

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

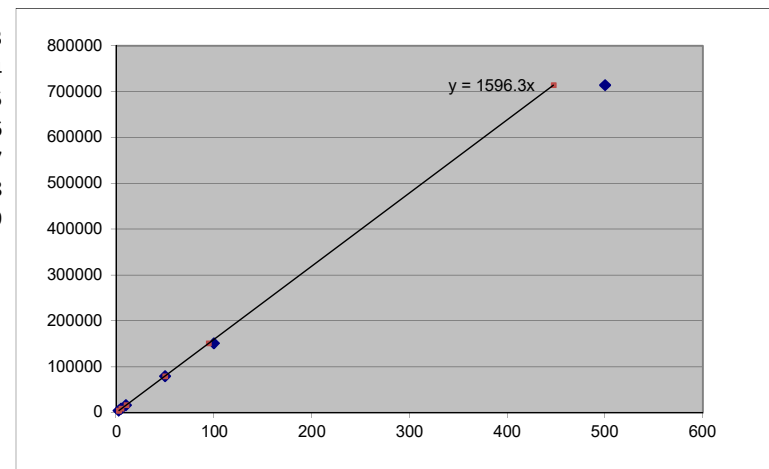
Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
14188881	Cal2	HC-METHANE-	CAL2		1/20/2021 12:00:	1	R355741		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Ethane	A	ppm		5.15876183		5	0	0	2	2	0	103%	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	1000000				
0 #12173						
Decimal	Sample	Response	Date/Time	Run Id		
Amnt, Injtd Equivalent	Conc ppm	Area Counts	Factor			
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

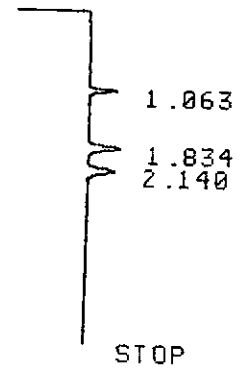


RUN# 16482 JAN 20, 2021 11:50:13

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%

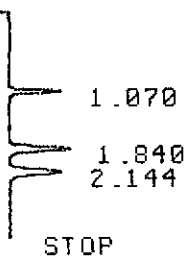
RT	AREA	TYPE	WIDTH	AREA%
1.063	4682	PP	.048	22.05370
1.834	8384	PV	.078	39.49128
2.140	8164	UP	.087	38.45502

