

Energy Laboratories Inc

ANALYTICAL RUN Summary

20-Sep-21

Run ID FID-HEADSPACE_210120A

Run Start Date: 1/20/2021
 Analyst: Jeff Whitmer
 Ical:
 Column ID: porapak Q
 Comments: thermometer used for temp:S94278.

Instrument ID	Description
1000_SGE_041819	1000 mL SGE Syringe _ Gas Tight

Std ID	Std Name	Std Amount	Std Units	Samp Amount	Samp Units	SampType	Expiration Date
10711	HC-Methane-W-CCV	0.3	ml			lcs	8/9/2022
12173	HC-Methane-W-CCV	0.3	ml			CCV	11/23/2023

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
14188877	MBLK	HC-METHANE-	MBLK		1/20/2021 11:50:	1	R355741		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Ethane	A	mg/L		0			0	0	0.00031	0.001	0	0%	0	0	0%	
Ethene	A	mg/L		0			0	0	0.00023	0.001	0	0%	0	0	0%	
Methane	A	mg/L		0			0	0	0.000704	0.001	0	0%	0	0	0%	
Ethylene	X	mg/L		0			0	0	0.001	0.001	0	0%	0	0	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
14188879	Cal1	HC-METHANE-	CAL1		1/20/2021 11:54:	1	R355741		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Ethane	A	ppm		2.66692829		2.5	0	0	2	2	0	107%	50	150	0%	
Ethene	A	ppm		2.68217219		2.5	0	0	2	2	0	107%	50	150	0%	
Methane	A	ppm		2.9330938		2.5	0	0	2	2	0	117%	50	150	0%	
Ethylene	X	ppm		2.68217219		1000	0	0	2	2	0	0%	0	0	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
14188881	Cal2	HC-METHANE-	CAL2		1/20/2021 12:00:	1	R355741		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q

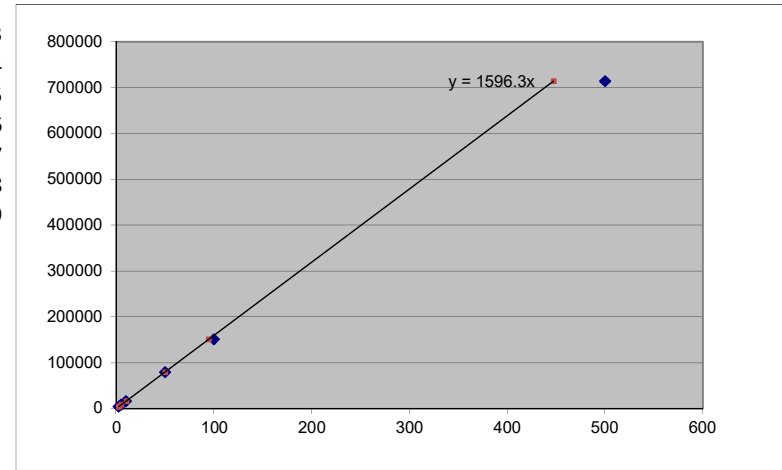
Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
14188881	Cal2	HC-METHANE-	CAL2		1/20/2021 12:00:	1	R355741		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Ethane	A	ppm		5.15876183		5	0	0	2	2	0	103%	85	115	0%	
Ethene	A	ppm		5.18455183		5	0	0	2	2	0	104%	85	115	0%	
Methane	A	ppm		5.47590194		5	0	0	2	2	0	110%	85	115	0%	
Ethylene	X	ppm		5.18455183		1000	0	0	2	2	0	1%	0	0	0%	S
Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
14188883	Cal3	HC-METHANE-	CAL3		1/20/2021 12:04:	1	R355741		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Ethane	A	ppm		10.3740375		10	0	0	2	2	0	104%	85	115	0%	
Ethene	A	ppm		10.2107455		10	0	0	2	2	0	102%	85	115	0%	
Methane	A	ppm		10.5521213		10	0	0	2	2	0	106%	85	115	0%	
Ethylene	X	ppm		10.2107455		1000	0	0	2	2	0	1%	0	0	0%	S
Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
14188885	Cal4	HC-METHANE-	CAL4		1/20/2021 12:09:	1	R355741		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Ethane	A	ppm		50.4828227		50	0	0	2	2	0	101%	85	115	0%	
Ethene	A	ppm		50.7731613		50	0	0	2	2	0	102%	85	115	0%	
Methane	A	ppm		49.9741048		50	0	0	2	2	0	100%	85	115	0%	
Ethylene	X	ppm		50.7731613		1000	0	0	2	2	0	5%	0	0	0%	S
Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
14188887	Cal5	HC-METHANE-	CAL5		1/20/2021 12:14:	1	R355741		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Ethane	A	ppm		96.640217		100	0	0	2	2	0	97%	85	115	0%	
Ethene	A	ppm		96.3665695		100	0	0	2	2	0	96%	85	115	0%	
Methane	A	ppm		94.8118498		100	0	0	2	2	0	95%	85	115	0%	
Ethylene	X	ppm		96.3665695		1000	0	0	2	2	0	10%	0	0	0%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
14188889	Cal6	HC-METHANE-	CAL6		1/20/2021 12:22:	1	R355741		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Ethane	A	ppm		444.006974		500	0	0	2	2	0	89%	85	115	0%	
Ethene	A	ppm		445.008645		500	0	0	2	2	0	89%	85	115	0%	
Methane	A	ppm		447.326874		500	0	0	2	2	0	89%	85	115	0%	
Ethylene	X	ppm		445.008645		1000	0	0	2	2	0	45%	0	0	0%	S
Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
14188891	Cal7	HC-METHANE-	CAL7		1/20/2021 12:31:	1	R355741		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	ppm		834.11562		1000	0	0	2	2	0	83%	85	115	0%	S
Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
14188893	LCS	HC-METHANE-	CCV		1/20/2021 12:36:	1	R355741		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Ethane	A	ppm		97.2572953		100	0	0	2	2	0	97%	85	115	0%	
Ethene	A	ppm		97.1407652		100	0	0	2	2	0	97%	85	115	0%	
Methane	A	ppm		96.8898234		100	0	0	2	2	0	97%	85	115	0%	
Ethylene	X	ppm		97.1407652		1000	0	0	2	2	0	10%	85	115	0%	S

