ 15    ICV ≤ 20
IV.	Continuing calibration <i>closing cv</i>	A	CV ≤ 20/50
V.	Laboratory Blanks	SW	
VI.	Field blanks	N	
VII.	Surrogate spikes	SW	
VIII.	Matrix spike/Matrix spike duplicates	A	
IX.	Laboratory control samples	A	LC 7
X.	Field duplicates	ND	D = 1, 2
XI.	Internal standards	Δ	
XII.	Compound quantitation RL/LOQ/LODs	Δ	Not reviewed for Level C validation.
XIII.	Target compound identification	A	Not reviewed for Level C validation.
XIV.	System performance	A	Not reviewed for Level C validation.
XV.	Overall assessment of data	Δ	

Note: A = Acceptable      ND = No compounds detected      D = Duplicate      SB=Source blank  
 N = Not provided/applicable      R = Rinstate      TB = Trip blank      OTHER:  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

\*\* Indicates sample underwent Level D validation

	Client ID	Lab ID	Matrix	Date
1	ERH733**    D	AZ85643**	Water	01/24/19
2	ERH734    D	AZ85644	Water	01/24/19
3	ERH757	AZ85646	Water	01/24/19
4	ERH755	AZ85653	Water	01/24/19
5	ERH733MS	AZ85643MS	Water	01/24/19
6	ERH733MSD	AZ85643MSD	Water	01/24/19
7				
8				

Notes:

190130A - BIK	1/30/19 / 2/1/19			

Method: Semivolatiles (EPA SW 846 Method 8270D)

Validation Area	Yes	No	NA	Findings/Comments
<b>I. Technical holding times</b>				
Were all technical holding times met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was cooler temperature criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>II. GC/MS Instrument performance check</b>				
Were the DFTPP performance results reviewed and found to be within the specified criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all samples analyzed within the 12 hour clock criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>IIIa. Initial calibration</b>				
Did the laboratory perform a 5 point calibration prior to sample analysis?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent relative standard deviations (%RSD) ≤ 15% and relative response factors (RRF) within method criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>IIIb. Initial Calibration Verification</b>				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent differences (%D) ≤ 20%?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>IV. Continuing calibration</b>				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent differences (%D) ≤ 20% and relative response factors (RRF) within method criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>V. Laboratory Blanks</b>				
Was a laboratory blank associated with every sample in this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was a laboratory blank analyzed at least once every 12 hours for each matrix and concentration?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was there contamination in the laboratory blanks? If yes, please see the blanks validation findings worksheet.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>VI. Field blanks</b>				
Were field blanks were identified in this SDG?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Were target compounds detected in the field blanks?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>VII. Surrogate spikes</b>				
Were all surrogate percent recovery (%R) within QC limits?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If any percent recoveries (%R) was less than 10%, was a reanalysis performed to confirm %R ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>VIII. Matrix spike/Matrix spike duplicates</b>				
Were matrix spike (MS) and matrix spike duplicate (MSD) analyzed in this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

LDC #: 44457A2a

**VALIDATION FINDINGS CHECKLIST**

Page: 2 of 2  
 Reviewer: [Signature]  
 2nd Reviewer: [Signature]

Validation Area	Yes	No	NA	Findings/Comments
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	/			
<b>IX. Laboratory control samples</b>				
Was an LCS analyzed per extraction batch?	/			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	/			
<b>X. Field duplicates</b>				
Were field duplicate pairs identified in this SDG?	/			
Were target compounds detected in the field duplicates?		/		
<b>XI. Internal standards</b>				
Were internal standard area counts within -50% to +100% of the associated calibration standard?	/			
Were retention times within + 30 seconds of the associated calibration standard?	/			
<b>XII. Compound quantitation</b>				
Did the laboratory LOQs/RLs meet the QAPP LOQs/RLs?	/			
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	/			
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	/			
<b>XIII. Target compound identification</b>				
Were relative retention times (RRT's) within + 0.06 RRT units of the standard?	/			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	/			
Were chromatogram peaks verified and accounted for?	/			
<b>XIV. System performance</b>				
System performance was found to be acceptable.	/			
<b>XV. Overall assessment of data</b>				
Overall assessment of data was found to be acceptable.	/			

## VALIDATION FINDINGS WORKSHEET

**METHOD: GC/MS SVOA**

A. Phenol	CC. Dimethylphthalate	EEE. Bis(2-ethylhexyl)phthalate	GGGG. C30-Hopane	I1. Methyl methanesulfonate
B. Bis (2-chloroethyl) ether	DD. Acenaphthylene	FFF. Di-n-octylphthalate	HHHH. 1-Methylphenanthrene	J1. Ethyl methanesulfonate
C. 2-Chlorophenol	EE. 2,6-Dinitrotoluene	GGG. Benzo(b)fluoranthene	IIII. 1,4-Dioxane	K1. o,o',o''-Triethylphosphorothioate
D. 1,3-Dichlorobenzene	FF. 3-Nitroaniline	HHH. Benzo(k)fluoranthene	JJJJ. Acetophenone	L1. n-Phenylene diamine
E. 1,4-Dichlorobenzene	GG. Acenaphthene	III. Benzo(a)pyrene	KKKK. Atrazine	M1. 1,4-Naphthoquinone
F. 1,2-Dichlorobenzene	HH. 2,4-Dinitrophenol	JJJ. Indeno(1,2,3-cd)pyrene	LLLL. Benzaldehyde	N1. N-Nitro-o-toluidine
G. 2-Methylphenol	II. 4-Nitrophenol	KKK. Dibenz(a,h)anthracene	MMMM. Caprolactam	O1. 1,3,5-Trinitrobenzene
H. 2,2'-Oxybis(1-chloropropane)	JJ. Dibenzofuran	LLL. Benzo(g,h,i)perylene	NNNN. 2,6-Dichlorophenol	P1. Pentachlorobenzene
I. 4-Methylphenol	KK. 2,4-Dinitrotoluene	MMM. Bis(2-Chloroisopropyl)ether	OOOO. 1,2-Diphenylhydrazine	Q1. 4-Aminobiphenyl
J. N-Nitroso-di-n-propylamine	LL. Diethylphthalate	NNN. Aniline	PPPP. 3-Methylphenol	R1. 2-Naphthylamine
K. Hexachloroethane	MM. 4-Chlorophenyl-phenyl ether	OOO. N-Nitrosodimethylamine	QQQQ. 3&4-Methylphenol	S1. Triphenylene
L. Nitrobenzene	NN. Fluorene	PPP. Benzoic Acid	RRRR. 4-Dimethyldibenzothiophene (4MDT)	T1. Octachlorostyrene
M. Isophorone	OO. 4-Nitroaniline	QQQ. Benzyl alcohol	SSSS. 2/3-Dimethyldibenzothiophene (4MDT)	U1. Famphur
N. 2-Nitrophenol	PP. 4,6-Dinitro-2-methylphenol	RRR. Pyridine	TTTT. 1-Methyldibenzothiophene (1MDT)	V1. 1,4-phenylenediamine
O. 2,4-Dimethylphenol	QQ. N-Nitrosodiphenylamine	SSS. Benzidine	UUUU.. 2,3,4,6-Tetrachlorophenol	W1. Methapyrilene
P. Bis(2-chloroethoxy)methane	RR. 4-Bromophenyl-phenylether	TTT. 1-Methylnaphthalene	VVVV. 1,2,4,5-Tetrachlorobenzene	X1. Pentachloroethane
Q. 2,4-Dichlorophenol	SS. Hexachlorobenzene	UUU. Benzo(b)thiophene	WWWWW.. 2-Picoline	Y1. 3,3'-Dimethylbenzidine
R. 1,2,4-Trichlorobenzene	TT. Pentachlorophenol	VVV. Benzonaphthothiophene	XXXX. 3-Methylcholanthrene	Z1. o-Toluidine
S. Naphthalene	UU. Phenanthrene	WWW. Benzo(e)pyrene	YYYY. a,a-Dimethylphenethylamine	A2. 1-Naphthylamine
T. 4-Chloroaniline	VV. Anthracene	XXX. 2,6-Dimethylnaphthalene	ZZZZ. Hexachloropropene	B2. 4-Aminobiphenyl
U. Hexachlorobutadiene	WW. Carbazole	YYY. 2,3,5-Trimethylnaphthalene	A1. N-Nitrosodiethylamine	C2. 4-Nitroquinoline-1-oxide
V. 4-Chloro-3-methylphenol	XX. Di-n-butylphthalate	ZZZ. Perylene	B1. N-Nitrosodi-n-butylamine	D2. Hexachloropene
W. 2-Methylnaphthalene	YY. Fluoranthene	AAAA. Dibenzothiophene	C1. N-Nitrosomethylethylamine	E2. Bis (2-chloro-1-methylethyl) ether
X. Hexachlorocyclopentadiene	ZZ. Pyrene	BBBB. Benzo(a)fluoranthene	D1. N-Nitrosomorpholine	F2. Bifenthrin
Y. 2,4,6-Trichlorophenol	AAA. Butylbenzylphthalate	CCCC. Benzo(b)fluorene	E1. N-Nitrosopyrrolidine	G2. Cyfluthrin
Z. 2,4,5-Trichlorophenol	BBB. 3,3'-Dichlorobenzidine	DDDD. cis/trans-Decalin	F1. Phenacetin	H2. Cypermethrin
AA. 2-Chloronaphthalene	CCC. Benzo(a)anthracene	EEEE. Biphenyl	G1. 2-Acetylaminofluorene	I2. Permethrin (cis/trans)
BB. 2-Nitroaniline	DDD. Chrysene	FFFF. Retene	H1. Pronamide	J2. 5-Nitro-o-toluidine



**VALIDATION FINDINGS WORKSHEET**

**Blanks**

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

- N N/A Was a method blank analyzed for each matrix?
- Y N N/A Was a method blank analyzed for each concentration preparation level?
- Y N N/A Was a method blank associated with every sample?
- Y N N/A Was the blank contaminated? If yes, please see qualification below.

Blank extraction date: 01/30/19 Blank analysis date: 02/01/19

Conc. units: ng/L Associated Samples: A 11

Compound	Blank ID	Sample Identification							
[Redacted]	190130A	BIK		4					
TIC <u>see following page</u>									
Pentanedioic acid	18.4 (6.37)			23.8 <sup>u</sup> (6.38)					

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:  
 Common contaminants such as the phthalates and TICs noted above that were detected in samples within ten times the associated method blank concentration were qualified as not detected, "U". Other contaminants within five times the method blank concentration were also qualified as not detected, "U".

Tentatively Identified Compound (LSC) summary

Operator ID: MA Date Acquired: 1 Feb 19 16:19  
 Data File: M:\YODA\DATA\Y190124\0124Y098.D  
 Name: 190130A Blk 1/800  
 Misc:  
 Method: M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title: EPA 8270C  
 Library Searched: M:\DATABASE\WILEY138.L

TIC Top Hit name	RT	EstConc	Units	Area	IntStd	ISRT	ISArea	ISConc
Benzene, methyl-	2.18	218.0	ppb	11425600	ISTD01	5.46	2620080	40.0
Ethene, tetrachloro-	2.80	84.6	ppb	4431650	ISTD01	5.46	2620080	40.0
Nonane	4.20	8.0	ppb	420148	ISTD01	5.46	2620080	40.0
Decane	5.25	14.5	ppb	759179	ISTD01	5.46	2620080	40.0
Butanedioic acid, di	5.53	7.7	ppb	401962	ISTD01	5.46	2620080	40.0
* Pentanedioic acid, d	6.37	18.4	ppb	1289090	ISTD02	6.90	3509310	40.0
Hexanedioic acid, di	7.15	5.3	ppb	369644	ISTD02	6.90	3509310	40.0

0124Y098.D Y0125NC.M Tue Mar 05 08:29:18 2019

ADDED PAGE

LDC #: 44457A22

# VALIDATION FINDINGS WORKSHEET

## Surrogate Recovery

Page: 1 of 1  
Reviewer: FT  
2nd Reviewer: [Signature]

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualification below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N / N/A Were percent recoveries (%R) for surrogates within QC limits?

Y N / N/A If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?

Y N / N/A If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Sample ID	Surrogate	%R (Limits)	Qualifications
	1	TBP	188 (43-140)	no qual
		FBP	162 (44-119)	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	

(NBZ) = Nitrobenzene - d5 (2FP) = 2-Fluorophenol  
(FBP) = 2-Fluorobiphenyl (TBP) = 2,4,6 -Tribromophenol  
(TPH) = Terphenyl - d14 (2CP) = 2-Chlorophenol - d4

LDC #: 44457A2a

**VALIDATION FINDINGS WORKSHEET**  
**Initial Calibration Calculation Verification**

Page: 1 of 1  
 Reviewer: FT  
 2nd Reviewer: [Signature]

METHOD: GCMS 8270D

The calibration factors (RRFF), average RRFF, and relative standard deviation (%RSD) were recalculated for compounds identified below using the following calculations:

$RRF = (Ax)(Cis)/(Ais)(Cx)$

average RRF = sum of the RRFs/number of standards

$\%RSD = 100 * (S/X)$

Where:

Ax = Area of compound

Cx = Concentration of compound

S = Standard deviation of the RRFs

X = Mean of the RRFs

Ais = Area of associated internal standard

Cis = Concentration of internal Standard

#	Standard ID	Calibration Date	Compound	Reported (RRF 40 std)	Recalculated (RRF40 std)	Reported AverageRRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
	ICAL	1/25/2019	A	3.089	3.089	3.026	3.026	9.90	9.90

LDC #: 44457A02

## VALIDATION FINDINGS WORKSHEET Continuing Calibration Results Verification

Page: 1 of 1

Reviewer: FT

2nd Reviewer: [Signature]

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference =  $100 * (\text{ave. RRF} - \text{RRF}) / \text{ave. RRF}$

$\text{RRF} = (A_x)(C_{is}) / (A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF

RRF = continuing calibration RRF

$A_x$  = Area of compound,

$A_{is}$  = Area of associated internal standard

$C_x$  = Concentration of compound,

$C_{is}$  = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Internal Standard)	Average RRF (Initial)	Reported	Recalculated	Reported	Recalculated
					RRF (CC)	RRF (CC)	%D	%D
1	CEV - 0124Y095	2/1/19	A	3.026	2.780	2.780	8.1	8.1
			(1st IS)					
			(2nd IS)					
			(3rd IS)					
			(4th IS)					
			(5th IS)					
2			(1st IS)					
			(2nd IS)					
			(3rd IS)					
			(4th IS)					
			(5th IS)					
			(6th IS)					
3			(1st IS)					
			(2nd IS)					
			(3rd IS)					
			(4th IS)					
			(5th IS)					
			(6th IS)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 4445 7A 2a

**VALIDATION FINDINGS WORKSHEET**  
**Surrogate Results Verification**

Page: 1 of 1  
 Reviewer: FT  
 2nd reviewer: TC

**METHOD:** GC/MS Semivolatiles (EPA SW 846 Method 8270D)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS \* 100

Where: SF = Surrogate Found  
 SS = Surrogate Spiked

Sample ID: #1

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5	175.0	122.7165	98.2	98.2	0
2-Fluorobiphenyl	↓	202.8245	162	162	↓
Terphenyl-d14	↓	156.9985	126	126	
Phenol-d5	250.0	176.1230	70.4	70.4	↓
2-Fluorophenol	↓	236.2309	94.5	94.5	
2,4,6-Tribromophenol	↓	FT 187.848 469.6188	188	188	
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID: \_\_\_\_\_

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID: \_\_\_\_\_

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

LDC #: 44457A22

**VALIDATION FINDINGS WORKSHEET**  
**Matrix Spike/Matrix Spike Duplicates Results Verification**

Page: 1 of 1  
 Reviewer: FT  
 2nd Reviewer: [Signature]

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery =  $100 * (SSC - SC) / SA$

Where: SSC = Spiked sample concentration  
 SA = Spike added

SC = Sample concentration

RPD =  $100 * |MSC - MSCD| / (MSC + MSCD)$

MSC = Matrix spike concentration

MSCD = Matrix spike duplicate concentration

MS/MSD samples: 5 + 6

Compound	Spike Added (ug/L)		Sample Concentration (ug/L)	Spiked Sample Concentration (ug/L)		Matrix Spike		Matrix Spike Duplicate		MS/MSD	
	MS	MSD		MS	MSD	Percent Recovery		Percent Recovery		RPD	
						Reported	Recalc	Reported	Recalc	Reported	Recalc
Phenol	62.5	62.5	ND	40.5	42.0	64.8	64.8	67.2	67.2	3.6	3.6
N-Nitroso-di-n-propylamine											
4-Chloro-3-methylphenol											
Acenaphthene											
Pentachlorophenol											
Pyrene											

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 44457A2a

**VALIDATION FINDINGS WORKSHEET**

**Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification**

Reviewer: FT

2nd Reviewer: AC

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 \* (SC/SA)

Where: SSC = Spike concentration  
SA = Spike added

RPD = |LCSC - LCSDC| \* 2 / (LCSC + LCSDC)

LCSC = Laboratory control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS/LCSD samples: 190130A LCS

Compound	Spike Added (ug/L)		Spike Concentration (ug/L)		LCS		LCSD		LCS/LCSD	
	LCS	LCSD	LCS	LCSD	Percent Recovery		Percent Recovery		RPD	
					Reported	Recalc	Reported	Recalc	Reported	Recalculated
Phenol	62.5	62.5	37.4	38.7	59.8	59.8	61.9	61.9	3.4	3.4
N-Nitroso-di-n-propylamine										
4-Chloro-3-methylphenol										
Acenaphthene										
Pentachlorophenol										
Pyrene										

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.



LDC #: 44457A2a

**VALIDATION FINDINGS WORKSHEET**  
**Sample Calculation Verification**

Page: 1 of 1

Reviewer: FT

2nd reviewer: [Signature]

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

Y N N/A  
Y N N/A

Were all reported results recalculated and verified for all level IV samples?

Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

$$\text{Concentration} = \frac{(A_x)(I_s)(V_i)(DF)(2.0)}{(A_{is})(RRF)(V_o)(V_i)(\%S)}$$

- A<sub>x</sub> = Area of the characteristic ion (EICP) for the compound to be measured
- A<sub>is</sub> = Area of the characteristic ion (EICP) for the specific internal standard
- I<sub>s</sub> = Amount of internal standard added in nanograms (ng)
- V<sub>o</sub> = Volume or weight of sample extract in milliliters (ml) or grams (g).
- V<sub>i</sub> = Volume of extract injected in microliters (ul)
- V<sub>i</sub> = Volume of the concentrated extract in microliters (ul)
- Df = Dilution Factor.
- %S = Percent solids, applicable to soil and solid matrices only.
- 2.0 = Factor of 2 to account for GPC cleanup

Example:

Sample I.D. 190130A LCS A

$$\text{Conc.} = \frac{(1156545)(40)(1)(1000)}{(511564)(3.026)(800)}$$

$$= 37.4 \text{ ng/L}$$

#	Sample ID	Compound	Reported Concentration (ng/L)	Calculated Concentration (ng/L)	Qualification
	LCS	A	37.4	37.4	

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** March 4, 2019

**Parameters:** Polynuclear Aromatic Hydrocarbons

**Validation Level:** Level C & D

**Laboratory:** APPL, Inc.

**Sample Delivery Group (SDG):** 87956

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
ERH733**	AZ85643**	Water	01/24/19
ERH734	AZ85644	Water	01/24/19
ERH757	AZ85646	Water	01/23/19
ERH755	AZ85653	Water	01/24/19
ERH733MS	AZ85643MS	Water	01/24/19
ERH733MSD	AZ85643MSD	Water	01/24/19

\*\*Indicates sample underwent Level D validation

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polynuclear Aromatic Hydrocarbons (PAHs) which are 1-Methylnaphthalene, 2-Methylnaphthalene, and Naphthalene by Environmental Protection Agency (EPA) SW 846 Method 8270D in Selected Ion Monitoring (SIM) mode

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level D data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## Qualification Code Reference

- H Holding times were exceeded.
- S Surrogate recovery was outside QC limits.
- C Calibration %RSD,  $r$ ,  $r^2$  or %D were noncompliant.
- R Calibration RRF was  $<0.05$ .
- B Presumed contamination from preparation (method blank).
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD was high.
- I Internal standard performance was unsatisfactory.
- M Instrument Performance Check (BFB or DFTPP) was noncompliant.
- T Presumed contamination from trip blank.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Instrument performance for pesticides was poor.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. GC/MS Instrument Performance Check**

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

## **III. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0% for all compounds.

Average relative response factors (RRF) for all compounds were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

## **IV. Continuing Calibration**

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0% for all compounds.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

## **V. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **VI. Field Blanks**

No field blanks were identified in this SDG.

## VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits with the following exceptions:

Sample	Surrogate	%R (Limits)	Affected Compound	Flag	A or P
ERH757	2-Methylnaphthalene-d10 Fluoranthene-d10	119 (39-114) 121 (58-120)	All compounds	NA	-

## VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## X. Field Duplicates

Samples ERH733\*\* and ERH734 were identified as field duplicates. No results were detected in any of the samples.

## XI. Internal Standards

All internal standard areas and retention times were within QC limits.

## XII. Compound Quantitation

All compound quantitations met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

## XIII. Target Compound Identifications

All target compound identifications met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

## XIV. System Performance

The system performance was acceptable for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

## **XV. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.



**Red Hill Bulk Storage Facility, CTO 18F0126  
Polynuclear Aromatic Hydrocarbons - Data Qualification Summary - SDG 87956**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Polynuclear Aromatic Hydrocarbons - Laboratory Blank Data Qualification  
Summary - SDG 87956**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Polynuclear Aromatic Hydrocarbons - Field Blank Data Qualification Summary -  
SDG 87956**

No Sample Data Qualified in this SDG

LDC #: 44457A2b  
 SDG #: 87956  
 Laboratory: APPL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**  
 Level C/D

Date: 3/1/19  
 Page: 1 of 1  
 Reviewer: FZ  
 2nd Reviewer: [Signature]

**METHOD:** GC/MS Polynuclear Aromatic Hydrocarbons (EPA SW 846 Method 8270D-SIM)

TT, W, S

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A, Δ	
II.	GC/MS Instrument performance check	Δ	
III.	Initial calibration/ICV	A, Δ	% PSD ≤ 15    ICV ≤ 20
IV.	Continuing calibration / dosing cal	Δ	CCV ≤ 20/50
V.	Laboratory Blanks	Δ	
VI.	Field blanks	N	
VII.	Surrogate spikes	SW	
VIII.	Matrix spike/Matrix spike duplicates	A	
IX.	Laboratory control samples	A	LOS 10
X.	Field duplicates	ND	D = 1, 2
XI.	Internal standards	Δ	
XII.	Compound quantitation RL/LOQ/LODs	A	Not reviewed for Level C validation.
XIII.	Target compound identification	Δ	Not reviewed for Level C validation.
XIV.	System performance	Δ	Not reviewed for Level C validation.
XV.	Overall assessment of data	Δ	

Note: A = Acceptable      ND = No compounds detected      D = Duplicate      SB=Source blank  
 N = Not provided/applicable      R = Rinsate      TB = Trip blank      OTHER:  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

\*\* Indicates sample underwent Level D validation

	Client ID	Lab ID	Matrix	Date
1	ERH733**      D	AZ85643**	Water	01/24/19
2	ERH734      D	AZ85644	Water	01/24/19
3	ERH757	AZ85646	Water	01/24/19
4	ERH755	AZ85653	Water	01/24/19
5	ERH733MS	AZ85643MS	Water	01/24/19
6	ERH733MSD	AZ85643MSD	Water	01/24/19
7				
8				

Notes:

190130A-BIK				

LDC #: 4457A2b

## VALIDATION FINDINGS CHECKLIST

Page: 1 of 2  
Reviewer: F7  
2nd Reviewer: JK

Method: Semivolatiles (EPA SW 846 Method 8270D)

Validation Area	Yes	No	NA	Findings/Comments
<b>I. Technical holding times</b>				
Were all technical holding times met?	/			
Was cooler temperature criteria met?	/			
<b>II. GC/MS Instrument performance check</b>				
Were the DFTPP performance results reviewed and found to be within the specified criteria?	/			
Were all samples analyzed within the 12 hour clock criteria?	/			
<b>IIIa. Initial calibration</b>				
Did the laboratory perform a 5 point calibration prior to sample analysis?	/			
Were all percent relative standard deviations (%RSD) $\leq$ 15% and relative response factors (RRF) within method criteria?	/			
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of $\geq$ 0.990?			/	
<b>IIIb. Initial Calibration Verification</b>				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	/			
Were all percent differences (%D) $\leq$ 20%?	/			
<b>IV. Continuing calibration</b>				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	/			
Were all percent differences (%D) $\leq$ 20% and relative response factors (RRF) within method criteria?	/			
<b>V. Laboratory Blanks</b>				
Was a laboratory blank associated with every sample in this SDG?	/			
Was a laboratory blank analyzed at least once every 12 hours for each matrix and concentration?	/			
Was there contamination in the laboratory blanks? If yes, please see the blanks validation findings worksheet.		/		
<b>VI. Field blanks</b>				
Were field blanks were identified in this SDG?		/		
Were target compounds detected in the field blanks?			/	
<b>VII. Surrogate spikes</b>				
Were all surrogate percent recovery (%R) within QC limits?		/		
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?		/		
If any percent recoveries (%R) was less than 10%, was a reanalysis performed to confirm %R?			/	
<b>VIII. Matrix spike/Matrix spike duplicates</b>				
Were matrix spike (MS) and matrix spike duplicate (MSD) analyzed in this SDG?	/			

LDC #: 44457 A2b

**VALIDATION FINDINGS CHECKLIST**

Page: 2 of 2  
 Reviewer: FJ  
 2nd Reviewer: TC

Validation Area	Yes	No	NA	Findings/Comments
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	/			
<b>IX. Laboratory control samples</b>				
Was an LCS analyzed per extraction batch?	/			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	/			
<b>X. Field duplicates</b>				
Were field duplicate pairs identified in this SDG?	/			
Were target compounds detected in the field duplicates?		/		
<b>XI. Internal standards</b>				
Were internal standard area counts within -50% to +100% of the associated calibration standard?	/			
Were retention times within + 30 seconds of the associated calibration standard?	/			
<b>XII. Compound quantitation</b>				
Did the laboratory LOQs/RLs meet the QAPP LOQs/RLs?	/			
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	/			
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	/			
<b>XIII. Target compound identification</b>				
Were relative retention times (RRT's) within + 0.06 RRT units of the standard?	/			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	/			
Were chromatogram peaks verified and accounted for?	/			
<b>XIV. System performance</b>				
System performance was found to be acceptable.	/			
<b>XV. Overall assessment of data</b>				
Overall assessment of data was found to be acceptable.	/			

## VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS SVOA

A. Phenol	CC. Dimethylphthalate	EEE. Bis(2-ethylhexyl)phthalate	GGGG. C30-Hopane	I1. Methyl methanesulfonate
B. Bis (2-chloroethyl) ether	DD. Acenaphthylene	FFF. Di-n-octylphthalate	HHHH. 1-Methylphenanthrene	J1. Ethyl methanesulfonate
C. 2-Chlorophenol	EE. 2,6-Dinitrotoluene	GGG. Benzo(b)fluoranthene	IIII. 1,4-Dioxane	K1. o,o',o''-Triethylphosphorothioate
D. 1,3-Dichlorobenzene	FF. 3-Nitroaniline	HHH. Benzo(k)fluoranthene	JJJJ. Acetophenone	L1. n-Phenylene diamine
E. 1,4-Dichlorobenzene	GG. Acenaphthene	III. Benzo(a)pyrene	KKKK. Atrazine	M1. 1,4-Naphthoquinone
F. 1,2-Dichlorobenzene	HH. 2,4-Dinitrophenol	JJJ. Indeno(1,2,3-cd)pyrene	LLLL. Benzaldehyde	N1. N-Nitro-o-toluidine
G. 2-Methylphenol	II. 4-Nitrophenol	KKK. Dibenz(a,h)anthracene	MMMM. Caprolactam	O1. 1,3,5-Trinitrobenzene
H. 2,2'-Oxybis(1-chloropropane)	JJ. Dibenzofuran	LLL. Benzo(g,h,i)perylene	NNNN. 2,6-Dichlorophenol	P1. Pentachlorobenzene
I. 4-Methylphenol	KK. 2,4-Dinitrotoluene	MMM. Bis(2-Chloroisopropyl)ether	OOOO. 1,2-Diphenylhydrazine	Q1. 4-Aminobiphenyl
J. N-Nitroso-di-n-propylamine	LL. Diethylphthalate	NNN. Aniline	PPPP. 3-Methylphenol	R1. 2-Naphthylamine
K. Hexachloroethane	MM. 4-Chlorophenyl-phenyl ether	OOO. N-Nitrosodimethylamine	QQQQ. 3&4-Methylphenol	S1. Triphenylene
L. Nitrobenzene	NN. Fluorene	PPP. Benzoic Acid	RRRR. 4-Dimethyldibenzothiophene (4MDT)	T1. Octachlorostyrene
M. Isophorone	OO. 4-Nitroaniline	QQQ. Benzyl alcohol	SSSS. 2/3-Dimethyldibenzothiophene (4MDT)	U1. Famphur
N. 2-Nitrophenol	PP. 4,6-Dinitro-2-methylphenol	RRR. Pyridine	TTTT. 1-Methyldibenzothiophene (1MDT)	V1. 1,4-phenylenediamine
O. 2,4-Dimethylphenol	QQ. N-Nitrosodiphenylamine	SSS. Benzidine	UUUU. 2,3,4,6-Tetrachlorophenol	W1. Methapyrilene
P. Bis(2-chloroethoxy)methane	RR. 4-Bromophenyl-phenylether	TTT. 1-Methylnaphthalene	VVVV. 1,2,4,5-Tetrachlorobenzene	X1. Pentachloroethane
Q. 2,4-Dichlorophenol	SS. Hexachlorobenzene	UUU. Benzo(b)thiophene	WWWWW. 2-Picoline	Y1. 3,3'-Dimethylbenzidine
R. 1,2,4-Trichlorobenzene	TT. Pentachlorophenol	VVV. Benzonaphthothiophene	XXXX. 3-Methylcholanthrene	Z1. o-Toluidine
S. Naphthalene	UU. Phenanthrene	WWW. Benzo(e)pyrene	YYYY. a,a-Dimethylphenethylamine	A2. 1-Naphthylamine
T. 4-Chloroaniline	VV. Anthracene	XXX. 2,6-Dimethylnaphthalene	ZZZZ. Hexachloropropene	B2. 4-Aminobiphenyl
U. Hexachlorobutadiene	WW. Carbazole	YYY. 2,3,5-Trimethylnaphthalene	A1. N-Nitrosodiethylamine	C2. 4-Nitroquinoline-1-oxide
V. 4-Chloro-3-methylphenol	XX. Di-n-butylphthalate	ZZZ. Perylene	B1. N-Nitrosodi-n-butylamine	D2. Hexachloropene
W. 2-Methylnaphthalene	YY. Fluoranthene	AAAA. Dibenzothiophene	C1. N-Nitrosomethylethylamine	E2. Bis (2-chloro-1-methylethyl) ether
X. Hexachlorocyclopentadiene	ZZ. Pyrene	BBBB. Benzo(a)fluoranthene	D1. N-Nitrosomorpholine	F2. Bifenthrin
Y. 2,4,6-Trichlorophenol	AAA. Butylbenzylphthalate	CCCC. Benzo(b)fluorene	E1. N-Nitrosopyrrolidine	G2. Cyfluthrin
Z. 2,4,5-Trichlorophenol	BBB. 3,3'-Dichlorobenzidine	DDDD. cis/trans-Decalin	F1. Phenacetin	H2. Cypermethrin
AA. 2-Chloronaphthalene	CCC. Benzo(a)anthracene	EEEE. Biphenyl	G1. 2-Acetylaminofluorene	I2. Permethrin (cis/trans)
BB. 2-Nitroaniline	DDD. Chrysene	FFFF. Retene	H1. Pronamide	J2. 5-Nitro-o-toluidine

LDC #: 44457A2b

## VALIDATION FINDINGS WORKSHEET Surrogate Recovery

Page: 1 of 1  
 Reviewer: FT  
 2nd Reviewer: AK

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualification below for all questions answered "N". Not applicable questions are identified as "N/A".

- N N/A Were percent recoveries (%R) for surrogates within QC limits?  
 N N/A If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?  
 N N/A If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

(S)

#	Sample ID	Surrogate	%R (Limits)	Qualifications
	3	W-d10	119 (39-114)	↓ det / P NO
		YY-d10	121 (58-120)	↓
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	

(NBZ) = Nitrobenzene - d5      (2FP) = 2-Fluorophenol  
 (FBP) = 2-Fluorobiphenyl    (TBP) = 2,4,6-Tribromophenol  
 (TPH) = Terphenyl - d14      (2CP) = 2-Chlorophenol - d4

LDC #: 44457A2b

**VALIDATION FINDINGS WORKSHEET**  
**Initial Calibration Calculation Verification**

Page: 1 of 1

Reviewer: FT

2nd Reviewer: [Signature]

METHOD: GCMS 8270<sup>D</sup><sub>C</sub>

The calibration factors (RRFF), average RRFF, and relative standard deviation (%RSD) were recalculated for compounds identified below using the following calculations:

$RRF = (Ax)(Cis)/(Ais)(Cx)$

average RRF = sum of the RRFs/number of standards

$\%RSD = 100 * (S/X)$

Where:

- Ax = Area of compound
- Cx = Concentration of compound
- S = Standard deviation of the RRFs
- X = Mean of the RRFs
- Ais = Area of associated internal standard
- Cis = Concentration of internal Standard

#	Standard ID	Calibration Date	Compound	Reported (RRF 5 ppb std)	Recalculated (RRF 5 ppb std)	Reported AverageRRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
	ICAL Linus	1/22/2019	S	1.383	1.383	1.259	1.259	13.00	13.00

LDC #: 44457 A2b

## VALIDATION FINDINGS WORKSHEET Continuing Calibration Results Verification

Page: 1 of 1  
Reviewer: FT  
2nd Reviewer: AY

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference =  $100 * (\text{ave. RRF} - \text{RRF}) / \text{ave. RRF}$   
 $\text{RRF} = (A_x)(C_{is}) / (A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF  
 RRF = continuing calibration RRF  
 $A_x$  = Area of compound,  
 $C_x$  = Concentration of compound,  
 $A_{is}$  = Area of associated internal standard  
 $C_{is}$  = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Internal Standard)	Average RRF (Initial)	Reported	Recalculated	Reported	Recalculated
					RRF (CC)	RRF (CC)	%D	%D
1	CCV-0122 L081	2/1/19	S	1.259	1.291	1.291	2.5	2.5
			(1st IS)					
			(2nd IS)					
			(3rd IS)					
			(4th IS)					
			(5th IS)					
2	CCV-0122 L088	2/1/19	S	↓	1.289	1.289	2.4	2.4
			(1st IS)					
			(2nd IS)					
			(3rd IS)					
			(4th IS)					
			(5th IS)					
3			(1st IS)					
			(2nd IS)					
			(3rd IS)					
			(4th IS)					
			(5th IS)					
			(6th IS)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.



LDC #: 44457A06

**VALIDATION FINDINGS WORKSHEET**  
**Surrogate Results Verification**

Page: 1 of 1  
 Reviewer: FT  
 2nd reviewer: AT

**METHOD:** GC/MS Semivolatiles (EPA SW 846 Method 8270D)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS \* 100

Where: SF = Surrogate Found  
 SS = Surrogate Spiked

Sample ID: #1

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference	
Nitrobenzene-d5	W-d10	6.250	6.0495	96.8	96.8	0
2-Fluorobiphenyl	YY-d10	6.250	5.3124	85.0	85.0	0
Terphenyl-d14						
Phenol-d5						
2-Fluorophenol						
2,4,6-Tribromophenol						
2-Chlorophenol-d4						
1,2-Dichlorobenzene-d4						

Sample ID: \_\_\_\_\_

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID: \_\_\_\_\_

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

LDC #: 44457A26

## VALIDATION FINDINGS WORKSHEET

### Matrix Spike/Matrix Spike Duplicates Results Verification

Page: 1 of 1  
 Reviewer: FT  
 2nd Reviewer: [Signature]

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery =  $100 * (SSC - SC) / SA$

Where: SSC = Spiked sample concentration  
 SA = Spike added

SC = Sample concentration

RPD =  $|MSC - MSC| * 2 / (MSC + MSDC)$

MSC = Matrix spike concentration

MSDC = Matrix spike duplicate concentration

MS/MSD samples: 5 + 6

Compound	Spike Added (ug/L)		Sample Concentration (ug/L)	Spiked Sample Concentration (ug/L)		Matrix Spike		Matrix Spike Duplicate		MS/MSD	
	MS	MSD		MS	MSD	Percent Recovery		Percent Recovery		RPD	
						Reported	Recalc	Reported	Recalc	Reported	Recalc
Phenol											
N-Nitroso-di-n-propylamine											
4-Chloro-3-methylphenol											
Acenaphthene											
Pentachlorophenol											
Pyrene											
<u>S</u>	<u>6.75</u>	<u>6.25</u>	<u>ND</u>	<u>4.73</u>	<u>4.93</u>	<u>75.7</u>	<u>75.7</u>	<u>78.9</u>	<u>78.9</u>	<u>4.1</u>	<u>4.1</u>

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 44457A2b

**VALIDATION FINDINGS WORKSHEET**

**Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification**

Reviewer: FT

2nd Reviewer: AC

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 \* (SC/SA)

Where: SSC = Spike concentration  
SA = Spike added

RPD = |LCSC - LCSDC| \* 2 / (LCSC + LCSDC)

LCSC = Laboratory control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS/LCSD samples: 190130A LCS/D

Compound	Spike Added (ug/L)		Spike Concentration (ug/L)		LCS		LCSD		LCS/LCSD	
	LCS	LCSD	LCS	LCSD	Percent Recovery		Percent Recovery		RPD	
					Reported	Recalc	Reported	Recalc	Reported	Recalculated
Phenol										
N-Nitroso-di-n-propylamine										
4-Chloro-3-methylphenol										
Acenaphthene										
Pentachlorophenol										
Pyrene										
S	6.25	6.25	6.00	6.17	96.0	96.0	98.7	98.7	2.8	2.8

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 44457A26

**VALIDATION FINDINGS WORKSHEET**  
**Sample Calculation Verification**

Page: 1 of 1  
Reviewer: FT  
2nd reviewer: [Signature]

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

Y/N/N/A  
Y/N/N/A

Were all reported results recalculated and verified for all level IV samples?  
Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration =  $\frac{(A_x)(I_s)(V_i)(DF)(2.0)}{(A_s)(RRF)(V_o)(V_i)(\%S)}$

- A<sub>x</sub> = Area of the characteristic ion (EICP) for the compound to be measured
- A<sub>s</sub> = Area of the characteristic ion (EICP) for the specific internal standard
- I<sub>s</sub> = Amount of internal standard added in nanograms (ng)
- V<sub>o</sub> = Volume or weight of sample extract in milliliters (ml) or grams (g).
- V<sub>i</sub> = Volume of extract injected in microliters (ul)
- V<sub>t</sub> = Volume of the concentrated extract in microliters (ul)
- Df = Dilution Factor.
- %S = Percent solids, applicable to soil and solid matrices only.
- 2.0 = Factor of 2 to account for GPC cleanup

Example:

Sample I.D. 190130A LCS S

Conc. =  $\frac{39797 (2.5) (1) (1000)}{16459 (1.259) (800)}$   
= 6.00 ug/L

#	Sample ID	Compound	Reported Concentration (ug/L)	Calculated Concentration (ug/L)	Qualification
	<u>LCS</u>	<u>S</u>	<u>6.00</u>	<u>6.00</u>	

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** March 5, 2019

**Parameters:** 2-(2-Methoxyethoxy)-ethanol

**Validation Level:** Level C & D

**Laboratory:** APPL, Inc.

**Sample Delivery Group (SDG):** 87956

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
ERH733**	AZ85643**	Water	01/24/19
ERH734	AZ85644	Water	01/24/19
ERH757	AZ85646	Water	01/23/19
ERH755	AZ85653	Water	01/24/19
ERH733MS	AZ85643MS	Water	01/24/19
ERH733MSD	AZ85643MSD	Water	01/24/19

\*\*Indicates sample underwent Level D validation

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

2-(2-Methoxyethoxy)-ethanol by Environmental Protection Agency (EPA) SW 846 Method 8270D Modified

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level D data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## Qualification Code Reference

- H Holding times were exceeded.
- S Surrogate recovery was outside QC limits.
- C Calibration %RSD,  $r$ ,  $r^2$  or %D were noncompliant.
- R Calibration RRF was  $<0.05$ .
- B Presumed contamination from preparation (method blank).
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD was high.
- I Internal standard performance was unsatisfactory.
- M Instrument Performance Check (BFB or DFTPP) was noncompliant.
- T Presumed contamination from trip blank.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Instrument performance for pesticides was poor.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.



## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. GC/MS Instrument Performance Check**

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

## **III. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0%.

Average relative response factors (RRF) were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

## **IV. Continuing Calibration**

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0%.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0%.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

## **V. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **VI. Field Blanks**

No field blanks were identified in this SDG.

## VII. Surrogates

Surrogates were not added to all samples as required by the method. Using professional judgment, no data were qualified, since the LCS/LCSD/MS/MSD percent recoveries were within QC limits. Additionally, one base surrogate percent recoveries were within QC limits in the phenol analysis.

## VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits.

Relative percent differences (RPD) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
ERH733MS/MSD (ERH733**)	2-(2-Methoxyethoxy)-ethanol	27.3 ( $\leq 20$ )	NA	-

## IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

Relative percent differences (RPD) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
190128A LCS/D (All samples in SDG 87956)	2-(2-Methoxyethoxy)-ethanol	41.0 ( $\leq 20$ )	UJ (all non-detects)	P

## X. Field Duplicates

Samples ERH733\*\* and ERH734 were identified as field duplicates. No results were detected in any of the samples.

## XI. Internal Standards

All internal standard areas and retention times were within QC limits.

## XII. Compound Quantitation

All compound quantitations met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

### **XIII. Target Compound Identifications**

All target compound identifications met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

### **XIV. System Performance**

The system performance was acceptable for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

### **XV. Overall Assessment of Data**

The analysis was conducted within all specifications of the method with the exception noted in Section VII. No results were rejected in this SDG.

Due to LCS/LCSD RPD, data were qualified as estimated in four samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

**Red Hill Bulk Storage Facility, CTO 18F0126  
 2-(2-Methoxyethoxy)-ethanol - Data Qualification Summary - SDG 87956**

Sample	Compound	Flag	A or P	Reason (Code)
ERH733** ERH734 ERH757 ERH755	2-(2-Methoxyethoxy)-ethanol	UJ (all non-detects)	P	Laboratory control samples (RPD) (L)

**Red Hill Bulk Storage Facility, CTO 18F0126  
 2-(2-Methoxyethoxy)-ethanol - Laboratory Blank Data Qualification Summary - SDG 87956**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
 2-(2-Methoxyethoxy)-ethanol - Field Blank Data Qualification Summary - SDG 87956**

No Sample Data Qualified in this SDG

LDC #: 44457A1c  
 SDG #: 87956  
 Laboratory: APPL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**

Level C/D

Date: 3/11/19  
 Page: 1 of 1  
 Reviewer: FE  
 2nd Reviewer: FE

**METHOD:** GC/MS 2-(2-Methoxyethoxy)-Ethanol (EPA SW 846 Method 8270D-STM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A Δ	
II.	GC/MS Instrument performance check	Δ	
III.	Initial calibration/ICV	A/A	0% PSD ≤ 15      1W ≤ 20
IV.	Continuing calibration <i>closing cal</i>	Δ	cal ≤ 20/50
V.	Laboratory Blanks	A	
VI.	Field blanks	N	
VII.	Surrogate spikes	SW	
VIII.	Matrix spike/Matrix spike duplicates	SW	
IX.	Laboratory control samples	SW	LCS 10
X.	Field duplicates	ND	D = 1, 2
XI.	Internal standards	Δ	
XII.	Compound quantitation RL/LOQ/LODs	Δ	Not reviewed for Level C validation.
XIII.	Target compound identification	Δ	Not reviewed for Level C validation.
XIV.	System performance	Δ	Not reviewed for Level C validation.
XV.	Overall assessment of data	Δ	

Note: A = Acceptable      ND = No compounds detected      D = Duplicate      SB=Source blank  
 N = Not provided/applicable      R = Rinsate      TB = Trip blank      OTHER:  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

\*\* Indicates sample underwent Level D validation

	Client ID	Lab ID	Matrix	Date
1	ERH733** D	AZ85643**	Water	01/24/19
2	ERH734 D	AZ85644	Water	01/24/19
3	ERH757	AZ85646	Water	01/24/19
4	ERH755	AZ85653	Water	01/24/19
5	ERH733MS	AZ85643MS	Water	01/24/19
6	ERH733MSD	AZ85643MSD	Water	01/24/19
7				
8				

Notes:

190128A - BIK				

Method: Semivolatiles (EPA SW 846 Method 8270D)

Validation Area	Yes	No	NA	Findings/Comments
<b>I. Technical holding times</b>				
Were all technical holding times met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was cooler temperature criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>II. GC/MS Instrument performance check</b>				
Were the DFTPP performance results reviewed and found to be within the specified criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all samples analyzed within the 12 hour clock criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>IIIa. Initial calibration</b>				
Did the laboratory perform a 5 point calibration prior to sample analysis?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent relative standard deviations (%RSD) ≤ 15% and relative response factors (RRF) within method criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>IIIb. Initial Calibration Verification</b>				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent differences (%D) < 20%?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>IV. Continuing calibration</b>				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent differences (%D) ≤ 20% and relative response factors (RRF) within method criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>V. Laboratory Blanks</b>				
Was a laboratory blank associated with every sample in this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was a laboratory blank analyzed at least once every 12 hours for each matrix and concentration?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was there contamination in the laboratory blanks? If yes, please see the blanks validation findings worksheet.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>VI. Field blanks</b>				
Were field blanks were identified in this SDG?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Were target compounds detected in the field blanks?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>VII. Surrogate spikes</b>				
Were all surrogate percent recovery (%R) within QC limits?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If any percent recoveries (%R) was less than 10%, was a reanalysis performed to confirm %R?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>VIII. Matrix spike/Matrix spike duplicates</b>				
Were matrix spike (MS) and matrix spike duplicate (MSD) analyzed in this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Validation Area	Yes	No	NA	Findings/Comments
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	<u>F7</u> ✓	<u>W</u> ✓	✓	
<b>IX. Laboratory control samples</b>				
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?		✓		
<b>X. Field duplicates</b>				
Were field duplicate pairs identified in this SDG?	✓			
Were target compounds detected in the field duplicates?		✓		
<b>XI. Internal standards</b>				
Were internal standard area counts within -50% to +100% of the associated calibration standard?	✓			
Were retention times within + 30 seconds of the associated calibration standard?	✓			
<b>XII. Compound quantitation</b>				
Did the laboratory LOQs/RLs meet the QAPP LOQs/RLs?	✓			
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
<b>XIII. Target compound identification</b>				
Were relative retention times (RRT's) within + 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
<b>XIV. System performance</b>				
System performance was found to be acceptable.	✓			
<b>XV. Overall assessment of data</b>				
Overall assessment of data was found to be acceptable.	✓			

## VALIDATION FINDINGS WORKSHEET

**METHOD: GC/MS SVOA**

A. Phenol	CC. Dimethylphthalate	EEE. Bis(2-ethylhexyl)phthalate	GGGG. C30-Hopane	I1. Methyl methanesulfonate
B. Bis (2-chloroethyl) ether	DD. Acenaphthylene	FFF. Di-n-octylphthalate	HHHH. 1-Methylphenanthrene	J1. Ethyl methanesulfonate
C. 2-Chlorophenol	EE. 2,6-Dinitrotoluene	GGG. Benzo(b)fluoranthene	IIII. 1,4-Dioxane	K1. o,o',o'-Triethylphosphorothioate
D. 1,3-Dichlorobenzene	FF. 3-Nitroaniline	HHH. Benzo(k)fluoranthene	JJJJ. Acetophenone	L1. n-Phenylene diamine
E. 1,4-Dichlorobenzene	GG. Acenaphthene	III. Benzo(a)pyrene	KKKK. Atrazine	M1. 1,4-Naphthoquinone
F. 1,2-Dichlorobenzene	HH. 2,4-Dinitrophenol	JJJ. Indeno(1,2,3-cd)pyrene	LLLL. Benzaldehyde	N1. N-Nitro-o-toluidine
G. 2-Methylphenol	II. 4-Nitrophenol	KKK. Dibenz(a,h)anthracene	MMMM. Caprolactam	O1. 1,3,5-Trinitrobenzene
H. 2,2'-Oxybis(1-chloropropane)	JJ. Dibenzofuran	LLL. Benzo(g,h,i)perylene	NNNN. 2,6-Dichlorophenol	P1. Pentachlorobenzene
I. 4-Methylphenol	KK. 2,4-Dinitrotoluene	MMM. Bis(2-Chloroisopropyl)ether	OOOO. 1,2-Diphenylhydrazine	Q1. 4-Aminobiphenyl
J. N-Nitroso-di-n-propylamine	LL. Diethylphthalate	NNN. Aniline	PPPP. 3-Methylphenol	R1. 2-Naphthylamine
K. Hexachloroethane	MM. 4-Chlorophenyl-phenyl ether	OOO. N-Nitrosodimethylamine	QQQQ. 3&4-Methylphenol	S1. Triphenylene
L. Nitrobenzene	NN. Fluorene	PPP. Benzoic Acid	RRRR. 4-Dimethyldibenzothiophene (4MDT)	T1. Octachlorostyrene
M. Isophorone	OO. 4-Nitroaniline	QQQ. Benzyl alcohol	SSSS. 2/3-Dimethyldibenzothiophene (4MDT)	U1. Famphur
N. 2-Nitrophenol	PP. 4,6-Dinitro-2-methylphenol	RRR. Pyridine	TTTT. 1-Methyldibenzothiophene (1MDT)	V1. 1,4-phenylenediamine
O. 2,4-Dimethylphenol	QQ. N-Nitrosodiphenylamine	SSS. Benzidine	UUUU. 2,3,4,6-Tetrachlorophenol	W1. Methapyrilene
P. Bis(2-chloroethoxy)methane	RR. 4-Bromophenyl-phenylether	TTT. 1-Methylnaphthalene	VVVV. 1,2,4,5-Tetrachlorobenzene	X1. Pentachloroethane
Q. 2,4-Dichlorophenol	SS. Hexachlorobenzene	UUU. Benzo(b)thiophene	WWWW. 2-Picoline	Y1. 3,3'-Dimethylbenzidine
R. 1,2,4-Trichlorobenzene	TT. Pentachlorophenol	VVV. Benzonaphthothiophene	XXXX. 3-Methylcholanthrene	Z1. o-Toluidine
S. Naphthalene	UU. Phenanthrene	WWW. Benzo(e)pyrene	YYYY. a,a-Dimethylphenethylamine	A2. 1-Naphthylamine
T. 4-Chloroaniline	VV. Anthracene	XXX. 2,6-Dimethylnaphthalene	ZZZZ. Hexachloropropene	B2. 4-Aminobiphenyl
U. Hexachlorobutadiene	WW. Carbazole	YYY. 2,3,5-Trimethylnaphthalene	A1. N-Nitrosodiethylamine	C2. 4-Nitroquinoline-1-oxide
V. 4-Chloro-3-methylphenol	XX. Di-n-butylphthalate	ZZZ. Perylene	B1. N-Nitrosodi-n-butylamine	D2. Hexachloropene
W. 2-Methylnaphthalene	YY. Fluoranthene	AAAA. Dibenzothiophene	C1. N-Nitrosomethylethylamine	E2. Bis (2-chloro-1-methylethyl) ether
X. Hexachlorocyclopentadiene	ZZ. Pyrene	BBBB. Benzo(a)fluoranthene	D1. N-Nitrosomorpholine	F2. Bifenthrin
Y. 2,4,6-Trichlorophenol	AAA. Butylbenzylphthalate	CCCC. Benzo(b)fluorene	E1. N-Nitrosopyrrolidine	G2. Cyfluthrin
Z. 2,4,5-Trichlorophenol	BBB. 3,3'-Dichlorobenzidine	DDDD. cis/trans-Decalin	F1. Phenacetin	H2. Cypermethrin
AA. 2-Chloronaphthalene	CCC. Benzo(a)anthracene	EEEE. Biphenyl	G1. 2-Acetylaminofluorene	I2. Permethrin (cis/trans)
BB. 2-Nitroaniline	DDD. Chrysene	FFFF. Retene	H1. Pronamide	J2. 5-Nitro-o-toluidine



LDC #: 44457A/C

### VALIDATION FINDINGS WORKSHEET Surrogate Recovery

Page: 1 of 1  
 Reviewer: FT  
 2nd Reviewer: [Signature]

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualification below for all questions answered "N". Not applicable questions are identified as "N/A".

- Y N N/A Were percent recoveries (%R) for surrogates within QC limits?
- Y N N/A If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?
- Y N N/A If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Sample ID	Surrogate	%R (Limits)	Qualifications
	all	Surrogates were not added to all samples as required by the method. Using professional judgment, no data were qualified, since the LCS/LCSD and MS/MSD percent recoveries were within QC limits. Additionally, all base surrogate percent recoveries were within QC limits in the phenol analysis. <i>except below</i>		Text
	1	FBP	162 (44-119)	no qual
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	

(NBZ) = Nitrobenzene - d5 (2FP) = 2-Fluorophenol

LDC #: 44457A/C

**VALIDATION FINDINGS WORKSHEET  
Matrix Spike/Matrix Spike Duplicates**

Page: 1 of 1  
Reviewer: FT  
2nd Reviewer: A

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.

Y N N/A Was a MS/MSD analyzed every 20 samples of each matrix?

Y N N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits? (E)

#	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	5+6	*	( )	( )	27.3 ( 20 )	#	Ident / A ND
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		

LDC #: 44457A/C

**VALIDATION FINDINGS WORKSHEET**  
**Laboratory Control Samples (LCS)**

Page: 1 of 7  
Reviewer: FT  
2nd Reviewer: AK

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y  N  N/A

Was a LCS required?

Y  N  N/A

Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

(L)

#	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	190128A - LCSD	*	( )	( )	4/0 ( 20 )	All	J/WS/P (ND)
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		

LDC #: 44457A/c

**VALIDATION FINDINGS WORKSHEET**  
**Initial Calibration Calculation Verification**

Page: 1 of 1

Reviewer: FT

2nd Reviewer: [Signature]

METHOD: GCMS 8270C <sup>D</sup>

The calibration factors (RRFF), average RRFF, and relative standard deviation (%RSD) were recalculated for compounds identified below using the following calculations:

$$RRF = (Ax)(Cis)/(Ais)(Cx)$$

average RRF = sum of the RRFs/number of standards

$$\%RSD = 100 * (S/X)$$

Where:

Ax = Area of compound

Cx = Concentration of compound

S = Standard deviation of the RRFs

X = Mean of the RRFs

Ais = Area of associated internal standard

Cis = Concentration of internal Standard

#	Standard ID	Calibration Date	Compound	Reported (RRF 400 std)	Recalculated (RRF400 std)	Reported AverageRRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
	ICAL	11/28/2018	2-(2-Methoxyethoxy) Ethanol	0.2070	0.2070	0.2402	0.2402	7.90	7.90
	Yoda								

### VALIDATION FINDINGS WORKSHEET Continuing Calibration Results Verification

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference =  $100 * (\text{ave. RRF} - \text{RRF}) / \text{ave. RRF}$   
 $\text{RRF} = (A_x)(C_{is}) / (A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF  
 RRF = continuing calibration RRF  
 $A_x$  = Area of compound,  
 $C_x$  = Concentration of compound,  
 $A_{is}$  = Area of associated internal standard  
 $C_{is}$  = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Internal Standard)	Average RRF (Initial)	Reported	Recalculated	Reported	Recalculated
					RRF (CC)	RRF (CC)	%D	%D
1	COV 1128Y057	1/29/19	2-(2-ME)-E (1st IS)	0.2402	0.2337	0.2337	2.7	2.7
			(2nd IS)					
			(3rd IS)					
			(4th IS)					
			(5th IS)					
			(6th IS)					
2			(1st IS)					
			(2nd IS)					
			(3rd IS)					
			(4th IS)					
			(5th IS)					
			(6th IS)					
3			(1st IS)					
			(2nd IS)					
			(3rd IS)					
			(4th IS)					
			(5th IS)					
			(6th IS)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 44457A/c

## VALIDATION FINDINGS WORKSHEET

### Matrix Spike/Matrix Spike Duplicates Results Verification

Page: 1 of 1  
 Reviewer: FT  
 2nd Reviewer: [Signature]

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery =  $100 * (SSC - SC) / SA$

Where: SSC = Spiked sample concentration  
 SA = Spike added

SC = Sample concentration

RPD =  $|MSC - MSC| * 2 / (MSC + MSDC)$

MSC = Matrix spike concentration

MSDC = Matrix spike duplicate concentration

MS/MSD samples: 5 + 6

Compound	Spike Added (ug/L)		Sample Concentration (ug/L)	Spiked Sample Concentration (ug/L)		Matrix Spike		Matrix Spike Duplicate		MS/MSD	
	MS	MSD		MS	MSD	Percent Recovery		Percent Recovery		RPD	
						Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Phenol											
N-Nitroso-di-n-propylamine											
4-Chloro-3-methylphenol											
Acenaphthene											
Pentachlorophenol											
Pyrene											
<u>2-(2-MEE)</u>	<u>80.0</u>	<u>80.0</u>	<u>ND</u>	<u>68.8</u>	<u>52.3</u>	<u>86.0</u>	<u>86.0</u>	<u>65.4</u>	<u>65.4</u>	<u>27.3</u>	<u>27.3</u>

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 44457A/c

**VALIDATION FINDINGS WORKSHEET**

**Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification**

Reviewer: FT  
 2nd Reviewer: AC

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 \* (SC/SA)

Where: SSC = Spike concentration  
 SA = Spike added

RPD =  $|LCS - LCSD| * 2 / (LCS + LCSD)$

LCS = Laboratory control sample concentration LCSD = Laboratory control sample duplicate concentration

LCS/LCSD samples: 190128A LCS ID

Compound	Spike Added (ug/L)		Spike Concentration (ug/L)		LCS		LCSD		LCS/LCSD	
	LCS	LCSD	LCS	LCSD	Percent Recovery		Percent Recovery		RPD	
					Reported	Recalc	Reported	Recalc	Reported	Recalculated
Phenol										
N-Nitroso-di-n-propylamine										
4-Chloro-3-methylphenol										
Acenaphthene										
Pentachlorophenol										
Pyrene										
<u>2-(2-MFE)</u>	<u>80.0</u>	<u>80.0</u>	<u>88.7</u>	<u>58.5</u>	<u>111</u>	<u>111</u>	<u>73.1</u>	<u>73.1</u>	<u>41.0</u>	<u>41.0</u>

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 44457A/c

**VALIDATION FINDINGS WORKSHEET**  
**Sample Calculation Verification**

Reviewer: FT  
 2nd reviewer: [Signature]

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

Y N N/A  
Y N N/A

Were all reported results recalculated and verified for all level IV samples?  
 Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

$$\text{Concentration} = \frac{(A_x)(I_s)(V_i)(DF)(2.0)}{(A_s)(RRF)(V_o)(V_t)(\%S)}$$

- A<sub>x</sub> = Area of the characteristic ion (EICP) for the compound to be measured
- A<sub>s</sub> = Area of the characteristic ion (EICP) for the specific internal standard
- I<sub>s</sub> = Amount of internal standard added in nanograms (ng)
- V<sub>o</sub> = Volume or weight of sample extract in milliliters (ml) or grams (g).
- V<sub>i</sub> = Volume of extract injected in microliters (ul)
- V<sub>t</sub> = Volume of the concentrated extract in microliters (ul)
- Df = Dilution Factor.
- %S = Percent solids, applicable to soil and solid matrices only.
- 2.0 = Factor of 2 to account for GPC cleanup

Example:

Sample I.D. 190128A LCS 2-(2-MEE)

$$\text{Conc.} = \frac{(163673) (40.0)}{(307091) (0.2402)}$$

= 88.7 ug/L

#	Sample ID	Compound	Reported Concentration (ug/L)	Calculated Concentration (ug/L)	Qualification
	LCS	2-(2-MEE)	88.7	88.7	



**Laboratory Data Consultants, Inc.  
Data Validation Report**

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** February 27, 2019

**Parameters:** Wet Chemistry

**Validation Level:** Level C & D

**Laboratory:** APPL, Inc.

**Sample Delivery Group (SDG):** 87956

<b>Sample Identification</b>	<b>Laboratory Sample Identification</b>	<b>Matrix</b>	<b>Collection Date</b>
ERH733**	AZ85643**	Water	01/24/19
ERH757	AZ85646	Water	01/24/19
ERH755	AZ85653	Water	01/24/19

\*\*Indicates sample underwent Level D validation

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Alkalinity by Standard Method 2320B

Chloride, Nitrate, and Sulfate by Environmental Protection Agency (EPA) Method 300.0

Ferrous Iron by Standard Method 3500-Fe B

Nitrate/Nitrite as Nitrogen by EPA Method 353.2

Total Organic Carbon by EPA SW 846 Method 9060A

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level D data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## Qualification Code Reference

- H Holding times were exceeded.
- S The sequence or number of standards used for the calibration was incorrect.
- C Correlation coefficient is  $<0.995$ .
- R %R for calibration is not within control limits.
- B Presumed contamination from preparation (method) blank or calibration blank.
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD or difference was high.
- I ICP ICS results were unsatisfactory.
- A ICP Serial Dilution %D were not within control limits.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Post Digestion Spike recovery was not within control limits.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

## I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met.

## II. Initial Calibration

All criteria for the initial calibration of each method were met.

## III. Continuing Calibration

Continuing calibration frequency and analysis criteria were met for each method when applicable.

## IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks with the following exceptions:

Blank ID	Analyte	Maximum Concentration	Limit of Quantitation	Associated Samples
PB (prep blank)	Total alkalinity Bicarbonate as CaCo3	1.5 mg/L 1.5 mg/L	2.0 mg/L 2.0 mg/L	All samples in SDG 87956
PB (prep blank)	Total organic carbon Chloride	0.31 mg/L 0.13 mg/L	0.93 mg/L 1.0 mg/L	ERH733** ERH757
ICB/CCB	Total organic carbon Chloride	0.28 mg/L 0.150 mg/L	0.93 mg/L 1.0 mg/L	ERH733** ERH757
PB (prep blank)	Chloride	0.15 mg/L	1.0 mg/L	ERH755
ICB/CCB	Total organic carbon Chloride	0.16 mg/L 0.085 mg/L	0.93 mg/L 1.0 mg/L	ERH755

Data qualification by the laboratory blanks was based on the maximum contaminant concentration in the laboratory blanks in the analysis of each analyte. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated laboratory blanks with the following exceptions:

Sample	Analyte	Reported Concentration	Limit of Quantitation	Modified Final Concentration
ERH733**	Total organic carbon	0.48 mg/L	0.93 mg/L	0.48U mg/L
ERH757	Total organic carbon	1.1 mg/L	0.93 mg/L	1.1U mg/L

Sample	Analyte	Reported Concentration	Limit of Quantitation	Modified Final Concentration
ERH755	Total organic carbon	0.63 mg/L	0.93 mg/L	0.63U mg/L

## V. Field Blanks

No field blanks were identified in this SDG.

## VI. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

## VII. Duplicate Sample Analysis

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

## VIII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## IX. Field Duplicates

No field duplicates were identified in this SDG.

## X. Sample Result Verification

All sample result verifications were acceptable for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

## XI. Overall Assessment of Data

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to laboratory blank contamination, data were qualified as not detected in three samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

**Red Hill Bulk Storage Facility, CTO 18F0126**  
**Wet Chemistry - Data Qualification Summary - SDG 87956**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126**  
**Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 87956**

Sample	Analyte	Modified Final Concentration	A or P	Code
ERH733**	Total organic carbon	0.48U mg/L	A	B
ERH757	Total organic carbon	1.1U mg/L	A	B
ERH755	Total organic carbon	0.63U mg/L	A	B

**Red Hill Bulk Storage Facility, CTO 18F0126**  
**Wet Chemistry - Field Blank Data Qualification Summary - SDG 87956**

No Sample Data Qualified in this SDG

LDC #: 44457A6  
 SDG #: 87956  
 Laboratory: APPL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**

Level C/D

Date: 2/27/19

Page: 1 of 1

Reviewer: [Signature]

2nd Reviewer: [Signature]

**METHOD: (Analyte)** Alkalinity (SM2320B), Chloride, Nitrate, Sulfate (EPA Method 300.0), Ferrous Iron (SM3500-Fe B), Nitrate/Nitrite-N (EPA Method 353.2), TOC (EPA SW846 Method 9060A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	SW	
V	Field blanks	N	
VI.	Matrix Spike/Matrix Spike Duplicates	N	C.S.
VII.	Duplicate sample analysis	N	
VIII.	Laboratory control samples	A	LCS10
IX.	Field duplicates	N	
X.	Sample result verification	A	Not reviewed for Level C validation.
XI.	Overall assessment of data	A	

Note: A = Acceptable      ND = No compounds detected      D = Duplicate      SB=Source blank  
 N = Not provided/applicable      R = Rinsate      TB = Trip blank      OTHER:  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

\*\* Indicates sample underwent Level D validation

	Client ID	Lab ID	Matrix	Date
1	ERH733**	AZ85643**	Water	01/24/19
2	ERH757	AZ85646	Water	01/24/19
3	ERH755	AZ85653	Water	01/24/19
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				

Notes: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_



Method: Inorganics (EPA Method See Cover)

Validation Area	Yes	No	NA	Findings/Comments
<b>I. Technical holding times</b>				
All technical holding times were met.	✓			
<b>II. Calibration</b>				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial calibration correlation coefficients > 0.995?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% QC limits?	✓			
Were titrant checks performed as required? (Level IV only)	✓			
Were balance checks performed as required? (Level IV only)			✓	
<b>III. Blanks</b>				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.	✓			
<b>IV. Matrix spike/Matrix spike duplicates and Duplicates</b>				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.			✓	
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.			✓	
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of ≤ CRDL (≤ 2X CRDL for soil) was used for samples that were ≤ 5X the CRDL, including when only one of the duplicate sample values were ≤ 5X the CRDL.			✓	
<b>V. Laboratory control samples</b>				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	✓			
<b>VI. Regional Quality Assurance and Quality Control</b>				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

LDC #: 44457A6

**VALIDATION FINDINGS CHECKLIST**

Page: 2 of 2  
 Reviewer: JB  
 2nd Reviewer: RT

Validation Area	Yes	No	NA	Findings/Comments
<b>VII. Sample Result Verification</b>				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
Were detection limits < RL?	✓			
<b>VIII. Overall assessment of data</b>				
Overall assessment of data was found to be acceptable.	✓			
<b>IX. Field duplicates</b>				
Field duplicate pairs were identified in this SDG.		✓		
Target analytes were detected in the field duplicates.			✓	
<b>X. Field blanks</b>				
Field blanks were identified in this SDG.		✓	✓	
Target analytes were detected in the field blanks.			✓	

VALIDATION FINDINGS WORKSHEET  
 Sample Specific Analysis Reference

All circled methods are applicable to each sample.

Sample ID	Parameter
1-3	pH TDS Cl F NO <sub>2</sub> NO <sub>3</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub> Ferrous Fe NO <sub>3</sub> /NO <sub>2</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
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	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
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	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>

Comments: \_\_\_\_\_

**VALIDATION FINDINGS WORKSHEET**

Blanks

CODE: B

Reviewer: JB

2nd Reviewer: ↗

METHOD: Inorganics, Method See Cover

Conc. units: mg/L Associated Samples All

Analyte	Blank ID	Blank ID	LOQ	Blank Action Limit															
	PB		LOQ	NONE (> 5x)															
Total Alkalinity	1.5		2.0	7.5															
Bicarbonate as CaCO3	1.5		2.0	7.5															

Conc. units: mg/L Associated Samples: 1, 2

Analyte	Blank ID	Blank ID	LOQ	Blank Action Limit															
	PB	ICB/CCB (mg/L)			1	2													
TOC	0.31	0.28	0.93	1.55	0.48U	1.1U													
Chloride	0.13	0.150	see below	0.75															

Blank LOQ Cl = 1.0 mg/L  
 (1) LOQ Cl = 5.0 mg/L  
 (2) LOQ Cl = 50.0 mg/L

Conc. units: mg/L Associated Samples: 3

Analyte	Blank ID	Blank ID	LOQ	Blank Action Limit															
	PB	ICB/CCB (mg/L)			3														
TOC		0.16	0.93	0.8	0.63U														
Chloride	0.15	0.085	1.0	0.75															

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:  
 All contaminants within five times the method blank concentration were qualified as not detected, "U".

LDC #: 44457A6

**Validation Findings Worksheet**  
**Initial and Continuing Calibration Calculation Verification**

Page: 1 of 1  
 Reviewer: JB  
 2nd Reviewer: ↻

Method: Inorganics, Method See Cover

The correlation coefficient (r) for the calibration of TOC was recalculated. Calibration date: 2/20/19

An initial or continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

$$\%R = \frac{\text{Found} \times 100}{\text{True}}$$

Where, Found = concentration of each analyte measured in the analysis of the ICV or CCV solution  
 True = concentration of each analyte in the ICV or CCV source

Type of analysis	Analyte	Standard	Conc. (ug/L)	Area	Recalculated	Reported	Acceptable (Y/N)
					r or r <sup>2</sup>	r or r <sup>2</sup>	
Initial calibration	TOC	s1	0	681067	0.9988	0.9989	Y
		s2	0.5	4791550			
		s3	1.25	10186940			
		s4	2.5	20579445			
		s5	3.75	28917365			
		s6	5	37803405			
Calibration verification	NO <sub>3</sub> /NO <sub>2</sub>	ICV	FOUND: 3.009 mg/L TRUE: 3 mg/L	100%	100%	Y	
Calibration verification <sup>n:58</sup>	Cl <sup>-</sup>	CCV	FOUND: 25.13 mg/L TRUE: 25 mg/L	100%	100%	Y	
Calibration verification							

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 44457A6

**VALIDATION FINDINGS WORKSHEET**  
**Level IV Recalculation Worksheet**

Page: 1 of 1  
 Reviewer: JB  
 2nd Reviewer: A

**METHOD:** Inorganics, Method See Cover

Percent recoveries (%R) for a laboratory control sample and a matrix spike sample were recalculated using the following formula:

$\%R = \frac{\text{Found}}{\text{True}} \times 100$     Where,    Found = concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).  
 True = concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$RPD = \frac{|S-D|}{(S+D)/2} \times 100$     Where,    S = Original sample concentration  
 D = Duplicate sample concentration

Sample ID	Type of Analysis	Element	Found / S (units)	True / D (units)	Recalculated	Reported	Acceptable (Y/N)
					%R / RPD	%R / RPD	
LCS	Laboratory control sample	Ferrous Fe	3.104 mg/L	3.00 mg/L	103%	103%	Y
	Matrix spike sample		(SSR-SR)				
	Duplicate sample						

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

# VALIDATION FINDINGS WORKSHEET

## Sample Calculation Verification

METHOD: Inorganics, Method See Cover

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

- (Y/N/N/A) Have results been reported and calculated correctly?  
(Y/N/N/A) Are results within the calibrated range of the instruments?  
(Y/N/N/A) Are all detection limits below the CRQL?

Compound (analyte) results for NO<sub>3</sub>/NO<sub>2</sub> reported with a positive detect were recalculated and verified using the following equation:

Concentration =    Recalculation:

$$\begin{aligned}
 \text{NO}_3/\text{NO}_2 &= 18.87621 \times \text{Abs} - 0.2940597 \\
 &= 18.87621 \times 0.043022 - 0.2940597 = 0.5180326 \text{ mg/L}
 \end{aligned}$$

#	Sample ID	Analyte	Reported Concentration (mg/L)	Calculated Concentration (mg/L)	Acceptable (Y/N)
	1	SO <sub>4</sub>	16.7	16.1	Y
		NO <sub>3</sub> /NO <sub>2</sub>	0.52	0.52	Y
		ATK	58.7	58.7	Y
		TOC	0.48	0.46	Y

Note: \_\_\_\_\_

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** March 4, 2019

**Parameters:** Gasoline Range Organics

**Validation Level:** Level C & D

**Laboratory:** APPL. Inc

**Sample Delivery Group (SDG):** 87956

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
ERH732	AZ85642	Water	01/24/19
ERH733**	AZ85643**	Water	01/24/19
ERH734	AZ85644	Water	01/24/19
ERH756	AZ85645	Water	01/23/19
ERH757	AZ85646	Water	01/23/19
ERH754	AZ85652	Water	01/24/19
ERH755	AZ85653	Water	01/24/19
ERH733MS	AZ85643MS	Water	01/24/19
ERH733MSD	AZ85643MSD	Water	01/24/19

\*\*Indicates sample underwent Level D validation



## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Gasoline Range Organics by Environmental Protection Agency (EPA) SW 846 Method 8260B

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level D data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered not detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## Qualification Code Reference

- H Holding times were exceeded.
- S Surrogate recovery was outside QC limits.
- C Calibration %RSD,  $r$ ,  $r^2$  or %D were noncompliant.
- R Calibration RRF was  $<0.05$ .
- B Presumed contamination from preparation (method blank).
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD was high.
- I Internal standard performance was unsatisfactory.
- M Instrument Performance Check (BFB or DFTPP) was noncompliant.
- T Presumed contamination from trip blank.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Instrument performance for pesticides was poor.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

A curve fit, based on the initial calibration, was established for quantitation. The coefficient of determination ( $r^2$ ) was greater than or equal to 0.990.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

## **III. Continuing Calibration**

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0%.

## **IV. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **V. Field Blanks**

Samples ERH732, ERH756, and ERH754 were identified as trip blanks. No contaminants were found.

## **VI. Surrogates**

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

## **VII. Matrix Spike/Matrix Spike Duplicates**

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## **VIII. Laboratory Control Samples**

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## **IX. Field Duplicates**

Samples ERH733\*\* and ERH734 were identified as field duplicates. No results were detected in any of the samples.

