

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

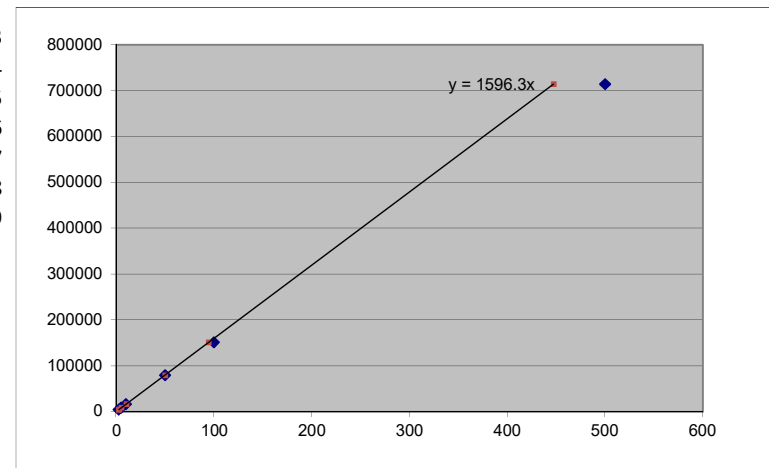
Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
14188881	Cal2	HC-METHANE-	CAL2		1/20/2021 12:00:	1	R355741		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Ethane	A	ppm		5.15876183		5	0	0	2	2	0	103%	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

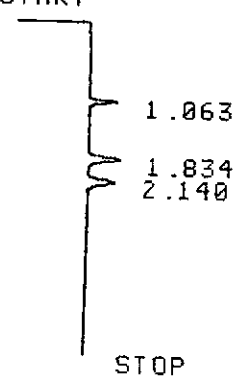
* RUN #16482 JAN 20, 2021 11:50:13
START



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%

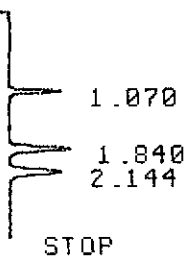
RT	AREA	TYPE	WIDTH	AREA%
1.063	4682	PP	.048	22.05370
1.834	8384	PV	.078	39.49128
2.140	8164	UP	.087	38.45502

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

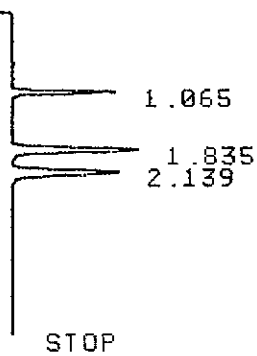
TOTAL AREA= 40739

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

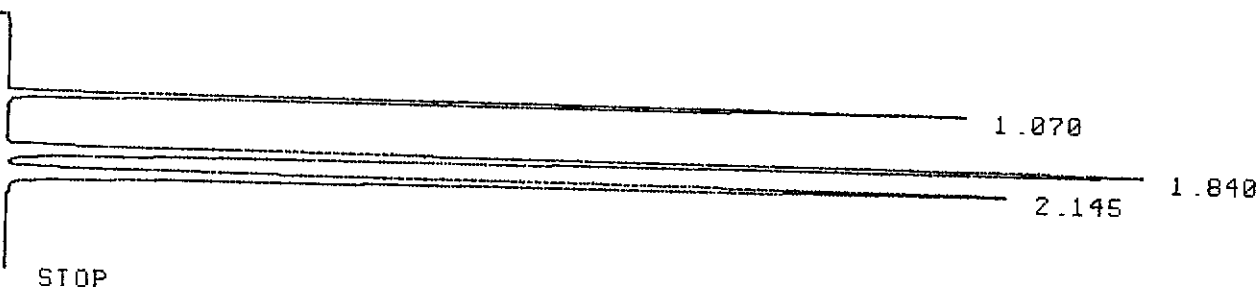
*CAL5-100PPM

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%

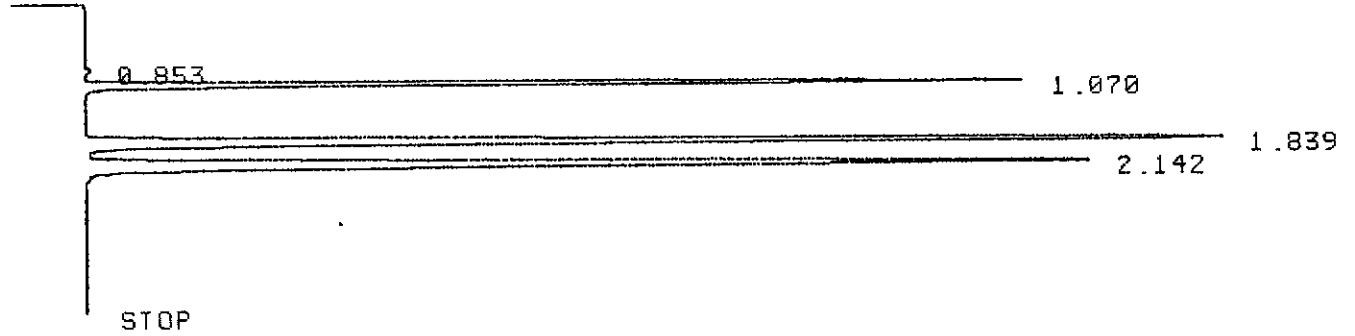
RT	AREA	TYPE	WIDTH	AREA%
1.070	1331471	PB	.049	21.86952