Inst ID FID-HeadSpace

Curve Data for samples analyzed after 1/29/2021

Blank,cts	STD ID					
0	#12173	1000000				
Decimal	Sample	Response	Date/Time	Run Id		
Amnt, Injtd	Conc ppm	Area				
Equivalent		Counts				
300ul						
0.0000025	2.5	4682	1872.8	1/21/2021 11:54	16483	
0.000005	5	8741	1748.2	1/21/2021 12:00	16484	
0.00001	10	16844	1684.4	1/21/2021 12:04	16485	
0.00005	50	79772	1595.44	1/21/2021 12:09	16486	
0.0001	100	151345	1513.45	1/21/2021 12:14	16487	
0.0005	500	714053	1428.106	1/21/2021 12:22	16488	
0.001	1000	1331471	1331.471	1/21/2021 12:31	16489	



		StdDev	188.2268
Methane	MW= 16.04	Avg RF	1596.267
		%RSD	11.79169

Calculated Recoveries			
[PPM]	Area Cnts	PPM	% recovery
2.5	4682	2.933094	1.1732375
5	8741	5.475902	1.0951804
10	16844	10.55212	1.0552121
50	79772	49.9741	0.9994821
100	151345	94.81185	0.9481185
500	714053	447.3269	0.8946537
1000	1331471	834.1156	0.8341156

Sample	Area Count	Dilution	Temperature (°C)	Concentration ppm and mg/L	Date and Time	Analyst	Sample	Test Code	Analyte
MBLK	0	1	20	0	1/20/2021 11:50	jdww	MBLK	HC-METHANE-W	Methane
MBLK	0	1	20	0	1/20/2021 11:50	jdww	MBLK	HC-METHANE-W	Ethane
MBLK	0	1	20	0	1/20/2021 11:50	jdww	MBLK	HC-METHANE-W	Ethene
Cal1	4682	1	20	2.9330938	1/20/2021 11:54	jdww	CCV	HC-METHANE-CCV	Methane
Cal1	8164	1	20	2.66692829	1/20/2021 11:54	jdww	CCV	HC-METHANE-CCV	Ethane
Cal1	8384	1	20	2.68217219	1/20/2021 11:54	jdww	CCV	HC-METHANE-CCV	Ethene
Cal2	8741	1	20	5.47590194	1/20/2021 12:00	jdww	CCV	HC-METHANE-CCV	Methane
Cal2	15792	1	20	5.15876183	1/20/2021 12:00	jdww	CCV	HC-METHANE-CCV	Ethane
Cal2	16206	1	20	5.18455183	1/20/2021 12:00	jdww	CCV	HC-METHANE-CCV	Ethene
Cal3	16844	1	20	10.5521213	1/20/2021 12:04	jdww	CCV	HC-METHANE-CCV	Methane
Cal3	31757	1	20	10.37403746	1/20/2021 12:04	jdww	CCV	HC-METHANE-CCV	Ethane
Cal3	31917	1	20	10.21074545	1/20/2021 12:04	jdww	CCV	HC-METHANE-CCV	Ethene
Cal4	79772	1	20	49.97410476	1/20/2021 12:09	jdww	CCV	HC-METHANE-CCV	Methane
Cal4	154538	1	20	50.48282269	1/20/2021 12:09	jdww	CCV	HC-METHANE-CCV	Ethane
Cal4	158708	1	20	50.7731613	1/20/2021 12:09	jdww	CCV	HC-METHANE-CCV	Ethene
Cal5	151345	1	20	94.81184983	1/20/2021 12:14	jdww	CCV	HC-METHANE-CCV	Methane
Cal5	295835	1	20	96.64021698	1/20/2021 12:14	jdww	CCV	HC-METHANE-CCV	Ethane
Cal5	301225	1	20	96.3665695	1/20/2021 12:14	jdww	CCV	HC-METHANE-CCV	Ethene
Cal6	714053	1	20	447.3268744	1/20/2021 12:22	jdww	CCV	HC-METHANE-CCV	Methane
Cal6	1359194	1	20	444.0069737	1/20/2021 12:22	jdww	CCV	HC-METHANE-CCV	Ethane
Cal6	1391019	1	20	445.0086452	1/20/2021 12:22	jdww	CCV	HC-METHANE-CCV	Ethene
Cal7	1331471	1	20	834.11562	1/20/2021 12:22	jdww	CCV	HC-METHANE-CCV	Methane
LCS	154662	1	20	96.88982337	1/20/2021 12:36	jdww	CCV	HC-METHANE-CCV	Methane
LCS	297724	1	20	97.25729532	1/20/2021 12:36	jdww	CCV	HC-METHANE-CCV	Ethane
LCS	303645	1	20	97.1407652	1/20/2021 12:36	jdww	CCV	HC-METHANE-CCV	Ethene