## **X. Compound Quantitation**

All compound quantitations met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

## **XI. Target Compound Identifications**

All target compound identifications met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

## **XII. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**Red Hill Bulk Storage Facility, CTO 18F0126  
Gasoline Range Organics - Data Qualification Summary - SDG 87956**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Gasoline Range Organics - Laboratory Blank Data Qualification Summary - SDG  
87956**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Gasoline Range Organics - Field Blank Data Qualification Summary - SDG 87956**

No Sample Data Qualified in this SDG

LDC #: 44457A7  
 SDG #: 87956  
 Laboratory: APPL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**

Level C/D

Date: 3/4/19  
 Page: 1 of 1  
 Reviewer: [Signature]  
 2nd Reviewer: [Signature]

**METHOD:** GC/MS Gasoline Range Organics (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/Δ	100% r2 ICV ≤ 20
IV.	Continuing calibration	Δ	CCV ≤ 20
V.	Laboratory Blanks	Δ	
VI.	Field blanks	ND	TB = 1, 4, 6
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	A	
IX.	Laboratory control samples	A	LOD 10
X.	Field duplicates	ND	D = 2, 3
XI.	Internal standards	Δ	
XII.	Compound quantitation RL/LOQ/LODs	Δ	Not reviewed for Level C validation.
XIII.	Target compound identification	A	Not reviewed for Level C validation.
XIV.	System performance	Δ	Not reviewed for Level C validation.
XV.	Overall assessment of data	Δ	

Note: A = Acceptable      ND = No compounds detected      D = Duplicate      SB=Source blank  
 N = Not provided/applicable      R = Rinsate      TB = Trip blank      OTHER:  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

\*\* Indicates sample underwent Level D validation

	Client ID	Lab ID	Matrix	Date
1	ERH732 TB	AZ85642	Water	01/24/19
2	ERH733** D	AZ85643**	Water	01/24/19
3	ERH734 D	AZ85644	Water	01/24/19
4	ERH756 TB	AZ85645	Water	01/24/19
5	ERH757	AZ85646	Water	01/24/19
6	ERH754 TP	AZ85652	Water	01/24/19
7	ERH755	AZ85653	Water	01/24/19
8	ERH733MS	AZ85643MS	Water	01/24/19
9	ERH733MSD	AZ85643MSD	Water	01/24/19
10				

Notes:

1	AL190128 - B114			
2	190130 AL1 - B114			

LDC #: 44457A7

**VALIDATION FINDINGS CHECKLIST**

Page: 1 of 2  
 Reviewer: FT  
 2nd Reviewer: AE

**Method:** Volatiles (EPA SW 846 Method 8260B)

Validation Area	Yes	No	NA	Findings/Comments
<b>I. Technical holding times</b>				
Were all technical holding times met?	/			
Was cooler temperature criteria met?				
<b>II. GC/MS Instrument performance check</b>				
Were the BFB performance results reviewed and found to be within the specified criteria?	/			
Were all samples analyzed within the 12 hour clock criteria?	/			
<b>IIIa. Initial calibration</b>				
Did the laboratory perform a 5 point calibration prior to sample analysis?	/			
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?			/	
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of > 0.990?	/			
Were all percent relative standard deviations (%RSD) ≤ 30%/15% and relative response factors (RRF) ≥ 0.05?			/	
<b>IIIb. Initial Calibration Verification</b>				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	/			
Were all percent differences (%D) ≤ 20%?	/			
<b>IV. Continuing calibration</b>				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	/			
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?			/	
Were all percent differences (%D) ≤ 20% and relative response factors (RRF) ≥ 0.05?	/			
<b>V. Laboratory Blanks</b>				
Was a laboratory blank associated with every sample in this SDG?	/			
Was a laboratory blank analyzed at least once every 12 hours for each matrix and concentration?	/			
Was there contamination in the laboratory blanks?		/		
<b>VI. Field blanks</b>				
Were field blanks were identified in this SDG?	/			
Were target compounds detected in the field blanks?		/		
<b>VII. Surrogate spikes</b>				
Were all surrogate percent recovery (%R) within QC limits?	/			
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			/	



LDC #: 44457A 7

**VALIDATION FINDINGS CHECKLIST**

Page: 2 of 2  
 Reviewer: FT  
 2nd Reviewer: [Signature]

Validation Area	Yes	No	NA	Findings/Comments
<b>VIII. Matrix spike/Matrix spike duplicates</b>				
Were matrix spike (MS) and matrix spike duplicate (MSD) analyzed in this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>IX. Laboratory control samples</b>				
Was an LCS analyzed per analytical batch in this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>X. Field duplicates</b>				
Were field duplicate pairs identified in this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were target compounds detected in the field duplicates?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>XI. Internal standards</b>				
Were internal standard area counts within -50% to +100% of the associated calibration standard?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were retention times within + 30 seconds of the associated calibration standard?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XII. Compound quantitation</b>				
Did the laboratory LOQs/RLs meet the QAPP LOQs/RLs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XIII. Target compound identification</b>				
Were relative retention times (RRT's) within + 0.06 RRT units of the standard?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were chromatogram peaks verified and accounted for?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XIV. System performance</b>				
System performance was found to be acceptable.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XV. Overall assessment of data</b>				
Overall assessment of data was found to be acceptable.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

LDC#: 44457A7  
 SDG#: pel cover

**VALIDATION FINDINGS WORKSHEET**  
**Initial Calibration Calculation Verification**

Page: 1 of 1  
 Reviewer: F7  
 2nd Reviewer: ↑

Method: Gasoline (EPA SW 846 Method 8260B)

Calibration Date	System	Compound	Standard	(Y) Response	(X) Concentration
1/22/2019	GCMS Loki	GRO	1	11.35443384	0.8
			2	11.98163237	2.0
			3	12.62207542	4.0
			4	18.11436978	12.0
			5	23.78842851	24.0
			6	28.60722789	32.0
			7	33.12981030	40.0

**Regression Output**

**Reported**

Constant	10.834137	10.800000
Std Err of Y Est		
R Squared	0.998425	0.998000
Degrees of Freedom		
X Coefficient(s)	0.555392	0.555000
Std Err of Coef.		
Correlation Coefficient	0.999212	
Coefficient of Determination (r <sup>2</sup> )	0.998425	0.998000

**VALIDATION FINDINGS WORKSHEET**  
**Continuing Calibration Results Verification**

**METHOD:** GC/MS VOA (EPA SW 846 Method 8260B)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference =  $100 * (\text{ave. RRF} - \text{RRF}) / \text{ave. RRF}$   
 $\text{RRF} = (A_x)(C_{is}) / (A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF  
 RRF = continuing calibration RRF  
 $A_x$  = Area of compound,  $A_{is}$  = Area of associated internal standard  
 $C_x$  = Concentration of compound,  $C_{is}$  = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference internal Standard)	Average RRF (initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	cov 0130409	1/30/19	GRU (1st internal standard)	300.0	290.118	290.118	3.3	3.3
			(2nd internal standard)					
			(3rd internal standard)					
			(4th internal standard)					
2			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
			(4th internal standard)					
3			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
			(4th internal standard)					
4			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
			(4th internal standard)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

**VALIDATION FINDINGS WORKSHEET**  
**Surrogate Results Verification**

**METHOD:** GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery:  $SF/SS * 100$

Where: SF = Surrogate Found  
SS = Surrogate Spiked

Sample ID: #2

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene	25.0	27.3903	110	110	0

Sample ID: \_\_\_\_\_

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

Sample ID: \_\_\_\_\_

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

Sample ID: \_\_\_\_\_

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

Sample ID: \_\_\_\_\_

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

LDC #: 4457A7

**VALIDATION FINDINGS WORKSHEET**  
**Matrix Spike/Matrix Spike Duplicates Results Verification**

Page: 1 of 1  
 Reviewer: FT  
 2nd Reviewer: [Signature]

**METHOD:** GC/MS VOA (EPA Method 8260B)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery =  $100 * (SSC - SC) / SA$

Where: SSC = Spiked sample concentration  
 SA = Spike added

SC = Sample concentration

RPD =  $|MSC - MSC| * 2 / (MSC + MSDC)$

MSC = Matrix spike concentration

MSDC = Matrix spike duplicate concentration

MS/MSD sample: 8 + 9

Compound	Spike Added		Sample Concentration	Spiked Sample Concentration		Matrix Spike		Matrix Spike Duplicate		MS/MSD	
	(ug/L)			(ug/L)		Percent Recovery		Percent Recovery		RPD	
	MS	MSD	MS	MSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated	
<del>GRD</del>											
<del>1,1-Dichloroethene</del>	300	300	ND	305	294	102	102	98.0	98.0	3.7	3.7
<del>Trichloroethene</del>											
<del>Benzene</del>											
<del>Toluene</del>											
<del>Chlorobenzene</del>											

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 44457A7

### VALIDATION FINDINGS WORKSHEET Laboratory Control Sample Results Verification

Page: 1 of 1  
Reviewer: FT  
2nd Reviewer: af

**METHOD:** GC/MS VOA (EPA Method 8260B)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery =  $100 * SSC/SA$

Where: SSC = Spiked sample concentration  
SA = Spike added

RPD =  $|LCSC - LCSDC| * 2 / (LCSC + LCSDC)$

LCSC = Laboratory control sample concentration    LCSDC = Laboratory control sample duplicate concentration

LCS ID: 190130A1    LCSD

Compound	Spike Added (ug/L)		Spiked Sample Concentration (ug/L)		LCS		LCSD		LCS/LCSD	
	LCS	LCSD	LCS	LCSD	Percent Recovery		Percent Recovery		RPD	
					Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
<del>GRD 1,1-Dichloroethene</del>	<del>300</del>	<del>300</del>	<del>315</del>	<del>303</del>	<del>105</del>	<del>105</del>	<del>101</del>	<del>101</del>	<del>3.9</del>	<del>3.9</del>
Trichloroethene										
Benzene										
Toluene										
Chlorobenzene										

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

**VALIDATION FINDINGS WORKSHEET**  
**Sample Calculation Verification**

**METHOD:** GC/MS VOA (EPA SW 846 Method 8260B)

Y/N/N/A

Were all reported results recalculated and verified for all level IV samples?

Y/N/N/A

Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

$$\text{Concentration} = \frac{(A_x)(I_s)(DF)}{(A_s)(RRF)(V_o)(\%S)}$$

- $A_x$  = Area of the characteristic ion (EICP) for the compound to be measured
- $A_s$  = Area of the characteristic ion (EICP) for the specific internal standard
- $I_s$  = Amount of internal standard added in nanograms (ng)
- RRF = Relative response factor of the calibration standard.
- $V_o$  = Volume or weight of sample pruged in milliliters (ml) or grams (g).
- Df = Dilution factor.
- %S = Percent solids, applicable to soils and solid matrices only.

Example:

Sample I.D. 190130AL1 : GRU  
LC5

$$\text{Conc.} = \frac{(12153647 - 10.83413)}{687255} (75.0)$$

$$= (0.555392)$$

$$= 315.36 \text{ ug/L}$$

#	Sample ID	Compound	Reported Concentration	Calculated Concentration	Qualification
	<u>LC5</u>	<u>GRU</u>	<u>148/L</u> <u>315</u>	<u>129/L</u> <u>315-36</u>	

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** March 4, 2019

**Parameters:** Total Petroleum Hydrocarbons as Extractables

**Validation Level:** Level C & D

**Laboratory:** APPL, Inc.

**Sample Delivery Group (SDG):** 87956

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
ERH733**	AZ85643**	Water	01/24/19
ERH734	AZ85644	Water	01/24/19
ERH757	AZ85646	Water	01/23/19
ERH755	AZ85653	Water	01/24/19
ERH733MS	AZ85643MS	Water	01/24/19
ERH733MSD	AZ85643MSD	Water	01/24/19

\*\*Indicates sample underwent Level D validation



## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Total Petroleum Hydrocarbons (TPH) as Extractables by Environmental Protection Agency (EPA) SW 846 Method 8015B

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level D data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered not detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## Qualification Code Reference

- H Holding times were exceeded.
- S Surrogate recovery was outside QC limits.
- C Calibration %RSD,  $r$ ,  $r^2$  or %D were noncompliant.
- R Calibration RRF was  $<0.05$ .
- B Presumed contamination from preparation (method blank).
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD was high.
- I Internal standard performance was unsatisfactory.
- M Instrument Performance Check (BFB or DFTPP) was noncompliant.
- T Presumed contamination from trip blank.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Instrument performance for pesticides was poor.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

## I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## II. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

## III. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

## IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## V. Field Blanks

No field blanks were identified in this SDG.

## VI. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits with the following exceptions:

Sample	Surrogate	%R (Limits)	Affected Compound	Flag	A or P
ERH755	Octacosane Ortho-Terphenyl	147 (60-142) 133 (56-125)	TPH as extractables	NA	-

## VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

### **VIII. Laboratory Control Samples**

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

### **IX. Field Duplicates**

Samples ERH733\*\* and ERH734 were identified as field duplicates. No results were detected in any of the samples.

### **X. Compound Quantitation**

All compound quantitations met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

### **XI. Target Compound Identifications**

All target compound identifications met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

### **XII. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**Red Hill Bulk Storage Facility, CTO 18F0126  
Total Petroleum Hydrocarbons as Extractables - Data Qualification Summary -  
SDG 87956**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Total Petroleum Hydrocarbons as Extractables - Laboratory Blank Data  
Qualification Summary - SDG 87956**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Total Petroleum Hydrocarbons as Extractables - Field Blank Data Qualification  
Summary - SDG 87956**

No Sample Data Qualified in this SDG

LDC #: 44457A8  
 SDG #: 87956  
 Laboratory: APPL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**  
 Level C/D

Date: 3/1/19  
 Page: 1 of 1  
 Reviewer: FJ  
 2nd Reviewer: H

**METHOD:** GC TPH as Extractables (EPA SW 846 Method 8015B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	Initial calibration/ICV	A / Δ	% RSD /  CV  ≤ 20
III.	Continuing calibration	A	CV ≤ 20
IV.	Laboratory Blanks	Δ	
V.	Field blanks	N	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A	Les ID
IX.	Field duplicates	ND	D = 1, 2
X.	Compound quantitation RL/LOQ/LODs	A	Not reviewed for Level C validation.
XI.	Target compound identification	A	Not reviewed for Level C validation.
XII.	Overall assessment of data	A	

Note: A = Acceptable      ND = No compounds detected      D = Duplicate      SB=Source blank  
 N = Not provided/applicable      R = Rinsate      TB = Trip blank      OTHER:  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

\*\* Indicates sample underwent Level D validation

	Client ID	Lab ID	Matrix	Date
1	ERH733** D	AZ85643**	Water	01/24/19
2	ERH734 D	AZ85644	Water	01/24/19
3	ERH757	AZ85646	Water	01/27/19
4	ERH755	AZ85653	Water	01/24/19
5	ERH733MS	AZ85643MS	Water	01/24/19
6	ERH733MSD	AZ85643MSD	Water	01/24/19
7				
8				
9				
10				
11				

Notes:

190/25A - BIK				

Method:  GC  HPLC

Validation Area	Yes	No	NA	Findings/Comments
<b>I. Technical holding times</b>				
Were all technical holding times met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was cooler temperature criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>IIa. Initial calibration</b>				
Did the laboratory perform a 5 point calibration prior to sample analysis?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent relative standard deviations (%RSD) < 20%?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of $\geq 0.990$ ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Were the RT windows properly established?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>IIb. Initial calibration verification</b>				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent differences (%D) < 20%?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>III. Continuing calibration</b>				
Was a continuing calibration analyzed daily?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent differences (%D) < 20%?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all the retention times within the acceptance windows?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>IV. Laboratory Blanks</b>				
Was a laboratory blank associated with every sample in this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was a laboratory blank analyzed for each matrix and concentration?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was there contamination in the laboratory blanks?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>V. Field Blanks</b>				
Were field blanks identified in this SDG?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Were target compounds detected in the field blanks?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>VI. Surrogate spikes</b>				
Were all surrogate percent recovery (%R) within the QC limits?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
If the percent recovery (%R) of one or more surrogates was outside QC limits, was a reanalysis performed to confirm %R?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>VII. Matrix spike/Matrix spike duplicates</b>				
Were matrix spike (MS) and matrix spike duplicate (MSD) analyzed in this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>VIII. Laboratory control samples</b>				
Was an LCS analyzed per analytical or extraction batch?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	



LDC #: 44457A3

## VALIDATION FINDINGS CHECKLIST

Page: 2 of 2  
Reviewer: FT  
2nd Reviewer: AB

Validation Area	Yes	No	NA	Findings/Comments
<b>IX. Field duplicates</b>				
Were field duplicate pairs identified in this SDG?	/			
Were target compounds detected in the field duplicates?		/		
<b>X. Compound quantitation</b>				
Did the laboratory LOQs/RLs meet the QAPP LOQs/RLs?	/			
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	/			
<b>XI. Target compound identification</b>				
Were the retention times of reported detects within the RT windows?	/			
<b>XIII. Overall assessment of data</b>				
Overall assessment of data was found to be acceptable.	/			

LDC #: 44457A8

**VALIDATION FINDINGS WORKSHEET**  
**Surrogate Recovery**

Reviewer: FT  
 2nd Reviewer: AK

METHOD:  GC  HPLC

Are surrogates required by the method? Yes  or No .

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were surrogates spiked into all samples and blanks?

Y N N/A Did all surrogate recoveries (%R) meet the QC limits?

(S)

#	Sample ID	Detector/Column	Surrogate Compound	%R (Limits)		Qualifications
	4		G	147	( 60-142 )	Jdet/P ND
			H	133	( 50-125 )	↓
				( )		
				( )		
				( )		
				( )		
				( )		
				( )		
				( )		
				( )		
				( )		
				( )		
				( )		
				( )		
				( )		
				( )		
				( )		
				( )		
				( )		
				( )		
				( )		
				( )		
				( )		
				( )		
				( )		
				( )		

	Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound
A	Chlorobenzene (CBZ)	G	Octacosane	M	Benzo(e)Pyrene	S	1-Chloro-3-Nitrobenzene	Y	Tetrachloro-m- xylene
B	4-Bromofluorobenzene (BFB)	H	Ortho-Terphenyl	N	Terphenyl-D14	T	3,4-Dinitrotoluene	Z	2-Bromonaphthalene
C	a,a,a-Trifluorotoluene	I	Fluorobenzene (FBZ)	O	Decachlorobiphenyl (DCB)	U	Triptyltin	AA	Chloro-octadecane
D	Bromochlorobenene	J	n-Triacontane	P	1-methylnaphthalene	V	Tri-n-propyltin	BB	2,4-Dichlorophenylacetic acid
E	1,4-Dichlorobutane	K	Hexacosane	Q	Dichlorophenyl Acetic Acid (DCAA)	W	Tributyl Phosphate	CC	2,5-Dibromotoluene
F	1,4-Difluorobenzene (DFB)	L	Bromobenzene	R	4-Nitrophenol	X	Triphenyl Phosphate		



LDC #: 44457A8

## VALIDATION FINDINGS WORKSHEET Continuing Calibration Results Verification

Page: 1 of 1  
 Reviewer: FT  
 2nd Reviewer: [Signature]

METHOD: GC  HPLC

The percent difference (%D) of the initial calibration average Calibration Factors (CF) and the continuing calibration CF were recalculated for the compounds identified below using the following calculation:

% Difference =  $100 * (\text{ave. CF} - \text{CF}) / \text{ave. CF}$       Where: ave. CF = initial calibration average CF  
 CF = continuing calibration CF  
 A = Area of compound  
 C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(ICAL)/ CCV Conc.	Reported	Recalculated	Reported	Recalculated
					CF/ Conc. CCV	CF/ Conc. CCV	%D	%D
1	CCV 124047	1/29/19	Diesel CP-C24	1187890	1146170	1146170	3.5	3.5
2	CCV 124061	1/29/19	↓	↓	1163780	1163780	2.0	2.0
3								
4								

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 44457A8

**VALIDATION FINDINGS WORKSHEET**  
**Surrogate Results Verification**

Page: 1 of 1

Reviewer: FT

2nd reviewer: [Signature]

METHOD:  GC  HPLC

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS \* 100

Where: SF = Surrogate Found  
 SS = Surrogate Spiked

Sample ID: #1

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
octacosane		75.0	85.086	113	113	0
o-Terphenyl		75.0	82.309	110	110	0

Sample ID: \_\_\_\_\_

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

	Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound
A	Chlorobenzene (CBZ)	G	Octacosane	M	Benzo(e)Pyrene	S	1-Chloro-3-Nitrobenzene	Y	Tetrachloro-m- xylene
B	4-Bromofluorobenzene (BFB)	H	Ortho-Terphenyl	N	Terphenyl-D14	T	3,4-Dinitrotoluene	Z	2-Bromonaphthalene
C	a,a,a-Trifluorotoluene	I	Fluorobenzene (FBZ)	O	Decachlorobiphenyl (DCB)	U	Triphenyltin	AA	Chloro-octadecane
D	Bromochlorobenene	J	n-Triacontane	P	1-methylnaphthalene	V	Tri-n-propyltin	BB	2,4-Dichlorophenylacetic acid
E	1,4-Dichlorobutane	K	Hexacosane	Q	Dichlorophenyl Acetic Acid (DCAA)	W	Tributyl Phosphate	CC	2,5-Dibromotoluene
F	1,4-Difluorobenzene (DFB)	L	Bromobenzene	R	4-Nitrophenol	X	Triphenyl Phosphate		

LDC #: 4445 7A 8

## VALIDATION FINDINGS WORKSHEET

### Matrix Spike/Matrix Spike Duplicates Results Verification

Page: 1 of 1

Reviewer: FT

2nd Reviewer: AC

METHOD:  GC  HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

$$\% \text{Recovery} = 100 * (\text{SSC} - \text{SC}) / \text{SA}$$

Where

SSC = Spiked sample concentration

MS = Matrix spike

SC = Sample concentration

MSD = Matrix spike duplicate

SA = Spike added

$$\text{RPD} = ((\text{SSCMS} - \text{SSCMSD}) * 2) / (\text{SSCMS} + \text{SSCMSD}) * 100$$

MS/MSD samples: 5 + 6

Compound	Spike Added (ug/L)		Sample Conc. (ug/L)	Spike Sample Concentration (ug/L)		Matrix spike		Matrix Spike Duplicate		MS/MSD	
	MS	MSD		MS	MSD	Percent Recovery		Percent Recovery		RPD	
						Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)											
Diesel (8015)	1250	1250	ND	1260	1270	101	101	102	102	0.79	0.79
Benzene (8021B)											
Methane (RSK-175)											
2,4-D (8151)											
Dinoseb (8151)											
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)											
2,4,6-Trinitrotoluene (8330)											
Phorate (8141A)											
Malathion (8141A)											
Formaldehyde (8315A)											

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 44457A8

### VALIDATION FINDINGS WORKSHEET

Page: 1 of 1

### Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Reviewer: FT  
2nd Reviewer: [Signature]

METHOD:  GC  HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

$$\% \text{Recovery} = 100 * (\text{SSC}/\text{SA})$$

$$\text{RPD} = ((\text{SSCLCS} - \text{SSCLCSD}) * 2) / (\text{SSCLCS} + \text{SSCLCSD}) * 100$$

Where SSC = Spiked sample concentration  
LCS = Laboratory Control Sample

SA = Spike added  
LCSD = Laboratory Control Sample duplicate

LCS/LCSD samples: 190125A LCS 1D

Compound	Spike Added ( <u>ug/L</u> )		Spike Sample Concentration ( <u>ug/L</u> )		LCS		LCSD		LCS/LCSD		
	LCS	LCSD	LCS	LCSD	Percent Recovery		Percent Recovery		RPD		
					Reported	Recalc.	Reported	Recalc.	Reported	Recalc.	
Gasoline (8015)											
Diesel (8015)	<u>1250</u>	<u>1250</u>	<u>1280</u>	<u>1260</u>	<u>102</u>	<u>102</u>	<u>101</u>	<u>101</u>	<u>1.6</u>	<u>1.6</u>	
Benzene (8021B)											
Methane (RSK-175)											
2,4-D (8151)											
Dinoseb (8151)											
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)											
2,4,6-Trinitrotoluene (8330)											
Phorate (8141A)											
Malathion (8141A)											
Formaldehyde (8315A)											

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.





**Laboratory Data Consultants, Inc.**  
**Data Validation Report**

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** March 4, 2019

**Parameters:** Methane

**Validation Level:** Level C & D

**Laboratory:** APPL, Inc.

**Sample Delivery Group (SDG):** 87956

<b>Sample Identification</b>	<b>Laboratory Sample Identification</b>	<b>Matrix</b>	<b>Collection Date</b>
ERH732	AZ85642	Water	01/24/19
ERH733**	AZ85643**	Water	01/24/19
ERH756	AZ85645	Water	01/23/19
ERH757	AZ85646	Water	01/23/19
ERH754	AZ85652	Water	01/24/19
ERH755	AZ85653	Water	01/24/19

\*\*Indicates sample underwent Level D validation

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Methane by Method RSK-175

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level D data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## Qualification Code Reference

- H Holding times were exceeded.
- S Surrogate recovery was outside QC limits.
- C Calibration %RSD,  $r$ ,  $r^2$  or %D were noncompliant.
- R Calibration RRF was  $<0.05$ .
- B Presumed contamination from preparation (method blank).
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD was high.
- I Internal standard performance was unsatisfactory.
- M Instrument Performance Check (BFB or DFTPP) was noncompliant.
- T Presumed contamination from trip blank.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Instrument performance for pesticides was poor.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

A curve fit, based on the initial calibration, was established for quantitation. The coefficient of determination ( $r^2$ ) was greater than or equal to 0.990.

Retention time windows were established as required by the method for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

## **III. Continuing Calibration**

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 20.0%.

Retention times of all compounds in the calibration standards were within the established retention time windows for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

## **IV. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **V. Field Blanks**

Samples ERH732, ERH756, and ERH754 were identified as trip blanks. No contaminants were found.

## **VI. Matrix Spike/Matrix Spike Duplicates**

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

## **VII. Laboratory Control Samples**

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## **VIII. Field Duplicates**

No field duplicates were identified in this SDG.

## **IX. Compound Quantitation**

All compound quantitations met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

## **X. Target Compound Identification**

All target compound identifications met validation criteria for samples which underwent Level D validation. Raw data were not reviewed for Level C validation.

## **XI. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**Red Hill Bulk Storage Facility, CTO 18F0126  
Methane - Data Qualification Summary - SDG 87956**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Methane - Laboratory Blank Data Qualification Summary - SDG 87956**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Methane - Field Blank Data Qualification Summary - SDG 87956**

No Sample Data Qualified in this SDG

LDC #: 44457A51  
 SDG #: 87956  
 Laboratory: APPL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**  
 Level C/D

Date: 3/4/19  
 Page: 1 of 1  
 Reviewer: [Signature]  
 2nd Reviewer: [Signature]

**METHOD:** GC Methane (Method RSK-175)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A Δ	
II.	Initial calibration/ICV	Δ Δ	1, 2 ICV ≤ 20
III.	Continuing calibration	A	CV ≤ 20
IV.	Laboratory Blanks	Δ	
V.	Field blanks	ND	FB = 1, 3, 5
VI.	Matrix spike/Matrix spike duplicates	N	CS
VII.	Laboratory control samples	A	LCSD
VIII.	Field duplicates	N	
IX.	Compound quantitation RL/LOQ/LODs	Δ	Not reviewed for Level C validation.
X.	Target compound identification	Δ	Not reviewed for Level C validation.
XI.	Overall assessment of data	Δ	

Note: A = Acceptable      ND = No compounds detected      D = Duplicate      SB=Source blank  
 N = Not provided/applicable      R = Rinsate      TB = Trip blank      OTHER:  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

\*\* Indicates sample underwent Level D validation

	Client ID	Lab ID	Matrix	Date
1	ERH732 TB	AZ85642	Water	01/24/19
2	ERH733**	AZ85643**	Water	01/24/19
3	ERH756 TB	AZ85645	Water	01/24/19
4	ERH757	AZ85646	Water	01/24/19
5	ERH754 TB	AZ85652	Water	01/24/19
6	ERH755	AZ85653	Water	01/24/19
7				
8				
9				
10				
11				
12				

Notes:

190128B - BIK				



LDC #: 44457AS1

## VALIDATION FINDINGS CHECKLIST

Page: 1 of 2  
Reviewer: FT  
2nd Reviewer: AKMethod:  GC  HPLC

Validation Area	Yes	No	NA	Findings/Comments
<b>I. Technical holding times</b>				
Were all technical holding times met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was cooler temperature criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>IIa. Initial calibration</b>				
Did the laboratory perform a 5 point calibration prior to sample analysis?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent relative standard deviations (%RSD) $\leq$ 20%?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of $\geq 0.990$ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were the RT windows properly established?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>IIb. Initial calibration verification</b>				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent differences (%D) $\leq$ 20%?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>III. Continuing calibration</b>				
Was a continuing calibration analyzed daily?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent differences (%D) $\leq$ 20%?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all the retention times within the acceptance windows?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>IV. Laboratory Blanks</b>				
Was a laboratory blank associated with every sample in this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was a laboratory blank analyzed for each matrix and concentration?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was there contamination in the laboratory blanks?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>V. Field Blanks</b>				
Were field blanks identified in this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were target compounds detected in the field blanks?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>VI. Surrogate spikes</b>				
Were all surrogate percent recovery (%R) within the QC limits?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If the percent recovery (%R) of one or more surrogates was outside QC limits, was a reanalysis performed to confirm %R?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>VII. Matrix spike/Matrix spike duplicates</b>				
Were matrix spike (MS) and matrix spike duplicate (MSD) analyzed in this SDG?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>VIII. Laboratory control samples</b>				
Was an LCS analyzed per analytical or extraction batch?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

LDC #: 44457A51

**VALIDATION FINDINGS CHECKLIST**

Page: 2 of 2  
 Reviewer: FT  
 2nd Reviewer: A

Validation Area	Yes	No	NA	Findings/Comments
<b>IX. Field duplicates</b>				
Were field duplicate pairs identified in this SDG?		/		
Were target compounds detected in the field duplicates?			/	
<b>X. Compound quantitation</b>				
Did the laboratory LOQs/RLs meet the QAPP LOQs/RLs?	/			
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	/			
<b>XI. Target compound identification</b>				
Were the retention times of reported detects within the RT windows?	/			
<b>XIII: Overall assessment of data</b>				
Overall assessment of data was found to be acceptable.	/			

LDC#: 44457A51  
 SDG#: per cover

**VALIDATION FINDINGS WORKSHEET**  
**Initial Calibration Calculation Verification**

Page: 1 of 1  
 Reviewer: FJ  
 2nd Reviewer: AK

Method: RSK 175

Calibration Date	System	Compound	Standard	(Y) Response	(X) Concentration
1/20/2019	Ints 7890	Methane	1	32996	2.080
			2	31584	4.160
			3	41402	8.340
			4	156731	20.850
			5	505025	83.400
			6	1190356	208.500
			7	3646926	834.000

**Regression Output**

**Reported**

Constant	80065.011707	80100.00
Std Err of Y Est		
R Squared	0.994074	0.994000
Degrees of Freedom		
X Coefficient(s)	4343.782489	4340.00
Std Err of Coef.		
Correlation Coefficient	0.997033	
Coefficient of Determination (r^2)	0.994074	0.994000

LDC #: 44457A5-1

**VALIDATION FINDINGS WORKSHEET**  
**Continuing Calibration Results Verification**

Page: 6  
 Reviewer: FT  
 2nd Reviewer: [Signature]

METHOD: GC  HPLC

The percent difference (%D) of the initial calibration average Calibration Factors (CF) and the continuing calibration CF were recalculated for the compounds identified below using the following calculation:

% Difference =  $100 * (\text{ave. CF} - \text{CF}) / \text{ave. CF}$       Where: ave. CF = initial calibration average CF  
 CF = continuing calibration CF  
 A = Area of compound  
 C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(ICAL)/ CCV Conc.	Reported	Recalculated	Reported	Recalculated
					CF/ Conc. CCV	CF/ Conc. CCV	%D	%D
1	ceV 19012823	1/28/19	Methane	83.40	88.531	88.531	6.2	6.2
2								
3								
4								

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 44457A5/

**VALIDATION FINDINGS WORKSHEET**

Page: 1 of 1

**Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification**

Reviewer: FT  
2nd Reviewer: RE

METHOD:  GC  HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

$\% \text{Recovery} = 100 * (\text{SSC}/\text{SA})$

$\text{RPD} = ((\text{SSCLCS} - \text{SSCLCSD}) * 2) / (\text{SSCLCS} + \text{SSCLCSD}) * 100$

Where SSC = Spiked sample concentration

LCS = Laboratory Control Sample

SA = Spike added

LCSD = Laboratory Control Sample duplicate

LCS/LCSD samples: 190128B LCS LP

Compound	Spike Added ( <u>ug/L</u> )		Spike Sample Concentration ( <u>ug/L</u> )		LCS		LCSD		LCS/LCSD		
	LCS	LCSD	LCS	LCSD	Percent Recovery		Percent Recovery		RPD		
					Reported	Recalc.	Reported	Recalc.	Reported	Recalc.	
Gasoline (8015)											
Diesel (8015)											
Benzene (8021B)											
Methane (RSK-175)	<u>83.4</u>	<u>83.4</u>	<u>88.5</u>	<u>103</u>	<u>106</u>	<u>106</u>	<u>124</u>	<u>124</u>	<u>15.1</u>	<u>15.1</u>	
2,4-D (8151)											
Dinoseb (8151)											
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)											
2,4,6-Trinitrotoluene (8330)											
Phorate (8141A)											
Malathion (8141A)											
Formaldehyde (8315A)											

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.



LDC #: 44457

**EDD POPULATION COMPLETENESS WORKSHEET**

Date: 3/14  
 Page: 1 of 1  
 2<sup>nd</sup> Reviewer: [Signature]

The LDC job number listed above was entered by JE  
 Entered from Body or Summary

	EDD Process		Comments/Action
I.	EDD Completeness	-	
Ia.	- All methods present?	Y	
Ib.	- All samples present/match report?	Y	
Ic.	- All reported analytes present?	Y	
Id.	- 10% or <u>100%</u> verification of EDD?	Y	
II.	EDD Preparation/Entry	-	
IIa.	- Carryover U/J?	Y	
IIb.	- Reason Codes used? If so, note which codes.	Y	
IIc.	- Additional Information (QC Level, Validator, Validated Y/N, etc.)	Y	
III.	Reasonableness Checks	-	
IIIa.	- Do all qualified ND results have ND qualifier (e.g. UJ)?	Y	
IIIb.	- Do all qualified detect results have detect qualifier (e.g. J)?	Y	
IIIc.	- If reason codes are used, do all qualified results have reason code field populated, and vice versa?	Y	
IIId.	- Does the detect flag require changing for blank qualifier? If so, are all U results marked ND?	Y/Y	
IIIe.	- Do blank concentrations in report match EDD where data was qualified due to blank contamination?	Y	
IIIf.	- Were multiple results reported due to dilutions/reanalysis? If so, were results qualified appropriately?	+	
IIIg.	- Are there any discrepancies between the data packet and the EDD?	N	

Notes: \*see discrepancy sheet

**Red Hill Bulk Storage Facility, CTO 18F0126 - SDG 87956  
LDC 44457**

AECOM

EPA_NO	LAB_ID	DF	ANALYTE	COLL_DATE	ANAL_DATE	QCLev	RESULT	UNITS	LAB_Q	LOQ	LOD	REV	Q_C
<b>METHOD: 2320B</b>													
ERH733	AZ85643	1	ALKALINITY, TOTAL (AS CaCO3)	1/24/2019 8:45:00 AM	1/30/2019 3:18:00 PM	D	58.7	MG_L		2.0	1.70		
ERH733	AZ85643	1	BICARBONATE	1/24/2019 8:45:00 AM	1/30/2019 3:18:00 PM	D	58.7	MG_L		2.0	1.70		
ERH733	AZ85643	1	CARBONATE (AS CO3)	1/24/2019 8:45:00 AM	1/30/2019 3:18:00 PM	D	1.70	MG_L	U	2.0	1.70		U
ERH757	AZ85646	1	ALKALINITY, TOTAL (AS CaCO3)	1/23/2019 3:25:00 PM	1/30/2019 3:23:00 PM	C	139	MG_L		2.0	1.70		
ERH757	AZ85646	1	BICARBONATE	1/23/2019 3:25:00 PM	1/30/2019 3:23:00 PM	C	139	MG_L		2.0	1.70		
ERH757	AZ85646	1	CARBONATE (AS CO3)	1/23/2019 3:25:00 PM	1/30/2019 3:23:00 PM	C	1.70	MG_L	U	2.0	1.70		U
ERH755	AZ85653	1	ALKALINITY, TOTAL (AS CaCO3)	1/24/2019 12:40:00 PM	1/30/2019 3:29:00 PM	C	65.5	MG_L		2.0	1.70		
ERH755	AZ85653	1	BICARBONATE	1/24/2019 12:40:00 PM	1/30/2019 3:29:00 PM	C	65.5	MG_L		2.0	1.70		
ERH755	AZ85653	1	CARBONATE (AS CO3)	1/24/2019 12:40:00 PM	1/30/2019 3:29:00 PM	C	1.70	MG_L	U	2.0	1.70		U
<b>METHOD: 300.0</b>													
ERH733	AZ85643	5	CHLORIDE (AS CL)	1/24/2019 8:45:00 AM	1/28/2019 4:46:00 PM	D	108	MG_L	D	5.0	1.00		
ERH733	AZ85643	1	NITROGEN, NITRATE (AS N)	1/24/2019 8:45:00 AM	1/25/2019 7:37:00 PM	D	2.2	MG_L		0.5	0.18		
ERH733	AZ85643	1	SULFATE (AS SO4)	1/24/2019 8:45:00 AM	1/25/2019 7:37:00 PM	D	16.7	MG_L		1.0	0.20		
ERH757	AZ85646	50	CHLORIDE (AS CL)	1/23/2019 3:25:00 PM	1/28/2019 4:54:00 PM	C	1110	MG_L	D	50.0	10.00		
ERH757	AZ85646	1	NITROGEN, NITRATE (AS N)	1/23/2019 3:25:00 PM	1/25/2019 7:45:00 PM	C	6.6	MG_L		0.5	0.18		
ERH757	AZ85646	50	SULFATE (AS SO4)	1/23/2019 3:25:00 PM	1/28/2019 4:54:00 PM	C	311	MG_L	D	50.0	10.00		
ERH755	AZ85653	1	CHLORIDE (AS CL)	1/24/2019 12:40:00 PM	1/25/2019 3:50:00 PM	C	41.2	MG_L		1.0	0.20		
ERH755	AZ85653	1	NITROGEN, NITRATE (AS N)	1/24/2019 12:40:00 PM	1/25/2019 3:50:00 PM	C	1.7	MG_L		0.5	0.18		
ERH755	AZ85653	1	SULFATE (AS SO4)	1/24/2019 12:40:00 PM	1/25/2019 3:50:00 PM	C	6.0	MG_L		1.0	0.20		
<b>METHOD: 3500-FE-B</b>													
ERH733	AZ85643	1	Iron, Ion (Fe2+)	1/24/2019 8:45:00 AM	1/25/2019 10:38:00 AM	D	0.32	MG_L	U	1.0	0.32		U
ERH757	AZ85646	1	Iron, Ion (Fe2+)	1/23/2019 3:25:00 PM	1/25/2019 10:39:00 AM	C	0.32	MG_L	U	1.0	0.32		U
ERH755	AZ85653	1	Iron, Ion (Fe2+)	1/24/2019 12:40:00 PM	1/25/2019 3:21:00 PM	C	0.32	MG_L	U	1.0	0.32		U
<b>METHOD: 353.2</b>													
ERH733	AZ85643	1	NITROGEN, NITRATE-NITRITE	1/24/2019 8:45:00 AM	1/28/2019 5:18:00 PM	D	0.52	MG_L		0.10	0.100		
ERH757	AZ85646	1	NITROGEN, NITRATE-NITRITE	1/23/2019 3:25:00 PM	1/28/2019 5:19:00 PM	C	1.8	MG_L		0.10	0.100		