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

22-Dec-21

Run ID FID-HEADSPACE_211221A

Run Start Date: 12/21/2021
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					
14940254	CCV	HC-METHANE-	CCV		12/21/2021 9:15:	1	R372153		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	ppm		95.8799671		100	0	0	2	2	0	96%	85	115	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
14940255	LCS	HC-METHANE-	LCS		12/21/2021 9:34:	1	R372153		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	ppm		96.5465223		100	0	0	2	2	0	97%	85	115	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
14940256	LCSD	HC-METHANE-	LCSD		12/21/2021 9:39:	1	R372153		0	1E+07						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	ppm		96.6511415		100	0	96.546522	2	2	0	97%	85	115	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
14940257	MBLK	HC-METHANE-	MBLK		12/21/2021 10:3	1	R372153		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					
14940258	B21121605-001	HC-METHANE-	SAMP		12/21/2021 10:4	1	R372153		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0.00118817			0	0	0.000704	0.002	0	0%	0	0	0%	J
Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
14940259	B21121605-002	HC-METHANE-	SAMP		12/21/2021 10:5	1	R372153		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0.00120199			0	0	0.000704	0.002	0	0%	0	0	0%	J
Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
14940260	B21121605-007	HC-METHANE-	SAMP		12/21/2021 11:0	1	R372153		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					
14940261	B21121613-001	HC-METHANE-	SAMP		12/21/2021 11:1	1	R372153		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					
14940262	B21121613-001	HC-METHANE-	DUP		12/21/2021 11:2	1	R372153		0	1E+07						
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		

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
14940263	B21121613-002	HC-METHANE-	SAMP		12/21/2021 11:3	1	R372153		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0.09429662			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					
14940264	B21121613-002	HC-METHANE-	DUP		12/21/2021 11:5	1	R372153		0	1E+07						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0.09531412			0	0.0942966	0.000704	0.002	0	0%	0	0	1%	
Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
14940265	B21121613-006	HC-METHANE-	SAMP		12/21/2021 12:0	1	R372153		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					
14940266	B21121613-010	HC-METHANE-	SAMP		12/21/2021 12:1	1	R372153		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					
14940267	B21121616-001	HC-METHANE-	SAMP		12/21/2021 12:3	78	R372153		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		2.54788887			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					
14940268	B21121616-005	HC-METHANE-	SAMP		12/21/2021 12:4	1	R372153		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0.00076301			0	0	0.000704	0.002	0	0%	0	0	0%	J

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
14940269	CCV	HC-METHANE-	CCV		12/21/2021 12:5	1	R372153		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	ppm		96.5722073		100	0	0	2	2	0	97%	85	115	0%	
Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
14940270	B21121622-001I	HC-METHANE-	SAMP		12/21/2021 1:45:	1	R372153		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					
14940271	B21121622-003	HC-METHANE-	SAMP		12/21/2021 1:55:	1	R372153		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					
14940272	B21121622-007	HC-METHANE-	SAMP		12/21/2021 2:04:	1	R372153		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					
14940273	B21121622-011	HC-METHANE-	SAMP		12/21/2021 2:14:	1	R372153		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					
14940274	B21121623-001	HC-METHANE-	SAMP		12/21/2021 2:39:	78	R372153		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0.55396438			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					
14940275	B21121623-005	HC-METHANE-	SAMP		12/21/2021 2:49:	1	R372153		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					
14940276	CCV	HC-METHANE-	CCV		12/21/2021 2:56:	1	R372153		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	ppm		96.9681311		100	0	0	2	2	0	97%	85	115	0%	