Calibration
Methane, Ethane,
Ethene
JOW
1/20/2021

*ID MB

* RUN #16482 JAN 20, 2021 11:50:13
START

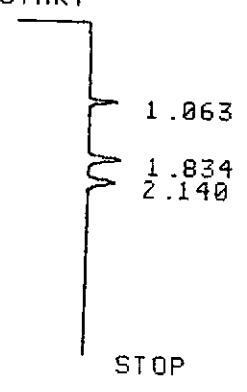


RUN# 16482 JAN 20, 2021 11:50:13

IDENTIFIER : MB
NO RUN PERKS STORED

*ID CAL1-2.5PPM

* RUN #16483 JAN 20, 2021 11:54:22
START



RUN# 16483 JAN 20, 2021 11:54:22

IDENTIFIER : CAL1-2.5PPM
AREA%

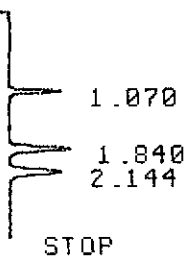
RT	AREA	TYPE	WIDTH	AREA%
1.063	4682	PP	.048	22.05370
1.834	8384	PV	.078	39.49128
2.140	8164	UP	.087	38.45502

TOTAL AREA= 21230
MUL FACTOR=1.0000E+00

*ID CAL2-5PPM

* RUN #16484 JAN 20, 2021 12:00:03

START



RUN# 16484 JAN 20, 2021 12:00:03

IDENTIFIER : CAL2-5PPM

AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.070	8741	UP	.049	21.45610
1.840	16206	PU	.076	39.78006
2.144	15792	UU	.088	38.76384

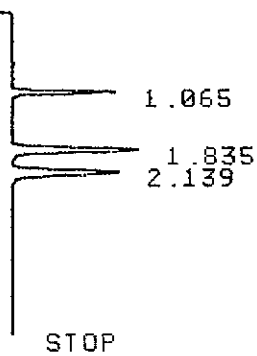
TOTAL AREA= 40739

MUL FACTOR=1.0000E+00

*ID CAL3-10PPM

* RUN #16485 JAN 20, 2021 12:04:08

START



RUN# 16485 JAN 20, 2021 12:04:08

IDENTIFIER : CAL3-10PPM

AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.065	16844	PU	.047	20.91955
1.835	31917	UP	.074	39.63958
2.139	31757	PU	.087	39.44088

TOTAL AREA= 80518

MUL FACTOR=1.0000E+00

*ID CAL4-50PPM

* RUN #16486 JAN 20, 2021 12:09:55

START



RUN# 16486 JAN 20, 2021 12:09:55

IDENTIFIER : CAL4-50PPM
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.070	79772	PB	.046	20.29729
1.840	158708	PB	.075	40.38187
2.145	154538	BB	.087	39.32085

TOTAL AREA= 393018
MUL FACTOR=1.0000E+00

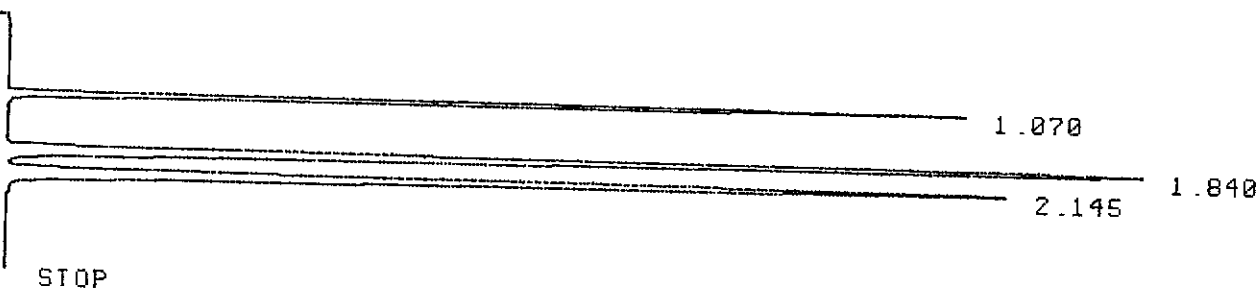
*CAL5-100PPM

INVALID SYSTEM COMMAND

*ID CAL5-100PPM

* RUN #16487 JAN 20, 2021 12:14:46

START



RUN# 16487 JAN 20, 2021 12:14:46

IDENTIFIER : CAL5-100PPM
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.070	151345	PB	.047	20.22234
1.840	301225	PB	.075	40.24893
2.145	295835	BB	.088	39.52874

TOTAL AREA= 748405
MUL FACTOR=1.0000E+00

*ID CAL6-500PPM

* RUN #16488 JAN 20, 2021 12:22:48
START



RUN# 16488 JAN 20, 2021 12:22:48

IDENTIFIER : CAL6-500PPM
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.070	714053	PB	.047	20.61195
1.838	1391019	PB	.077	40.15334
2.141	1359194	BB	.090	39.23469