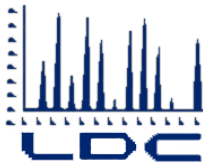


EPA_NO	LAB_ID	DF	ANALYTE	COLL_DATE	ANAL_DATE	QCLev	RESULT	UNITS	LAB_Q	LOQ	LOD	REV	Q_C
<b>METHOD: 353.2</b>													
ERH755	AZ85653	1	NITROGEN, NITRATE-NITRITE	1/24/2019 12:40:00 PM	1/28/2019 5:21:00 PM	C	0.38	MG_L		0.10	0.100		
<b>METHOD: 8015B_E</b>													
ERH733	AZ85643	1	C10-C24 DIESEL RANGE ORGANICS	1/24/2019 8:45:00 AM	1/29/2019 5:01:00 PM	D	25.00	UG_L	U	40.0	25.00	U	
ERH733	AZ85643	1	C24-C40 TOTAL PETROLEUM HYDROCARBONS, OIL RANGE	1/24/2019 8:45:00 AM	1/29/2019 5:01:00 PM	D	40.00	UG_L	U	40.0	40.00	U	
ERH734	AZ85644	1	C10-C24 DIESEL RANGE ORGANICS	1/24/2019 8:45:00 AM	1/29/2019 5:21:00 PM	C	25.00	UG_L	U	40.0	25.00	U	
ERH734	AZ85644	1	C24-C40 TOTAL PETROLEUM HYDROCARBONS, OIL RANGE	1/24/2019 8:45:00 AM	1/29/2019 5:21:00 PM	C	40.00	UG_L	U	40.0	40.00	U	
ERH757	AZ85646	1	C10-C24 DIESEL RANGE ORGANICS	1/23/2019 3:25:00 PM	1/29/2019 5:40:00 PM	C	25.00	UG_L	U	40.0	25.00	U	
ERH757	AZ85646	1	C24-C40 TOTAL PETROLEUM HYDROCARBONS, OIL RANGE	1/23/2019 3:25:00 PM	1/29/2019 5:40:00 PM	C	40.00	UG_L	U	40.0	40.00	U	
ERH755	AZ85653	1	C10-C24 DIESEL RANGE ORGANICS	1/24/2019 12:40:00 PM	1/29/2019 6:00:00 PM	C	25.00	UG_L	U	40.0	25.00	U	
ERH755	AZ85653	1	C24-C40 TOTAL PETROLEUM HYDROCARBONS, OIL RANGE	1/24/2019 12:40:00 PM	1/29/2019 6:00:00 PM	C	40.00	UG_L	U	40.0	40.00	U	
<b>METHOD: 8260B</b>													
ERH732	AZ85642	1	BENZENE	1/24/2019 8:15:00 AM	1/29/2019 5:50:00 AM	C	0.30	UG_L	U	1.0	0.30	U	
ERH732	AZ85642	1	ETHYLBENZENE	1/24/2019 8:15:00 AM	1/29/2019 5:50:00 AM	C	0.50	UG_L	U	1.0	0.50	U	
ERH732	AZ85642	1	PETROLEUM HYDROCARBONS C6-C10	1/24/2019 8:15:00 AM	1/29/2019 5:49:00 AM	C	18.0	UG_L	U	20	18.0	U	
ERH732	AZ85642	1	TOLUENE	1/24/2019 8:15:00 AM	1/29/2019 5:50:00 AM	C	0.30	UG_L	U	1.0	0.30	U	
ERH732	AZ85642	1	Xylenes	1/24/2019 8:15:00 AM	1/29/2019 5:50:00 AM	C	0.30	UG_L	U	2.0	0.30	U	
ERH733	AZ85643	1	BENZENE	1/24/2019 8:45:00 AM	1/30/2019 5:47:00 PM	D	0.30	UG_L	U	1.0	0.30	U	
ERH733	AZ85643	1	ETHYLBENZENE	1/24/2019 8:45:00 AM	1/30/2019 5:47:00 PM	D	0.50	UG_L	U	1.0	0.50	U	
ERH733	AZ85643	1	PETROLEUM HYDROCARBONS C6-C10	1/24/2019 8:45:00 AM	1/30/2019 5:48:00 PM	D	18.0	UG_L	U	20	18.0	U	
ERH733	AZ85643	1	TOLUENE	1/24/2019 8:45:00 AM	1/30/2019 5:47:00 PM	D	0.30	UG_L	U	1.0	0.30	U	
ERH733	AZ85643	1	Xylenes	1/24/2019 8:45:00 AM	1/30/2019 5:47:00 PM	D	0.30	UG_L	U	2.0	0.30	U	
ERH734	AZ85644	1	BENZENE	1/24/2019 8:45:00 AM	1/29/2019 6:19:00 AM	C	0.30	UG_L	U	1.0	0.30	U	
ERH734	AZ85644	1	ETHYLBENZENE	1/24/2019 8:45:00 AM	1/29/2019 6:19:00 AM	C	0.50	UG_L	U	1.0	0.50	U	
ERH734	AZ85644	1	PETROLEUM HYDROCARBONS C6-C10	1/24/2019 8:45:00 AM	1/29/2019 6:18:00 AM	C	18.0	UG_L	U	20	18.0	U	
ERH734	AZ85644	1	TOLUENE	1/24/2019 8:45:00 AM	1/29/2019 6:19:00 AM	C	0.30	UG_L	U	1.0	0.30	U	
ERH734	AZ85644	1	Xylenes	1/24/2019 8:45:00 AM	1/29/2019 6:19:00 AM	C	0.30	UG_L	U	2.0	0.30	U	
ERH756	AZ85645	1	BENZENE	1/23/2019 1:20:00 PM	1/29/2019 12:36:00 AM	C	0.30	UG_L	U	1.0	0.30	U	

EPA_NO	LAB_ID	DF	ANALYTE	COLL_DATE	ANAL_DATE	QCLev	RESULT	UNITS	LAB_Q	LOQ	LOD	REV	Q_C
<b>METHOD: 8260B</b>													
ERH756	AZ85645	1	ETHYLBENZENE	1/23/2019 1:20:00 PM	1/29/2019 12:36:00 AM	C	0.50	UG_L	U	1.0	0.50	U	
ERH756	AZ85645	1	PETROLEUM HYDROCARBONS C6-C10	1/23/2019 1:20:00 PM	1/29/2019 12:35:00 AM	C	18.0	UG_L	U	20	18.0	U	
ERH756	AZ85645	1	TOLUENE	1/23/2019 1:20:00 PM	1/29/2019 12:36:00 AM	C	0.30	UG_L	U	1.0	0.30	U	
ERH756	AZ85645	1	Xylenes	1/23/2019 1:20:00 PM	1/29/2019 12:36:00 AM	C	0.30	UG_L	U	2.0	0.30	U	
ERH757	AZ85646	1	BENZENE	1/23/2019 3:25:00 PM	1/29/2019 6:46:00 AM	C	0.30	UG_L	U	1.0	0.30	UJ	s
ERH757	AZ85646	1	ETHYLBENZENE	1/23/2019 3:25:00 PM	1/29/2019 6:46:00 AM	C	0.50	UG_L	U	1.0	0.50	UJ	s
ERH757	AZ85646	1	PETROLEUM HYDROCARBONS C6-C10	1/23/2019 3:25:00 PM	1/29/2019 6:47:00 AM	C	18.0	UG_L	U	20	18.0	U	
ERH757	AZ85646	1	TOLUENE	1/23/2019 3:25:00 PM	1/29/2019 6:46:00 AM	C	0.30	UG_L	U	1.0	0.30	UJ	s
ERH757	AZ85646	1	Xylenes	1/23/2019 3:25:00 PM	1/29/2019 6:46:00 AM	C	0.30	UG_L	U	2.0	0.30	UJ	s
ERH754	AZ85652	1	BENZENE	1/24/2019 12:08:00 PM	1/29/2019 1:05:00 AM	C	0.30	UG_L	U	1.0	0.30	U	
ERH754	AZ85652	1	ETHYLBENZENE	1/24/2019 12:08:00 PM	1/29/2019 1:05:00 AM	C	0.50	UG_L	U	1.0	0.50	U	
ERH754	AZ85652	1	PETROLEUM HYDROCARBONS C6-C10	1/24/2019 12:08:00 PM	1/29/2019 1:04:00 AM	C	18.0	UG_L	U	20	18.0	U	
ERH754	AZ85652	1	TOLUENE	1/24/2019 12:08:00 PM	1/29/2019 1:05:00 AM	C	0.30	UG_L	U	1.0	0.30	U	
ERH754	AZ85652	1	Xylenes	1/24/2019 12:08:00 PM	1/29/2019 1:05:00 AM	C	0.30	UG_L	U	2.0	0.30	U	
ERH755	AZ85653	1	BENZENE	1/24/2019 12:40:00 PM	1/29/2019 7:16:00 AM	C	0.30	UG_L	U	1.0	0.30	U	
ERH755	AZ85653	1	ETHYLBENZENE	1/24/2019 12:40:00 PM	1/29/2019 7:16:00 AM	C	0.50	UG_L	U	1.0	0.50	U	
ERH755	AZ85653	1	PETROLEUM HYDROCARBONS C6-C10	1/24/2019 12:40:00 PM	1/29/2019 7:15:00 AM	C	18.0	UG_L	U	20	18.0	U	
ERH755	AZ85653	1	TOLUENE	1/24/2019 12:40:00 PM	1/29/2019 7:16:00 AM	C	0.30	UG_L	U	1.0	0.30	U	
ERH755	AZ85653	1	Xylenes	1/24/2019 12:40:00 PM	1/29/2019 7:16:00 AM	C	0.30	UG_L	U	2.0	0.30	U	
<b>METHOD: 8270D</b>													
ERH733	AZ85643	1	2-(2-METHOXY ETHOXY)-ETHANOL	1/24/2019 8:45:00 AM	1/29/2019 7:02:00 PM	D	80.0	UG_L	U	100	80.0	UJ	1
ERH733	AZ85643	1	DECAMETHYL-CYCLOPENTASILOXANE	1/24/2019 8:45:00 AM	2/1/2019 8:57:00 PM	D	15	UG_L	T	0	0		
ERH733	AZ85643	1	MESITYL OXIDE	1/24/2019 8:45:00 AM	2/1/2019 8:57:00 PM	D	110	UG_L	T	0	0		
ERH733	AZ85643	1	OCTAMETHYLCYCLOTETRASILOXANE	1/24/2019 8:45:00 AM	2/1/2019 8:57:00 PM	D	43	UG_L	T	0	0		
ERH733	AZ85643	1	PHENOL	1/24/2019 8:45:00 AM	2/1/2019 8:57:00 PM	D	4.00	UG_L	U	5.0	4.00	U	
ERH734	AZ85644	1	2-(2-METHOXY ETHOXY)-ETHANOL	1/24/2019 8:45:00 AM	1/29/2019 7:25:00 PM	C	80.0	UG_L	U	100	80.0	UJ	1
ERH734	AZ85644	1	Hexanedioic Acid Dioctyl Ester	1/24/2019 8:45:00 AM	2/1/2019 9:25:00 PM	C	19	UG_L	T	0	0		

EPA_NO	LAB_ID	DF	ANALYTE	COLL_DATE	ANAL_DATE	QCLev	RESULT	UNITS	LAB_Q	LOQ	LOD	REV	Q_C
<b>METHOD: 8270D</b>													
ERH734	AZ85644	1	MESITYL OXIDE	1/24/2019 8:45:00 AM	2/1/2019 9:25:00 PM	C	20	UG_L	T	0	0		
ERH734	AZ85644	1	PHENOL	1/24/2019 8:45:00 AM	2/1/2019 9:25:00 PM	C	4.00	UG_L	U	5.0	4.00	U	
ERH757	AZ85646	1	2-(2-METHOXY ETHOXY)-ETHANOL	1/23/2019 3:25:00 PM	1/30/2019 10:04:00 AM	C	80.0	UG_L	U	100	80.0	UJ	1
ERH757	AZ85646	1	Hexanedioic Acid Diocetyl Ester	1/23/2019 3:25:00 PM	2/1/2019 9:53:00 PM	C	50	UG_L	T	0	0		
ERH757	AZ85646	1	N-ETHYL-4-METHYL-BENZENESULFONAMIDE	1/23/2019 3:25:00 PM	2/1/2019 9:53:00 PM	C	23	UG_L	T	0	0		
ERH757	AZ85646	1	PHENOL	1/23/2019 3:25:00 PM	2/1/2019 9:53:00 PM	C	4.00	UG_L	U	5.0	4.00	U	
ERH755	AZ85653	1	2-(2-METHOXY ETHOXY)-ETHANOL	1/24/2019 12:40:00 PM	1/29/2019 8:13:00 PM	C	80.0	UG_L	U	100	80.0	UJ	1
ERH755	AZ85653	1	PENTANEDIOIC ACID, DIMETHYL ESTER	1/24/2019 12:40:00 PM	2/1/2019 10:21:00 PM	C		UG_L	T	0	24	U	b
ERH755	AZ85653	1	PHENOL	1/24/2019 12:40:00 PM	2/1/2019 10:21:00 PM	C	4.00	UG_L	U	5.0	4.00	U	
<b>METHOD: 8270DSIM</b>													
ERH733	AZ85643	1	1-METHYLNAPHTHALENE	1/24/2019 8:45:00 AM	2/1/2019 7:16:00 PM	D	0.10	UG_L	U	0.2	0.10	U	
ERH733	AZ85643	1	2-METHYLNAPHTHALENE	1/24/2019 8:45:00 AM	2/1/2019 7:16:00 PM	D	0.10	UG_L	U	0.2	0.10	U	
ERH733	AZ85643	1	NAPHTHALENE	1/24/2019 8:45:00 AM	2/1/2019 7:16:00 PM	D	0.10	UG_L	U	0.2	0.10	U	
ERH734	AZ85644	1	1-METHYLNAPHTHALENE	1/24/2019 8:45:00 AM	2/1/2019 7:38:00 PM	C	0.10	UG_L	U	0.2	0.10	U	
ERH734	AZ85644	1	2-METHYLNAPHTHALENE	1/24/2019 8:45:00 AM	2/1/2019 7:38:00 PM	C	0.10	UG_L	U	0.2	0.10	U	
ERH734	AZ85644	1	NAPHTHALENE	1/24/2019 8:45:00 AM	2/1/2019 7:38:00 PM	C	0.10	UG_L	U	0.2	0.10	U	
ERH757	AZ85646	1	1-METHYLNAPHTHALENE	1/23/2019 3:25:00 PM	2/1/2019 8:01:00 PM	C	0.10	UG_L	U	0.2	0.10	U	
ERH757	AZ85646	1	2-METHYLNAPHTHALENE	1/23/2019 3:25:00 PM	2/1/2019 8:01:00 PM	C	0.10	UG_L	U	0.2	0.10	U	
ERH757	AZ85646	1	NAPHTHALENE	1/23/2019 3:25:00 PM	2/1/2019 8:01:00 PM	C	0.10	UG_L	U	0.2	0.10	U	
ERH755	AZ85653	1	1-METHYLNAPHTHALENE	1/24/2019 12:40:00 PM	2/1/2019 8:23:00 PM	C	0.10	UG_L	U	0.2	0.10	U	
ERH755	AZ85653	1	2-METHYLNAPHTHALENE	1/24/2019 12:40:00 PM	2/1/2019 8:23:00 PM	C	0.10	UG_L	U	0.2	0.10	U	
ERH755	AZ85653	1	NAPHTHALENE	1/24/2019 12:40:00 PM	2/1/2019 8:23:00 PM	C	0.10	UG_L	U	0.2	0.10	U	
<b>METHOD: 9060A</b>													
ERH733	AZ85643	1	TOTAL ORGANIC CARBON	1/24/2019 8:45:00 AM	2/14/2019 12:39:00 AM	D		MG_L	J	0.93	0.48	U	b
ERH757	AZ85646	1	TOTAL ORGANIC CARBON	1/23/2019 3:25:00 PM	2/14/2019 1:43:00 AM	C		MG_L		0.93	1.1	U	b
ERH755	AZ85653	1	TOTAL ORGANIC CARBON	1/24/2019 12:40:00 PM	2/20/2019 11:26:00 PM	C		MG_L	J	0.93	0.63	U	b
<b>METHOD: RSK175</b>													
ERH732	AZ85642	1	METHANE	1/24/2019 8:15:00 AM	1/28/2019 11:36:00 AM	C	1.00	UG_L	U	5.0	1.00	U	

EPA_NO	LAB_ID	DF	ANALYTE	COLL_DATE	ANAL_DATE	QCLev	RESULT	UNITS	LAB_Q	LOQ	LOD	REV	Q_C
<b>METHOD: RSK175</b>													
ERH733	AZ85643	1	METHANE	1/24/2019 8:45:00 AM	1/28/2019 11:38:00 AM	D	1.00	UG_L	U	5.0	1.00	U	
ERH756	AZ85645	1	METHANE	1/23/2019 1:20:00 PM	1/28/2019 11:40:00 AM	C	1.00	UG_L	U	5.0	1.00	U	
ERH757	AZ85646	1	METHANE	1/23/2019 3:25:00 PM	1/28/2019 11:43:00 AM	C	1.00	UG_L	U	5.0	1.00	U	
ERH754	AZ85652	1	METHANE	1/24/2019 12:08:00 PM	1/28/2019 11:45:00 AM	C	1.00	UG_L	U	5.0	1.00	U	
ERH755	AZ85653	1	METHANE	1/24/2019 12:40:00 PM	1/28/2019 11:47:00 AM	C	1.00	UG_L	U	5.0	1.00	U	



## LABORATORY DATA CONSULTANTS, INC.

2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

AECOM  
1001 Bishop Street Suite 1600  
Honolulu, HI 96813  
ATTN: Ms. Margie Pascua  
[Margie.Pascua@aecom.com](mailto:Margie.Pascua@aecom.com)

March 14, 2019

SUBJECT: Red Hill Bulk Storage Facility, CTO 18F0126, Data Validation

Dear Ms. Pascua,

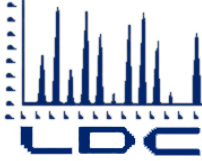
Enclosed are the final validation reports for the fractions listed below. This SDG was received on March 4, 2019. Attachment 1 is a summary of the samples that were reviewed for each analysis.

### LDC Project #44484:

<u>SDG #</u>	<u>Fraction</u>
87986	Volatiles, Phenol & Tentatively Identified Compounds, Polynuclear Aromatic Hydrocarbons, 2-(2-Methoxyethoxy)-ethanol, Wet Chemistry, Gasoline Range Organics, Total Petroleum Hydrocarbons as Extractables, Methane

The data validation was performed under Level C validation guidelines. The analyses were validated using the following documents and variances, as applicable to each method:

- Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i, Revision 02; January 2017
- Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i, Revision 01, April 2017
- Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i, Revision 00, September 2017
- Sampling and Analysis Plan, Addendum 03 Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i, Revision 00; June 2018
- Project Procedures Manual, U.S. Naval Facilities Engineering Command Environmental Restoration Program, NAVFAC Pacific, DON 2015
- U.S. Department of Defense Quality Systems Manual for Environmental Laboratories, Version 5.1, 2017



## LABORATORY DATA CONSULTANTS, INC.

2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIB, November 2004; update IV, February 2007; update V, July 2014

Please feel free to contact us if you have any questions.

Sincerely,

Stella Cuenco

[scuenco@lab-data.com](mailto:scuenco@lab-data.com)

Operations Manager/Senior Chemist

EDD 90/10 C/D

### LDC #44484 (AECOM-Honolulu, HI / Red Hill Bulk Storage Facility, CTO 18F0126)

LDC	SDG#	DATE REC'D	(2) DATE DUE	BTEX (8260B)		Phenol & TICs (8270D)		(3)PAHs (8270D -SIM)		2,2-MEE (8270D-M)		GRO (8260B)		TPH-E (8015B)		Methane (175)		Alk. (2320B)		Cl <sub>2</sub> SO <sub>4</sub> NO <sub>3</sub> (300.0)		Fe II (3500-Fe B)		NO <sub>3</sub> /NO <sub>2</sub> -N (353.2)		TOC (9060A)												
				W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S							W	S			
Matrix: Water/Soil				W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S			
A	87986	03/04/19	03/18/19	5	0	3	0	3	0	3	0	5	0	3	0	2	0	1	0	1	0	1	0	1	0	1	0											
Total	T/SC			5	0	3	0	3	0	3	0	5	0	3	0	2	0	1	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	29	

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** March 7, 2019

**Parameters:** Volatiles

**Validation Level:** Level C

**Laboratory:** APPL, Inc.

**Sample Delivery Group (SDG):** 87986

<b>Sample Identification</b>	<b>Laboratory Sample Identification</b>	<b>Matrix</b>	<b>Collection Date</b>
ERH760	AZ85762	Water	01/28/19
ERH761	AZ85763	Water	01/28/19
ERH762	AZ85764	Water	01/28/19
ERH763	AZ85765	Water	01/28/19
ERH764	AZ85766	Water	01/28/19



## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) which are Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX) by Environmental Protection Agency (EPA) SW 846 Method 8260B

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## Qualification Code Reference

- H Holding times were exceeded.
- S Surrogate recovery was outside QC limits.
- C Calibration %RSD,  $r$ ,  $r^2$  or %D were noncompliant.
- R Calibration RRF was  $<0.05$ .
- B Presumed contamination from preparation (method blank).
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD was high.
- I Internal standard performance was unsatisfactory.
- M Instrument Performance Check (BFB or DFTPP) was noncompliant.
- T Presumed contamination from trip blank.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Instrument performance for pesticides was poor.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. GC/MS Instrument Performance Check**

A bromofluorobenzene (BFB) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

## **III. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0% for all compounds.

Average relative response factors (RRF) for all compounds were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

## **IV. Continuing Calibration**

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0% for all compounds.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

## **V. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **VI. Field Blanks**

Samples ERH760 and ERH763 were identified as trip blanks. No contaminants were found.

Sample ERH761 was identified as an equipment blank. No contaminants were found.

Sample ERH762 was identified as a field blank. No contaminants were found.

## VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits with the following exceptions:

Sample	Surrogate	%R (Limits)	Affected Compound	Flag	A or P
ERH760	1,2-Dichloroethane-d4	122 (81-118)	All compounds	NA	-
ERH761	1,2-Dichloroethane-d4	122 (81-118)	All compounds	NA	-
ERH762	1,2-Dichloroethane-d4	121 (81-118)	All compounds	NA	-
ERH763	1,2-Dichloroethane-d4	121 (81-118)	All compounds	NA	-

## VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

## IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## X. Field Duplicates

No field duplicates were identified in this SDG.

## XI. Internal Standards

All internal standard areas and retention times were within QC limits.

## XII. Compound Quantitation

Raw data were not reviewed for Level C validation.

## XIII. Target Compound Identifications

Raw data were not reviewed for Level C validation.

#### **XIV. System Performance**

Raw data were not reviewed for Level C validation.

#### **XV. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**Red Hill Bulk Storage Facility, CTO 18F0126  
Volatiles - Data Qualification Summary - SDG 87986**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Volatiles - Laboratory Blank Data Qualification Summary - SDG 87986**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Volatiles - Field Blank Data Qualification Summary - SDG 87986**

No Sample Data Qualified in this SDG

LDC #: 44484A1a  
 SDG #: 87986  
 Laboratory: APPL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**

Level C

Date: 3/6/19  
 Page: 1 of 1  
 Reviewer: [Signature]  
 2nd Reviewer: [Signature]

**METHOD:** GC/MS Volatiles (BTEX)(EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A Δ	
II.	GC/MS Instrument performance check	Δ	
III.	Initial calibration/ICV	A Δ	% PSD ≤ 15 ICV ≤ 20
IV.	Continuing calibration / closing cal	Δ	CCV ≤ 20 / 50
V.	Laboratory Blanks	Δ	
VI.	Field blanks	ND	TB = 1,4 EB = 2 FB = 3
VII.	Surrogate spikes	SW	
VIII.	Matrix spike/Matrix spike duplicates	N	CS
IX.	Laboratory control samples	A	LES 1P
X.	Field duplicates	N	
XI.	Internal standards	Δ	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	Δ	

Note: A = Acceptable ND = No compounds detected D = Duplicate SB=Source blank  
 N = Not provided/applicable R = Rinsate TB = Trip blank OTHER:  
 SW = See worksheet FB = Field blank EB = Equipment blank

	Client ID	Lab ID	Matrix	Date
1	ERH760 TB	AZ85762	Water	01/28/19
2	ERH761 EB	AZ85763	Water	01/28/19
3	ERH762 FB	AZ85764	Water	01/28/19
4	ERH763 TB	AZ85765	Water	01/28/19
5	ERH764	AZ85766	Water	01/28/19
6				
7				
8				

Notes:

190202AL LES				



LDC #: 44484A1a

**VALIDATION FINDINGS WORKSHEET**  
**Surrogate Spikes**

Page: 1 of 1  
Reviewer: FT  
2nd Reviewer: ↑

**METHOD:** GC/MS VOA (EPA SW 846 Method 8260B )

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(5)

- Y N N/A Were all surrogate %R within QC limits?
- Y N N/A If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R out of outside of criteria?

#	Sample ID	Surrogate	%Recovery (Limits)	Qualifications
	1	DCE	122 ( 81-118 )	Just / P ND
			( )	
	2	↓	122 ( ↓ )	↓
			( )	
	3	↓	121 ( ↓ )	↓
			( )	
	4	↓	121 ( ↓ )	↓
			( )	
	190202AL	↓	124 ( ↓ )	↓
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	

SMC1 (TOL) = Toluene-d8  
 SMC2 (BFB) = Bromofluorobenzene  
 SMC3 (DCE) = 1,2-Dichloroethane-d4  
 SMC4 (DFM) = Dibromofluoromethane

**Laboratory Data Consultants, Inc.**  
**Data Validation Report**

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** March 7, 2019

**Parameters:** Phenol & Tentatively Identified Compounds

**Validation Level:** Level C

**Laboratory:** APPL, Inc.

**Sample Delivery Group (SDG):** 87986

<b>Sample Identification</b>	<b>Laboratory Sample Identification</b>	<b>Matrix</b>	<b>Collection Date</b>
ERH761	AZ85763	Water	01/28/19
ERH762	AZ85764	Water	01/28/19
ERH764	AZ85766	Water	01/28/19

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Phenol and Tentatively Identified Compounds (TIC) by Environmental Protection Agency (EPA) SW 846 Method 8270D

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## Qualification Code Reference

- H Holding times were exceeded.
- S Surrogate recovery was outside QC limits.
- C Calibration %RSD,  $r$ ,  $r^2$  or %D were noncompliant.
- R Calibration RRF was  $<0.05$ .
- B Presumed contamination from preparation (method blank).
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD was high.
- I Internal standard performance was unsatisfactory.
- M Instrument Performance Check (BFB or DFTPP) was noncompliant.
- T Presumed contamination from trip blank.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Instrument performance for pesticides was poor.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. GC/MS Instrument Performance Check**

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

## **III. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0%.

Average relative response factors (RRF) for all compounds were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

## **IV. Continuing Calibration**

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0%.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0%.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

## **V. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks with the following exceptions:

Blank ID	Extraction Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
190130A-BLK	01/30/19	Benzene, methyl- (2.18) Acetic acid, ethyl ester (2.49) Ethene, tetrachloro- (2.80) Butanedioic acid, dimethyl ester (5.53) Pentanedioic acid, dimethyl ester (6.73) Hexanedioic acid, dimethyl ester (7.15)	218.0 ug/L 63.9 ug/L 84.6 ug/L 7.7 ug/L 18.4 ug/L 5.3 ug/L	All samples in SDG 87986

Sample concentrations were compared to concentrations detected in the laboratory blanks. The sample concentrations were either not detected or were significantly greater (>10X for TICs, >5X for other contaminants) than the concentrations found in the associated laboratory blanks.

## VI. Field Blanks

Sample ERH761 was identified as an equipment blank. No contaminants were found.

Sample ERH762 was identified as a field blank. No contaminants were found.

## VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

## VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

## IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## X. Field Duplicates

No field duplicates were identified in this SDG.

## XI. Internal Standards

All internal standard areas and retention times were within QC limits.

## XII. Compound Quantitation

Raw data were not reviewed for Level C validation.

### **XIII. Target Compound Identifications**

Raw data were not reviewed for Level C validation.

### **XIV. System Performance**

Raw data were not reviewed for Level C validation.

### **XV. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.



**Red Hill Bulk Storage Facility, CTO 18F0126  
Phenol & Tentatively Identified Compounds - Data Qualification Summary - SDG  
87986**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Phenol & Tentatively Identified Compounds - Laboratory Blank Data Qualification  
Summary - SDG 87986**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Phenol & Tentatively Identified Compounds - Field Blank Data Qualification  
Summary - SDG 87986**

No Sample Data Qualified in this SDG

LDC #: 44484A2a  
 SDG #: 87986  
 Laboratory: APPL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**

Level C

Date: 3/6/19  
 Page: 1 of 1  
 Reviewer: [Signature]  
 2nd Reviewer: [Signature]

**METHOD:** GC/MS Phenol & TICs (EPA SW 846 Method 8270D)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	% PSD $\leq 15$ ICV $\leq 20$
IV.	Continuing calibration <i>closing cal</i>	A	CCV $\leq 20/50$
V.	Laboratory Blanks	SW	
VI.	Field blanks	ND	FB=1 FB=2
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	N	CS
IX.	Laboratory control samples	A	LOS ID
X.	Field duplicates	N	
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable      ND = No compounds detected      D = Duplicate      SB=Source blank  
 N = Not provided/applicable      R = Rinsate      TB = Trip blank      OTHER:  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

	Client ID	Lab ID	Matrix	Date
1	ERH761      EB	AZ85763	Water	01/28/19
2	ERH762      FB	AZ85764	Water	01/28/19
3	ERH764	AZ85766	Water	01/28/19
4				
5				
6				
7				
8				

Notes:

190130A - Blk	1/30/19	2/01/19		

LDC #: 44484A2a

### VALIDATION FINDINGS WORKSHEET

Page: 1 of 1

#### Blanks

Reviewer: FT

2nd Reviewer: 7

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

- Y N N/A Was a method blank analyzed for each matrix?
- Y N N/A Was a method blank analyzed for each concentration preparation level?
- Y N N/A Was a method blank associated with every sample?
- Y N N/A Was the blank contaminated? If yes, please see qualification below.

Blank extraction date: 1/30/19 Blank analysis date: 2/01/19

Conc. units: ug/L Associated Samples: All (ND)

Compound	Blank ID								
	190130A Bk								
TIC	su	following	page						

Blank extraction date: \_\_\_\_\_ Blank analysis date: \_\_\_\_\_

Conc. units: \_\_\_\_\_ Associated Samples: \_\_\_\_\_

Compound	Blank ID								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT: Common contaminants such as the phthalates and TICs noted above that were detected in samples within ten times the associated method blank concentration were qualified as not detected, "U". Other contaminants within five times the method blank concentration were also qualified as not detected, "U".

Tentatively Identified Compound (LSC) summary

Operator ID: MA Date Acquired: 1 Feb 19 16:19  
 Data File: M:\YODA\DATA\Y190124\0124Y098.D  
 Name: 190130A Blk 1/800  
 Misc:  
 Method: M:\YODA\DATA\Y190124\Y0125NC.M (RTE Integrator)  
 Title: EPA 8270C  
 Library Searched: M:\DATABASE\WILEY138.L

TIC Top Hit name	RT	EstConc	Units	Area	IntStd	ISRT	ISArea	ISConc
Benzene, methyl-	2.18	218.0	ppb	11425600	ISTD01	5.46	2620080	40.0
Acetic acid, ethyl e	2.49	63.9	ppb	3347430	ISTD01	5.46	2620080	40.0
Ethene, tetrachloro-	2.80	84.6	ppb	4431650	ISTD01	5.46	2620080	40.0
Butanedioic acid, di	5.53	7.7	ppb	401962	ISTD01	5.46	2620080	40.0
Pentanedioic acid, d	6.37	18.4	ppb	1289090	ISTD02	6.90	3509310	40.0
Hexanedioic acid, di	7.15	5.3	ppb	369644	ISTD02	6.90	3509310	40.0

0124Y098.D Y0125NC.M Fri Feb 08 08:10:08 2019

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** March 7, 2019

**Parameters:** Polynuclear Aromatic Hydrocarbons

**Validation Level:** Level C

**Laboratory:** APPL, Inc.

**Sample Delivery Group (SDG):** 87986

<b>Sample Identification</b>	<b>Laboratory Sample Identification</b>	<b>Matrix</b>	<b>Collection Date</b>
ERH761	AZ85763	Water	01/28/19
ERH762	AZ85764	Water	01/28/19
ERH764	AZ85766	Water	01/28/19

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polynuclear Aromatic Hydrocarbons (PAHs) which are 1-Methylnaphthalene, 2-Methylnaphthalene, and Naphthalene by Environmental Protection Agency (EPA) SW 846 Method 8270D in Selected Ion Monitoring (SIM) mode

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## Qualification Code Reference

- H Holding times were exceeded.
- S Surrogate recovery was outside QC limits.
- C Calibration %RSD,  $r$ ,  $r^2$  or %D were noncompliant.
- R Calibration RRF was  $<0.05$ .
- B Presumed contamination from preparation (method blank).
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD was high.
- I Internal standard performance was unsatisfactory.
- M Instrument Performance Check (BFB or DFTPP) was noncompliant.
- T Presumed contamination from trip blank.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Instrument performance for pesticides was poor.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.



## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. GC/MS Instrument Performance Check**

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

## **III. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0% for all compounds.

Average relative response factors (RRF) for all compounds were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

## **IV. Continuing Calibration**

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0% for all compounds.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

## **V. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **VI. Field Blanks**

Sample ERH761 was identified as an equipment blank. No contaminants were found.

Sample ERH762 was identified as a field blank. No contaminants were found.

## **VII. Surrogates**

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

## **VIII. Matrix Spike/Matrix Spike Duplicates**

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

## **IX. Laboratory Control Samples**

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## **X. Field Duplicates**

No field duplicates were identified in this SDG.

## **XI. Internal Standards**

All internal standard areas and retention times were within QC limits.

## **XII. Compound Quantitation**

Raw data were not reviewed for Level C validation.

## **XIII. Target Compound Identifications**

Raw data were not reviewed for Level C validation.

## **XIV. System Performance**

Raw data were not reviewed for Level C validation.

## **XV. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**Red Hill Bulk Storage Facility, CTO 18F0126  
Polynuclear Aromatic Hydrocarbons - Data Qualification Summary - SDG 87986**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Polynuclear Aromatic Hydrocarbons - Laboratory Blank Data Qualification  
Summary - SDG 87986**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Polynuclear Aromatic Hydrocarbons - Field Blank Data Qualification Summary -  
SDG 87986**

No Sample Data Qualified in this SDG

LDC #: 44484A2b  
 SDG #: 87986  
 Laboratory: APPL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**  
 Level C

Date: 3/5/19  
 Page: bf 1  
 Reviewer: [Signature]  
 2nd Reviewer: [Signature]

**METHOD:** GC/MS PAH (EPA SW 846 Method 8270D-SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	GC/MS Instrument performance check	Δ	
III.	Initial calibration/ICV	Δ/A	% PSD ≤ 15    ICV ≤ 20
IV.	Continuing calibration / closing cal	Δ	CCV ≤ 20/50
V.	Laboratory Blanks	Δ	
VI.	Field blanks	ND	EB=1    FB=2
VII.	Surrogate spikes	Δ	
VIII.	Matrix spike/Matrix spike duplicates	N	
IX.	Laboratory control samples	A	LCS 10
X.	Field duplicates	N	
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	Δ	

Note: A = Acceptable      ND = No compounds detected      D = Duplicate      SB=Source blank  
 N = Not provided/applicable      R = Rinsate      TB = Trip blank      OTHER:  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

	Client ID	Lab ID	Matrix	Date
1	ERH761    EB	AZ85763	Water	01/28/19
2	ERH762    FB	AZ85764	Water	01/28/19
3	ERH764	AZ85766	Water	01/28/19
4				
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Notes:

190130A				

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** March 7, 2019

**Parameters:** 2-(2-Methoxyethoxy)-ethanol

**Validation Level:** Level C

**Laboratory:** APPL, Inc.

**Sample Delivery Group (SDG):** 87986

<b>Sample Identification</b>	<b>Laboratory Sample Identification</b>	<b>Matrix</b>	<b>Collection Date</b>
ERH761	AZ85763	Water	01/28/19
ERH762	AZ85764	Water	01/28/19
ERH764	AZ85766	Water	01/28/19

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

2-(2-Methoxyethoxy)-ethanol by Environmental Protection Agency (EPA) SW 846 Method 8270D M

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## Qualification Code Reference

- H Holding times were exceeded.
- S Surrogate recovery was outside QC limits.
- C Calibration %RSD,  $r$ ,  $r^2$  or %D were noncompliant.
- R Calibration RRF was  $<0.05$ .
- B Presumed contamination from preparation (method blank).
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD was high.
- I Internal standard performance was unsatisfactory.
- M Instrument Performance Check (BFB or DFTPP) was noncompliant.
- T Presumed contamination from trip blank.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Instrument performance for pesticides was poor.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.



## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. GC/MS Instrument Performance Check**

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

## **III. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0%.

Average relative response factors (RRF) were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

## **IV. Continuing Calibration**

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0%.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0%.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

## **V. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **VI. Field Blanks**

Sample ERH761 was identified as an equipment blank. No contaminants were found.

Sample ERH762 was identified as a field blank. No contaminants were found.

## **VII. Surrogates**

Surrogates were not added to all samples as required by the method. Using professional judgment, no data were qualified, since the LCS/LCSD percent recoveries were within QC limits. Additionally, all base surrogate percent recoveries were within QC limits in the phenol analysis.

## **VIII. Matrix Spike/Matrix Spike Duplicates**

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

## **IX. Laboratory Control Samples**

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## **X. Field Duplicates**

No field duplicates were identified in this SDG.

## **XI. Internal Standards**

All internal standard areas and retention times were within QC limits.

## **XII. Compound Quantitation**

Raw data were not reviewed for Level C validation.

## **XIII. Target Compound Identifications**

Raw data were not reviewed for Level C validation.

## **XIV. System Performance**

Raw data were not reviewed for Level C validation.