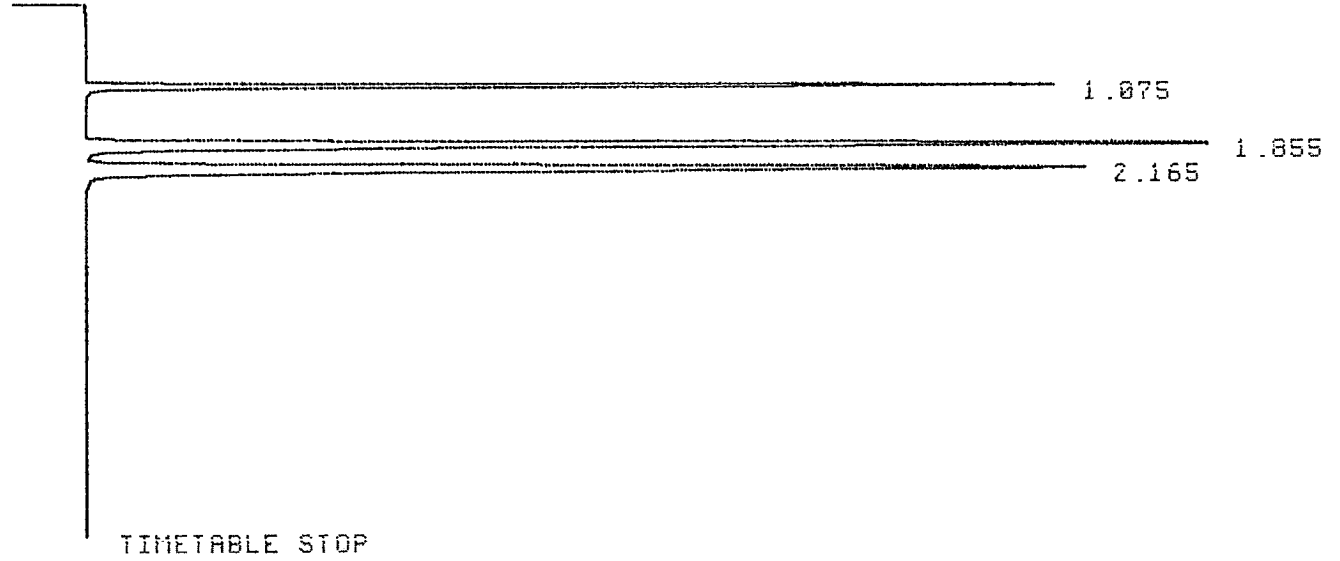
Sample ID	Area Count	Dilution Factor	Temperature (C)	Concentration	Date/Time Analyzed	Analyst	Sample Type	Test Code	Analyte	Headspace Volume	Liquid Volume
CCV	153050	1	20	95.87996707	12/21/2021 9:15	jdw	CCV	HC-METHANE-CCV	Methane		
LCS	154114	1	20	96.54652235	12/21/2021 9:34	jdw	LCS	HC-METHANE-CCV	Methane		
LCS	154281	1	20	96.65114145	12/21/2021 9:39	jdw	LCS	HC-METHANE-CCV	Methane		
MBLK	704	1	20	0.000102434	12/21/2021 10:38	jdw	MBLK	HC-METHANE-W	Methane	10	32
B21121605-001H	8870	1	20	0.001188171	12/21/2021 10:41	jdw	SAMP	HC-METHANE-W	Methane	10	32
B21121605-002H	8965	1	20	0.001201994	12/21/2021 10:50	jdw	SAMP	HC-METHANE-W	Methane	10	32
B21121605-007A	4779	1	20	0.000592921	12/21/2021 11:04	jdw	SAMP	HC-METHANE-W	Methane	10	32
B21121613-001H	998	1	20	4.27776E-05	12/21/2021 11:17	jdw	SAMP	HC-METHANE-W	Methane	10	32
B21121613-001HDUP	784	1	20	1.16402E-05	12/21/2021 11:27	jdw	DUP	HC-METHANE-W	Methane	10	32
B21121613-002F	648781	1	20	0.094296624	12/21/2021 11:37	jdw	SAMP	HC-METHANE-W	Methane	10	32
B21121613-002FDUP	655774	1	20	0.095314121	12/21/2021 11:50	jdw	DUP	HC-METHANE-W	Methane	10	32
B21121613-006A	3340	1	20	0.000383544	12/21/2021 12:03	jdw	SAMP	HC-METHANE-W	Methane	10	32
B21121613-010A	5017	1	20	0.000627551	12/21/2021 12:12	jdw	SAMP	HC-METHANE-W	Methane	10	32
B21121616-001H	225204	78	20	2.547888875	12/21/2021 12:36	jdw	SAMP	HC-METHANE-W	Methane	10	32
B21121616-005A	5948	1	20	0.000763013	12/21/2021 12:47	jdw	SAMP	HC-METHANE-W	Methane	10	32
B21121622-001I	4291	1	20	0.000521916	12/21/2021 13:45	jdw	SAMP	HC-METHANE-W	Methane	10	32
B21121622-003H	1217	1	20	7.46426E-05	12/21/2021 13:55	jdw	SAMP	HC-METHANE-W	Methane	10	32
B21121622-007A	1395	1	20	0.000100542	12/21/2021 14:04	jdw	SAMP	HC-METHANE-W	Methane	10	32
B21121622-011A	1027	1	20	4.69972E-05	12/21/2021 14:14	jdw	SAMP	HC-METHANE-W	Methane	10	32
B21121623-001H	49515	78	20	0.553964382	12/21/2021 14:39	jdw	SAMP	HC-METHANE-W	Methane	10	32
B21121623-005A	4514	1	20	0.000554363	12/21/2021 14:49	jdw	SAMP	HC-METHANE-W	Methane	10	32
CCV	154155	1	20	96.57220728	12/21/2021 12:56	jdw	CCV	HC-METHANE-CCV	Methane		
CCV	154787	1	20	96.96813109	12/21/2021 14:56	jdw	CCV	HC-METHANE-CCV	Methane		