TOTAL AREA=3464266
MUL FACTOR=1.0000E+00

*ID CAL7-1000PPM

* RUN #16489 JAN 20, 2021 12:31:25
START



RUN# 16489 JAN 20, 2021 12:31:25

IDENTIFIER : CAL7-1000PPM
AREA%

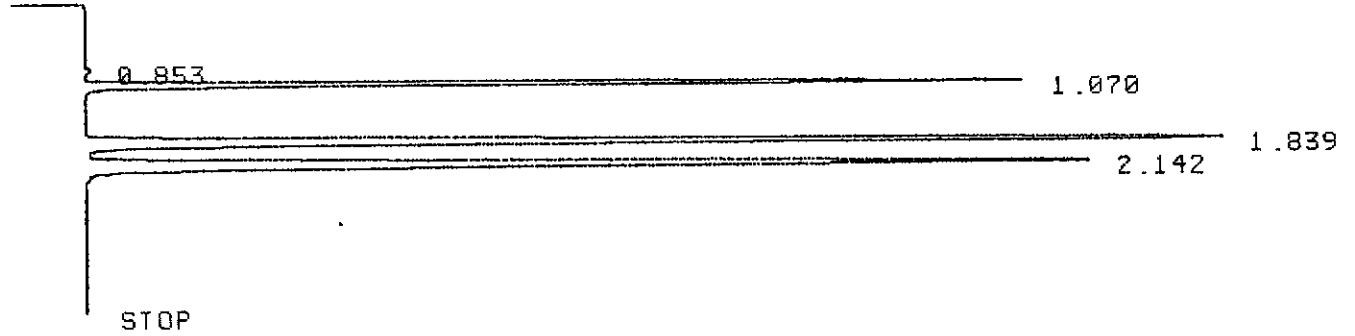
RT	AREA	TYPE	WIDTH	AREA%
1.070	1331471	PB	.049	21.86052

2.139 2333118 UB .095 37.95542
2.999 795 PP .068 .01293

TOTAL AREA=6146995
MUL FACTOR=1.0000E+00

*ID 10711-LCS

* RUN #16490 JAN 20, 2021 12:36:18
START



RUN# 16490 JAN 20, 2021 12:36:18

IDENTIFIER : 10711-LCS
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.853	1141	PU	.054	.15069
1.070	154662	BB	.049	20.42627
1.839	303645	BU	.075	40.10251
2.142	297724	UU	.088	39.32053

TOTAL AREA= 757172
MUL FACTOR=1.0000E+00

*

Energy Laboratories Inc

ANALYTICAL RUN Summary

17-Feb-22

Run ID FID-HEADSPACE_220215A

Run Start Date: 2/15/2022
Analyst: Jeff Whitmer
Ical:
Column ID: porapak Q
Comments: See Preservation Comment column for sample pH; thermometer used for temp:S94278.

Instrument ID	Description
1000_SGE_041819	1000 mL SGE Syringe _ Gas Tight

Std ID	Std Name	Std Amount	Std Units	Samp Amount	Samp Units	SampType	Expiration Date
10711	HC-Methane-W-CCV	0.3	ml			lcs	8/9/2022
12173	HC-Methane-W-CCV	0.3	ml			CCV	11/23/2023

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15038421	CCV	HC-METHANE-	CCV		2/15/2022 9:14:0	1	R374776		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	ppm		94.1008158		100	0	0	2	2	0	94%	85	115	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15038422	LCS	HC-METHANE-	LCS		2/15/2022 9:19:0	1	R374776		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	ppm		99.4451607		100	0	0	2	2	0	99%	85	115	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15038423	LCSD	HC-METHANE-	LCSD		2/15/2022 9:24:0	1	R374776		0	2E+07						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	ppm		99.9576064		100	0	99.445161	2	2	0	100%	85	115	1%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15038424	MBLK	HC-METHANE-	MBLK		2/15/2022 10:27:	1	R374776		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0			0	0	0.000704	0.001	0	0%	0	0	0%	
Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15038425	B22020962-001I	HC-METHANE-	SAMP		2/15/2022 10:33:	1	R374776		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0			0	0	0.000704	0.002	0	0%	0	0	0%	U
Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15038426	B22020962-005	HC-METHANE-	SAMP		2/15/2022 10:39:	1	R374776		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0			0	0	0.000704	0.002	0	0%	0	0	0%	U
Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15038427	B22020962-006I	HC-METHANE-	SAMP		2/15/2022 11:05:	78	R374776		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0.57004616			0	0	0.054912	0.156	0	0%	0	0	0%	
Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15038428	B22020962-006I	HC-METHANE-	DUP		2/15/2022 11:17:	78	R374776		0	2E+07						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0.56122785			0	0.5700462	0.054912	0.156	0	0%	0	0	2%	
Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15038429	B22020962-010	HC-METHANE-	SAMP		2/15/2022 11:37:	1	R374776		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0			0	0	0.000704	0.002	0	0%	0	0	0%	U

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15038430	B22020962-011I	HC-METHANE-	SAMP		2/15/2022 11:43:	1	R374776		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0			0	0	0.000704	0.002	0	0%	0	0	0%	U
Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15038431	B22020962-015	HC-METHANE-	SAMP		2/15/2022 11:54:	1	R374776		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0			0	0	0.000704	0.002	0	0%	0	0	0%	U
Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15038432	B22020962-016I	HC-METHANE-	SAMP		2/15/2022 12:00:	1	R374776		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0			0	0	0.000704	0.002	0	0%	0	0	0%	U
Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15038433	B22020962-020	HC-METHANE-	SAMP		2/15/2022 12:07:	1	R374776		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0			0	0	0.000704	0.002	0	0%	0	0	0%	U
Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15038434	B22020962-021I	HC-METHANE-	SAMP		2/15/2022 12:12:	1	R374776		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0			0	0	0.000704	0.002	0	0%	0	0	0%	U
Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15038435	B22020962-025	HC-METHANE-	SAMP		2/15/2022 12:18:	1	R374776		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0			0	0	0.000704	0.002	0	0%	0	0	0%	U