## **XV. Overall Assessment of Data**

The analysis was conducted within all specifications of the method with the exception noted in Section VII. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**Red Hill Bulk Storage Facility, CTO 18F0126  
2-(2-Methoxyethoxy)-ethanol - Data Qualification Summary - SDG 87986**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
2-(2-Methoxyethoxy)-ethanol - Laboratory Blank Data Qualification Summary -  
SDG 87986**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
2-(2-Methoxyethoxy)-ethanol - Field Blank Data Qualification Summary - SDG  
87986**

No Sample Data Qualified in this SDG

LDC #: 44484A2c  
 SDG #: 87986  
 Laboratory: APPL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**

Level C

Date: 3/6/19  
 Page: 1 of 1  
 Reviewer: [Signature]  
 2nd Reviewer: [Signature]

**METHOD:** GC/MS 2-(2-Methoxyethoxy)-Ethanol (EPA SW 846 Method 8270D-SM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	GC/MS Instrument performance check	Δ	
III.	Initial calibration/ICV	A/A	% PSD = 15 CV = 20
IV.	Continuing calibration / closing CV	Δ	CV = 20/50
V.	Laboratory Blanks	Δ	
VI.	Field blanks	ND	EB = 1 FB = 2
VII.	Surrogate spikes	SW	
VIII.	Matrix spike/Matrix spike duplicates	N	CS
IX.	Laboratory control samples	A	res ID
X.	Field duplicates	N	
XI.	Internal standards	Δ	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable ND = No compounds detected D = Duplicate SB=Source blank  
 N = Not provided/applicable R = Rinsate TB = Trip blank OTHER:  
 SW = See worksheet FB = Field blank EB = Equipment blank

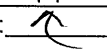
	Client ID	Lab ID	Matrix	Date
1	ERH761 EB	AZ85763	Water	01/28/19
2	ERH762 FB	AZ85764	Water	01/28/19
3	ERH764	AZ85766	Water	01/28/19
4				
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Notes:

190204A				

LDC #: \_\_\_\_\_

### VALIDATION FINDINGS WORKSHEET Surrogate Recovery

Page: 1 of 1  
Reviewer: FT  
2nd Reviewer: 

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualification below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were percent recoveries (%R) for surrogates within QC limits?

Y N N/A If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?

Y N N/A If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Sample ID	Surrogate	%R (Limits)	Qualifications
	all	Surrogates were not added to all samples as required by the method. Using professional judgment, no data were qualified, since the LCS/LCSD percent recoveries were within QC limits. Additionally, all base surrogate percent recoveries were within QC limits in the phenol analysis.		Text
			( )	
			( )	
			( )	
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(NBZ) = Nitrobenzene - d5  
(FBP) = 2-Fluorobiphenyl  
(TPH) = Terphenyl - d14

(2FP) = 2-Fluorophenol  
(TBP) = 2,4,6 -Tribromophenol  
(2CP) = 2-Chlorophenol - d4

**Laboratory Data Consultants, Inc.**  
**Data Validation Report**

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** March 8, 2019

**Parameters:** Wet Chemistry

**Validation Level:** Level C

**Laboratory:** APPL, Inc.

**Sample Delivery Group (SDG):** 87986

<b>Sample Identification</b>	<b>Laboratory Sample Identification</b>	<b>Matrix</b>	<b>Collection Date</b>
ERH764	AZ85766	Water	01/28/19

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Alkalinity by Standard Method 2320B

Chloride, Nitrate, and Sulfate by Environmental Protection Agency (EPA) Method 300.0

Ferrous Iron by Standard Method 3500-Fe B

Nitrate/Nitrite as Nitrogen by EPA Method 353.2

Total Organic Carbon by EPA SW 846 Method 9060A

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.



## Qualification Code Reference

- H Holding times were exceeded.
- S The sequence or number of standards used for the calibration was incorrect.
- C Correlation coefficient is  $<0.995$ .
- R %R for calibration is not within control limits.
- B Presumed contamination from preparation (method) blank or calibration blank.
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD or difference was high.
- I ICP ICS results were unsatisfactory.
- A ICP Serial Dilution %D were not within control limits.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Post Digestion Spike recovery was not within control limits.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

## I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
ERH764	Nitrate	49 hours	48 hours	UJ (all non-detects)	P

## II. Initial Calibration

All criteria for the initial calibration of each method were met.

## III. Continuing Calibration

Continuing calibration frequency and analysis criteria were met for each method when applicable.

## IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks with the following exceptions:

Blank ID	Analyte	Maximum Concentration	Limit of Quantitation	Associated Samples
PB (prep blank)	Alkalinity Total organic carbon	2.2 mg/L 0.31 mg/L	2.0 mg/L 0.93 mg/L	All samples in SDG 87986
ICB/CCB	Total organic carbon	0.31 mg/L	0.93 mg/L	All samples in SDG 87986

Data qualification by the laboratory blanks was based on the maximum contaminant concentration in the laboratory blanks in the analysis of each analyte. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated laboratory blanks with the following exceptions:

Sample	Analyte	Reported Concentration	Limit of Quantitation	Modified Final Concentration
ERH764	Total organic carbon	1.0 mg/L	0.93 mg/L	1.0U mg/L

## **V. Field Blanks**

No field blanks were identified in this SDG.

## **VI. Matrix Spike/Matrix Spike Duplicates**

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

## **VII. Duplicate Sample Analysis**

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

## **VIII. Laboratory Control Samples**

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## **IX. Field Duplicates**

No field duplicates were identified in this SDG.

## **X. Sample Result Verification**

Raw data were not reviewed for Level C validation.

## **XI. Overall Assessment of Data**

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to technical holding time, data were qualified as estimated in one sample.

Due to laboratory blank contamination, data were qualified as not detected in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

**Red Hill Bulk Storage Facility, CTO 18F0126  
Wet Chemistry- Data Qualification Summary - SDG 87986**

Sample	Analyte	Flag	A or P	Reason (Code)
ERH764	Nitrate	UJ (all non-detects)	P	Technical holding times (H)

**Red Hill Bulk Storage Facility, CTO 18F0126  
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 87986**

Sample	Analyte	Modified Final Concentration	A or P	Code
ERH764	Total organic carbon	1.0U mg/L	A	B

**Red Hill Bulk Storage Facility, CTO 18F0126  
Wet Chemistry - Field Blank Data Qualification Summary - SDG 87986**

No Sample Data Qualified in this SDG

LDC #: 44484A6  
 SDG #: 87986  
 Laboratory: APPL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**

Level C

Date: 3/4/19  
 Page: 1 of 1  
 Reviewer: B  
 2nd Reviewer: A

**METHOD: (Analyte)** Alkalinity (SM2320B), Chloride, Nitrate, Sulfate (EPA Method 300.0), Ferrous Iron (SM3500-Fe B), Nitrate/Nitrite-N (EPA Method 353.2), TOC (EPA SW846 Method 9060A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / SW	
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	SW	
V	Field blanks	N	
VI.	Matrix Spike/Matrix Spike Duplicates	N	C.S.
VII.	Duplicate sample analysis	N	
VIII.	Laboratory control samples	A	LCS ID
IX.	Field duplicates	N	
X.	Sample result verification	N	
XI.	Overall assessment of data	A	

Note: A = Acceptable      ND = No compounds detected      D = Duplicate      SB=Source blank  
 N = Not provided/applicable      R = Rinsate      TB = Trip blank      OTHER:  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

	Client ID	Lab ID	Matrix	Date
1	ERH764	AZ85766	Water	01/28/19
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				

Notes: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**VALIDATION FINDINGS WORKSHEET**  
**Sample Specific Analysis Reference**

All circled methods are applicable to each sample.

Sample ID	Parameter
1	pH TDS (C) F NO <sub>2</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub> Ferrowfe NO <sub>3</sub> /NO <sub>2</sub> Toc
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
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Comments: \_\_\_\_\_

\_\_\_\_\_

# VALIDATION FINDINGS WORKSHEET

## Technical Holding Times

CODE: H

All circled dates have exceeded the technical holding time.

Y N N/A Were all samples preserved as applicable to each method ?

Y N N/A Were all cooler temperatures within validation criteria?

Method:		<u>§16 EPA 300.0</u>					
Parameters:		<u>Nitrate</u>					
Technical holding time:		<u>48 hours.</u>					
Sample ID	Sampling date	Analysis date	Total Time	Qualifier	Analysis date	Total Time	Qualifier
<u>1</u>	<u>1/28/19 9:10</u>	<u>1/30/19 10:10</u>	<u>49 hours.</u>	<u>J/W/P</u>	<u>(ND)</u>		

**VALIDATION FINDINGS WORKSHEET**

**Blanks**

CODE: B

Reviewer: JB

2nd Reviewer: 

**METHOD:** Inorganics, Method See Cover

**Conc. units:** mg/L **Associated Samples** All

Analyte	Blank ID	Blank ID	Blank Action Limit																	
	PB	ICB/CCB (mg/L)		1																
Alkalinity	2.2		11																	
TOC	0.31	0.31	1.55	1.0U																

Alkalinity LOQ = 2.0 mg/L  
 TOC LOQ = 0.93 mg/L

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:  
 All contaminants within five times the method blank concentration were qualified as not detected, "U".



**Laboratory Data Consultants, Inc.  
Data Validation Report**

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** March 7, 2019

**Parameters:** Gasoline Range Organics

**Validation Level:** Level C

**Laboratory:** APPL, Inc.

**Sample Delivery Group (SDG):** 87986

<b>Sample Identification</b>	<b>Laboratory Sample Identification</b>	<b>Matrix</b>	<b>Collection Date</b>
ERH760	AZ85762	Water	01/28/19
ERH761	AZ85763	Water	01/28/19
ERH762	AZ85764	Water	01/28/19
ERH763	AZ85765	Water	01/28/19
ERH764	AZ85766	Water	01/28/19

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Gasoline Range Organics by Environmental Protection Agency (EPA) SW 846 Method 8260B

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered not detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## Qualification Code Reference

- H Holding times were exceeded.
- S Surrogate recovery was outside QC limits.
- C Calibration %RSD,  $r$ ,  $r^2$  or %D were noncompliant.
- R Calibration RRF was  $<0.05$ .
- B Presumed contamination from preparation (method blank).
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD was high.
- I Internal standard performance was unsatisfactory.
- M Instrument Performance Check (BFB or DFTPP) was noncompliant.
- T Presumed contamination from trip blank.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Instrument performance for pesticides was poor.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

A curve fit, based on the initial calibration, was established for quantitation. The coefficient of determination ( $r^2$ ) was greater than or equal to 0.990.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

## **III. Continuing Calibration**

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0%.

## **IV. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **V. Field Blanks**

Samples ERH760 and ERH763 were identified as trip blanks. No contaminants were found.

Sample ERH761 was identified as an equipment blank. No contaminants were found.

Sample ERH762 was identified as a field blank. No contaminants were found.

## **VI. Surrogates**

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

## **VII. Matrix Spike/Matrix Spike Duplicates**

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

### **VIII. Laboratory Control Samples**

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

### **IX. Field Duplicates**

No field duplicates were identified in this SDG.

### **X. Compound Quantitation**

Raw data were not reviewed for Level C validation.

### **XI. Target Compound Identifications**

Raw data were not reviewed for Level C validation.

### **XII. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**Red Hill Bulk Storage Facility, CTO 18F0126  
Gasoline Range Organics - Data Qualification Summary - SDG 87986**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Gasoline Range Organics - Laboratory Blank Data Qualification Summary - SDG  
87986**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Gasoline Range Organics - Field Blank Data Qualification Summary - SDG 87986**

No Sample Data Qualified in this SDG

LDC #: 44484A7  
 SDG #: 87986  
 Laboratory: APPL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**

Level C

Date: 3/6/19  
 Page: 1 of 1  
 Reviewer: FJ  
 2nd Reviewer: TE

**METHOD:** GC/MS Gasoline Range Organics (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A Δ	
II.	GC/MS Instrument performance check	Δ	
III.	Initial calibration/ICV	A Δ	r <sup>2</sup> ICV ≤ 20
IV.	Continuing calibration TB	Δ	CCV ≤ 20
V.	Laboratory Blanks	Δ	
VI.	Field blanks	ND	TB = 1, 4 EB = 2 FB = 3
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	N	CS
IX.	Laboratory control samples	A	Les 1P
X.	Field duplicates	N	
XI.	Internal standards	Δ	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable  
 N = Not provided/applicable  
 SW = See worksheet

ND = No compounds detected  
 R = Rinsate  
 FB = Field blank

D = Duplicate  
 TB = Trip blank  
 EB = Equipment blank

SB=Source blank  
 OTHER:

	Client ID	Lab ID	Matrix	Date
1	ERH760 TB	AZ85762	Water	01/28/19
2	ERH761 FB	AZ85763	Water	01/28/19
3	ERH762 FB	AZ85764	Water	01/28/19
4	ERH763 TB	AZ85765	Water	01/28/19
5	ERH764	AZ85766	Water	01/28/19
6				
7				
8				

Notes:

190202AL BLK				



**Laboratory Data Consultants, Inc.  
Data Validation Report**

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126  
**LDC Report Date:** March 7, 2019  
**Parameters:** Total Petroleum Hydrocarbons as Extractables  
**Validation Level:** Level C  
**Laboratory:** APPL, Inc.  
**Sample Delivery Group (SDG):** 87986

<b>Sample Identification</b>	<b>Laboratory Sample Identification</b>	<b>Matrix</b>	<b>Collection Date</b>
ERH761	AZ85763	Water	01/28/19
ERH762	AZ85764	Water	01/28/19
ERH764	AZ85766	Water	01/28/19

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Total Petroleum Hydrocarbons (TPH) as Extractables by Environmental Protection Agency (EPA) SW 846 Method 8015B

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered not detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## Qualification Code Reference

- H Holding times were exceeded.
- S Surrogate recovery was outside QC limits.
- C Calibration %RSD,  $r$ ,  $r^2$  or %D were noncompliant.
- R Calibration RRF was  $<0.05$ .
- B Presumed contamination from preparation (method blank).
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD was high.
- I Internal standard performance was unsatisfactory.
- M Instrument Performance Check (BFB or DFTPP) was noncompliant.
- T Presumed contamination from trip blank.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Instrument performance for pesticides was poor.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

## **III. Continuing Calibration**

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

## **IV. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **V. Field Blanks**

Sample ERH761 was identified as an equipment blank. No contaminants were found.

Sample ERH762 was identified as a field blank. No contaminants were found.

## **VI. Surrogates**

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

## **VII. Matrix Spike/Matrix Spike Duplicates**

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

### **VIII. Laboratory Control Samples**

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

### **IX. Field Duplicates**

No field duplicates were identified in this SDG.

### **X. Compound Quantitation**

Raw data were not reviewed for Level C validation.

### **XI. Target Compound Identifications**

Raw data were not reviewed for Level C validation.

### **XII. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**Red Hill Bulk Storage Facility, CTO 18F0126  
Total Petroleum Hydrocarbons as Extractables - Data Qualification Summary -  
SDG 87986**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Total Petroleum Hydrocarbons as Extractables - Laboratory Blank Data  
Qualification Summary - SDG 87986**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Total Petroleum Hydrocarbons as Extractables - Field Blank Data Qualification  
Summary - SDG 87986**

No Sample Data Qualified in this SDG

LDC #: 44484A8  
 SDG #: 87986  
 Laboratory: APPL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**

Level C

Date: 3/5/19  
 Page: 1 of 1  
 Reviewer: FJ  
 2nd Reviewer: RE

**METHOD:** GC TPH as Extractables (EPA SW 846 Method 8015B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	Initial calibration/ICV	A/A	% PSD / CV ≤ 20 CV ≤ 20
III.	Continuing calibration	Δ	
IV.	Laboratory Blanks	A	
V.	Field blanks	ND	FB=1 FB=2
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	N	CS
VIII.	Laboratory control samples	A	LOS IP
IX.	Field duplicates	N	
X.	Compound quantitation RL/LOQ/LODs	N	
XI.	Target compound identification	N	
XII.	Overall assessment of data	A	

Note: A = Acceptable  
 N = Not provided/applicable  
 SW = See worksheet  
 ND = No compounds detected  
 R = Rinsate  
 FB = Field blank  
 D = Duplicate  
 TB = Trip blank  
 EB = Equipment blank  
 SB=Source blank  
 OTHER:

	Client ID	Lab ID	Matrix	Date
1	ERH761 FB	AZ85763	Water	01/28/19
2	ERH762 FB	AZ85764	Water	01/28/19
3	ERH764	AZ85766	Water	01/28/19
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Notes:

190201A - BIK				



**Laboratory Data Consultants, Inc.  
Data Validation Report**

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** March 8, 2019

**Parameters:** Methane

**Validation Level:** Level C

**Laboratory:** APPL, Inc.

**Sample Delivery Group (SDG):** 87986

<b>Sample Identification</b>	<b>Laboratory Sample Identification</b>	<b>Matrix</b>	<b>Collection Date</b>
ERH763	AZ85765	Water	01/28/19
ERH764	AZ85766	Water	01/28/19

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Methane by Method RSK-175

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## Qualification Code Reference

- H Holding times were exceeded.
- S Surrogate recovery was outside QC limits.
- C Calibration %RSD,  $r$ ,  $r^2$  or %D were noncompliant.
- R Calibration RRF was  $<0.05$ .
- B Presumed contamination from preparation (method blank).
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD was high.
- I Internal standard performance was unsatisfactory.
- M Instrument Performance Check (BFB or DFTPP) was noncompliant.
- T Presumed contamination from trip blank.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Instrument performance for pesticides was poor.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

A curve fit, based on the initial calibration, was established for quantitation. The coefficient of determination ( $r^2$ ) was greater than or equal to 0.990.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

## **III. Continuing Calibration**

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 20.0%.

## **IV. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **V. Field Blanks**

Sample ERH763 was identified as a trip blank. No contaminants were found.

## **VI. Matrix Spike/Matrix Spike Duplicates**

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

## **VII. Laboratory Control Samples**

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## **VIII. Field Duplicates**

No field duplicates were identified in this SDG.

## **IX. Compound Quantitation**

Raw data were not reviewed for Level C validation.

## **X. Target Compound Identification**

Raw data were not reviewed for Level C validation.

## **XI. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**Red Hill Bulk Storage Facility, CTO 18F0126  
Methane - Data Qualification Summary - SDG 87986**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Methane - Laboratory Blank Data Qualification Summary - SDG 87986**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Methane - Field Blank Data Qualification Summary - SDG 87986**

No Sample Data Qualified in this SDG

LDC #: 44484A51  
 SDG #: 87986  
 Laboratory: APPL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**

Level C

Date: 3/6/19  
 Page: 1 of 1  
 Reviewer: [Signature]  
 2nd Reviewer: [Signature]

**METHOD:** GC Methane (Method RSK-175)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	Δ Δ	
II.	Initial calibration/ICV	Δ Δ	ICV ≤ 20
III.	Continuing calibration	A	CV ≤ 20
IV.	Laboratory Blanks	Δ	
V.	Field blanks	ND	TB = 1
VI.	Matrix spike/Matrix spike duplicates	N	CS
VII.	Laboratory control samples	Δ	CS IP
VIII.	Field duplicates	N	
IX.	Compound quantitation RL/LOQ/LODs	N	
X.	Target compound identification	N	
XI.	Overall assessment of data	Δ	

Note: A = Acceptable      ND = No compounds detected      D = Duplicate      SB=Source blank  
 N = Not provided/applicable      R = Rinsate      TB = Trip blank      OTHER:  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

	Client ID	Lab ID	Matrix	Date
1	ERH763 TB	AZ85765	Water	01/28/19
2	ERH764	AZ85766	Water	01/28/19
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12				

Notes:

190204 A				



**Red Hill Bulk Storage Facility, CTO 18F0126 - SDG 87986  
LDC 44484**

AECOM

EPA_NO	LAB_ID	DF	ANALYTE	COLL_DATE	ANAL_DATE	QCLev	RESULT	UNITS	LAB_Q	LOQ	LOD	REV	Q_C
<b>METHOD: 2320B</b>													
ERH764	AZ85766	1	ALKALINITY, TOTAL (AS CaCO3)	1/28/2019 9:10:00 AM	2/5/2019 3:29:00 PM	C	114	MG_L		2.0	1.70		
ERH764	AZ85766	1	BICARBONATE	1/28/2019 9:10:00 AM	2/5/2019 3:29:00 PM	C	114	MG_L		2.0	1.70		
ERH764	AZ85766	1	CARBONATE (AS CO3)	1/28/2019 9:10:00 AM	2/5/2019 3:29:00 PM	C	1.70	MG_L	U	2.0	1.70		U
<b>METHOD: 300.0</b>													
ERH764	AZ85766	2	CHLORIDE (AS CL)	1/28/2019 9:10:00 AM	1/30/2019 2:51:00 PM	C	52.3	MG_L	D	2.0	0.40		
ERH764	AZ85766	1	NITROGEN, NITRATE (AS N)	1/28/2019 9:10:00 AM	1/30/2019 10:16:00 AM	C	0.18	MG_L	U	0.5	0.18	UJ	h
ERH764	AZ85766	1	SULFATE (AS SO4)	1/28/2019 9:10:00 AM	1/30/2019 10:16:00 AM	C	10.5	MG_L		1.0	0.20		
<b>METHOD: 3500-FE-B</b>													
ERH764	AZ85766	1	Iron, Ion (Fe2+)	1/28/2019 9:10:00 AM	1/30/2019 10:18:00 AM	C	0.20	MG_L	J	1.0	0.32	J	
<b>METHOD: 353.2</b>													
ERH764	AZ85766	1	NITROGEN, NITRATE-NITRITE	1/28/2019 9:10:00 AM	2/4/2019 2:39:00 PM	C	0.100	MG_L	U	0.10	0.100		U
<b>METHOD: 8015B_E</b>													
ERH761	AZ85763	1	C10-C24 DIESEL RANGE ORGANICS	1/28/2019 11:00:00 AM	2/4/2019 2:13:00 PM	C	25.00	UG_L	U	40.0	25.00		U
ERH761	AZ85763	1	C24-C40 TOTAL PETROLEUM HYDROCARBONS, OIL RANGE	1/28/2019 11:00:00 AM	2/4/2019 2:13:00 PM	C	40.00	UG_L	U	40.0	40.00		U
ERH762	AZ85764	1	C10-C24 DIESEL RANGE ORGANICS	1/28/2019 10:45:00 AM	2/4/2019 2:33:00 PM	C	25.00	UG_L	U	40.0	25.00		U
ERH762	AZ85764	1	C24-C40 TOTAL PETROLEUM HYDROCARBONS, OIL RANGE	1/28/2019 10:45:00 AM	2/4/2019 2:33:00 PM	C	40.00	UG_L	U	40.0	40.00		U
ERH764	AZ85766	1	C10-C24 DIESEL RANGE ORGANICS	1/28/2019 9:10:00 AM	2/4/2019 2:53:00 PM	C	25.00	UG_L	U	40.0	25.00		U
ERH764	AZ85766	1	C24-C40 TOTAL PETROLEUM HYDROCARBONS, OIL RANGE	1/28/2019 9:10:00 AM	2/4/2019 2:53:00 PM	C	40.00	UG_L	U	40.0	40.00		U
<b>METHOD: 8260B</b>													
ERH760	AZ85762	1	BENZENE	1/28/2019 10:40:00 AM	2/2/2019 5:59:00 PM	C	0.30	UG_L	U	1.0	0.30		U
ERH760	AZ85762	1	ETHYLBENZENE	1/28/2019 10:40:00 AM	2/2/2019 5:59:00 PM	C	0.50	UG_L	U	1.0	0.50		U
ERH760	AZ85762	1	PETROLEUM HYDROCARBONS C6-C10	1/28/2019 10:40:00 AM	2/2/2019 5:58:00 PM	C	18.0	UG_L	U	20	18.0		U
ERH760	AZ85762	1	TOLUENE	1/28/2019 10:40:00 AM	2/2/2019 5:59:00 PM	C	0.30	UG_L	U	1.0	0.30		U
ERH760	AZ85762	1	Xylenes	1/28/2019 10:40:00 AM	2/2/2019 5:59:00 PM	C	0.30	UG_L	U	2.0	0.30		U
ERH761	AZ85763	1	BENZENE	1/28/2019 11:00:00 AM	2/2/2019 6:27:00 PM	C	0.30	UG_L	U	1.0	0.30		U
ERH761	AZ85763	1	ETHYLBENZENE	1/28/2019 11:00:00 AM	2/2/2019 6:27:00 PM	C	0.50	UG_L	U	1.0	0.50		U
ERH761	AZ85763	1	PETROLEUM HYDROCARBONS C6-C10	1/28/2019 11:00:00 AM	2/2/2019 6:26:00 PM	C	18.0	UG_L	U	20	18.0		U

EPA_NO	LAB_ID	DF	ANALYTE	COLL_DATE	ANAL_DATE	QCLev	RESULT	UNITS	LAB_Q	LOQ	LOD	REV	Q_C
<b>METHOD: 8260B</b>													
ERH761	AZ85763	1	TOLUENE	1/28/2019 11:00:00 AM	2/2/2019 6:27:00 PM	C	0.30	UG_L	U	1.0	0.30	U	
ERH761	AZ85763	1	Xylenes	1/28/2019 11:00:00 AM	2/2/2019 6:27:00 PM	C	0.30	UG_L	U	2.0	0.30	U	
ERH762	AZ85764	1	BENZENE	1/28/2019 10:45:00 AM	2/2/2019 6:56:00 PM	C	0.30	UG_L	U	1.0	0.30	U	
ERH762	AZ85764	1	ETHYLBENZENE	1/28/2019 10:45:00 AM	2/2/2019 6:56:00 PM	C	0.50	UG_L	U	1.0	0.50	U	
ERH762	AZ85764	1	PETROLEUM HYDROCARBONS C6-C10	1/28/2019 10:45:00 AM	2/2/2019 6:55:00 PM	C	18.0	UG_L	U	20	18.0	U	
ERH762	AZ85764	1	TOLUENE	1/28/2019 10:45:00 AM	2/2/2019 6:56:00 PM	C	0.30	UG_L	U	1.0	0.30	U	
ERH762	AZ85764	1	Xylenes	1/28/2019 10:45:00 AM	2/2/2019 6:56:00 PM	C	0.30	UG_L	U	2.0	0.30	U	
ERH763	AZ85765	1	BENZENE	1/28/2019 7:50:00 AM	2/2/2019 5:30:00 PM	C	0.30	UG_L	U	1.0	0.30	U	
ERH763	AZ85765	1	ETHYLBENZENE	1/28/2019 7:50:00 AM	2/2/2019 5:30:00 PM	C	0.50	UG_L	U	1.0	0.50	U	
ERH763	AZ85765	1	PETROLEUM HYDROCARBONS C6-C10	1/28/2019 7:50:00 AM	2/2/2019 5:29:00 PM	C	18.0	UG_L	U	20	18.0	U	
ERH763	AZ85765	1	TOLUENE	1/28/2019 7:50:00 AM	2/2/2019 5:30:00 PM	C	0.30	UG_L	U	1.0	0.30	U	
ERH763	AZ85765	1	Xylenes	1/28/2019 7:50:00 AM	2/2/2019 5:30:00 PM	C	0.30	UG_L	U	2.0	0.30	U	
ERH764	AZ85766	1	BENZENE	1/28/2019 9:10:00 AM	2/2/2019 7:24:00 PM	C	0.30	UG_L	U	1.0	0.30	U	
ERH764	AZ85766	1	ETHYLBENZENE	1/28/2019 9:10:00 AM	2/2/2019 7:24:00 PM	C	0.50	UG_L	U	1.0	0.50	U	
ERH764	AZ85766	1	PETROLEUM HYDROCARBONS C6-C10	1/28/2019 9:10:00 AM	2/2/2019 7:23:00 PM	C	18.0	UG_L	U	20	18.0	U	
ERH764	AZ85766	1	TOLUENE	1/28/2019 9:10:00 AM	2/2/2019 7:24:00 PM	C	0.30	UG_L	U	1.0	0.30	U	
ERH764	AZ85766	1	Xylenes	1/28/2019 9:10:00 AM	2/2/2019 7:24:00 PM	C	0.30	UG_L	U	2.0	0.30	U	
<b>METHOD: 8270D</b>													
ERH761	AZ85763	1	2-(2-METHOXY ETHOXY)-ETHANOL	1/28/2019 11:00:00 AM	2/8/2019 10:34:00 AM	C	80.0	UG_L	U	100	80.0	U	
ERH761	AZ85763	1	Hexanedioic Acid Dioctyl Ester	1/28/2019 11:00:00 AM	2/1/2019 10:49:00 PM	C	6.9	UG_L	T	0	0		
ERH761	AZ85763	1	MESITYL OXIDE	1/28/2019 11:00:00 AM	2/1/2019 10:49:00 PM	C	61	UG_L	T	0	0		
ERH761	AZ85763	1	PHENOL	1/28/2019 11:00:00 AM	2/1/2019 10:49:00 PM	C	4.00	UG_L	U	5.0	4.00	U	
ERH762	AZ85764	1	2-(2-METHOXY ETHOXY)-ETHANOL	1/28/2019 10:45:00 AM	2/8/2019 10:58:00 AM	C	80.0	UG_L	U	100	80.0	U	
ERH762	AZ85764	1	BIS(2-METHOXYETHYL) PHTHALATE	1/28/2019 10:45:00 AM	2/1/2019 11:16:00 PM	C	5.1	UG_L	T	0	0		
ERH762	AZ85764	1	PHENOL	1/28/2019 10:45:00 AM	2/1/2019 11:16:00 PM	C	4.00	UG_L	U	5.0	4.00	U	
ERH764	AZ85766	1	2-(2-METHOXY ETHOXY)-ETHANOL	1/28/2019 9:10:00 AM	2/8/2019 11:21:00 AM	C	80.0	UG_L	U	100	80.0	U	
ERH764	AZ85766	1	BUTYL ISOBUTYL PHTHALATE	1/28/2019 9:10:00 AM	2/1/2019 11:44:00 PM	C	5.7	UG_L	T	0	0		

EPA_NO	LAB_ID	DF	ANALYTE	COLL_DATE	ANAL_DATE	QCLev	RESULT	UNITS	LAB_Q	LOQ	LOD	REV	Q_C
<b>METHOD: 8270D</b>													
ERH764	AZ85766	1	Hexanedioic Acid Dioctyl Ester	1/28/2019 9:10:00 AM	2/1/2019 11:44:00 PM	C	20	UG_L	T	0	0		
ERH764	AZ85766	1	PHENOL	1/28/2019 9:10:00 AM	2/1/2019 11:44:00 PM	C	4.00	UG_L	U	5.0	4.00	U	
<b>METHOD: 8270DSIM</b>													
ERH761	AZ85763	1	1-METHYLNAPHTHALENE	1/28/2019 11:00:00 AM	2/1/2019 8:45:00 PM	C	0.10	UG_L	U	0.2	0.10	U	
ERH761	AZ85763	1	2-METHYLNAPHTHALENE	1/28/2019 11:00:00 AM	2/1/2019 8:45:00 PM	C	0.10	UG_L	U	0.2	0.10	U	
ERH761	AZ85763	1	NAPHTHALENE	1/28/2019 11:00:00 AM	2/1/2019 8:45:00 PM	C	0.10	UG_L	U	0.2	0.10	U	
ERH762	AZ85764	1	1-METHYLNAPHTHALENE	1/28/2019 10:45:00 AM	2/1/2019 9:08:00 PM	C	0.10	UG_L	U	0.2	0.10	U	
ERH762	AZ85764	1	2-METHYLNAPHTHALENE	1/28/2019 10:45:00 AM	2/1/2019 9:08:00 PM	C	0.10	UG_L	U	0.2	0.10	U	
ERH762	AZ85764	1	NAPHTHALENE	1/28/2019 10:45:00 AM	2/1/2019 9:08:00 PM	C	0.10	UG_L	U	0.2	0.10	U	
ERH764	AZ85766	1	1-METHYLNAPHTHALENE	1/28/2019 9:10:00 AM	2/1/2019 9:30:00 PM	C	0.10	UG_L	U	0.2	0.10	U	
ERH764	AZ85766	1	2-METHYLNAPHTHALENE	1/28/2019 9:10:00 AM	2/1/2019 9:30:00 PM	C	0.10	UG_L	U	0.2	0.10	U	
ERH764	AZ85766	1	NAPHTHALENE	1/28/2019 9:10:00 AM	2/1/2019 9:30:00 PM	C	0.10	UG_L	U	0.2	0.10	U	
<b>METHOD: 9060A</b>													
ERH764	AZ85766	1	TOTAL ORGANIC CARBON	1/28/2019 9:10:00 AM	2/13/2019 11:34:00 AM	C		MG_L		0.93	1.0	U	b
<b>METHOD: RSK175</b>													
ERH763	AZ85765	1	METHANE	1/28/2019 7:50:00 AM	2/4/2019 9:54:00 AM	C	1.00	UG_L	U	5.0	1.00	U	
ERH764	AZ85766	1	METHANE	1/28/2019 9:10:00 AM	2/4/2019 9:57:00 AM	C	1.00	UG_L	U	5.0	1.00	U	

LDC #: 44484

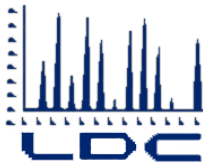
**EDD POPULATION COMPLETENESS WORKSHEET**

Date: 3/13  
 Page: 1 of 1  
 2<sup>nd</sup> Reviewer: [Signature]

The LDC job number listed above was entered by [Signature]  
 Entered from Body or Summary

	EDD Process		Comments/Action
I.	EDD Completeness	-	
Ia.	- All methods present?	Y	
Ib.	- All samples present/match report?	Y	
Ic.	- All reported analytes present?	Y	
Id.	- 10% or <u>60%</u> verification of EDD?	Y	
II.	EDD Preparation/Entry	-	
IIa.	- Carryover U/J?	Y	
IIb.	- Reason Codes used? If so, note which codes.	Y	
IIc.	- Additional Information (QC Level, Validator, Validated Y/N, etc.)	Y	
III.	Reasonableness Checks	-	
IIIa.	- Do all qualified ND results have ND qualifier (e.g. UJ)?	Y	
IIIb.	- Do all qualified detect results have detect qualifier (e.g. J)?	Y	
IIIc.	- If reason codes are used, do all qualified results have reason code field populated, and vice versa?	Y	
IIId.	- Does the detect flag require changing for blank qualifier? If so, are all U results marked ND?	Y/Y	
IIIe.	- Do blank concentrations in report match EDD where data was qualified due to blank contamination?	Y	
IIIf.	- Were multiple results reported due to dilutions/reanalysis? If so, were results qualified appropriately?	X	
IIIg.	- Are there any discrepancies between the data packet and the EDD?	N	

Notes: \*see discrepancy sheet



## LABORATORY DATA CONSULTANTS, INC.

2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

AECOM  
1001 Bishop Street Suite 1600  
Honolulu, HI 96813  
ATTN: Ms. Margie Pascua  
[Margie.Pascua@aecom.com](mailto:Margie.Pascua@aecom.com)

March 18, 2019

SUBJECT: Red Hill Bulk Storage Facility, CTO 18F0126, Data Validation

Dear Ms. Pascua,

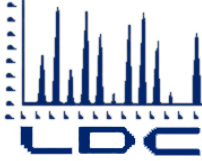
Enclosed are the final validation reports for the fractions listed below. This SDG was received on March 8, 2019. Attachment 1 is a summary of the samples that were reviewed for each analysis.

### LDC Project #44517:

<u>SDG #</u>	<u>Fraction</u>
88062	Volatiles, Phenol & Tentatively Identified Compounds, Polynuclear Aromatic Hydrocarbons, 2-(2-Methoxyethoxy)-ethanol, Wet Chemistry, Gasoline Range Organics, Total Petroleum Hydrocarbons as Extractables, Methane

The data validation was performed under Level C validation guidelines. The analyses were validated using the following documents and variances, as applicable to each method:

- Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i, Revision 02; January 2017
- Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i, Revision 01, April 2017
- Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i, Revision 00, September 2017
- Sampling and Analysis Plan, Addendum 03 Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i, Revision 00; June 2018
- Project Procedures Manual, U.S. Naval Facilities Engineering Command Environmental Restoration Program, NAVFAC Pacific, DON 2015
- U.S. Department of Defense Quality Systems Manual for Environmental Laboratories, Version 5.1, 2017



## LABORATORY DATA CONSULTANTS, INC.

2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIB, November 2004; update IV, February 2007; update V, July 2014

Please feel free to contact us if you have any questions.

Sincerely,

Stella Cuenco  
[scuenco@lab-data.com](mailto:scuenco@lab-data.com)  
Operations Manager/Senior Chemist



## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** March 14, 2019

**Parameters:** Volatiles

**Validation Level:** Level C

**Laboratory:** APPL, Inc.

**Sample Delivery Group (SDG):** 88062

<b>Sample Identification</b>	<b>Laboratory Sample Identification</b>	<b>Matrix</b>	<b>Collection Date</b>
ERH758	AZ86199	Water	02/07/19
ERH759	AZ86200	Water	02/07/19



## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) which are Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX) by Environmental Protection Agency (EPA) SW 846 Method 8260B

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## Qualification Code Reference

- H Holding times were exceeded.
- S Surrogate recovery was outside QC limits.
- C Calibration %RSD,  $r$ ,  $r^2$  or %D were noncompliant.
- R Calibration RRF was  $<0.05$ .
- B Presumed contamination from preparation (method blank).
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD was high.
- I Internal standard performance was unsatisfactory.
- M Instrument Performance Check (BFB or DFTPP) was noncompliant.
- T Presumed contamination from trip blank.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Instrument performance for pesticides was poor.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. GC/MS Instrument Performance Check**

A bromofluorobenzene (BFB) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

## **III. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0% for all compounds.

Average relative response factors (RRF) for all compounds were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

## **IV. Continuing Calibration**

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0% for all compounds.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

## **V. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **VI. Field Blanks**

Sample ERH758 was identified as a trip blank. No contaminants were found.

## **VII. Surrogates**

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

## **VIII. Matrix Spike/Matrix Spike Duplicates**

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

## **IX. Laboratory Control Samples**

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## **X. Field Duplicates**

No field duplicates were identified in this SDG.

## **XI. Internal Standards**

All internal standard areas and retention times were within QC limits.

## **XII. Compound Quantitation**

Raw data were not reviewed for Level C validation.

## **XIII. Target Compound Identifications**

Raw data were not reviewed for Level C validation.

## **XIV. System Performance**

Raw data were not reviewed for Level C validation.