JAW
12/21/2021

*

*ID 12173-500X-CCU

* RUN #18719 DEC 21, 2021 09:15:45
START



RUN# 18719 DEC 21, 2021 09:15:45

IDENTIFIER : 12173-500X-C
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.075	153050	PB	.046	20.14084
1.855	306285	BB	.075	40.30602
2.165	300564	BB	.088	39.55315

TOTAL AREA= 759899
MUL FACTOR=1.0000E+00

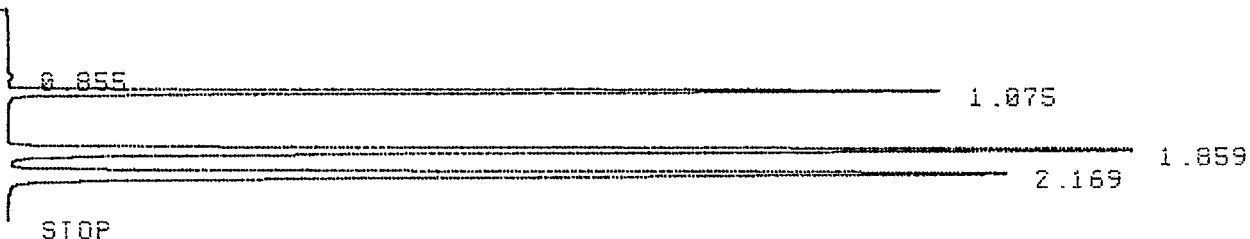
*

*ID 10711

*ID 10711-LCS

* RUN #18720 DEC 21, 2021 09:34:46

START



RUN# 18720 DEC 21, 2021 09:34:46

IDENTIFIER : 10711-LCS

AREA%

RT	AREA	TYPE	WIDTH	AREA%
.855	877	UU	.052	.11431
1.075	154114	PB	.048	20.08718
1.859	308901	PV	.076	40.26205
2.169	303334	UU	.089	39.53645

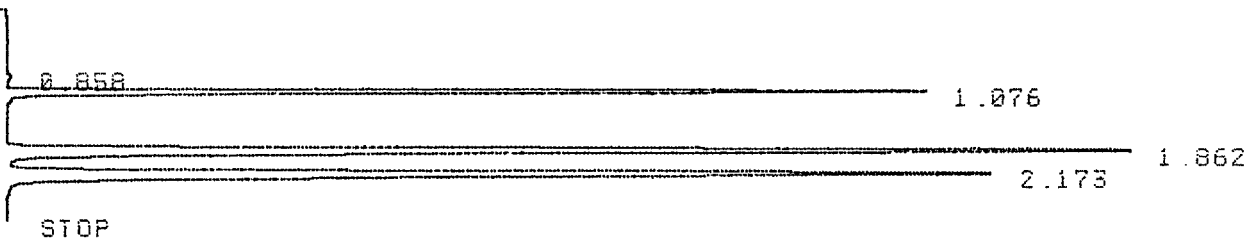
TOTAL AREA= 767226

MUL FACTOR=1.0000E+00

*ID 10711-LCSD

* RUN #18721 DEC 21, 2021 09:39:06

START



RUN# 18721 DEC 21, 2021 09:39:06

IDENTIFIER : 10711-LCSD

AREA%

RT	AREA	TYPE	WIDTH	AREA%
.858	934	UP	.058	.12252
1.076	154281	PV	.049	20.23870
1.862	306699	PV	.077	40.23301
2.173	300393	UB	.089	39.40578