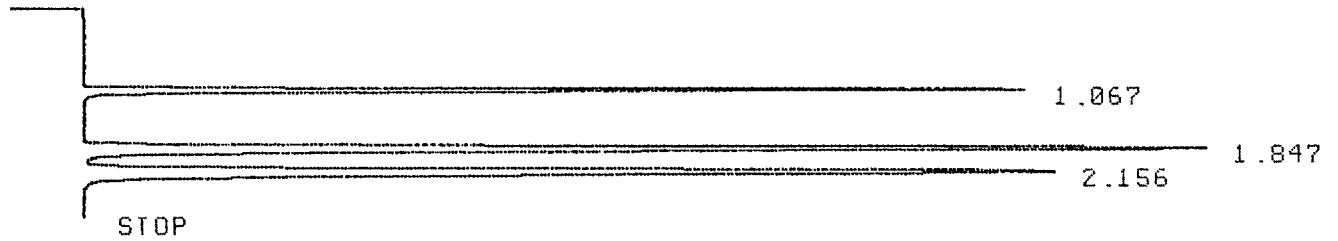
Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15038436	B22020962-026I	HC-METHANE-	SAMP		2/15/2022 12:24:	1	R374776		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0.0570712			0	0	0.000704	0.002	0	0%	0	0	0%	
Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15038437	B22020962-030	HC-METHANE-	SAMP		2/15/2022 12:37:	1	R374776		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0			0	0	0.000704	0.002	0	0%	0	0	0%	U
Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15038438	B22020962-031I	HC-METHANE-	SAMP		2/15/2022 12:42:	1	R374776		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0			0	0	0.000704	0.002	0	0%	0	0	0%	U
Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15038439	B22020962-036	HC-METHANE-	SAMP		2/15/2022 12:49:	1	R374776		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0			0	0	0.000704	0.002	0	0%	0	0	0%	U
Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15038440	CCV	HC-METHANE-	CCV		2/15/2022 12:55:	1	R374776		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	ppm		95.1325982		100	0	0	2	2	0	95%	85	115	0%	

Sample ID	Area Count	Dilution Factor	Temperature (C)	Concentration	Date/Time Analyzed	Analyst	Sample Type	Test Code	Analyte	Headspace Volume	Liquid Volume
CCV	150210	1	20	94.10081577	2/15/2022 9:14	jdw	CCV	HC-METHANE-CCV	Methane		
LCS	158741	1	20	99.44516075	2/15/2022 9:19	jdw	LCS	HC-METHANE-CCV	Methane		
LCSD	159559	1	20	99.95760644	2/15/2022 9:24	jdw	LCSD	HC-METHANE-CCV	Methane		
MBLK	613	1	20	8.91928E-05	2/15/2022 10:27	jdw	MBLK	HC-METHANE-W	Methane	10	32
B22020962-001I	594	1	20	-2.76454E-06	2/15/2022 10:33	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22020962-005A	1143	1	20	7.71162E-05	2/15/2022 10:39	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22020962-006I	50841	78	20	0.570046158	2/15/2022 11:05	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22020962-006IDUP	50064	78	20	0.561227852	2/15/2022 11:17	jdw	DUP	HC-METHANE-W	Methane	10	32
B22020962-010A	1054	1	20	6.41665E-05	2/15/2022 11:37	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22020962-011I	871	1	20	3.75396E-05	2/15/2022 11:43	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22020962-015A	1190	1	20	8.39548E-05	2/15/2022 11:54	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22020962-016I	1011	1	20	5.79099E-05	2/15/2022 12:00	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22020962-020A	946	1	20	4.84522E-05	2/15/2022 12:07	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22020962-021I	986	1	20	5.42723E-05	2/15/2022 12:12	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22020962-025A	817	1	20	2.96824E-05	2/15/2022 12:18	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22020962-026I	392849	1	20	0.057071198	2/15/2022 12:24	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22020962-030A	1010	1	20	5.77644E-05	2/15/2022 12:37	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22020962-031I	1154	1	20	7.87167E-05	2/15/2022 12:42	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22020962-036A	904	1	20	4.23411E-05	2/15/2022 12:49	jdw	SAMP	HC-METHANE-W	Methane	10	32
CCV	151857	1	20	95.13259823	2/15/2022 12:55	jdw	CCV	HC-METHANE-CCV	Methane		

*ID 12173-500X-CCU

JDW
2/15/2022

* RUN #19337 FEB 15, 2022 09:14:32
START



RUN# 19337 FEB 15, 2022 09:14:32

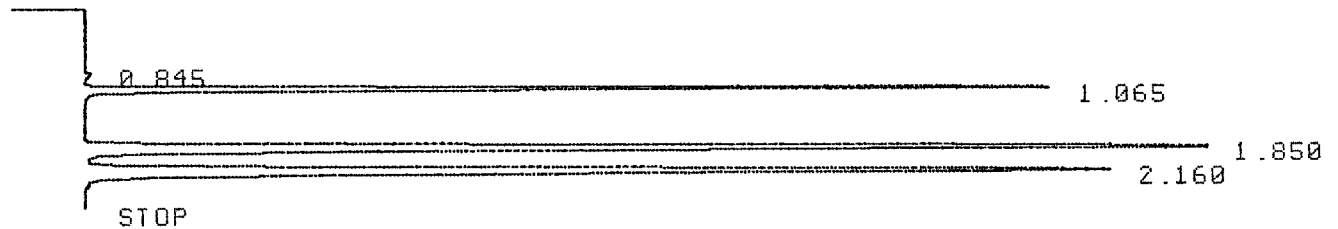
IDENTIFIER : 12173-500X-C
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.067	150210	PB	.047	20.08150
1.847	301307	PU	.076	40.28157
2.156	296485	UB	.089	39.63693