## **XV. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**Red Hill Bulk Storage Facility, CTO 18F0126  
Volatiles - Data Qualification Summary - SDG 88062**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Volatiles - Laboratory Blank Data Qualification Summary - SDG 88062**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Volatiles - Field Blank Data Qualification Summary - SDG 88062**

No Sample Data Qualified in this SDG

LDC #: 44517A1a  
 SDG #: 88062  
 Laboratory: APPL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**  
 Level C

Date: 3/13/19  
 Page: 1 of 1  
 Reviewer: [Signature]  
 2nd Reviewer: [Signature]

**METHOD:** GC/MS Volatiles (BTEX)(EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	GC/MS Instrument performance check	Δ	
III.	Initial calibration/ICV	A/A	% PSD ≤ 15      1 CV ≤ 20
IV.	Continuing calibration <i>Closing cal</i>	A	1 CV ≤ 20 / 50
V.	Laboratory Blanks	Δ	
VI.	Field blanks	ND	TB = 1
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	N	
IX.	Laboratory control samples	A	100 / 10
X.	Field duplicates	N	
XI.	Internal standards	Δ	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	Δ	

Note: A = Acceptable      ND = No compounds detected      D = Duplicate      SB=Source blank  
 N = Not provided/applicable      R = Rinsate      TB = Trip blank      OTHER:  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

	Client ID	Lab ID	Matrix	Date
1	ERH758      TB	AZ86199	Water	02/07/19
2	ERH759	AZ86200	Water	02/07/19
3				
4				
5				
6				
7				
8				

Notes:

190212 AL-BIK				

**Laboratory Data Consultants, Inc.  
Data Validation Report**

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** March 14, 2019

**Parameters:** Phenol & Tentatively Identified Compounds

**Validation Level:** Level C

**Laboratory:** APPL, Inc.

**Sample Delivery Group (SDG):** 88062

<b>Sample Identification</b>	<b>Laboratory Sample Identification</b>	<b>Matrix</b>	<b>Collection Date</b>
ERH759	AZ86200	Water	02/07/19



## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Phenol and Tentatively Identified Compounds (TIC) by Environmental Protection Agency (EPA) SW 846 Method 8270D

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## Qualification Code Reference

- H Holding times were exceeded.
- S Surrogate recovery was outside QC limits.
- C Calibration %RSD,  $r$ ,  $r^2$  or %D were noncompliant.
- R Calibration RRF was <0.05.
- B Presumed contamination from preparation (method blank).
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD was high.
- I Internal standard performance was unsatisfactory.
- M Instrument Performance Check (BFB or DFTPP) was noncompliant.
- T Presumed contamination from trip blank.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Instrument performance for pesticides was poor.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. GC/MS Instrument Performance Check**

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

## **III. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0%.

Average relative response factors (RRF) for all compounds were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

## **IV. Continuing Calibration**

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0%.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0%.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

## **V. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks with the following exceptions:

Blank ID	Extraction Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
190212A-BLK	02/12/19	3-Penten-2-ol (1.57) Benzene, methyl- (2.14) Acetic acid, ethyl ester (2.43) Ethene, tetrachloro- (2.75) Butanoic acid, 3,3-dimethyl ester (3.05) 2-Pentanone, 4-hydroxy-4-methyl- (3.36) Nonane (4.15) Cyclohexane, propyl- (4.55) Decane, 3,3,4-trimethyl- (4.69) Cyclohexane, 1,2,3,-trimethyl- (4.86) Decane (5.21) Butanedioic acid, dimethyl ester (5.50) Naphthalene, decahydro-, trans (5.83) Pentanedioic acid, dimethyl ester (6.33) 2-Propanone, 1-hydroxy- (6.53) Butanal, 3-hydroxy- (7.53) [1,2,4]Triazolo[1,5-a]pyrimidin-7-o- (7.63) Hexanedioic acid, dioctyl ester (13.10) 9-Octadecenamide, (z)- (14:65) (+)-cis-2,3-Dimethoxy-8-oxo-9,10- (19.43)	11.4 ug/L 89.1 ug/L 45.6 ug/L 82.3 ug/L 12.8 ug/L 37.9 ug/L 12.2 ug/L 10.9 ug/L 15.8 ug/L 9.0 ug/L 33.1 ug/L 8.7 ug/L 9.4 ug/L 17.7 ug/L 9.7 ug/L 8.2 ug/L 8.0 ug/L 15.0 ug/L 8.1 ug/L 9.4 ug/L	All samples in SDG 88062

Sample concentrations were compared to concentrations detected in the laboratory blanks. The sample concentrations were either not detected or were significantly greater (>10X for TICs, >5X for other contaminants) than the concentrations found in the associated laboratory blanks.

## VI. Field Blanks

No field blanks were identified in this SDG.

## VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

## VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

## IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
190212A-LCS/D (All samples in SDG 88062)	Phenol	140 (10-115)	-	NA	-

Relative percent differences (RPD) were within QC limits.

#### **X. Field Duplicates**

No field duplicates were identified in this SDG.

#### **XI. Internal Standards**

All internal standard areas and retention times were within QC limits.

#### **XII. Compound Quantitation**

Raw data were not reviewed for Level C validation.

#### **XIII. Target Compound Identifications**

Raw data were not reviewed for Level C validation.

#### **XIV. System Performance**

Raw data were not reviewed for Level C validation.

#### **XV. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**Red Hill Bulk Storage Facility, CTO 18F0126  
Phenol & Tentatively Identified Compounds - Data Qualification Summary - SDG  
88062**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Phenol & Tentatively Identified Compounds - Laboratory Blank Data Qualification  
Summary - SDG 88062**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Phenol & Tentatively Identified Compounds - Field Blank Data Qualification  
Summary - SDG 88062**

No Sample Data Qualified in this SDG

LDC #: 44517A2a  
 SDG #: 88062  
 Laboratory: APPL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**  
 Level C

Date: 3/13/19  
 Page: 1 of 1  
 Reviewer: [Signature]  
 2nd Reviewer: [Signature]

**METHOD:** GC/MS Phenol & TICs (EPA SW 846 Method 8270D)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	% PSD ≤ 15      ICV ≤ 20
IV.	Continuing calibration / <u>dpsing cw</u>	Λ	cw ≤ 20 / 50
V.	Laboratory Blanks	SW	
VI.	Field blanks	N	
VII.	Surrogate spikes	SW	
VIII.	Matrix spike/Matrix spike duplicates	N	CS
IX.	Laboratory control samples	SW	LCs 10
X.	Field duplicates	N	
XI.	Internal standards	Δ	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	Δ	

Note: A = Acceptable      ND = No compounds detected      D = Duplicate      SB=Source blank  
 N = Not provided/applicable      R = Rinsate      TB = Trip blank      OTHER:  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

	Client ID	Lab ID	Matrix	Date
1	ERH759	AZ86200	Water	02/07/19
2				
3				
4				
5				
6				
7				
8				

Notes:

190212A - BK		3/12/19	2/15/19		



## VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS SVOA

A. Phenol	CC. Dimethylphthalate	EEE. Bis(2-ethylhexyl)phthalate	GGGG. C30-Hopane	I1. Methyl methanesulfonate
B. Bis (2-chloroethyl) ether	DD. Acenaphthylene	FFF. Di-n-octylphthalate	HHHH. 1-Methylphenanthrene	J1. Ethyl methanesulfonate
C. 2-Chlorophenol	EE. 2,6-Dinitrotoluene	GGG. Benzo(b)fluoranthene	IIII. 1,4-Dioxane	K1. o,o',o''-Triethylphosphorothioate
D. 1,3-Dichlorobenzene	FF. 3-Nitroaniline	HHH. Benzo(k)fluoranthene	JJJJ. Acetophenone	L1. n-Phenylene diamine
E. 1,4-Dichlorobenzene	GG. Acenaphthene	III. Benzo(a)pyrene	KKKK. Atrazine	M1. 1,4-Naphthoquinone
F. 1,2-Dichlorobenzene	HH. 2,4-Dinitrophenol	JJJ. Indeno(1,2,3-cd)pyrene	LLLL. Benzaldehyde	N1. N-Nitro-o-toluidine
G. 2-Methylphenol	II. 4-Nitrophenol	KKK. Dibenz(a,h)anthracene	MMMM. Caprolactam	O1. 1,3,5-Trinitrobenzene
H. 2,2'-Oxybis(1-chloropropane)	JJ. Dibenzofuran	LLL. Benzo(g,h,i)perylene	NNNN. 2,6-Dichlorophenol	P1. Pentachlorobenzene
I. 4-Methylphenol	KK. 2,4-Dinitrotoluene	MMM. Bis(2-Chloroisopropyl)ether	OOOO. 1,2-Diphenylhydrazine	Q1. 4-Aminobiphenyl
J. N-Nitroso-di-n-propylamine	LL. Diethylphthalate	NNN. Aniline	PPPP. 3-Methylphenol	R1. 2-Naphthylamine
K. Hexachloroethane	MM. 4-Chlorophenyl-phenyl ether	OOO. N-Nitrosodimethylamine	QQQQ. 3&4-Methylphenol	S1. Triphenylene
L. Nitrobenzene	NN. Fluorene	PPP. Benzoic Acid	RRRR. 4-Dimethyldibenzothiophene (4MDT)	T1. Octachlorostyrene
M. Isophorone	OO. 4-Nitroaniline	QQQ. Benzyl alcohol	SSSS. 2/3-Dimethyldibenzothiophene (4MDT)	U1. Famphur
N. 2-Nitrophenol	PP. 4,6-Dinitro-2-methylphenol	RRR. Pyridine	TTTT. 1-Methyldibenzothiophene (1MDT)	V1. 1,4-phenylenediamine
O. 2,4-Dimethylphenol	QQ. N-Nitrosodiphenylamine	SSS. Benzidine	UUUU.. 2,3,4,6-Tetrachlorophenol	W1. Methapyrilene
P. Bis(2-chloroethoxy)methane	RR. 4-Bromophenyl-phenylether	TTT. 1-Methylnaphthalene	VVVV. 1,2,4,5-Tetrachlorobenzene	X1. Pentachloroethane
Q. 2,4-Dichlorophenol	SS. Hexachlorobenzene	UUU. Benzo(b)thiophene	WWWW.. 2-Picoline	Y1. 3,3'-Dimethylbenzidine
R. 1,2,4-Trichlorobenzene	TT. Pentachlorophenol	VVV. Benzonaphthothiophene	XXXX. 3-Methylcholanthrene	Z1. o-Toluidine
S. Naphthalene	UU. Phenanthrene	WWW. Benzo(e)pyrene	YYYY. a,a-Dimethylphenethylamine	A2. 1-Naphthylamine
T. 4-Chloroaniline	VV. Anthracene	XXX. 2,6-Dimethylnaphthalene	ZZZZ. Hexachloropropene	B2. 4-Aminobiphenyl
U. Hexachlorobutadiene	WW. Carbazole	YYY. 2,3,5-Trimethylnaphthalene	A1. N-Nitrosodiethylamine	C2. 4-Nitroquinoline-1-oxide
V. 4-Chloro-3-methylphenol	XX. Di-n-butylphthalate	ZZZ. Perylene	B1. N-Nitrosodi-n-butylamine	D2. Hexachloropene
W. 2-Methylnaphthalene	YY. Fluoranthene	AAAA. Dibenzothiophene	C1. N-Nitrosomethylethylamine	E2. Bis (2-chloro-1-methylethyl) ether
X. Hexachlorocyclopentadiene	ZZ. Pyrene	BBBB. Benzo(a)fluoranthene	D1. N-Nitrosomorpholine	F2. Bifenthrin
Y. 2,4,6-Trichlorophenol	AAA. Butylbenzylphthalate	CCCC. Benzo(b)fluorene	E1. N-Nitrosopyrrolidine	G2. Cyfluthrin
Z. 2,4,5-Trichlorophenol	BBB. 3,3'-Dichlorobenzidine	DDDD. cis/trans-Decalin	F1. Phenacetin	H2. Cypermethrin
AA. 2-Chloronaphthalene	CCC. Benzo(a)anthracene	EEEE. Biphenyl	G1. 2-Acetylaminofluorene	I2. Permethrin (cis/trans)
BB. 2-Nitroaniline	DDD. Chrysene	FFFF. Retene	H1. Pronamide	J2. 5-Nitro-o-toluidine

LDC #: 44517A2a

### VALIDATION FINDINGS WORKSHEET

Page: 1 of 1

#### Blanks

Reviewer: FT

2nd Reviewer: [Signature]

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

- Y N N/A Was a method blank analyzed for each matrix?
- Y N N/A Was a method blank analyzed for each concentration preparation level?
- Y N N/A Was a method blank associated with every sample?
- Y N N/A Was the blank contaminated? If yes, please see qualification below.

Blank extraction date: 2/2/19 Blank analysis date: 2/15/19

Conc. units: ug/l

Associated Samples: All (NO)

Compound	Blank ID								
	190212A - BIK								
TIC	su	following page							

Blank extraction date: \_\_\_\_\_ Blank analysis date: \_\_\_\_\_

Conc. units: \_\_\_\_\_

Associated Samples: \_\_\_\_\_

Compound	Blank ID								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:  
Common contaminants such as the phthalates and TICs noted above that were detected in samples within ten times the associated method blank concentration were qualified as not detected, "U". Other contaminants within five times the method blank concentration were also qualified as not detected, "U".

Tentatively Identified Compound (LSC) summary

Operator ID: MA Date Acquired: 15 Feb 19 8:08  
 Data File: M:\YODA\DATA\Y190208\0208Y099.D  
 Name: 190212A BLK 1/800  
 Misc:  
 Method: M:\YODA\DATA\Y190208\Y0208NC.M (RTE Integrator)  
 Title: EPA 8270C  
 Library Searched: M:\DATABASE\WILEY138.L

TIC Top Hit name	RT	EstConc	Units	Area	IntStd	ISRT	ISArea	ISConc
3-Penten-2-ol	1.57	11.4	ppb	511783	ISTD01	5.41	2238060	40.0
Benzene, methyl-	2.14	89.1	ppb	3989020	ISTD01	5.41	2238060	40.0
Acetic acid, ethyl e	2.43	45.6	ppb	2039000	ISTD01	5.41	2238060	40.0
Ethene, tetrachloro-	2.75	82.3	ppb	3685210	ISTD01	5.41	2238060	40.0
Butanoic acid, 3,3-d	3.05	12.8	ppb	572222	ISTD01	5.41	2238060	40.0
2-Pentanone, 4-hydro	3.36	37.9	ppb	1695200	ISTD01	5.41	2238060	40.0
Nonane	4.15	12.2	ppb	544427	ISTD01	5.41	2238060	40.0
Cyclohexane, propyl-	4.55	10.9	ppb	485688	ISTD01	5.41	2238060	40.0
Decane, 3,3,4-trimet	4.69	15.8	ppb	705277	ISTD01	5.41	2238060	40.0
Cyclohexane, 1,2,3-t	4.86	9.0	ppb	404800	ISTD01	5.41	2238060	40.0
Decane	5.21	33.1	ppb	1479870	ISTD01	5.41	2238060	40.0
Butanedioic acid, di	5.50	8.7	ppb	388369	ISTD01	5.41	2238060	40.0
Naphthalene, decahyd	5.83	9.4	ppb	422942	ISTD01	5.41	2238060	40.0
Pentanedioic acid, d	6.33	17.7	ppb	1085090	ISTD02	6.85	3070840	40.0
2-Propanone, 1-hydro	6.53	9.7	ppb	594025	ISTD02	6.85	3070840	40.0
Butanal, 3-hydroxy-	7.53	8.2	ppb	506456	ISTD02	6.85	3070840	40.0
[1,2,4]Triazolo[1,5-	7.63	8.0	ppb	491017	ISTD02	6.85	3070840	40.0
Hexanedioic acid, di	13.10	15.0	ppb	1604570	ISTD05	13.70	5355930	40.0
9-Octadecenamide, (Z	14.65	8.1	ppb	635392	ISTD06	15.56	3912060	40.0
(+)-cis-2,3-Dimethox	19.43	9.4	ppb	739022	ISTD06	15.56	3912060	40.0

0208Y099.D Y0208NC.M Tue Feb 19 15:14:46 2019

LDC #: 44517A2a

### VALIDATION FINDINGS WORKSHEET Surrogate Recovery

Page: 1 of 1  
 Reviewer: FT  
 2nd Reviewer: D

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualification below for all questions answered "N". Not applicable questions are identified as "N/A".

- Y N N/A Were percent recoveries (%R) for surrogates within QC limits?  
Y N N/A If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?  
Y N N/A If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

(S)

#	Sample ID	Surrogate	%R (Limits)	Qualifications
	190212A-BIK	2FP	125 (19-119)	↓
		Phenol - D6	121 (10-115)	
			( )	
			( )	
			( )	
			( )	
			( )	
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			( )	
			( )	

(NBZ) = Nitrobenzene - d5      (2FP) = 2-Fluorophenol  
 (FBP) = 2-Fluorobiphenyl      (TBP) = 2,4,6-Tribromophenol  
 (TPH) = Terphenyl - d14      (2CP) = 2-Chlorophenol - d4

LDC #: 44517A2a

### VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

Page: 1 of 1  
Reviewer: FT  
2nd Reviewer: 7

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A  
Y N N/A

Was a LCS required?

Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

(L)

#	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	190212A - LCSD	A	140 (10-115)	( )	( )	All	Idu/p (ND)
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** March 14, 2019

**Parameters:** Polynuclear Aromatic Hydrocarbons

**Validation Level:** Level C

**Laboratory:** APPL, Inc.

**Sample Delivery Group (SDG):** 88062

<b>Sample Identification</b>	<b>Laboratory Sample Identification</b>	<b>Matrix</b>	<b>Collection Date</b>
ERH759	AZ86200	Water	02/07/19

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polynuclear Aromatic Hydrocarbons (PAHs) which are 1-Methylnaphthalene, 2-Methylnaphthalene, and Naphthalene by Environmental Protection Agency (EPA) SW 846 Method 8270D in Selected Ion Monitoring (SIM) mode

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.



## Qualification Code Reference

- H Holding times were exceeded.
- S Surrogate recovery was outside QC limits.
- C Calibration %RSD,  $r$ ,  $r^2$  or %D were noncompliant.
- R Calibration RRF was <0.05.
- B Presumed contamination from preparation (method blank).
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD was high.
- I Internal standard performance was unsatisfactory.
- M Instrument Performance Check (BFB or DFTPP) was noncompliant.
- T Presumed contamination from trip blank.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Instrument performance for pesticides was poor.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. GC/MS Instrument Performance Check**

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

## **III. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0% for all compounds.

Average relative response factors (RRF) for all compounds were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

## **IV. Continuing Calibration**

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0% for all compounds.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

## **V. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **VI. Field Blanks**

No field blanks were identified in this SDG.

## **VII. Surrogates**

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

## **VIII. Matrix Spike/Matrix Spike Duplicates**

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

## **IX. Laboratory Control Samples**

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## **X. Field Duplicates**

No field duplicates were identified in this SDG.

## **XI. Internal Standards**

All internal standard areas and retention times were within QC limits.

## **XII. Compound Quantitation**

Raw data were not reviewed for Level C validation.

## **XIII. Target Compound Identifications**

Raw data were not reviewed for Level C validation.

## **XIV. System Performance**

Raw data were not reviewed for Level C validation.

## **XV. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**Red Hill Bulk Storage Facility, CTO 18F0126  
Polynuclear Aromatic Hydrocarbons - Data Qualification Summary - SDG 88062**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Polynuclear Aromatic Hydrocarbons - Laboratory Blank Data Qualification  
Summary - SDG 88062**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Polynuclear Aromatic Hydrocarbons - Field Blank Data Qualification Summary -  
SDG 88062**

No Sample Data Qualified in this SDG

LDC #: 44517A2b  
 SDG #: 88062  
 Laboratory: APPL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**  
 Level C

Date: 3/13/19  
 Page: 1 of 1  
 Reviewer: FE  
 2nd Reviewer: FE

**METHOD:** GC/MS Polynuclear Aromatic Hydrocarbons (EPA SW 846 Method 8270D-SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	% RSD ≤ 15 CV ≤ 20
IV.	Continuing calibration	A	CV ≤ 20/50
V.	Laboratory Blanks	A	
VI.	Field blanks	N	
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	N	CS
IX.	Laboratory control samples	A	CS ID
X.	Field duplicates	N	
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable      ND = No compounds detected      D = Duplicate      SB=Source blank  
 N = Not provided/applicable      R = Rinsate      TB = Trip blank      OTHER:  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

	Client ID	Lab ID	Matrix	Date
1	ERH759	AZ86200	Water	02/07/19
2				
3				
4				
5				
6				
7				
8				

Notes:

190212A - BIK					

**Laboratory Data Consultants, Inc.  
Data Validation Report**

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** March 14, 2019

**Parameters:** 2-(2-Methoxyethoxy)-ethanol

**Validation Level:** Level C

**Laboratory:** APPL, Inc.

**Sample Delivery Group (SDG):** 88062

<b>Sample Identification</b>	<b>Laboratory Sample Identification</b>	<b>Matrix</b>	<b>Collection Date</b>
ERH759	AZ86200	Water	02/07/19

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

2-(2-Methoxyethoxy)-ethanol by Environmental Protection Agency (EPA) SW 846 Method 8270D Modified

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.



## Qualification Code Reference

- H Holding times were exceeded.
- S Surrogate recovery was outside QC limits.
- C Calibration %RSD,  $r$ ,  $r^2$  or %D were noncompliant.
- R Calibration RRF was  $<0.05$ .
- B Presumed contamination from preparation (method blank).
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD was high.
- I Internal standard performance was unsatisfactory.
- M Instrument Performance Check (BFB or DFTPP) was noncompliant.
- T Presumed contamination from trip blank.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Instrument performance for pesticides was poor.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. GC/MS Instrument Performance Check**

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

## **III. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0%.

Average relative response factors (RRF) were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

## **IV. Continuing Calibration**

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0%.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0%.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

## **V. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **VI. Field Blanks**

No field blanks were identified in this SDG.

## **VII. Surrogates**

Surrogates were not added to all samples as required by the method. Using professional judgment, no data were qualified, since the LCS/LCSD percent recoveries were within QC limits. Additionally, all base surrogate percent recoveries were within QC limits in the phenol analysis.

## **VIII. Matrix Spike/Matrix Spike Duplicates**

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

## **IX. Laboratory Control Samples**

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## **X. Field Duplicates**

No field duplicates were identified in this SDG.

## **XI. Internal Standards**

All internal standard areas and retention times were within QC limits.

## **XII. Compound Quantitation**

Raw data were not reviewed for Level C validation.

## **XIII. Target Compound Identifications**

Raw data were not reviewed for Level C validation.

## **XIV. System Performance**

Raw data were not reviewed for Level C validation.

## **XV. Overall Assessment of Data**

The analysis was conducted within all specifications of the method with the exception noted in Section VII. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**Red Hill Bulk Storage Facility, CTO 18F0126  
2-(2-Methoxyethoxy)-ethanol - Data Qualification Summary - SDG 88062**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
2-(2-Methoxyethoxy)-ethanol - Laboratory Blank Data Qualification Summary -  
SDG 88062**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
2-(2-Methoxyethoxy)-ethanol - Field Blank Data Qualification Summary - SDG  
88062**

No Sample Data Qualified in this SDG

LDC #: 44517A2c

# VALIDATION COMPLETENESS WORKSHEET

Date: 3/13/19

SDG #: 88062

Level C

Page: 1 of 1

Laboratory: APPL, Inc.

M

Reviewer: [Signature]

2nd Reviewer: [Signature]

**METHOD:** GC/MS 2-(2-Methoxyethoxy)-Ethanol (EPA SW 846 Method 8270D-SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	% PSD ≤ 15 ICV ≤ 20
IV.	Continuing calibration <i>closing CV</i>	A	CV ≤ 20/50
V.	Laboratory Blanks	A	
VI.	Field blanks	N	
VII.	Surrogate spikes	SW	
VIII.	Matrix spike/Matrix spike duplicates	N	
IX.	Laboratory control samples	A	LOS/P
X.	Field duplicates	N	
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable  
 N = Not provided/applicable  
 SW = See worksheet

ND = No compounds detected  
 R = Rinsate  
 FB = Field blank

D = Duplicate  
 TB = Trip blank  
 EB = Equipment blank

SB=Source blank  
 OTHER:

	Client ID	Lab ID	Matrix	Date
1	ERH759	AZ86200	Water	02/07/19
2				
3				
4				
5				
6				
7				
8				

Notes:

190213A - B11				

LDC #: 44517A2c

**VALIDATION FINDINGS WORKSHEET**  
**Surrogate Recovery**

Page: 1 of 1  
Reviewer: FT  
2nd Reviewer: [Signature]

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualification below for all questions answered "N". Not applicable questions are identified as "N/A".

- Y  N  N/A Were percent recoveries (%R) for surrogates within QC limits?
- Y  N  N/A If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?
- Y  N  N/A If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Sample ID	Surrogate	%R (Limits)	Qualifications
	all	Surrogates were not added to all samples as required by the method. Using professional judgment, no data were qualified, since the LCS/LCSD percent recoveries were within QC limits. Additionally, all base surrogate percent recoveries were within QC limits in the phenol analysis.		Text
			( )	
			( )	
			( )	
			( )	
			( )	
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			( )	

(NBZ) = Nitrobenzene - d5  
 (FBP) = 2-Fluorobiphenyl  
 (TPH) = Terphenyl - d14  
 (2FP) = 2-Fluorophenol  
 (TBP) = 2,4,6 -Tribromophenol  
 (2CP) = 2-Chlorophenol - d4

**Laboratory Data Consultants, Inc.  
Data Validation Report**

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** March 11, 2019

**Parameters:** Wet Chemistry

**Validation Level:** Level C

**Laboratory:** APPL, Inc.

**Sample Delivery Group (SDG):** 88062

<b>Sample Identification</b>	<b>Laboratory Sample Identification</b>	<b>Matrix</b>	<b>Collection Date</b>
ERH759	AZ86200	Water	02/07/19

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Alkalinity by Standard Method 2320B

Chloride, Nitrate, and Sulfate by Environmental Protection Agency (EPA) Method 300.0

Ferrous Iron by Standard Method 3500-Fe B

Nitrate/Nitrite as Nitrogen by EPA Method 353.2

Total Organic Carbon by EPA SW 846 Method 9060A

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results.



The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## Qualification Code Reference

- H Holding times were exceeded.
- S The sequence or number of standards used for the calibration was incorrect.
- C Correlation coefficient is  $<0.995$ .
- R %R for calibration is not within control limits.
- B Presumed contamination from preparation (method) blank or calibration blank.
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD or difference was high.
- I ICP ICS results were unsatisfactory.
- A ICP Serial Dilution %D were not within control limits.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Post Digestion Spike recovery was not within control limits.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

## I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met.

## II. Initial Calibration

All criteria for the initial calibration of each method were met.

## III. Continuing Calibration

Continuing calibration frequency and analysis criteria were met for each method when applicable.

## IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks with the following exceptions:

Blank ID	Analyte	Maximum Concentration	Limit of Quantitation	Associated Samples
PB (prep blank)	Alkalinity Total organic carbon	2.6 mg/L 0.31 mg/L	2.0 mg/L 0.93 mg/L	All samples in SDG 88062
ICB/CCB	Total organic carbon	0.31 mg/L	0.93 mg/L	All samples in SDG 88062

Data qualification by the laboratory blanks was based on the maximum contaminant concentration in the laboratory blanks in the analysis of each analyte. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated laboratory blanks with the following exceptions:

Sample	Analyte	Reported Concentration	Limit of Quantitation	Modified Final Concentration
ERH759	Total organic carbon	0.26 mg/L	0.93 mg/L	0.26U mg/L

## V. Field Blanks

No field blanks were identified in this SDG.

## VI. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

## **VII. Duplicate Sample Analysis**

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

## **VIII. Laboratory Control Samples**

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## **IX. Field Duplicates**

No field duplicates were identified in this SDG.

## **X. Sample Result Verification**

Raw data were not reviewed for Level C validation.

## **XI. Overall Assessment of Data**

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to laboratory blank contamination, data were qualified as not detected in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Based upon the data validation all other results are considered valid and usable for all purposes.

**Red Hill Bulk Storage Facility, CTO 18F0126  
Wet Chemistry- Data Qualification Summary - SDG 88062**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 88062**

Sample	Analyte	Modified Final Concentration	A or P	Code
ERH759	Total organic carbon	0.26U mg/L	A	B

**Red Hill Bulk Storage Facility, CTO 18F0126  
Wet Chemistry - Field Blank Data Qualification Summary - SDG 88062**

No Sample Data Qualified in this SDG

LDC #: 44517A6  
 SDG #: 88062  
 Laboratory: APPL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**

Level C

Date: 3/11/19  
 Page: 1 of 1  
 Reviewer: [Signature]  
 2nd Reviewer: [Signature]

**METHOD: (Analyte)** Alkalinity (SM2320B), Chloride, Nitrate, Sulfate (EPA Method 300.0), Ferrous Iron (SM3500-Fe B), Nitrate/Nitrite-N (EPA Method 353.2), TOC (EPA SW846 Method 9060A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	SW	
V	Field blanks	N	
VI.	Matrix Spike/Matrix Spike Duplicates	N	C.S.
VII.	Duplicate sample analysis	N	
VIII.	Laboratory control samples	A	LCS/D
IX.	Field duplicates	N	
X.	Sample result verification	N	
XI.	Overall assessment of data	A	

Note: A = Acceptable  
 N = Not provided/applicable  
 SW = See worksheet

ND = No compounds detected  
 R = Rinsate  
 FB = Field blank

D = Duplicate  
 TB = Trip blank  
 EB = Equipment blank

SB=Source blank  
 OTHER:

	Client ID	Lab ID	Matrix	Date
1	ERH759	AZ86200	Water	02/07/19
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				

Notes: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

### VALIDATION FINDINGS WORKSHEET

Sample Specific Analysis Reference

All circled methods are applicable to each sample.

Sample ID	Parameter
1	pH TDS <u>(Cl)</u> <u>(F)</u> <u>(NO<sub>3</sub>)</u> <u>(NO<sub>2</sub>)</u> <u>(SO<sub>4</sub>)</u> O-PO <sub>4</sub> <u>(Alk)</u> CN NH <sub>3</sub> TKN <u>(TOC)</u> Cr6+ ClO <sub>4</sub> <u>Ferrous Fe</u> <u>(NO<sub>3</sub> / NO<sub>2</sub>)</u>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
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	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
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	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
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	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
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	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
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	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
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	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
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	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>

Comments: \_\_\_\_\_

\_\_\_\_\_

**VALIDATION FINDINGS WORKSHEET**

**Blanks**

CODE: B

Reviewer: JB

2nd Reviewer: 

**METHOD:** Inorganics, Method See Cover

**Conc. units:** mg/L **Associated Samples** All

Analyte	Blank ID	Blank ID	Blank Action Limit														
	PB	ICB/CCB (mg/L)		1													
Alkalinity	2.6		13														
TOC	0.31	0.31	1.55	0.26U													

Alkalinity LOQ = 2.0 mg/L  
 TOC LOQ = 0.93 mg/L

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:  
 All contaminants within five times the method blank concentration were qualified as not detected, "U".



**Laboratory Data Consultants, Inc.  
Data Validation Report**

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** March 14, 2019

**Parameters:** Gasoline Range Organics

**Validation Level:** Level C

**Laboratory:** APPL, Inc.

**Sample Delivery Group (SDG):** 88062

<b>Sample Identification</b>	<b>Laboratory Sample Identification</b>	<b>Matrix</b>	<b>Collection Date</b>
ERH758	AZ86199	Water	02/07/19
ERH759	AZ86200	Water	02/07/19

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Gasoline Range Organics by Environmental Protection Agency (EPA) SW 846 Method 8260B

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered not detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## Qualification Code Reference

- H Holding times were exceeded.
- S Surrogate recovery was outside QC limits.
- C Calibration %RSD,  $r$ ,  $r^2$  or %D were noncompliant.
- R Calibration RRF was  $<0.05$ .
- B Presumed contamination from preparation (method blank).
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD was high.
- I Internal standard performance was unsatisfactory.
- M Instrument Performance Check (BFB or DFTPP) was noncompliant.
- T Presumed contamination from trip blank.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Instrument performance for pesticides was poor.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

## I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## II. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

A curve fit, based on the initial calibration, was established for quantitation. The coefficient of determination ( $r^2$ ) was greater than or equal to 0.990.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

## III. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0% with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
02/12/19	Gasoline range organics	75	All samples in SDG 88062	UJ (all non-detects)	A

## IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## V. Field Blanks

Sample ERH758 was identified as a trip blank. No contaminants were found.

## VI. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

## VII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

### VIII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
190212AL LCS/D (All samples in SDG 88062)	Gasoline range organics	146 (78-122)	-	NA	-

Relative percent differences (RPD) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
190212AL LCS/D (All samples in SDG 88062)	Gasoline range organics	47.9 ( $\leq 30$ )	UJ (all non-detects)	A

### IX. Field Duplicates

No field duplicates were identified in this SDG.

### X. Compound Quantitation

Raw data were not reviewed for Level C validation.

### XI. Target Compound Identifications

Raw data were not reviewed for Level C validation.

### XII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to continuing calibration %D and LCS/LCSD RPD, data were qualified as estimated in two samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

**Red Hill Bulk Storage Facility, CTO 18F0126  
Gasoline Range Organics - Data Qualification Summary - SDG 88062**

Sample	Compound	Flag	A or P	Reason (Code)
ERH758 ERH759	Gasoline range organics	UJ (all non-detects)	A	Continuing calibration (%D) (C)
ERH758 ERH759	Gasoline range organics	UJ (all non-detects)	A	Laboratory control samples (RPD) (L)

**Red Hill Bulk Storage Facility, CTO 18F0126  
Gasoline Range Organics - Laboratory Blank Data Qualification Summary - SDG  
88062**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Gasoline Range Organics - Field Blank Data Qualification Summary - SDG 88062**

No Sample Data Qualified in this SDG

LDC #: 44517A7  
 SDG #: 88062  
 Laboratory: APPL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**  
 Level C

Date: 3/13/19  
 Page: 1 of 1  
 Reviewer: [Signature]  
 2nd Reviewer: [Signature]

**METHOD:** GC/MS Gasoline Range Organics (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	GC/MS Instrument performance check	Δ	
III.	Initial calibration/ICV	A/A	r <sup>2</sup> ICV ≤ 20
IV.	Continuing calibration	SW	CCV ≤ 20
V.	Laboratory Blanks	Δ	
VI.	Field blanks	ND	TB = 1
VII.	Surrogate spikes	Δ	
VIII.	Matrix spike/Matrix spike duplicates	N	CS
IX.	Laboratory control samples	SW	LCS/D
X.	Field duplicates	N	
XI.	Internal standards	Δ	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable      ND = No compounds detected      D = Duplicate      SB=Source blank  
 N = Not provided/applicable      R = Rinsate      TB = Trip blank      OTHER:  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

	Client ID	Lab ID	Matrix	Date
1	ERH758	AZ86199	Water	02/07/19
2	ERH759	AZ86200	Water	02/07/19
3				
4				
5				
6				
7				
8				

Notes:

190212AL				



LDC #: 44517A7

### VALIDATION FINDINGS WORKSHEET Continuing Calibration

Page: 1 of 1

Reviewer: FT

2nd Reviewer: AL

METHOD: ✓GC      HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

What type of continuing calibration calculation was performed?      %D or      %R

Y N N/A Were continuing calibration standards analyzed at the required frequencies?

Y N N/A Did the continuing calibration standards meet the %D / %R validation criteria of ≤20.0% / 80-120%?

**Level IV Only**

Y N N/A Were the retention times for all calibrated compounds within their respective acceptance windows?

(c)

#	Date	Standard ID	Detector/ Column	Compound	%D (Limit ≤ 20.0)	RT (limit)	Associated Samples	Qualifications
	2/12/19	CON-0212 L09		gasoline Range Organics	75		All	N/A ND

LDC #: 4457A7

**VALIDATION FINDINGS WORKSHEET**  
**Laboratory Control Samples (LCS)**

Page: 1 of 1  
Reviewer: FT  
2nd Reviewer: [Signature]

**METHOD:** GC/MS BNA (EPA SW 846 Method 8270C)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y/N/N/A Was a LCS required?  
Y(N)/N/A Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

(L)

#	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	190212AL	gasoline Range	146 (78-127)	( )	( )	All	Jdu/P (NP)
	1cs/P	Organics	( )	( )	( )		
		↓	( )	( )	47.9 (30)	↓	J/W/P (NO)
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
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			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		

**Laboratory Data Consultants, Inc.  
Data Validation Report**

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126  
**LDC Report Date:** March 14, 2019  
**Parameters:** Total Petroleum Hydrocarbons as Extractables  
**Validation Level:** Level C  
**Laboratory:** APPL, Inc.  
**Sample Delivery Group (SDG):** 88062

<b>Sample Identification</b>	<b>Laboratory Sample Identification</b>	<b>Matrix</b>	<b>Collection Date</b>
ERH759	AZ86200	Water	02/07/19

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Total Petroleum Hydrocarbons (TPH) as Extractables by Environmental Protection Agency (EPA) SW 846 Method 8015B

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered not detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## Qualification Code Reference

- H Holding times were exceeded.
- S Surrogate recovery was outside QC limits.
- C Calibration %RSD,  $r$ ,  $r^2$  or %D were noncompliant.
- R Calibration RRF was  $<0.05$ .
- B Presumed contamination from preparation (method blank).
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD was high.
- I Internal standard performance was unsatisfactory.
- M Instrument Performance Check (BFB or DFTPP) was noncompliant.
- T Presumed contamination from trip blank.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Instrument performance for pesticides was poor.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

## **III. Continuing Calibration**

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

## **IV. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **V. Field Blanks**

No field blanks were identified in this SDG.

## **VI. Surrogates**

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

## **VII. Matrix Spike/Matrix Spike Duplicates**

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

## **VIII. Laboratory Control Samples**

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

### **IX. Field Duplicates**

No field duplicates were identified in this SDG.

### **X. Compound Quantitation**

Raw data were not reviewed for Level C validation.

### **XI. Target Compound Identifications**

Raw data were not reviewed for Level C validation.