TOTAL AREA= 762307
MUL FACTOR=1.0000E+00

*ID MB

* RUN #18722 DEC 21, 2021 10:38:11
START

1.000
:67075

RUN# 18722 DEC 21, 2021 10:38:11

IDENTIFIER : MB
AREA%

RT	AREA TYPE	WIDTH	AREA%
1.080	704 UU	.064	100.00000

TOTAL AREA= 704
MUL FACTOR=1.0000E+00

*ID 1605-1H

* RUN #18723 DEC 21, 2021 10:41:42
START

1.080
:67304

RUN# 18723 DEC 21, 2021 10:41:42

IDENTIFIER : 1605-1H
AREA%

RT	AREA TYPE	WIDTH	AREA%
1.080	8870 UU	.048	100.00000

TOTAL AREA= 8870
MUL FACTOR=1.0000E+00

* PLOT

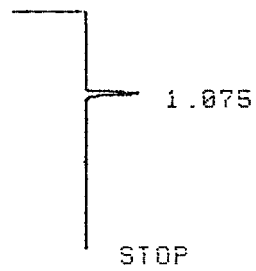


* PLOT



*ID 1605-2H

* RUN #18724 DEC 21, 2021 10:50:31
START



RUN# 18724 DEC 21, 2021 10:50:31

IDENTIFIER : 1605-2H

AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.075	8965	PP	.049	100.00000

TOTAL AREA= 8965
MUL FACTOR=1.00000E+00

* PLOT



* PLOT

STOP

* PLOT

STOP

*ID 1605-7A

* RUN #18725 DEC 21, 2021 11:04:52

START

1.074

STOP

RUN# 18725 DEC 21, 2021 11:04:52

IDENTIFIER : 1605-7A

AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.074	4779	BP	.048	100.00000

TOTAL AREA= 4779

MUL FACTOR=1.00000E+00

* PLOT

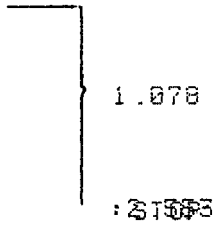
STOP

* PLOT

STOP

*ID 1613-1H

* RUN #18726 DEC 21, 2021 11:17:22
START



RUN# 18726 DEC 21, 2021 11:17:22

IDENTIFIER : 1613-1H

AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.078	998	UU	.064	100.00000

TOTAL AREA= 998
MUL FACTOR=1.0000E+00

* PLOT

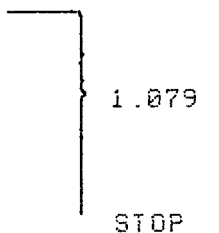


* PLOT



*ID 1613-1H-DUP

* RUN #18727 DEC 21, 2021 11:27:27
START



IDENTIFIER : 1613-1H-DUP
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.079	784	UP	.054	100.00000

TOTAL AREA= 784
MUL FACTOR=1.0000E+00

* PLOT

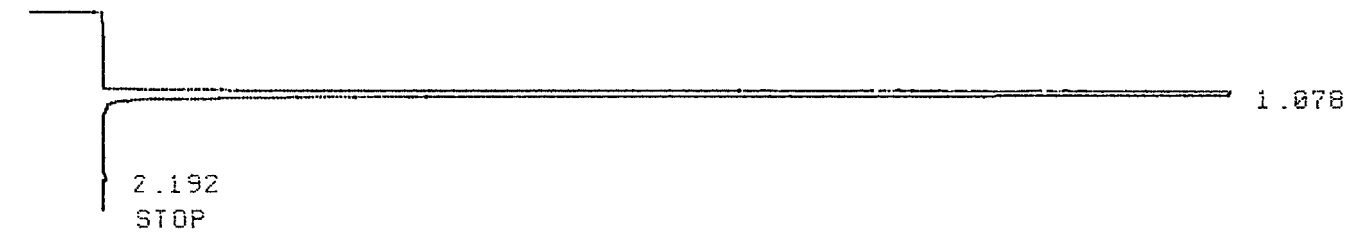


* PLOT



*ID 1613-2F

* RUN #18728 DEC 21, 2021 11:37:34
START



IDENTIFIER : 1613-2F
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.078	648781	PB	.048	99.86102
2.192	903	BP	.085	.13899