TOTAL AREA= 748002
MUL FACTOR=1.0000E+00

*ID 10711-LCS

* RUN #19338 FEB 15, 2022 09:19:50
START



RUN# 19338 FEB 15, 2022 09:19:50

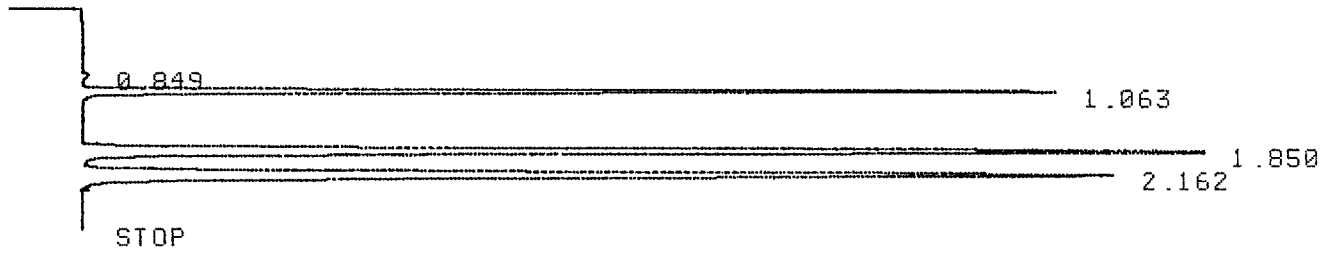
IDENTIFIER : 10711-LCS
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.845	1224	UP	.053	.15576
1.065	158741	PB	.048	20.20061
1.850	316248	PB	.075	40.24419
2.160	309610	BB	.088	39.39946

TOTAL AREA= 785823
MUL FACTOR=1.0000E+00

*
*ID 10711-LCSD

* RUN #19339 FEB 15, 2022 09:24:30
START



RUN# 19339 FEB 15, 2022 09:24:30

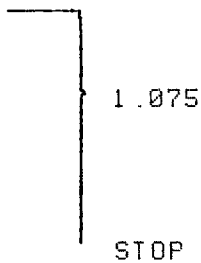
IDENTIFIER : 10711-LCSD
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.849	1422	PU	.063	.18037
1.063	159559	PB	.048	20.23892
1.850	316316	BB	.075	40.12243
2.162	311080	BP	.088	39.45829

TOTAL AREA= 788377
MUL FACTOR=1.0000E+00

*ID MB

* RUN #19340 FEB 15, 2022 10:27:05
START



RUN# 19340 FEB 15, 2022 10:27:05

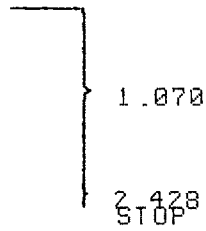
IDENTIFIER : MB
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.075	613	BP	.054	100.00000

TOTAL AREA= 613
MUL FACTOR=1.0000E+00

*
*ID 962-1I

* RUN #19341 FEB 15, 2022 10:33:14
START



RUN# 19341 FEB 15, 2022 10:33:14

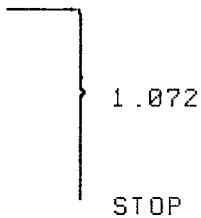
IDENTIFIER : 962-1I
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.070	594	BP	.039	100.00000

TOTAL AREA= 594
MUL FACTOR=1.0000E+00

*ID 962-5A

* RUN #19342 FEB 15, 2022 10:39:08
START



RUN# 19342 FEB 15, 2022 10:39:08

IDENTIFIER : 962-5A
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.072	1143	UP	.068	100.00000

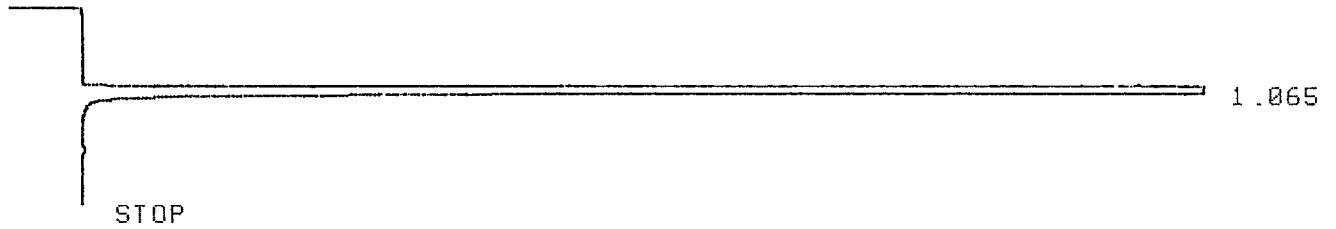
TOTAL AREA= 1143
MUL FACTOR=1.0000E+00

*

*ID ID 962-6I

* RUN #19343 FEB 15, 2022 10:46:32

START



RUN# 19343 FEB 15, 2022 10:46:32

IDENTIFIER : ID 962-6I

AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.065	2817126	PB	.054	100.00000

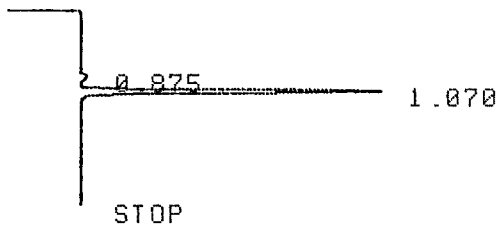
TOTAL AREA=2817126

MUL FACTOR=1.0000E+00

*ID 962-6I-78X

* RUN #19344 FEB 15, 2022 11:05:59

START



RUN# 19344 FEB 15, 2022 11:05:59

IDENTIFIER : 962-6I-78X

AREA%

RT	AREA	TYPE	WIDTH	AREA%
.875	2196	PV	.089	4.14051
1.070	50841	UU	.049	95.85949

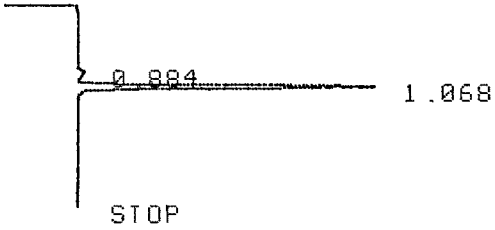
TOTAL AREA= 53037

MUL FACTOR=1.0000E+00

STOP

*ID 962-6I-78XDUP

* RUN #19345 FEB 15, 2022 11:17:57
START



RUN# 19345 FEB 15, 2022 11:17:57

IDENTIFIER : 962-6I-78XDU
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.884	1528	PU	.065	2.96170
1.068	50064	BB	.049	97.03830