### **XII. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.



**Red Hill Bulk Storage Facility, CTO 18F0126  
Total Petroleum Hydrocarbons as Extractables - Data Qualification Summary -  
SDG 88062**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Total Petroleum Hydrocarbons as Extractables - Laboratory Blank Data  
Qualification Summary - SDG 88062**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Total Petroleum Hydrocarbons as Extractables - Field Blank Data Qualification  
Summary - SDG 88062**

No Sample Data Qualified in this SDG

LDC #: 44517A8  
 SDG #: 88062  
 Laboratory: APPL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**

Level C

Date: 3/13/19  
 Page: 1 of 1  
 Reviewer: [Signature]  
 2nd Reviewer: [Signature]

**METHOD:** GC TPH as Extractables (EPA SW 846 Method 8015B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	Initial calibration/ICV	A/A	0% PSD / CV ≤ 20
III.	Continuing calibration	A	CV ≤ 20
IV.	Laboratory Blanks	A	
V.	Field blanks	N	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	N	CS
VIII.	Laboratory control samples	A	CV ≤ 10
IX.	Field duplicates	N	
X.	Compound quantitation RL/LOQ/LODs	N	
XI.	Target compound identification	N	
XII.	Overall assessment of data	A	

Note: A = Acceptable      ND = No compounds detected      D = Duplicate      SB=Source blank  
 N = Not provided/applicable      R = Rinsate      TB = Trip blank      OTHER:  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

	Client ID	Lab ID	Matrix	Date
1	ERH759	AZ86200	Water	02/07/19
2				
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11				

Notes:

1	190211A - BIK				

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Red Hill Bulk Storage Facility, CTO 18F0126

**LDC Report Date:** March 14, 2019

**Parameters:** Methane

**Validation Level:** Level C

**Laboratory:** APPL, Inc.

**Sample Delivery Group (SDG):** 88062

<b>Sample Identification</b>	<b>Laboratory Sample Identification</b>	<b>Matrix</b>	<b>Collection Date</b>
ERH758	AZ86199	Water	02/07/19
ERH759	AZ86200	Water	02/07/19

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the Project Procedures Manual, U.S. Naval Facilities Engineering Command (NAVFAC) Environmental Restoration (ER) Program, NAVFAC Pacific (DON 2015), and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Methane by Method RSK-175

All sample results were subjected to Level C data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## Qualification Code Reference

- H Holding times were exceeded.
- S Surrogate recovery was outside QC limits.
- C Calibration %RSD,  $r$ ,  $r^2$  or %D were noncompliant.
- R Calibration RRF was  $<0.05$ .
- B Presumed contamination from preparation (method blank).
- L Laboratory Control Sample/Laboratory Control Sample Duplicate %R or RPD was not within control limits.
- Q MS/MSD recovery was poor.
- E MS/MSD or Duplicate RPD was high.
- I Internal standard performance was unsatisfactory.
- M Instrument Performance Check (BFB or DFTPP) was noncompliant.
- T Presumed contamination from trip blank.
- F Presumed contamination from FB or ER.
- D The analysis with this flag should not be used because another more technically sound analysis is available.
- P Instrument performance for pesticides was poor.
- V Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

A curve fit, based on the initial calibration, was established for quantitation. The coefficient of determination ( $r^2$ ) was greater than or equal to 0.990.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

## **III. Continuing Calibration**

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 20.0%.

## **IV. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **V. Field Blanks**

Sample ERH758 was identified as a trip blank. No contaminants were found.

## **VI. Matrix Spike/Matrix Spike Duplicates**

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

## **VII. Laboratory Control Samples**

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## **VIII. Field Duplicates**

No field duplicates were identified in this SDG.

## **IX. Compound Quantitation**

Raw data were not reviewed for Level C validation.

## **X. Target Compound Identification**

Raw data were not reviewed for Level C validation.

## **XI. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.



**Red Hill Bulk Storage Facility, CTO 18F0126  
Methane - Data Qualification Summary - SDG 88062**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Methane - Laboratory Blank Data Qualification Summary - SDG 88062**

No Sample Data Qualified in this SDG

**Red Hill Bulk Storage Facility, CTO 18F0126  
Methane - Field Blank Data Qualification Summary - SDG 88062**

No Sample Data Qualified in this SDG

LDC #: 44517A51  
 SDG #: 88062  
 Laboratory: APPL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**  
 Level C

Date: 3/13/19  
 Page: 1 of 1  
 Reviewer: [Signature]  
 2nd Reviewer: [Signature]

**METHOD:** GC Methane (Method RSK-175)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	Δ Δ	
II.	Initial calibration/ICV	Δ Δ	ICV ± 20
III.	Continuing calibration	Δ	CCV ± 20
IV.	Laboratory Blanks	Δ	
V.	Field blanks	ND	TB = 1
VI.	Matrix spike/Matrix spike duplicates	N	CS
VII.	Laboratory control samples	A	LOSIP
VIII.	Field duplicates	N	
IX.	Compound quantitation RL/LOQ/LODs	N	
X.	Target compound identification	N	
XI.	Overall assessment of data	Δ	

Note: A = Acceptable      ND = No compounds detected      D = Duplicate      SB=Source blank  
 N = Not provided/applicable      R = Rinsate      TB = Trip blank      OTHER:  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

	Client ID	Lab ID	Matrix	Date
1	ERH758	AZ86199	Water	02/07/19
2	ERH759	AZ86200	Water	02/07/19
3				
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12				

Notes:

190213A - B112				

**Red Hill Bulk Storage Facility, CTO 18F0126 - SDG 88062  
LDC 445517**

AECOM

EPA_NO	LAB_ID	DF	ANALYTE	COLL_DATE	ANAL_DATE	QCLev	RESULT	UNITS	LAB_Q	LOQ	LOD	REV	Q_C
<b>METHOD: 2320B</b>													
ERH759	AZ86200	1	ALKALINITY, TOTAL (AS CaCO3)	2/7/2019 10:45:00 AM	2/13/2019 1:50:00 PM	C	54.7	MG_L		2.0	1.70		
ERH759	AZ86200	1	BICARBONATE	2/7/2019 10:45:00 AM	2/13/2019 1:50:00 PM	C	54.7	MG_L		2.0	1.70		
ERH759	AZ86200	1	CARBONATE (AS CO3)	2/7/2019 10:45:00 AM	2/13/2019 1:50:00 PM	C	1.70	MG_L	U	2.0	1.70		U
<b>METHOD: 300.0</b>													
ERH759	AZ86200	5	CHLORIDE (AS CL)	2/7/2019 10:45:00 AM	2/9/2019 1:52:00 PM	C	82.4	MG_L	D	5.0	1.00		
ERH759	AZ86200	1	NITROGEN, NITRATE (AS N)	2/7/2019 10:45:00 AM	2/8/2019 2:17:00 PM	C	0.85	MG_L		0.5	0.18		
ERH759	AZ86200	1	SULFATE (AS SO4)	2/7/2019 10:45:00 AM	2/8/2019 2:17:00 PM	C	29.4	MG_L		1.0	0.20		
<b>METHOD: 3500-FE-B</b>													
ERH759	AZ86200	1	Iron, Ion (Fe2+)	2/7/2019 10:45:00 AM	2/8/2019 11:08:00 AM	C	0.85	MG_L	J	1.0	0.32		J
<b>METHOD: 353.2</b>													
ERH759	AZ86200	1	NITROGEN, NITRATE-NITRITE	2/7/2019 10:45:00 AM	2/13/2019 2:59:00 PM	C	0.19	MG_L		0.10	0.100		
<b>METHOD: 8015B_E</b>													
ERH759	AZ86200	1	C10-C24 DIESEL RANGE ORGANICS	2/7/2019 10:45:00 AM	2/13/2019 4:43:00 PM	C	25.00	UG_L	U	40.0	25.00		U
ERH759	AZ86200	1	C24-C40 TOTAL PETROLEUM HYDROCARBONS, OIL RANGE	2/7/2019 10:45:00 AM	2/13/2019 4:43:00 PM	C	40.00	UG_L	U	40.0	40.00		U
<b>METHOD: 8260B</b>													
ERH758	AZ86199	1	BENZENE	2/7/2019 7:40:00 AM	2/12/2019 4:46:00 PM	C	0.30	UG_L	U	1.0	0.30		U
ERH758	AZ86199	1	ETHYLBENZENE	2/7/2019 7:40:00 AM	2/12/2019 4:46:00 PM	C	0.50	UG_L	U	1.0	0.50		U
ERH758	AZ86199	1	PETROLEUM HYDROCARBONS C6-C10	2/7/2019 7:40:00 AM	2/12/2019 4:45:00 PM	C	18.0	UG_L	U	20	18.0		UJ c,l
ERH758	AZ86199	1	TOLUENE	2/7/2019 7:40:00 AM	2/12/2019 4:46:00 PM	C	0.30	UG_L	U	1.0	0.30		U
ERH758	AZ86199	1	Xylenes	2/7/2019 7:40:00 AM	2/12/2019 4:46:00 PM	C	0.30	UG_L	U	2.0	0.30		U
ERH759	AZ86200	1	BENZENE	2/7/2019 10:45:00 AM	2/12/2019 5:14:00 PM	C	0.30	UG_L	U	1.0	0.30		U
ERH759	AZ86200	1	ETHYLBENZENE	2/7/2019 10:45:00 AM	2/12/2019 5:14:00 PM	C	0.50	UG_L	U	1.0	0.50		U
ERH759	AZ86200	1	PETROLEUM HYDROCARBONS C6-C10	2/7/2019 10:45:00 AM	2/12/2019 5:13:00 PM	C	18.0	UG_L	U	20	18.0		UJ c,l
ERH759	AZ86200	1	TOLUENE	2/7/2019 10:45:00 AM	2/12/2019 5:14:00 PM	C	0.30	UG_L	U	1.0	0.30		U
ERH759	AZ86200	1	Xylenes	2/7/2019 10:45:00 AM	2/12/2019 5:14:00 PM	C	0.30	UG_L	U	2.0	0.30		U
<b>METHOD: 8270D</b>													
ERH759	AZ86200	1	2-(2-METHOXY ETHOXY)-ETHANOL	2/7/2019 10:45:00 AM	2/14/2019 4:37:00 PM	C	80.0	UG_L	U	100	80.0		U

EPA_NO	LAB_ID	DF	ANALYTE	COLL_DATE	ANAL_DATE	QCLev	RESULT	UNITS	LAB_Q	LOQ	LOD	REV	Q_C
<b>METHOD: 8270D</b>													
ERH759	AZ86200	1	Ethyl isothiocyanate	2/7/2019 10:45:00 AM	2/15/2019 9:31:00 AM	C	7.8	UG_L	T	0	0		
ERH759	AZ86200	1	PHENOL	2/7/2019 10:45:00 AM	2/15/2019 9:31:00 AM	C	4.00	UG_L	U	5.0	4.00	U	
<b>METHOD: 8270DSIM</b>													
ERH759	AZ86200	1	1-METHYLNAPHTHALENE	2/7/2019 10:45:00 AM	2/15/2019 8:48:00 AM	C	0.10	UG_L	U	0.2	0.10	U	
ERH759	AZ86200	1	2-METHYLNAPHTHALENE	2/7/2019 10:45:00 AM	2/15/2019 8:48:00 AM	C	0.10	UG_L	U	0.2	0.10	U	
ERH759	AZ86200	1	NAPHTHALENE	2/7/2019 10:45:00 AM	2/15/2019 8:48:00 AM	C	0.10	UG_L	U	0.2	0.10	U	
<b>METHOD: 9060A</b>													
ERH759	AZ86200	1	TOTAL ORGANIC CARBON	2/7/2019 10:45:00 AM	2/13/2019 10:32:00 AM	C		MG_L	J	0.93	0.26	U	b
<b>METHOD: RSK175</b>													
ERH758	AZ86199	1	METHANE	2/7/2019 7:40:00 AM	2/13/2019 9:42:00 AM	C	1.00	UG_L	U	5.0	1.00	U	
ERH759	AZ86200	1	METHANE	2/7/2019 10:45:00 AM	2/13/2019 9:44:00 AM	C	1.00	UG_L	U	5.0	1.00	U	

LDC #: 44517

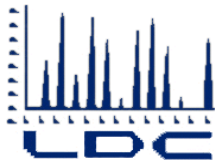
**EDD POPULATION COMPLETENESS WORKSHEET**

Date: 3/18  
 Page: 1 of 1  
 2<sup>nd</sup> Reviewer: FIM

The LDC job number listed above was entered by JE  
 Entered from Body or Summary

	EDD Process		Comments/Action
I.	EDD Completeness	-	
Ia.	- All methods present?	Y	
Ib.	- All samples present/match report?	Y	
Ic.	- All reported analytes present?	Y	
Id.	- 10% or <u>100%</u> verification of EDD?	Y	
II.	EDD Preparation/Entry	-	
IIa.	- Carryover U/J?	Y	
IIb.	- Reason Codes used? If so, note which codes.	Y	
IIc.	- Additional Information (QC Level, Validator, Validated Y/N, etc.)	Y	
III.	Reasonableness Checks	-	
IIIa.	- Do all qualified ND results have ND qualifier (e.g. UJ)?	Y	
IIIb.	- Do all qualified detect results have detect qualifier (e.g. J)?	Y	
IIIc.	- If reason codes are used, do all qualified results have reason code field populated, and vice versa?	Y	
IIId.	- Does the detect flag require changing for blank qualifier? If so, are all U results marked ND?	Y/Y	
IIIe.	- Do blank concentrations in report match EDD where data was qualified due to blank contamination?	Y	
IIIf.	- Were multiple results reported due to dilutions/reanalysis? If so, were results qualified appropriately?	+	
IIIg.	- Are there any discrepancies between the data packet and the EDD?	N	

Notes: \*see discrepancy sheet



## LABORATORY DATA CONSULTANTS, INC.

2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

AECOM  
1001 Bishop Street Suite 1600  
Honolulu, HI 96813  
ATTN: Ms. Margie Pascua  
[Margie.Pascua@aecom.com](mailto:Margie.Pascua@aecom.com)

April 1, 2019

**SUBJECT: Data Quality Assessment Report  
December 2018 to February 2019  
Environmental Investigation and  
Groundwater Monitoring  
Red Hill Bulk Fuel Storage Facility  
Joint Base Pearl Harbor-Hickam  
Oahu, Hawaii  
CTO 18F0126**

Enclosed is the Data Quality Assessment Report, December 2018 to February 2019, Environmental Investigation and Groundwater Monitoring for Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, Oahu, Hawaii, CTO 18F0126.

We appreciate this opportunity to support AECOM in the performance of this project.

Please feel free to contact us if you have any questions.

Sincerely,

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**DATA QUALITY ASSESSMENT REPORT**

**DECEMBER 2018 TO FEBRUARY 2019  
ENVIRONMENTAL INVESTIGATION AND  
GROUNDWATER MONITORING**

**RED HILL BULK FUEL STORAGE FACILITY  
JOINT BASE PEARL HARBOR-HICKAM  
OAHU, HAWAII  
CTO 18F0126**

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## GLOSSARY

BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
CTO	Contract Task Order
DQAR	Data Quality Assessment Report
DOD	Department of Defense
DL	Detection Limit
DUP	Laboratory Duplicate
EB	Equipment Blank
FB	Field Blank
FD	Field Duplicate
GRO	Gasoline Range Organics
LCS/LCSD	Laboratory Control Sample/Laboratory Control Sample Duplicate
LDC	Laboratory Data Consultants, Inc
LOD	Limit of Detection
LOQ	Limit of Quantitation
MEE	2-(2-Methoxyethoxy)-ethanol
MS/MSD	Matrix Spike / Matrix Spike Duplicate
NAVFAC	Naval Facilities Engineering Command
PAH	Polynuclear Aromatic Hydrocarbons
PARCCS	Precision, Accuracy, Representativeness, Comparability, Completeness, Sensitivity
PQO	Project Quality Objectives
PT	Proficiency Testing sample
QA/QC	Quality Assurance/Quality Control
QSM	Quality Systems Manual
RPD	Relative Percent Difference
RRF	Relative Response Factor
SDG	Sample Delivery Group
SGCU	Silica Gel Clean Up
SIM	Selected Ion Monitoring
TB	Trip Blank
TOC	Total Organic Carbon
TPHE	Total Petroleum Hydrocarbons as Extractables
VOC	Volatile Organic Compounds
%D	Percent Difference
%R	Percent Recovery
%RSD	Percent Relative Standard Deviation
mg/L	Milligrams per Liter
ug/L	Micrograms per Liter

## 1.0 INTRODUCTION

An environmental investigation and groundwater monitoring were conducted on December 2018 through February 2019 at the Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam in Oahu, Hawaii. This part of the investigation included the collection and analyses of 42 environmental and quality control (QC) samples. The analyses were performed by the following methods:

Benzene, Toluene, Ethylbenzene, Xylenes, total (BTEX) by Environmental Protection Agency (EPA) SW-846 Method 8260B

Phenol and Tentatively Identified Compounds (TIC) by EPA SW-846 Method 8270D

Polynuclear Aromatic Hydrocarbons (PAH) by EPA SW-846 Method 8270D-Selected Ion Monitoring (SIM) mode

2-(2-Methoxyethoxy)-ethanol by (MEE) EPA SW-846 Method 8270D Modified

Gasoline Range Organics (GRO) by EPA SW-846 Method 8260B

Total Petroleum Hydrocarbons as Extractables (TPHE) by EPA SW-846 Method 8015B

Methane by Method RSK-175

Wet Chemistry:

Alkalinity by Standard Method 2320B

Chloride, Nitrate as Nitrogen, and Sulfate (Anions) by EPA Method 300.0

Ferrous Iron by Standard Method 3500-Fe B

Nitrate/Nitrite as Nitrogen by EPA Method 353.2

Total Organic Carbon (TOC) by EPA SW-846 Method 9060A

Analytical services for the water samples were provided by APPL, Inc. and Analytical Resources, Inc. The samples were grouped into sample delivery groups (SDGs) as received by the laboratory. The environmental samples are associated with quality assurance (QA) and QC samples designed to document the data quality of the entire SDG or a sub-group of samples within a SDG. Table I is a cross-reference table listing each sample, analysis, SDG, collection date, laboratory sample number, matrix, and validation level.

Approximately ten percent of the analytical data were validated according to Naval Facilities Engineering Command (NAVFAC) Pacific Level D data validation procedures and ninety percent of the analytical data were validated according to NAVFAC Pacific Level C data validation procedures. The analytical data were evaluated for QA/QC based on the *NAVFAC Pacific Environmental Restoration (ER) Program Data Validation Procedures (DON 2015)* and the *Department of Defense Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (DoD 2017)*.

This data quality assessment report (DQAR) summarizes the QA/QC evaluation of the data according to precision, accuracy, representativeness, completeness, comparability, and sensitivity (PARCCS) relative to the project quality objectives (PQOs). This report provides a quantitative and qualitative assessment of the data and identifies potential sources of error, uncertainty, and bias that may affect the overall usability.

The DQAR evaluates and summarizes the results of QA/QC data validation for the entire sampling program. Each analytical fraction has a separate section for each of the PARCCS criteria. These sections interpret specific QC deviations and their effects on both individual data points and the analyses as a whole. Section 11 presents a summary of the PARCCS criteria by comparing quantitative parameters with acceptability criteria defined in the PQOs. Qualitative PARCCS criteria are also summarized in this section.

## Precision and Accuracy of Environmental Data

Environmental data quality depends on sample collection procedures, analytical methods and instrumentation, documentation, and sample matrix properties. Both sampling procedures and laboratory analyses contain potential sources of uncertainty, error, and/or bias, which affect the overall quality of a measurement. Errors in sample data may result from incomplete equipment decontamination, inappropriate sampling techniques, sample heterogeneity, improper filtering, and improper preservation. The accuracy of analytical results is dependent on selecting appropriate analytical methods, maintaining equipment properly, and complying with QC requirements. The sample matrix also is an important factor in the ability to obtain precise and accurate results within a given media.

Environmental and laboratory QA/QC samples assess the effects of sampling procedures and evaluate laboratory contamination, laboratory performance, and matrix effects. QA/QC samples include: method blanks, calibration blanks, laboratory control samples/laboratory control sample duplicates (LCS/LCSD), matrix spike sample/matrix spike sample duplicate (MS/MSD), field duplicate samples (FD), trip blanks (TB), equipment blank (EB), field blank (FB) and proficiency testing (PT) samples.

Before conducting the PARCCS evaluation, the analytical data were validated according to the NAVFAC procedures and DoD QSM. Samples not meeting the NAVFAC procedures and DoD QSM acceptance criteria were qualified with a flag, an abbreviation indicating a deficiency with the data. The following are flags used in data validation.

- J Estimated The associated numerical value is an estimated quantity. The analyte was detected but the reported value may not be accurate or precise. The "J" qualification indicates the data fell outside the QC limits, but the exceedance was not sufficient to cause rejection of the data.
- R Rejected The data is unusable (the compound or analyte may or may not be present). Use of the "R" qualifier indicates a significant variance from functional guideline acceptance criteria. Either resampling or reanalysis is necessary to determine the presence or absence of the rejected analyte.
- U Nondetected Analyses were performed for the compound or analyte, but it was not detected. The "U" designation is also applied to suspected blank contamination. The "U" flag is used to qualify any result detected in an environmental sample at a concentration less than 10 times the value of the concentration in any associated blank for common laboratory contaminants and less than 5 times the concentration in any associated blank for all other contaminants.
- UJ Estimated/Nondetected Analyses were performed for the compound or analyte, but it was not detected and the limit of detection (LOD) is an estimated quantity due to poor accuracy or precision. This qualification is also used to flag possible false negative results in the case where low bias in the analytical system is indicated by low calibration response, surrogate, internal standard, or other spike recovery.

Once the data are reviewed and qualified according to the NAVFAC procedures and DoD QSM, the data set is then evaluated using PARCCS criteria. PARCCS criteria provide an evaluation of overall data usability. The following is a discussion of PARCCS criteria as related to the PQOs.

**Precision** is a measure of the agreement or reproducibility of analytical results under a given set of conditions. It is a quantity that cannot be measured directly but is calculated from the reported concentrations.

Precision is expressed as the relative percent difference (RPD):

$$\text{RPD} = (D1 - D2) / \{1/2(D1 + D2)\} \times 100$$

Where:

D1 = the reported concentration for primary sample analyses

D2 = the reported concentrations for duplicate analyses

Precision is primarily assessed by calculating a RPD from the reported concentrations of the spiked compounds for each sample in the MS/MSD pair. In the absence of a MS/MSD pair, a laboratory duplicate or LCS/LCSD pair can be analyzed as an alternative means of assessing precision. In some cases, samples from multiple SDGs were within one QC batch and therefore are associated with the same laboratory QC samples. An additional measure of sampling precision may be obtained by collecting and analyzing field duplicate samples, which are compared using the RPD result as the evaluation criteria.

MS and MSD samples are field samples spiked by the laboratory with target analytes prior to preparation and analysis. These samples measure the overall efficiency of the analytical method in recovering target analytes from an environmental matrix. A LCS is similar to a MS/MSD sample in that the LCS is spiked with the same target analytes prior to preparation and analysis. However, the LCS is prepared using a controlled interference-free matrix instead of a field sample aliquot. Laboratory reagent water is used to prepare aqueous LCS. The LCS measures laboratory efficiency in recovering target analytes from an aqueous matrix in the absence of matrix interferences.

For inorganic analysis, one primary sample is analyzed and accompanied by an unspiked laboratory duplicate. The data reviewer compares the reported results of the primary analysis and the laboratory duplicate and calculates RPDs to assess laboratory precision.

Laboratory and field precision are further evaluated by calculating RPDs for field duplicate pairs. The sampler collects two field samples at the same location and under identically controlled conditions. The laboratory then analyzes the samples under identical conditions.

An RPD outside the numerical QC limit in MS/MSD samples, LCS/LCSDs, or FDs indicates imprecision. Imprecision is the variance in the consistency with which the laboratory arrives at a particular reported result. Thus, the actual analyte concentration may be higher or lower than the reported result.

Possible causes of poor precision include sample matrix interference, improper sample collection or handling, inconsistent sample preparation, and poor instrument stability. In some duplicates, results may be reported in either the primary or duplicate samples at levels below the limit of quantitation (LOQ) or non-detected. Since these values are considered to be estimates, RPD exceedances from these duplicate sets do not suggest a significant impact on the data quality.

**Accuracy** is a measure of the agreement of an experimental determination and the true value of the parameter being measured. It is used to identify bias in a given measurement system. Recoveries outside acceptable QC limits may be caused by factors such as instrumentation, analyst error, or matrix interference. Accuracy is assessed through the analysis of MS, MSD, LCS, and samples containing surrogate spikes. In some cases, samples from multiple SDGs were within one QC batch and therefore are associated with the same laboratory QC samples. Surrogate spikes are either isotopically labeled compounds or compounds that are not typically detected in the samples. Surrogate spikes are added to every blank, environmental sample, MS/MSD, LCS/LCSD and standard, for all applicable organic analyses. Accuracy of inorganic analyses is determined using the percent recoveries of MS and LCS analyses.

Percent recovery (%R) is calculated using the following equation:

$$\%R = (A-B)/C \times 100$$

Where:

A = measured concentration in the spiked sample

B = measured concentration of the spike compound in the unspiked sample

C = concentration of the spike

The percent recovery of each analyte spiked in MS/MSD samples, LCS, and surrogate compounds added to environmental samples is evaluated against the acceptance criteria specified by the previously noted documents. Spike recoveries outside the acceptable QC accuracy limits provide an indication of bias, where the reported data may overestimate or underestimate the actual concentration of compounds detected or LODs reported for environmental samples.

Accuracy can also be evaluated by analyzing PT samples. PT testing determines the performance of individual laboratories for specific tests or measurements and is used to monitor laboratories' continuing performance.

**Representativeness** is a qualitative parameter that expresses the degree to which the sample data are characteristic of a population and is evaluated by reviewing the QC results of blank samples and holding times. Positive detects of compounds in the blank samples identify compounds that may have been introduced into the samples during sample collection, transport, preparation, or analysis. The QA/QC blanks collected and analyzed are method blanks, calibration blanks, field blanks, equipment blanks, and trip blanks.

A method blank is a laboratory grade water or solid matrix that contains the method reagents and has undergone the same preparation and analysis as the environmental samples. The method blank provides a measure of the combined contamination derived from the laboratory source water, glassware, instruments, reagents, and sample preparation steps. Method blanks are prepared for each sample of a similar matrix extracted by the same method at a similar concentration level.

For inorganic analyses, initial and continuing calibration blanks (ICB/CCB) consist of acidified laboratory grade water, which are injected at the beginning and at a regular frequency during each 12 - hour sample analysis run. These blanks estimate residual contaminants from the previous sample or standards analysis and measure baseline shifts that commonly occur in emission and absorption spectroscopy.

Trip blanks are used to identify possible volatile organic contamination introduced into the sample during transport. A trip blank is a sample volatile organics analysis vial filled in the laboratory with reagent-grade water and preserved to a pH less than 2 with hydrochloric acid. It is transported to the site, stored with the sample containers, and returned unopened to the laboratory for analysis. Trip blanks were collected and analyzed for BTEX, GRO, and methane.

Equipment blanks consist of analyte-free water poured over or through the sample collection equipment. The water is collected in a sample container for laboratory analysis. These blanks are collected after the sampling equipment is decontaminated and measure efficiency of the decontamination procedure. Equipment blanks were collected and analyzed for BTEX, phenol and TICs, PAH, MEE, GRO, and TPHE.

Field blanks consist of analyte-free source water stored at the sample collection site. The water is collected from each source water used during each sampling event. Field blanks were collected and analyzed for BTEX, phenol and TICs, PAH, MEE, GRO, and TPH as extractables.

Contaminants found in both the environmental sample and a blank sample are assumed to be laboratory artifacts if the concentration in the environmental sample is less than 5 times the blank value.

Holding times are evaluated to assure that the sample integrity is intact for accurate sample preparation and analysis. Holding times will be specific for each method and matrix analyzed. Holding time exceedances can cause loss of sample constituents due to biodegradation, precipitation, volatilization, and chemical degradation.

**Comparability** is a qualitative expression of the confidence with which one data set may be compared to another. It provides an assessment of the equivalence of the analytical results to data obtained from other analyses. It is important that data sets be comparable if they are used in conjunction with other data sets. The factors affecting comparability include the following: sample collection and handling techniques, matrix type, and analytical method. If these aspects of sampling and analysis are carried out according to standard analytical procedures, the data are considered comparable. Comparability can only be compared with confidence when precision, accuracy, and representativeness are known.

**Completeness** is defined as the percentage of acceptable sample results compared to the total number of sample results. Completeness is evaluated to determine if an acceptable amount of usable data were obtained so that a valid scientific site assessment can be completed. Completeness equals the total number of sample results for each fraction minus the total number of rejected sample results divided by the total number of sample results multiplied by 100. As specified in the PQOs, the goal for completeness for target analytes in each analytical fraction is 90 percent.

Percent completeness is calculated using the following equation:

$$\%C = (T - R)/T \times 100$$

Where:

%C = percent completeness

T = total number of sample results

R = total number of rejected sample results

Completeness is also determined by comparing the planned number of samples per method and matrix as specified in the project planning document, with the number determined above.

**Sensitivity** is the ability of an analytical method or instrument to discriminate between measurement responses representing different concentrations. This capability is established during the planning phase to meet the PQOs. It is important that calibration requirements, detection limits (DLs), and project-specific LODs and LOQs presented in the work plan are achieved and that target analytes can be detected at concentrations necessary to support the PQOs. In addition, sample results are compared to method blank and field blank results to identify potential effects of laboratory background and field procedures on sensitivity.

The following sections present a review of QC data for each analytical method. The details regarding the qualification of results are provided in the data validation reports.

## **2.0 VOLATILE ORGANIC COMPOUNDS**

A total of 42 water samples were analyzed for BTEX by EPA SW 846 Method 8260B. All BTEX data were assessed to be valid since none of the 168 total results were rejected due to holding time or QC exceedances. This section discusses the QA/QC supporting documentation as defined by the PARCCS criteria and evaluated based on the PQOs.

### **2.1 Precision and Accuracy**

#### **2.1.1 Instrument Calibration**

Initial and continuing calibration results provide a means of evaluating accuracy within a particular SDG. Relative response factor (RRF), percent relative standard deviation (%RSD), and percent difference (%D) are the three major parameters used to measure the effectiveness of instrument calibration. RRF is a measure of the relative spectral response of an analyte compared to its internal standard. %RSD is an expression of the linearity of instrument response. %D is a comparison of a continuing calibration instrumental response with its initial response. %RSD and %D exceedances suggest routine instrumental anomalies, which typically impact all sample results for the affected compounds.

The RRFs met the validation acceptance criteria of  $\geq 0.05$  in the initial and continuing calibrations. The %RSDs met the method acceptance criteria of 15 percent or the coefficient of determination ( $r^2$ ) was  $\geq 0.990$  in the initial calibration. The %Ds in the initial and continuing calibration verifications met the method acceptance criteria of 20 percent. The %Ds in the ending continuing calibration verifications met the validation acceptance criteria of 50 percent.

#### **2.1.2 Surrogates**

As a result of low surrogate %Rs, the BTEX results for samples ERH738, ERH739, ERH753, and ERH757 were qualified as non-detected estimated (UJ). Low surrogate %R indicates that the results may be biased low in the associated sample.

No data were qualified as a result of high surrogate %Rs in several samples since the associated results were not detected.

#### **2.1.3 MS/MSD Samples**

As a result of low MS/MSD %Rs, the toluene result for sample ERH730 was qualified as non-detected estimated (UJ). Low MS/MSD %R indicates that the result may be biased low in the associated sample.

No data were qualified as a result of high MS/MSD %Rs and RPDs since the associated results were not detected.

#### **2.1.4 LCS/LCSD Samples**

As a result of a low LCSD %R, the toluene result for samples ERH729, ERH730, ERH731, ERH735, ERH736, ERH740, ERH741, ERH748, and ERH749 were qualified as non-detected estimated (UJ). Low LCS/LCSD %R indicates that the result may be biased low in the associated sample.

All LCS/LCSD RPDs were within the acceptance criteria.



### **2.1.5 FD Samples**

No VOC were detected for field duplicate samples ERH719 and ERH720; samples ERH722 and ERH723; samples ERH730 and ERH731; samples ERH733 and ERH734; and samples ERH738 and ERH739.

### **2.1.6 Internal Standards**

All internal standard areas and retention areas were within acceptance criteria.

### **2.1.7 Proficiency Testing Samples**

Proficiency testing (PT) samples were not performed for the sampling event.

### **2.1.8 Compound Quantitation and Target Identification**

All compound quantitation and target identifications were found to be acceptable.

## **2.2 Representativeness**

### **2.2.1 Holding Times**

The evaluation of holding times to verify compliance with the method was conducted. All holding times were met.

### **2.2.2 Blanks**

Method blanks, TBs, EBs and FBs were collected and analyzed to evaluate representativeness. The concentration for an individual target compound in any of the types of QA/QC blanks was used for data qualification.

If contaminants were detected in a blank, corrective actions were made for the chemical analytical data during data validation. The corrective action consisted of amending the laboratory reported results based on the following criteria.

Results Below or Above the LOQ If a sample result for the blank contaminant was less than the LOQ or greater than the sample LOQ and less than 5 times the blank value for all contaminants, the sample result for the blank contaminant was amended as a non-detect at the concentration reported in the sample results.

No Action If a sample result for the blank contaminant was greater than 5 times the blank value for all contaminants, the result was not amended.

#### **2.2.2.1 Method Blanks**

No contaminants were detected in the method blanks for this analysis.

#### **2.2.2.2 EBs and FBs**

No contaminants were detected in the equipment blanks and field blanks for this analysis.

### **2.2.2.3 Trip Blanks**

No contaminants were detected in the trip blanks for this analysis.

## **2.3 Comparability**

The laboratory used standard analytical methods for all of the analyses. In all cases, the DLs and LODs attained were below the specified LOQs. Target compounds detected below the LOQs flagged (J) by the laboratory should be considered estimated. The comparability of the data is regarded as acceptable.

## **2.4 Completeness**

The completeness level attained for VOC field samples was 100 percent. This percentage was calculated as the total number of accepted sample results divided by the total number of sample results multiplied by 100.

## **2.5 Sensitivity**

The calibration was evaluated for instrument sensitivity and was determined to be technically acceptable. All laboratory DLs and LOQs met the specified requirements described in the QAPP.

## **3.0 PHENOL & TENTATIVELY IDENTIFIED COMPOUNDS**

A total of 24 water samples were analyzed for phenol and TICs by EPA SW-846 Method 8270D. All phenol and TIC data were assessed to be valid since none of the 66 total results were rejected due to holding time or QC exceedances. This section discusses the QA/QC supporting documentation as defined by the PARCCS criteria and evaluated based on the PQOs.

### **3.1 Precision and Accuracy**

#### **3.1.1 Instrument Calibration**

The RRFs met the validation acceptance criteria of  $\geq 0.05$  in the initial and continuing calibrations. The %RSDs met the method acceptance criteria of 15 percent. The %Ds in the initial and continuing calibration verifications met the method acceptance criteria of 20 percent. The %Ds in the ending continuing calibration verifications met the validation acceptance criteria of 50 percent.

#### **3.1.2 Surrogates**

No data were qualified when one acid surrogate %R was outside the QC limits and the %R was greater than or equal to 10%.

#### **3.1.3 MS/MSD Samples**

All MS/MSD %Rs were within the acceptance criteria.

No data were qualified as a result of high MS/MSD RPDs since the associated results were not detected.

#### **3.1.4 LCS/LCSD Samples**

No data were qualified as a result of a high LCS %R since the associated results were not detected.

All LCS/LCSD RPDs were within the acceptance criteria.

### **3.1.5 Internal Standards**

All internal standard areas and retention times were within the acceptance criteria.

### **3.1.6 FD Samples**

No phenol was detected for field duplicate samples ERH719 and ERH720; samples ERH722 and ERH723; samples ERH730 and ERH731; samples ERH733 and ERH734; and samples ERH738 and ERH739.

### **3.1.7 Proficiency Testing Samples**

PT samples were not performed for the sampling event.

### **3.1.8 Compound Quantitation and Target Identification**

All compound quantitation and target compound identification were found to be acceptable.

## **3.2 Representativeness**

### **3.2.1 Holding Times**

The evaluation of holding times to verify compliance with the method was conducted. All holding times were met.

### **3.2.2 Blanks**

Method blanks, EBs, and FBs were collected and analyzed to evaluate representativeness.

#### **3.2.2.1 Method Blanks**

As a result of contamination found in the method blank, one TIC result for sample ERH755 was qualified as not detected (U).

#### **3.2.2.2 EBs and FBs**

No phenol was detected in the equipment blanks and field blanks for this analysis.

## **3.3 Comparability**

The laboratory used standard analytical methods for all of the analyses. In all cases, the DLs and LODs attained were below the specified LOQs. The comparability of the data is regarded as acceptable.

## **3.4 Completeness**

The completeness level attained for phenol and TICs was 100 percent. This percentage was calculated as the total number of accepted sample results divided by the total number of sample results multiplied by 100.

### **3.5 Sensitivity**

The calibration was evaluated for instrument sensitivity and was determined to be technically acceptable. All laboratory DLs and LOQs met the specified requirements described in the work plan.

## **4.0 POLYNUCLEAR AROMATIC HYDROCARBONS**

A total of 24 water samples were analyzed for 1-methylnaphthalene, 2-methylnaphthalene, and naphthalene by EPA SW-846 Method 8270D-SIM. All PAH data were assessed to be valid since none of the 72 total results were rejected based on holding time or QC exceedances. This section discusses the QA/QC supporting documentation as defined by the PARCCS criteria and evaluated based on the PQOs.

### **4.1 Precision and Accuracy**

#### **4.1.1 Instrument Calibration**

The RRFs met the validation acceptance criteria of  $\geq 0.05$  in the initial and continuing calibrations. The %RSDs met the method acceptance criteria of 15 percent. The %Ds in the initial and continuing calibration verifications met the method acceptance criteria of 20 percent. The %Ds in the ending continuing calibration verifications met the validation acceptance criteria of 50 percent.

#### **4.1.2 Surrogates**

No data were qualified as a result of high surrogate %Rs in several samples since the associated results were not detected.

#### **4.1.3 MS/MSD Samples**

All MS/MSD %Rs were within the acceptance criteria.

No data were qualified as a result of high MS/MSD RPDs since the associated results were not detected.

#### **4.1.4 LCS/LCSD Samples**

No data were qualified as a result of high LCS/LCSD %Rs since the associated results were not detected.

All LCS/LCSD RPD were within the acceptance criteria.