TOTAL AREA= 649684
MUL FACTOR=1.0000E+00

* PLOT

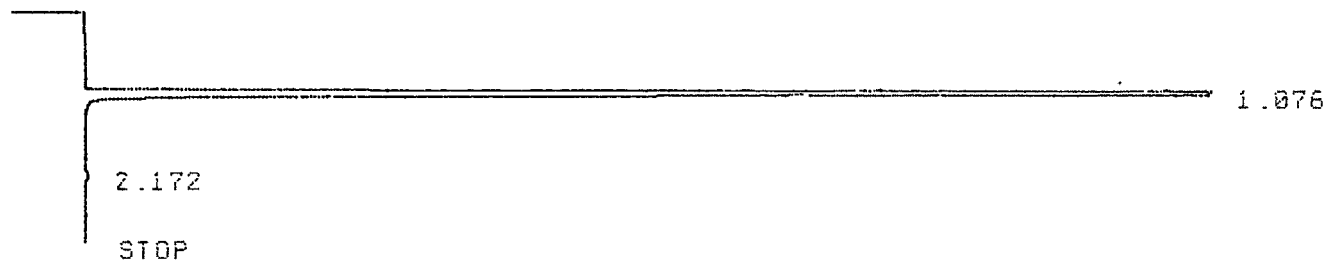


* PLOT



*ID 1613-2F-DUP

* RUN #18729 DEC 21, 2021 11:50:25
START



RUN# 18729 DEC 21, 2021 11:50:25

IDENTIFIER : 1613-2F-DUP

AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.076	655774	PB	.047	99.85658
2.172	942	PU	.081	.14344

TOTAL AREA= 656716
MUL FACTOR=1.00000E+00

* PLOT



STOP

* PLOT

STOP

*ID 1613-6A

* RUN #18730 DEC 21, 2021 12:03:39
START

1.075

:STOP

RUN# 18730 DEC 21, 2021 12:03:39

IDENTIFIER : 1613-6A

AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.075	3340	UP	.051	100.00000

TOTAL AREA= 3340
MUL FACTOR=1.00000E+00

* PLOT

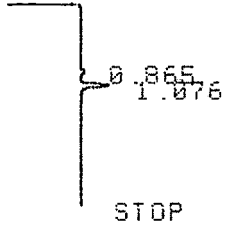
STOP

* PLOT

STOP

*ID 1613-10A

* RUN #18731 DEC 21, 2021 12:12:10
START



RUN# 18731 DEC 21, 2021 12:12:10

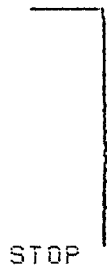
IDENTIFIER : 1613-10A

AREA%

RT	AREA	TYPE	WIDTH	AREA%
.865	790	PP	.080	13.60427
1.076	5017	UU	.051	86.39571

TOTAL AREA= 5807
MUL FACTOR=1.0000E+00

* PLOT



* PLOT



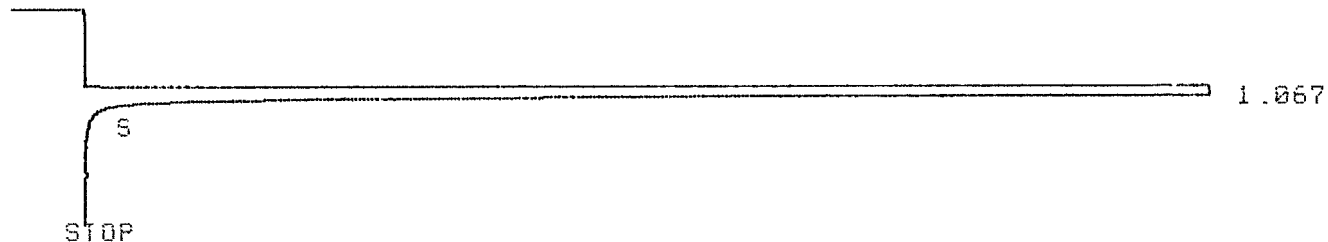
*ID 1616-1H

*

*ID 1616-1H

* RUN #18732 DEC 21, 2021 12:22:34

START



RUN# 18732 DEC 21, 2021 12:22:34

IDENTIFIER : 1616-1H

AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.067	5809773	SHB	.065	100.00000

TOTAL AREA=5809773

MUL FACTOR=1.0000E+00

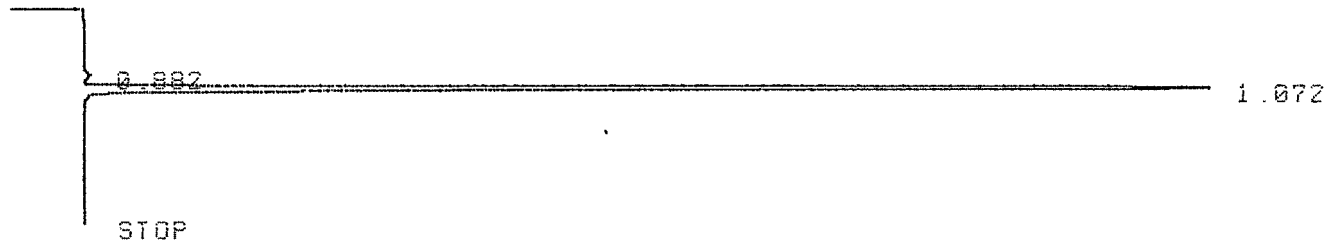
* PLOT



*ID 1616-1H-78X

* RUN #18733 DEC 21, 2021 12:36:14

START



RUN# 18733

IDENTIFIER : 1616-1H-78X
AREA%

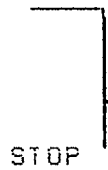
RT	AREA	TYPE	WIDTH	AREA%
.882	1428	UP	.071	.63010
1.072	225204	PB	.049	99.36989