TOTAL AREA= 51592
MUL FACTOR=1.0000E+00

* PLOT



*

*ID 962-15A

* RUN #19348 FEB 15, 2022 11:54:19
START

┌───┐
│ 0.525
│ } 1.065
│
└───┘
STOP

RUN# 19348 FEB 15, 2022 11:54:19

IDENTIFIER : 962-15A
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.525	437	PU	.055	26.85926
1.065	1190	UU	.060	73.14074

TOTAL AREA= 1627
MUL FACTOR=1.0000E+00

*ID 962-16I

* RUN #19349 FEB 15, 2022 12:00:04
START

┌───┐
│ 1.066
│
└───┘
STOP

RUN# 19349 FEB 15, 2022 12:00:04

IDENTIFIER : 962-16I
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.066	1011	UU	.065	100.00000

TOTAL AREA= 1011
MUL FACTOR=1.0000E+00

1.065
1.838
2.035
STOP

RUN# 19352 FEB 15, 2022 12:18:41

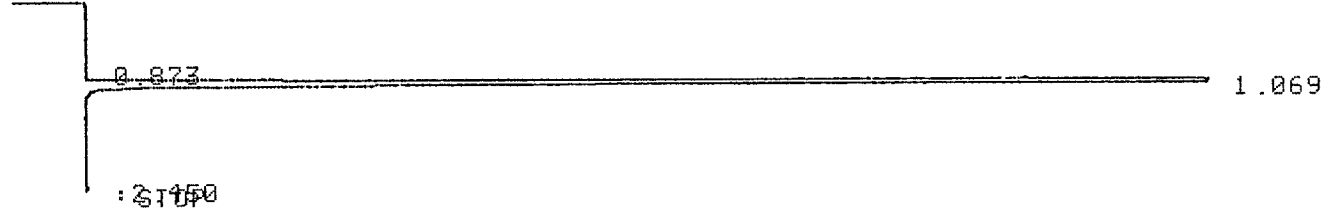
IDENTIFIER : 962-25A
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.065	817	PU	.051	47.44483
1.838	411	I PB	.033	23.86759
2.035	494	PU	.045	28.68758

TOTAL AREA= 1722
MUL FACTOR=1.0000E+00

*ID 962-26I

* RUN #19353 FEB 15, 2022 12:24:38
START



RUN# 19353 FEB 15, 2022 12:24:38

IDENTIFIER : 962-26I
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.873	498	PU	.066	.12661
1.069	392849	PB	.047	99.87341

TOTAL AREA= 393347
MUL FACTOR=1.0000E+00

* PLOT



STOP

* PLOT

STOP

*ID 962-30A

* RUN #19354 FEB 15, 2022 12:37:12
START

1.066

:STOP

RUN# 19354 FEB 15, 2022 12:37:12

IDENTIFIER : 962-30A

AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.066	1010	I PB	.065	100.00000

TOTAL AREA= 1010
MUL FACTOR=1.0000E+00

*

*ID 962-31I

* RUN #19355 FEB 15, 2022 12:42:51
START

┌───┐
│ │ } 1.068
│ │
└───┘
STOP

RUN# 19355 FEB 15, 2022 12:42:51

IDENTIFIER : 962-31I
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.068	1154	PP	.054	100.00000

TOTAL AREA= 1154
MUL FACTOR=1.0000E+00

*ID 962-36A

* RUN #19356 FEB 15, 2022 12:49:15
START

┌───┐
│ │ } 1.065
│ │
└───┘
STOP

RUN# 19356 FEB 15, 2022 12:49:15

IDENTIFIER : 962-36A
AREA%

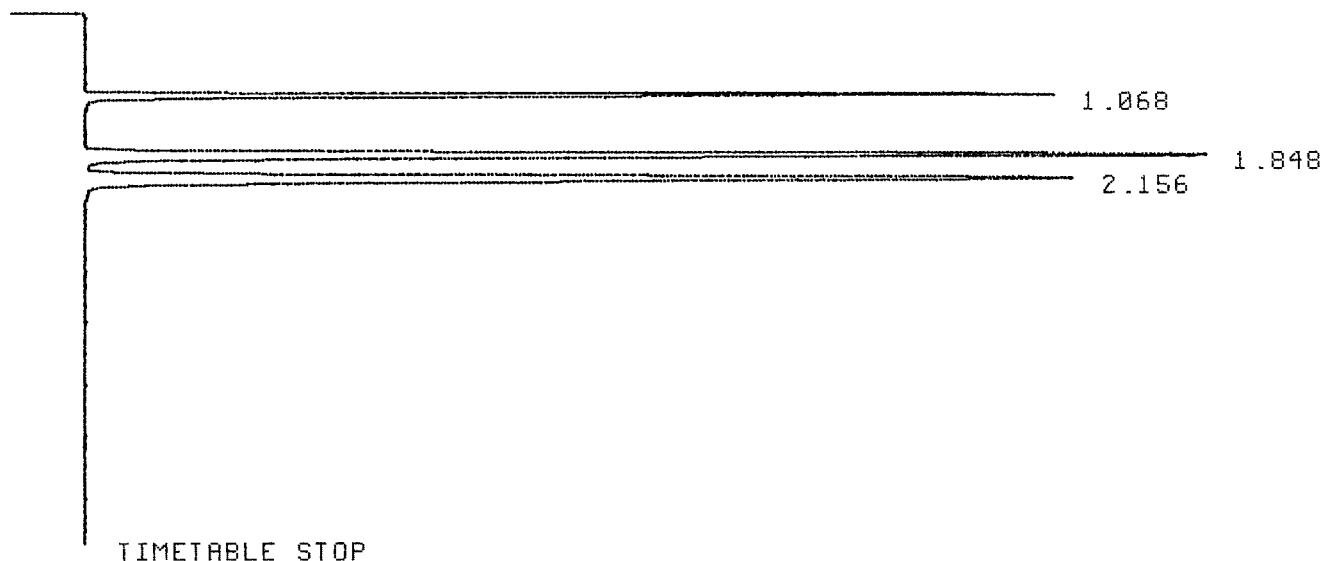
RT	AREA	TYPE	WIDTH	AREA%
1.065	904	UU	.054	100.00000