#### **4.1.5 Internal Standards**

All internal standard areas and retention times were within the acceptance criteria.

#### **4.1.6 Field Duplicate Samples**

The FD RPDs were within the acceptance criteria for field duplicate samples ERH738 and ERH739.

No PAH were detected for field duplicate samples ERH719 and ERH720; samples ERH722 and ERH723; samples ERH730 and ERH731; and samples ERH733 and ERH734.

#### **4.1.7 Proficiency Testing Samples**

PT samples were not performed for the sampling event.

#### **4.1.8 Compound Quantitation and Target Identification**

All compound quantitation and target compound identification were found to be acceptable.

### **4.2 Representativeness**

#### **4.2.1 Holding Times**

The evaluation of holding times to verify compliance with the method was conducted. All holding times were met.

#### **4.2.2 Blanks**

Method blanks, EBs, and FBs were collected and analyzed to evaluate representativeness.

##### **4.2.2.1 Method Blanks**

No contaminants were detected in the method blanks for this analysis.

##### **4.2.2.2 EBs and FBs**

No contaminants were detected in the equipment blanks and field blanks for this analysis.

### **4.3 Comparability**

The laboratory used standard analytical methods for all of the analyses. In all cases, the DLs and LODs attained were below the specified LOQs. The comparability of the data is regarded as acceptable.

### **4.4 Completeness**

The completeness level attained for PAH field samples was 100 percent. This percentage was calculated as the total number of accepted sample results divided by the total number of sample results multiplied by 100.

### **4.5 Sensitivity**

The calibration was evaluated for instrument sensitivity and was determined to be technically acceptable. All laboratory DLs and LOQs met the specified requirements described in the work plan.

## **5.0 2-(2-METHOXYETHOXY)-ETHANOL**

A total of 24 water samples were analyzed for MEE by EPA SW 846 Method 8270D modified. All MEE data were assessed to be valid since none of the 24 total results were rejected based on holding time or QC exceedances. This section discusses the QA/QC supporting documentation as defined by the PARCCS criteria and evaluated based on the PQOs.

## **5.1 Precision and Accuracy**

### **5.1.1 Instrument Calibration**

The RRFs met the validation acceptance criteria of  $\geq 0.05$  in the initial and continuing calibrations. The %RSDs met the method acceptance criteria of 15 percent. The %Ds in the initial and continuing calibration verifications met the method acceptance criteria of 20 percent. The %Ds in the ending continuing calibration verifications met the validation acceptance criteria of 50 percent.

### **5.1.2 Surrogates**

Surrogates were not added to all samples as required by the method. No data were qualified as a result of high surrogate %Rs in the phenol analysis for sample ERH749, since the associated result was not detected.

### **5.1.3 MS/MSD Samples**

All MS/MSD %Rs were within the acceptance criteria.

No data were qualified as a result of a high MS/MSD RPD since the associated result was not detected.

### **5.1.4 LCS/LCSD Samples**

No data were qualified as a result of a high LCSD %R since the associated results were not detected.

As a result of high LCS/LCSD RPDs, the MEE results for 14 samples were qualified as non-detected estimated (UJ). Bias cannot be determined.

### **5.1.5 Internal Standards**

All internal standard areas and retention times were within the acceptance criteria.

### **5.1.6 Field Duplicate Samples**

No MEE was detected for field duplicate samples ERH719 and ERH720; samples ERH722 and ERH723; samples ERH730 and ERH731; samples ERH733 and ERH734; and samples ERH738 and ERH739.

### **5.1.7 Proficiency Testing Samples**

PT samples were not performed for the sampling event.

### **5.1.8 Compound Quantitation and Target Identification**

All compound quantitation and target compound identification were found to be acceptable.

## **5.2 Representativeness**

### **5.2.1 Holding Times**

The evaluation of holding times to verify compliance with the method was conducted. All holding times were met.

## **5.2.2 Blanks**

Method blanks, EBs, and FBs were collected and analyzed to evaluate representativeness.

### **5.2.2.1 Method Blanks**

No contaminants were detected in the method blanks for this analysis.

### **5.2.2.2 EBs and FBs**

No contaminants were detected in the equipment blanks and field blanks for this analysis.

## **5.3 Comparability**

The laboratory used standard analytical methods for all of the analyses. In all cases, the DLs and LODs attained were below the specified LOQs. The comparability of the data is regarded as acceptable.

## **5.4 Completeness**

The completeness level attained for MEE field samples was 100 percent. This percentage was calculated as the total number of accepted sample results divided by the total number of sample results multiplied by 100.

## **5.5 Sensitivity**

The calibration was evaluated for instrument sensitivity and was determined to be technically acceptable. All laboratory DLs and LOQs met the specified requirements described in the work plan.

## **6.0 GASOLINE RANGE ORGANICS**

A total of 42 water samples were analyzed for GRO by EPA SW-846 Method 8260B. All GRO data were assessed to be valid since none of the 42 total results were rejected based on holding time or QC exceedances. This section discusses the QA/QC supporting documentation as defined by the PARCCS criteria and evaluated based on the PQOs.

### **6.1 Precision and Accuracy**

#### **6.1.1 Instrument Calibration**

The coefficient of determination ( $r^2$ ) was  $\geq 0.990$  in the initial calibration. The %Ds in the initial calibration verification met the method acceptance criteria of 20 percent.

The GRO result for samples ERH758 and ERH759 were qualified as non-detected estimated (UJ). The %D in the associated continuing calibration verification was outside the method acceptance criteria of 20 percent.

#### **6.1.2 Surrogates**

All surrogate %Rs were within the acceptance criteria.

### **6.1.3 MS/MSD Samples**

All MS/MSD %Rs and RPDs were within the acceptance criteria.

### **6.1.4 LCS/LCSD Samples**

No data were qualified as a result of a high LCS %R since the associated results were not detected.

As a result of high LCS/LCSD RPDs, the GRO results for samples ERH758 and ERH759 were qualified as non-detected estimated (UJ). Bias cannot be determined.

### **6.1.5 Field Duplicate Samples**

The FD RPDs were outside the acceptance criteria for field duplicate samples ERH738 and ERH739. Sample data were not qualified on the basis of field duplicate imprecision.

No GRO were detected for field duplicate samples ERH719 and ERH720; samples ERH722 and ERH723; samples ERH730 and ERH731; and samples ERH733 and ERH734.

### **6.1.6 Proficiency Testing Samples**

PT samples were not performed for the sampling event.

### **6.1.7 Compound Quantitation and Target Identification**

All compound quantitation and target compound identification were found to be acceptable

## **6.2 Representativeness**

### **6.2.1 Holding Times**

The evaluation of holding times to verify compliance with the method was conducted. All holding times were met.

### **6.2.2 Blanks**

Method blanks, EBs, FBs, and TBs were collected and analyzed to evaluate representativeness.

#### **6.2.2.1 Method Blanks**

No contaminants were detected in the method blanks for this analysis.

#### **6.2.2.2 EBs and FBs**

No contaminants were detected in the equipment blanks and field blanks for this analysis.

#### **6.2.2.3 Trip Blanks**

No contaminants were detected in the trip blanks for this analysis.



### **6.3 Comparability**

The laboratory used standard analytical methods for all of the analyses. In all cases, the DLs attained were below the specified LOQs. The comparability of the data is regarded as acceptable.

### **6.4 Completeness**

The completeness level attained for GRO field samples was 100 percent. This percentage was calculated as the total number of accepted sample results divided by the total number of sample results multiplied by 100.

### **6.5 Sensitivity**

The calibration was evaluated for instrument sensitivity and was determined to be technically acceptable. All laboratory DLs and LOQs met the specified requirements described in the work plan.

## **7.0 TOTAL PETROLEUM HYDROCARBONS AS EXTRACTABLES**

A total of 24 water samples were analyzed for diesel range organics (DRO) and oil range organics (ORO) by EPA SW-846 Method 8015B and five water samples were also analyzed for DRO and ORO with silica gel cleanup (SGCU) by EPA SW-846 Method 8015B. All TPHE data were assessed to be valid since none of the 58 total results were rejected based on holding time or QC exceedances. This section discusses the QA/QC supporting documentation as defined by the PARCCS criteria and evaluated based on the PQOs.

### **7.1 Precision and Accuracy**

#### **7.1.1 Instrument Calibration**

The %RSDs in the initial calibration and the %Ds in the initial and continuing calibration verifications met the method acceptance criteria of 20 percent.

#### **7.1.2 Surrogates**

As a result of low surrogate %Rs, the DRO and ORO results for samples ERH719 and ERH719 (SGCU) were qualified as non-detected estimated (UJ). Low surrogate %R indicates that the results may be biased low in the associated sample.

No data were qualified as a result of high surrogate %Rs, since the associated results were not detected.

#### **7.1.3 MS/MSD Samples**

No data were qualified as a result of a high ORO MS %R, since the associated result was not detected.

All MS/MSD RPDs were within the acceptance criteria.

#### **7.1.4 LCS/LCSD Samples**

All LCS/LCSD %Rs and RPDs were within the acceptance criteria.

### **7.1.5 Field Duplicate Samples**

The FD RPDs were within the acceptance criteria for field duplicate samples ERH738 and ERH739.

No DRO or ORO were detected for field duplicate samples ERH719 and ERH720; samples ERH722 and ERH723; samples ERH730 and ERH731; and samples ERH733 and ERH734.

### **7.1.6 Proficiency Testing Samples**

PT samples were not performed for the sampling event.

### **7.1.7 Compound Quantitation and Target Identification**

All compound quantitation and target compound identification were found to be acceptable.

In instances where data were reextracted or reanalyzed by the laboratory, data were qualified as not reportable by the validators in order to yield only one complete set of data for a given sample.

## **7.2 Representativeness**

### **7.2.1 Holding Times**

The evaluation of holding times to verify compliance with the method was conducted.

### **7.2.2 Blanks**

Method blanks, EBs, and FBs were collected and analyzed to evaluate representativeness.

#### **7.2.2.1 Method Blanks**

No contaminants were detected in the method blanks for this analysis.

#### **7.2.2.2 Equipment Blanks and Field Blanks**

No contaminants were detected in the equipment blanks and field blanks for this analysis.

## **7.3 Comparability**

The laboratory used standard analytical methods for all of the analyses. In all cases, the DLs attained were below the specified LOQs. The comparability of the data is regarded as acceptable.

## **7.4 Completeness**

The completeness level attained for TPHE field samples was 100 percent. This percentage was calculated as the total number of accepted sample results divided by the total number of sample results multiplied by 100.

## **7.5 Sensitivity**

The calibration was evaluated for instrument sensitivity and was determined to be technically acceptable. All laboratory DLs and LOQs met the specified requirements described in the work plan.

## **8.0 METHANE**

A total of 34 water samples were analyzed for methane by Method RSK-175. All methane data were assessed to be valid since none of the 34 total results were rejected based on holding time or QC exceedances. This section discusses the QA/QC supporting documentation as defined by the PARCCS criteria and evaluated based on the PQOs.

### **8.1 Precision and Accuracy**

#### **8.1.1 Instrument Calibration**

The coefficient of determination ( $r^2$ ) was  $\geq 0.990$  in the initial calibration. The %Ds in the initial and continuing calibration verifications met the method acceptance criteria of 20 percent.

The methane results for samples ERH718, ERH719, ERH721, and ERH722 were qualified as non-detected estimated (UJ). The %RSD in the associated initial calibration was outside the method acceptance criteria of 20 percent.

#### **8.1.2 MS/MSD Samples**

MS/MSD was not performed for this analysis.

#### **8.1.3 LCS/LCSD Samples**

All LCS/LCSD %Rs and RPDs were within the acceptance criteria.

#### **8.1.4 Field Duplicate Samples**

Field duplicate samples were not collected for this analysis.

#### **8.1.5 Proficiency Testing Samples**

PT samples were not performed for the sampling event.

#### **8.1.6 Compound Quantitation and Target Identification**

All compound quantitation and target compound identification were found to be acceptable.

In instances where data were diluted by the laboratory, data were qualified as not reportable by the validators in order to yield only one complete set of data for a given sample.

### **8.2 Representativeness**

#### **8.2.1 Holding Times**

The evaluation of holding times to verify compliance with the method was conducted. All holding times were met.

#### **8.2.2 Blanks**

Method blanks and trip blanks were collected and analyzed to evaluate representativeness.

### **8.2.2.1 Method Blanks**

No contaminants were detected in the method blanks for this analysis.

### **8.2.2.2 Trip Blanks**

No contaminants were detected in the trip blanks for this analysis.

## **8.3 Comparability**

The laboratory used standard analytical methods for all of the analyses. In all cases, the DLs attained were below the specified LOQs. The comparability of the data is regarded as acceptable.

## **8.4 Completeness**

The completeness level attained for methane field samples was 100 percent. This percentage was calculated as the total number of accepted sample results divided by the total number of sample results multiplied by 100.

## **8.5 Sensitivity**

The calibration was evaluated for instrument sensitivity and was determined to be technically acceptable. All laboratory DLs and LOQs met the specified requirements described in the work plan.

## **9.0 WET CHEMISTRY**

A total of 17 water samples were analyzed for alkalinity by Standard Method 2320B; anions by EPA Method 300.0; ferrous iron by Standard Method 3500-Fe B; nitrate/nitrite as nitrogen by EPA Method 353.2; and TOC by EPA SW-846 Method 9060A. All wet chemistry data were assessed to be valid since none of the 153 total results were rejected due to holding time or QC exceedances. This section discusses the QA/QC supporting documentation as defined by the PARCCS criteria and evaluated based on the PQOs.

### **9.1 Precision and Accuracy**

#### **9.1.1 Instrument Calibration**

The correlation coefficients in the initial calibrations and percent recoveries in the initial and continued calibration verifications were within the method acceptance criteria of  $\geq 0.995$  and 90-110 percent, respectively.

#### **9.1.2 MS/MSD Samples**

All MS/MSD %Rs and RPDs were within the acceptance criteria.

#### **9.1.3 LCS/LCSD Samples**

All LCS/LCSD %Rs and RPDs were within the acceptance criteria.

#### **9.1.4 Laboratory Duplicate Samples**

DUP and quadruplicate sample analyses were performed for TOC. Results were within the acceptance criteria.

#### **9.1.5 Field Duplicate Samples**

Field duplicates were not collected for these analyses.

#### **9.1.6 Proficiency Testing Samples**

PT samples were not performed for the sampling event.

#### **9.1.7 Sample Result Verification**

All sample results were found to be acceptable.

### **9.2 Representativeness**

#### **9.2.1 Holding Times**

The evaluation of holding times to verify compliance with the method was conducted.

As a result of analysis holding time exceedances, eight nitrate results were qualified as detected estimated (J) or non-detected estimated (UJ). The analysis holding time is 48 hours for nitrate. Results may be biased low in the associated samples.

#### **9.2.2 Blanks**

Method blanks and calibration blanks were analyzed to evaluate representativeness.

##### **9.2.2.1 Method and Calibration Blanks**

As a result of method blank contaminations, one sulfate and thirteen TOC results were qualified as not detected (U).

### **9.3 Comparability**

The laboratory used standard analytical methods for all of the analyses. In all cases, the DLs attained were below the specified LOQs. Target compounds detected below the LOQs flagged (J) by the laboratory should be considered estimated. The comparability of the data is regarded as acceptable.

### **9.4 Completeness**

The completeness level attained for wet chemistry field samples was 100 percent. This percentage was calculated as the total number of accepted sample results divided by the total number of sample results multiplied by 100.

## **9.5 Sensitivity**

The calibration was evaluated for instrument sensitivity and was determined to be technically acceptable. All laboratory DLs and LOQs met the specified requirements described in the work plan.

## **10.0 VARIANCES IN ANALYTICAL PERFORMANCE**

The laboratory used standard analytical methods for all of the analyses throughout the project. No systematic variances in analytical performance were noted in the case narratives.

## **11.0 SUMMARY OF PARCCS CRITERIA**

The validation reports present the PARCCS results for all SDGs. Each PARCCS criterion is discussed in detail in the following sections.

### **11.1 Precision and Accuracy**

Low surrogate %R, MS/MSD %R, and LCS/LCSD %R indicate that the associated VOC and DRO results may be biased low in the associated samples.

Bias cannot be determined for MEE, GRO, and methane results due to initial calibration % RSD, initial calibration verification %D, and LCS/LCSD RPD outside the acceptance criteria.

Precision and accuracy were evaluated using data quality indicators such as calibration, surrogates, MS/MSD, LCS/LCSD, FD, and internal standards. The precision and accuracy of the data set were considered acceptable after integration of qualification of estimated results as noted above.

### **11.2 Representativeness**

All samples for each method and matrix were evaluated for holding time compliance. All holding times were met with the exceptions noted in Section 9.2.1. All samples were associated with a method blank in each individual SDG. The representativeness of the project data is considered acceptable.

### **11.3 Comparability**

Sampling frequency requirements were met in obtaining field duplicates and necessary field blanks. The laboratory used standard analytical methods for their analyses. The analytical results were reported in correct standard units. The overall comparability is considered acceptable.

#### 11.4 Completeness

Of the 617 total results reported, none of the results were rejected. The completeness for all SDGs is as follows:

<b>Parameter</b>	<b>Total Analytes</b>	<b>No. of Rejects</b>	<b>% Completeness</b>
BTEX	168	0	100
Phenol & TICs	66	0	100
PAH	72	0	100
MEE	24	0	100
GRO	42	0	100
TPH as Extractables	58	0	100
Methane	34	0	100
Wet Chemistry	153	0	100
<b>Total</b>	<b>617</b>	<b>0</b>	<b>100</b>

The completeness percentage based on rejected data met the 90 percent PQO goal. A less quantifiable loss of data occurred in the application of blank qualifications as noted in Sections 3.2.2.1 and 9.2.2.1.

#### 11.5 Sensitivity

Sensitivity was achieved by the laboratory to support the PQOs. Calibration concentrations, DLs, LODs and LOQs met the project requirements and low level contamination in the method blanks did not affect sensitivity.

Table I. Sample Cross-Reference

LDC	SDG	Client Sample ID	Lab Sample ID	Matrix	Sample Date	QC Type	Validation Level	BTEX (8260B)	Phenol and TIC (8270D)	PAH (8270D SIM)	MEE (8270D)	GRO (8260B)	TPHE (8015B)	TPHE SGCU (8015B)	Methane (RSK 175)	Anions (300.0)	NO3/NO2 as N (353.2)	Alkalinity (2320B)	Ferrous Iron (3500-FE-B)	TOC (9060A)
44152A	87650/18L0338	ERH719	AZ84057/18L0338-01	Water	12/12/18	FD1	Level D	X	X	X	X	X	X	X	X	X	X	X	X	X
44152A	87650	ERH718	AZ84058	Water	12/12/18	TB	Level C	X				X			X					
44152A	87650	ERH720	AZ84059	Water	12/12/18	FD1	Level C	X	X	X	X	X	X							
44152A	87650	ERH721	AZ84060	Water	12/13/18	TB	Level C	X				X			X					
44152A	87650/18L0338	ERH722	AZ84061/18L0338-02	Water	12/13/18	FD2	Level C	X	X	X	X	X	X		X	X	X	X	X	X
44152A	87650	ERH723	AZ84062	Water	12/13/18	FD2	Level C	X	X	X	X	X	X	X						
44415A	87918	ERH744	AZ85417	Water	01/21/19	TB	Level C	X				X			X					
44415A	87918	ERH745	AZ85418	Water	01/21/19		Level C	X	X	X	X	X	X		X	X	X	X	X	X
44415A	87918	ERH746	AZ85419	Water	01/21/19	TB	Level C	X				X			X					
44415A	87918	ERH747	AZ85420	Water	01/21/19		Level C	X	X	X	X	X	X		X	X	X	X	X	X
44415B	87932	ERH737	AZ85519	Water	01/21/19	TB	Level C	X				X			X					
44415B	87932	ERH738	AZ85520	Water	01/21/19	FD3	Level C	X	X	X	X	X	X	X	X	X	X	X	X	X
44415B	87932	ERH739	AZ85521	Water	01/21/19	FD3	Level C	X	X	X	X	X	X	X						
44415B	87932	ERH742	AZ85522	Water	01/21/19	TB	Level C	X				X			X					
44415B	87932	ERH743	AZ85523	Water	01/21/19		Level D	X	X	X	X	X	X		X	X	X	X	X	X
44415B	87932	ERH750	AZ85524	Water	01/21/19	TB	Level C	X				X			X					
44415B	87932	ERH751	AZ85525	Water	01/21/19		Level C	X	X	X	X	X	X		X	X	X	X	X	X
44415B	87932	ERH752	AZ85526	Water	01/22/19	TB	Level C	X				X			X					
44415B	87932	ERH753	AZ85527	Water	01/22/19		Level C	X	X	X	X	X	X		X	X	X	X	X	X
44408A	87940	ERH729	AZ85561	Water	01/23/19	TB	Level C	X				X			X					
44408A	87940	ERH730	AZ85562	Water	01/23/19	FD4	Level C	X	X	X	X	X	X		X	X	X	X	X	X
44408A	87940	ERH731	AZ85563	Water	01/23/19	FD4	Level C	X	X	X	X	X	X							
44408A	87940	ERH735	AZ85564	Water	01/22/19	TB	Level C	X				X			X					
44408A	87940	ERH736	AZ85565	Water	01/22/19		Level C	X	X	X	X	X	X		X	X	X	X	X	X
44408A	87940	ERH740	AZ85566	Water	01/22/19	TB	Level C	X				X			X					
44408A	87940	ERH741	AZ85567	Water	01/22/19		Level D	X	X	X	X	X	X	X	X	X	X	X	X	X
44408A	87940	ERH748	AZ85568	Water	01/23/19	TB	Level C	X				X			X					
44408A	87940	ERH749	AZ85569	Water	01/23/19		Level C	X	X	X	X	X	X		X	X	X	X	X	X
44457A	87956	ERH732	AZ85642	Water	01/24/19	TB	Level C	X				X			X					
44457A	87956	ERH733	AZ85643	Water	01/24/19	FD5	Level D	X	X	X	X	X	X		X	X	X	X	X	X
44457A	87956	ERH734	AZ85644	Water	01/24/19	FD5	Level C	X	X	X	X	X	X							
44457A	87956	ERH756	AZ85645	Water	01/23/19	TB	Level C	X				X			X					



Table I. Sample Cross-Reference

LDC	SDG	Client Sample ID	Lab Sample ID	Matrix	Sample Date	QC Type	Validation Level	BTEX (8260B)	Phenol and TIC (8270D)	PAH (8270D SIM)	MEE (8270D)	GRO (8260B)	TPHE (8015B)	TPHE SGCU (8015B)	Methane (RSK 175)	Anions (300.0)	NO3/NO2 as N (353.2)	Alkalinity (2320B)	Ferrous Iron (3500-FE-B)	TOC (9060A)
44457A	87956	ERH757	AZ85646	Water	01/23/19		Level C	X	X	X	X	X	X		X	X	X	X	X	X
44457A	87956	ERH754	AZ85652	Water	01/24/19	TB	Level C	X				X			X					
44457A	87956	ERH755	AZ85653	Water	01/24/19		Level C	X	X	X	X	X	X		X	X	X	X	X	X
44484A	87986	ERH760	AZ85762	Water	01/28/19	TB	Level C	X				X								
44484A	87986	ERH761	AZ85763	Water	01/28/19	EB	Level C	X	X	X	X	X	X							
44484A	87986	ERH762	AZ85764	Water	01/28/19	FB	Level C	X	X	X	X	X	X							
44484A	87986	ERH763	AZ85765	Water	01/28/19	TB	Level C	X				X			X					
44484A	87986	ERH764	AZ85766	Water	01/28/19		Level C	X	X	X	X	X	X		X	X	X	X	X	X
44517A	88062	ERH758	AZ86199	Water	02/07/19	TB	Level C	X				X			X					
44517A	88062	ERH759	AZ86200	Water	02/07/19		Level C	X	X	X	X	X	X		X	X	X	X	X	X

As a Project Manager or decision-maker, you may use environmental data to accomplish one or more of the following tasks:

- Determine whether a chemical substance is present in an environmental sample at or above some threshold value or action level;
- Verify that a pollutant concentration remains below a permit limit;
- Evaluate potential risks to human health or the environment;
- Monitor changes in concentrations of contaminants; or
- Determine the effectiveness of remediation activities.

Making correct decisions in these cases often depends on the ability of an analytical method to detect and measure extremely low concentrations of a substance.

This Fact Sheet has been prepared to: 1) provide Project Managers and data users with basic information about detection and quantitation concepts; and 2) acquaint the reader with detection and quantitation terminology and requirements contained in the *DoD Quality Systems Manual for Environmental Laboratories (DoD QSM)*, Version 5.1. This information should help clarify the uncertainty associated with reporting low-concentration data. It should also help project teams understand the importance of selecting analytical methods that are sensitive enough for their intended uses, i.e., capable of generating reliable data (data of known precision and bias) at the project-specific decision levels.<sup>1</sup>

### **Measures of Sensitivity – Basic Concepts**

The following terms are used to describe the routine sensitivity of analytical procedures:

- DL – Detection Limit
- LOD – Limit of Detection
- LOQ – Limit of Quantitation

All measures of sensitivity are specific to the analyte, sample matrix, test method, instrumentation, and analyst/laboratory performance. Therefore, analytical performance must be demonstrated for each variable (e.g., it is possible that two “identical” instruments from the same manufacturer may exhibit different sensitivities). A graphical representation of these terms is shown as Figure 1.

The Detection Limit (DL) is the smallest analyte concentration that can be demonstrated to be different from zero or a blank concentration with 99% confidence. At the DL, the false positive rate (Type I error) is 1% (red shaded region in Figure 1). A DL may be used as the lowest

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<sup>1</sup> A discussion on the Minimum Detectable Concentration (or Minimum Detectable Activity) for radiological data is beyond the scope of this Fact Sheet. For a discussion on this, see DoD/DOE QSM 5.1 Module 6, Section 1.5.2.1.1.

concentration for reliably reporting a detection of a specific analyte in a specific matrix with a specific method with 99% confidence.

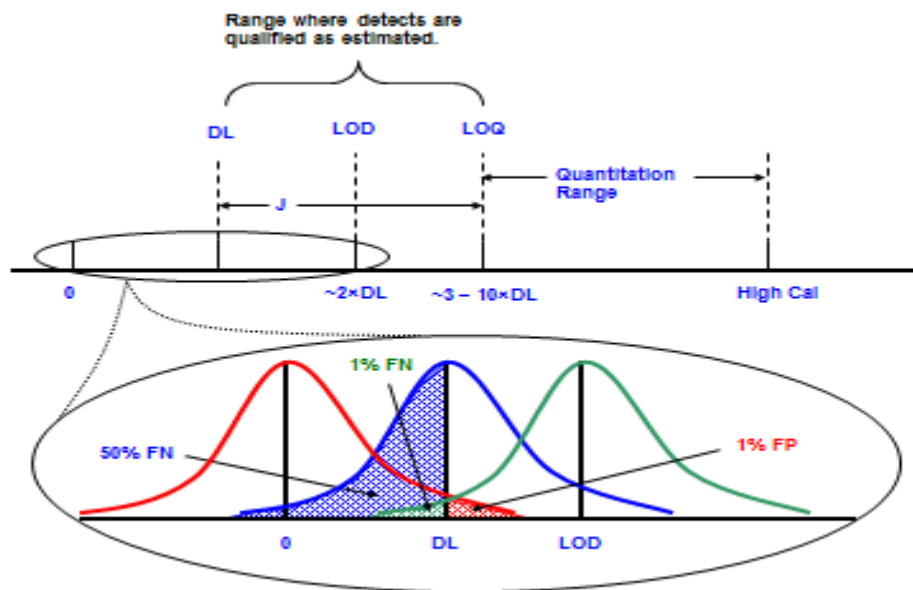


Figure 1: Summary of data quality characteristics below and above DL, LOD, and LOQ. The red trace shows the distribution of results given a sample with a true concentration of zero. The blue trace shows the distribution of results given a sample with a true concentration at the Detection Limit. The green trace shows the distribution of results given a sample with a true concentration at the Limit of Detection. The red shaded region represents those results which would yield a false positive (i.e., the true concentration is zero but the analytical result is detection). The blue and green shaded regions represent those results which would yield a false negative if the true concentration is at the reporting limit and the reporting limit is set at the DL or LOD, respectively (i.e., a sample with a true concentration at the DL has a 50% chance of yielding a false negative, and a sample with a true concentration at the LOD has a 1% chance of yielding a false negative).

Note that for reporting purposes, any result at or above the DL must also meet qualitative identification criteria required by the test method. Although a result at or above the DL indicates that the analyte is present, the absence of a result at or above the DL is inconclusive (i.e., one cannot confidently state whether the analyte is present or absent), because the false negative rate if the analyte is present at the DL is 50% (blue shaded region in Figure 1).

The Limit of Detection (LOD) is defined as the lowest concentration for reliable reporting of a non-detect of a specific analyte in a specific matrix with a specific method at 99% confidence. At the LOD, the false negative rate (Type II error) is 1% (green shaded region in Figure 1). In other words, if a sample has a true concentration at the LOD, there is at least a 99% probability of reporting a “detection” (a measured value  $\geq$  DL) and a 1% chance of falsely reporting a non-detect (a false negative).

For reporting purposes, the failure to obtain a “detection” should be reported as “<LOD,” because the false negative rate at the LOD is only 1%. Reporting the sample result as “<DL,” is inappropriate because the false negative rate at the DL is 50%.

The Limit of Quantitation (LOQ) is the smallest concentration that produces a quantitative result with known and recorded precision and bias. For DoD/DOE projects, the LOQ shall be set at or above the concentration of the lowest initial calibration standard and within the calibration range. Because of the requirements on precision and bias, the LOQ is larger than the LOD<sup>2</sup>; therefore, the following is true:

$$DL < LOD < LOQ$$

Quantitative results, with a known degree of precision and bias, can only be achieved at or above the LOQ. Detections between the DL and the LOQ assure the *presence* of the analyte, but their numeric values are estimates and are therefore indicated as such on test reports. Figure 2 summarizes the differences and the relationship between DL, LOD, and LOQ.

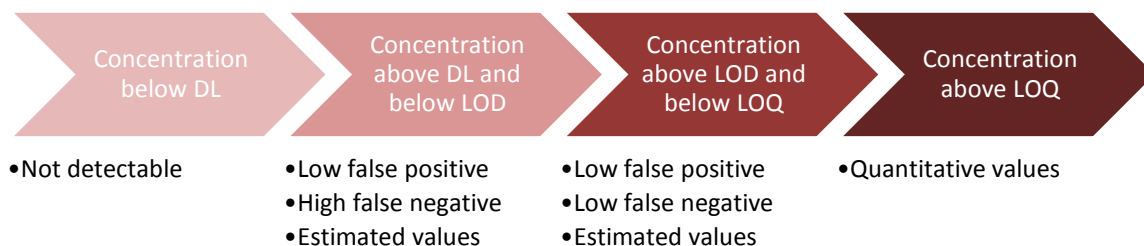


Figure 2: Summary of data quality characteristics below and above DL, LOD, and LOQ.

### Types of Procedures for Estimating Sensitivity

Numerical estimates of the DL, LOD, or LOQ for a specific analyte, matrix, and method can be calculated using various statistical procedures, which involve spiking reagent water or other specific matrix with low concentrations of the analyte of interest. At this time, unfortunately, universally accepted statistical procedures do not exist.

The estimator that has been most commonly used by environmental laboratories is the EPA Method Detection Limit (MDL), which is an approximation of the DL. EPA has defined the MDL as “the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero.”<sup>3</sup> Calculating the MDL at 99% confidence means there is a 1% probability of a false positive when a sample has a result at the MDL. The EPA MDL was designed to protect against false positives; however, it does not protect against false negatives.

<sup>2</sup> See TNI Module 4, Section 1.5.2.2d.

<sup>3</sup> 40 Code of Federal Regulations (CFR) Part 136, Appendix B, rev.2

### **Uses and Limitations of the MDL**

When performed correctly and consistently, MDLs determined using the EPA procedure can be useful for comparing the performance of different laboratories using the same methods or the performance of different methods within the same laboratory. Laboratories typically determine the MDL in reagent water, resulting in a “best-case” MDL, which provides limited information about method performance on real-world samples.

The EPA MDL procedure as originally defined in 40 CFR Part 136, (Appendix B, 1984) has been criticized as a poor estimator of the DL for numerous reasons including but not limited to:

1. It is a single laboratory, short-term estimator that fails to account for analytical bias, changing instrument conditions or analyst skill.
2. It assumes uniform variance across all possible spike concentrations, failing to account for the fact that variance changes at higher concentrations.
3. It assumes that measured values at the spike concentration are normally distributed. By using the procedure and spiking at very low concentrations, laboratories have been able to calculate MDLs that cannot be achieved in practice.
4. It does not require a demonstration of the ability to detect an analyte at the calculated MDL.
5. It is not reproducible from day-to-day, lab-to-lab, etc.

Since 2000 the EPA has increased efforts to address these issues. In 2016 the EPA updated the MDL procedure in 40 CFR 136 which did include provisions for addressing background contamination, multiple analysts and instruments, and included verification requirements; however, the MDL calculation of spikes remains unchanged.

### **DoD QSM Requirements**

Requirements for the DL, LOD and the LOQ which are designed to address some of the concerns discussed in the previous paragraph are contained in DoD QSM Module 4 Sections 1.5.2.1 and 1.5.2.2. Requirements that may be of particular note to Project Managers and Data Users are:

- Laboratories are required to verify measures of sensitivity, in terms of the LOD and LOQ, at least quarterly.
- Laboratories shall establish a detection limit (DL) for each suite of analyte-matrix-method, including surrogates. The DL shall be used to determine the LOD for each analyte and matrix as well as for all preparatory and cleanup methods routinely used on samples.
- After each DL determination, the laboratory must establish the LOD. It is specific to each suite of analyte, matrix, and method (including sample preparation).
- The laboratory must establish the LOD by spiking a quality system matrix at a concentration of at least 2 times but no greater than four times the DL.
- The signal to noise (S/N) ratio at the LOD must be at least three, and the results must meet all method requirements for analyte identification.

- The DL and LOD must be reported for all analyte-matrix-method suites unless it is not applicable to the test or specifically excluded by project requirements.
- The laboratory procedure for establishing the LOQ must empirically demonstrate precision and bias at the LOQ for each suite of analyte-matrix-method, including surrogates. The LOQ and associated precision and bias must meet client requirements and must be reported. If the method is modified, precision and bias at the new LOQ must be demonstrated and reported. For DoD/DOE projects, the LOQ must be set within the calibration range, including the lowest calibration level.

### **Establishing Project-Specific Requirements for Method Sensitivity**

Project teams should establish their project-specific requirements for method sensitivity in terms of a Reporting Limit (RL) for each analyte and matrix. As defined in the DoD QSM, the RL is a customer-specified lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix. The RL cannot be less than the LOQ, if precision and bias of the RL and the LOQ are identical. If the LOQ for a particular analytical method or laboratory cannot meet the RL, then a project team has four options:

1. Consult with the laboratory to improve method performance or modify the method to achieve a lower LOQ.
2. Select a different method with an LOQ less than or equal to the RL.
3. Raise the RL.
4. If no other options are available to meet project needs, allow for increased level of uncertainty such that adjusted LOQ can meet RL. This LOQ must be verified.

Please note that precision and bias must be taken into consideration when assessing the LOQ versus the RL. Also note that data below the RL may be reported; however, they are estimated values if less than the LOQ. Although data reporting and flagging requirements are project-specific, all reported LOD and LOQ shall be adjusted for the size of sample aliquots, concentration/dilution factors, and percent solids.

### **Reporting and Flagging Analytical Data**

The following example (based on QSM 5.1 Module 2 section 5.10.3.1.1) illustrates the proper use of the “U” and “J” data qualifier flags for non-detect and estimated analytical results, respectively.

Data Qualifier flags in this example are defined as:

U- Analyte was not detected and is reported as less than the LOD or as defined by the customer. The LOD has been adjusted for any dilution or concentration of the sample.

J- The reported result is an estimated value (e.g. matrix interference was observed, or the analyte was detected at a concentration outside the calibration range).

Example: Detection Limit (DL) = 2, Limit of Detection (LOD) = 4, Limit of Quantitation (LOQ) = 20, Reporting Limit (RL) for the project = 30, with precision and bias of the LOQ meeting precision and bias of the RL. All samples are undiluted.

Sample #1:	Analytical Result: Non-detect	Reported Result: 4U
Sample #2:	Analytical Result: 2	Reported Result: 2J
Sample #3:	Analytical Result: 10	Reported Result: 10J
Sample #4:	Analytical Result: 20	Reported Result: 20
Sample #5:	Analytical Result: 30	Reported Result: 30

Note that the laboratory may use additional data qualifiers or different letters or symbols to denote the qualifiers as long as they are appropriately defined and their use is consistent with project-specific requirements. Additionally, the laboratory-defined data qualifiers are for laboratory use only. Data usability must be determined by the project team.

### **Understanding and Documenting Uncertainty for Low-Concentration Data**

As mentioned above, detection and quantitation limits are laboratory specific. The following are some steps Project Managers can take to document measurement uncertainty for low concentration data.

- As part of the laboratory selection process, provide the laboratory with project-specific RLs, including precision and bias, for each analyte and matrix. Ask the laboratory to provide its DL, LOD, and LOQ with associated precision and bias for each target analyte in each matrix of concern (e.g., reagent water, clean sand, etc.) and verify that these values meet project-specific RLs. Request laboratory SOPs for establishing the DL and for establishing and verifying the LOD and LOQ.
- Ask the laboratory to verify the LOD by processing an LOD verification check sample with each batch of samples. This is a quality control sample that is spiked at a concentration at or slightly above the LOD to evaluate whether the analyte of interest is in fact “detectable” in the matrix of interest. To accurately report non-detects, set the reporting for non-detects to “less than the LOD” or report the LOD with a “U” flag.
- If the project involves the collection of unusual or difficult matrices, or if the project-specific RL is near the LOQ, ask the laboratory to verify the LOQ in the project-specific matrix by analyzing a minimum of four replicate samples with known concentrations at the LOQ.
- Review low concentration raw data (e.g., chromatograms). If a result is reported above the DL, make sure that the signal-to-noise ratio is at least 3.
- Compare sample result with blank results. If sample results (including chromatograms) cannot be distinguished from blank results, the data may not be useable for decision making.