TOTAL AREA= 226632
MUL FACTOR=1.0000E+00

* PLOT

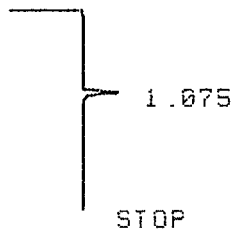


* PLOT



*ID 1616-5A

* RUN #18734 DEC 21, 2021 12:47:33
START



RUN# 18734 DEC 21, 2021 12:47:33

IDENTIFIER : 1616-5A
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.075	5948	PU	.050	100.00000

TOTAL AREA= 5948
MUL FACTOR=1.0000E+00

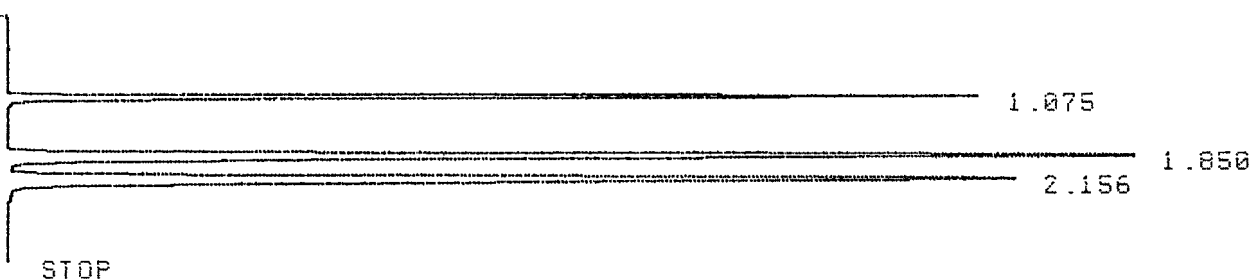
STOP

* PLOT

STOP

*ID 12173-500X-CCU

* RUN #18735 DEC 21, 2021 12:56:40
START



RUN# 18735 DEC 21, 2021 12:56:40

IDENTIFIER : 12173-500X-C
AREA%

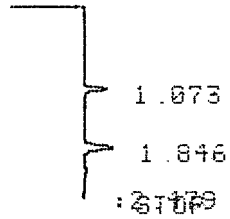
RT	AREA	TYPE	WIDTH	AREA%
1.075	154155	PB	.047	20.17704
1.850	307200	PB	.075	40.20878
2.156	302657	BB	.088	39.61416

TOTAL AREA= 764012
MUL FACTOR=1.0000E+00

*

*ID 1622-1I

* RUN #18736 DEC 21, 2021 13:45:42
START



RUN# 18736 DEC 21, 2021 13:45:42

IDENTIFIER : 1622-1I
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.073	4291	PU	.053	35.18366
1.846	7905	UP	.078	64.81635

TOTAL AREA= 12196
MUL FACTOR=1.0000E+00

* PLOT

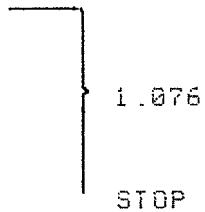


* PLOT



*ID 1622-3H

* RUN #18737 DEC 21, 2021 13:55:00
START



IDENTIFIER : 1622-3H

AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.076	1217	PP	.066	100.00000

TOTAL AREA= 1217

MUL FACTOR=1.0000E+00

* PLOT



STOP

* PLOT

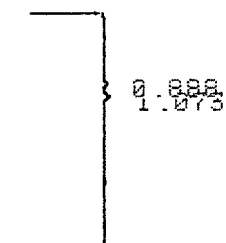


STOP

*ID 1622-7A

* RUN #18738 DEC 21, 2021 14:04:39

START



STOP

RUN# 18738 DEC 21, 2021 14:04:39

IDENTIFIER : 1622-7A

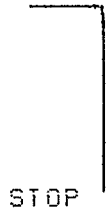
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.888	658	PV	.073	32.05066
1.073	1395	UP	.063	67.94934

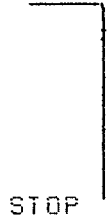
TOTAL AREA= 2053

MUL FACTOR=1.0000E+00

* PLOT

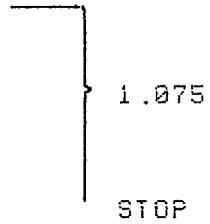


* PLOT



*ID 1622-11A

* RUN #18739 DEC 21, 2021 14:14:01
START



RUN# 18739 DEC 21, 2021 14:14:01

IDENTIFIER : 1622-11A

AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.075	1027	BP	.053	100.00000