TOTAL AREA= 904
MUL FACTOR=1.0000E+00

*

*ID 12173-500X-CCU

* RUN #19357 FEB 15, 2022 12:55:17
START



RUN# 19357 FEB 15, 2022 12:55:17

IDENTIFIER : 12173-500X-C
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.068	151857	BB	.046	20.13322
1.848	303500	UU	.076	40.23805
2.156	298904	UB	.088	39.62872

TOTAL AREA= 754261
MUL FACTOR=1.0000E+00

*

Energy Laboratories Inc

Spike LOG

Standard ID: 12173
 Standard Name: HC-Methane-W-CCV
 Date Prepared: 11/22/2019
 Date Expires: 11/23/2023
 Department: GAS
 Vendor: Matheson
 Lot Number: 109-96-04454
 Balance ID:

Type: Primary
 BY:
 Status: New

Comments: CCV Gas Standard for Methane, Ethene, Ethane: 50000ppm stock diluted from 100 - 500ppm with Helium for CCV. Diluted from 2.5ppm - 1000ppm with Helium for Calibration.

Chemical / Solvent Used	BottleNo	Amt	Units	Exp
3 Multi-Component Gas Standard in Ni	12173		mL	11/23

Final Volume: mL

Stock Source

Base Units

Amount Added

Analyses

CAS

Conc: ug/mL

MATHESON TRI-GAS INC
1650 Enterprise Pkwy
Twinsburg, OH 44087
1-215-648-4000

CERTIFICATE OF ANALYSIS

Energy Laboratories Inc
1120 South 27th Street
Billings, MT 59101

Ref Po# 3008099

14 LITER DISPOSABLE

LOT NUMBER: 109-96-04454

COMPONENT

CONCENTRATION

methane	50010	ppm
ethane	50030	ppm
ethylene	50030	ppm
nitrogen	Bal	

ITEM NUMBER: GMT2685284TC

CGA: 160

PSIG: 240

FILL DATE: 11/22/19

EXPIRATION DATE: 11/23/23

ID #: 12173

Opened: _____

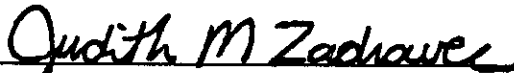
3 Multi-Component Gas Standard in Nitrogen

Expires: 11/23/2023

Rec'd: 12/3/2019

Energy Laboratories Inc 1120 So. 27th Street
Billings MT 59107

Above are the results of the analysis you requested, as reported by our laboratory. Results are in mole percent, unless otherwise indicated. Mixture accuracy is $\pm 2\%$. NIST traceable by weights or gaseous standards.



Judy Zadravec, Chemist

10/19/2018

DATE

Energy Laboratories Inc

Spike LOG

Standard ID: 10711
 Standard Name: HC-Methane-W-CCV
 Date Prepared: 8/8/2018
 Date Expires: 8/9/2022
 Department: GAS
 Vendor: Matheson
 Lot Number: 109-86-03507
 Balance ID:

Type: Primary
 BY:
 Status: New

Comments: LCS Gas Standard for Methane, Ethene, Ethane: 100ppm per standard used undiluted for LCS

Chemical / Solvent Used	BottleNo	Amt	Units	Exp
3 Multi-Component Gas Standard in Ni	10711		mL	8/9/22

Final Volume: mL

Stock Source

Base Units

Amount Added

Analyses

CAS

Conc: ug/mL

MATHESON TRI-GAS INC
1650 Enterprise Pkwy
Twinsburg, OH 44087
1-215-648-4000

CERTIFICATE OF ANALYSIS

Energy Laboratories Inc
1120 South 27th Street
Billings, MT 59101

Ref Po# 3005062

14 LITER DISPOSABLE

LOT NUMBER: 109-86-03507

<u>COMPONENT</u>	<u>CONCENTRATION</u>
methane	100.0 ppm
ethane	100.0 ppm
ethylene	100.0 ppm
nitrogen	Bal

ITEM NUMBER: GMT2677328TC

CGA: 160

PSIG: 240

FILL DATE: 08/08/18

EXPIRATION DATE: 08/09/22

Above are the results of the analysis you requested, as reported by our laboratory. Results are in mole percent, unless otherwise indicated. Mixture accuracy is $\pm 2\%$. NIST traceable by weights or gaseous standards.

Judith M Zadravec

Judy Zadravec, Chemist

8/14/2018

DATE

ID #: 10711
Opened: _____
3 Multi-Component Gas Standard in Nitrogen
Expires: 8/9/2022
Rec'd: 8/27/2018
Energy Laboratories Inc 1120 So. 27th Street
Billings MT 59107