TOTAL AREA= 1027
MUL FACTOR=1.0000E+00

* PLOT



* PLOT

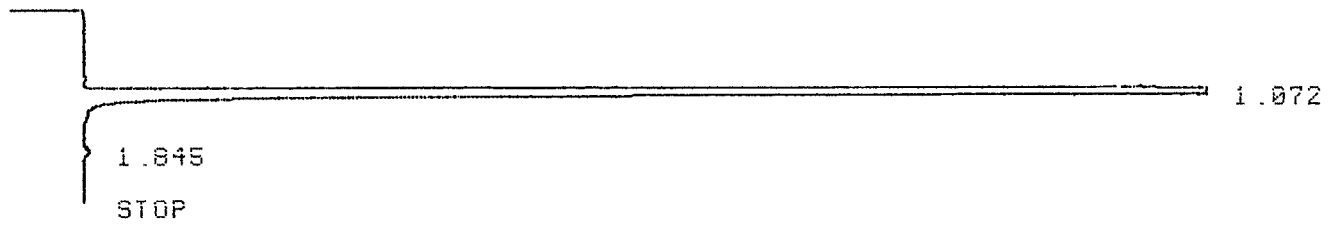


STOP

*ID 1623-1H

* RUN #18740 DEC 21, 2021 14:23:40

START



RUN# 18740 DEC 21, 2021 14:23:40

IDENTIFIER : 1623-1H

AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.072	2872242	PB	.055	99.93088
1.845	1987	UP	.086	.06913

TOTAL AREA=2874229

MUL FACTOR=1.0000E+00

* PLOT



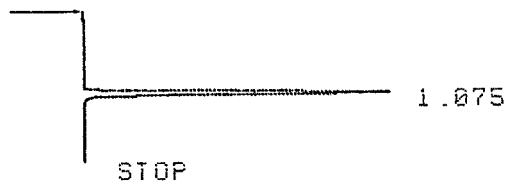
* PLOT



*ID 1623-1H-78X

* RUN #18741 DEC 21, 2021 14:39:26

START



RUN# 18741 DEC 21, 2021 14:39:26

IDENTIFIER : 1623-1H-78X

AREA#

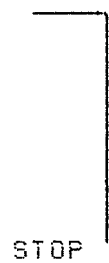
RT	AREA	TYPE	WIDTH	AREA%
1.075	49515	PB	.047	100.00000

TOTAL AREA= 49515
MUL FACTOR=1.00000E+00

* PLOT



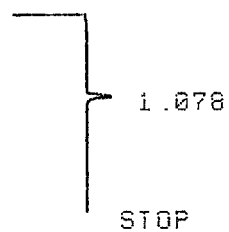
* PLOT



*ID 1623-5A

* RUN #18742 DEC 21, 2021 14:49:37

START



RUN# 18742

IDENTIFIER : 1623-SA
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.078	4514	PP	.052	100.00000

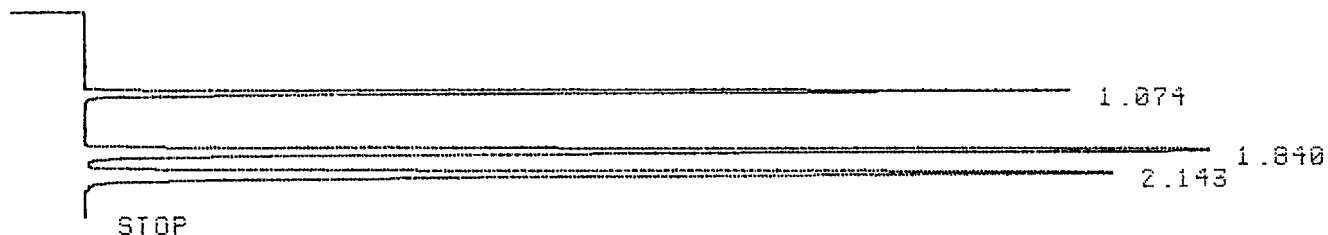
TOTAL AREA= 4514
MUL FACTOR=1.0000E+00

*

*ID 12173-500X-CCU

* RUN #18743 DEC 21, 2021 14:56:01

START



RUN# 18743 DEC 21, 2021 14:56:01

IDENTIFIER : 12173-500X-C
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.074	154787	BB	.046	20.13500
1.840	308962	PB	.074	40.19038
2.143	304997	BU	.087	39.67462

TOTAL AREA= 768746
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: _____

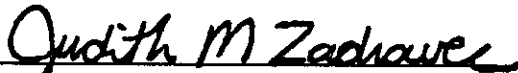
3 Multi-Component Gas Standard in Nitrogen

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	8/9/2022

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