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

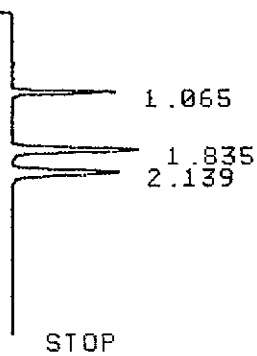
TOTAL AREA= 40739

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

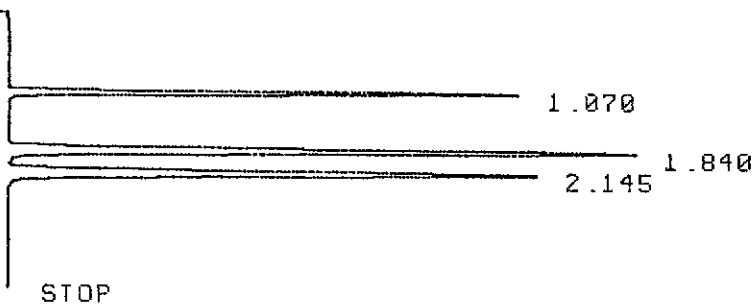
TOTAL AREA= 80518

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

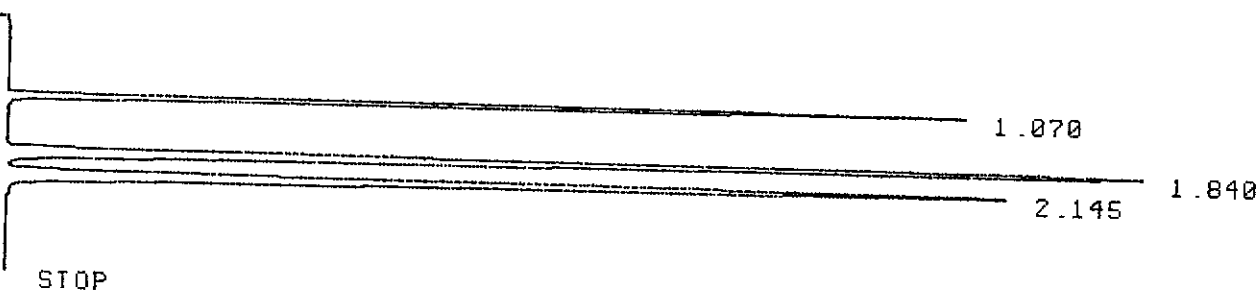
*CAL5-100PPM

INVALID SYSTEM COMMAND

*ID CAL5-100PPM

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

START



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

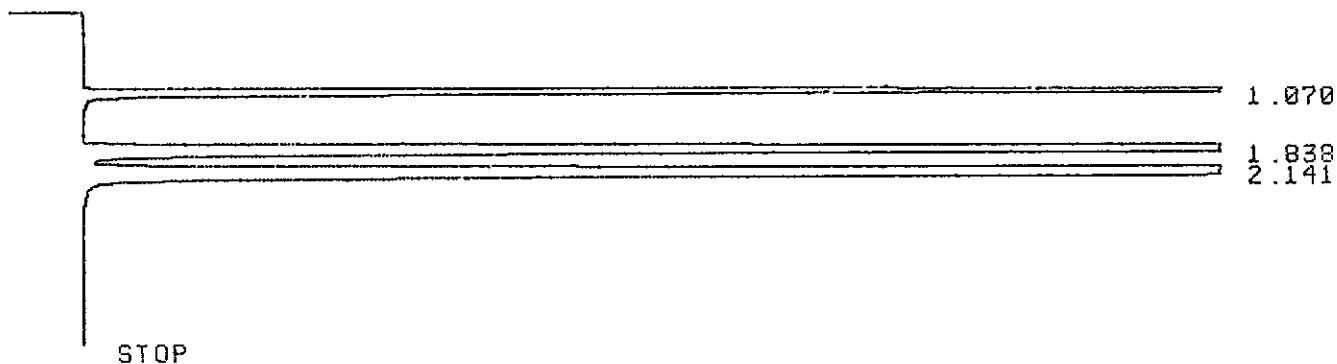
IDENTIFIER : CAL5-100PPM
AREA%

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

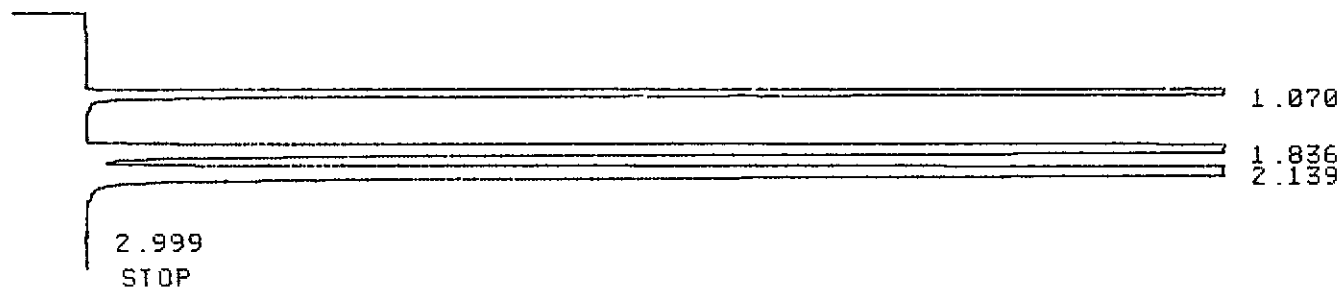
IDENTIFIER : CAL6-500PPM
AREA%

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%

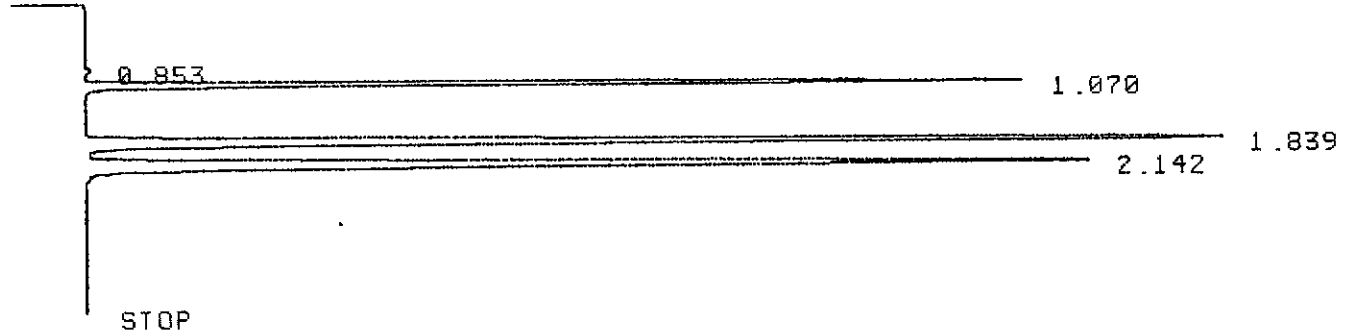
RT	AREA	TYPE	WIDTH	AREA%
1.070	1331471	PB	.049	21.86052

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

10-Feb-22

Run ID FID-HEADSPACE_220209A

Run Start Date: 2/9/2022
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					
15028993	CCV	HC-METHANE-	CCV		2/9/2022 9:14:00	1	R374500		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	ppm		100.812100		100	0	0	2	2	0	101%	85	115	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15028994	LCS	HC-METHANE-	LCS		2/9/2022 9:19:00	1	R374500		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	ppm		96.5665691		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					
15028995	LCSD	HC-METHANE-	LCSD		2/9/2022 9:23:00	1	R374500		0	2E+07						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	ppm		98.7811113		100	0	96.566569	2	2	0	99%	85	115	2%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15028996	MBLK	HC-METHANE-	MBLK		2/9/2022 10:30:0	1	R374500		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					
15028997	B22020415-001I	HC-METHANE-	SAMP		2/9/2022 10:39:0	1	R374500		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0.00204736			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					
15028998	B22020415-001I	HC-METHANE-	DUP		2/9/2022 10:45:0	1	R374500		0	2E+07						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0.00210542			0	0.0020474	0.000704	0.002	0	0%	0	0	3%	
Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15028999	B22020415-005	HC-METHANE-	SAMP		2/9/2022 10:50:0	1	R374500		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					
15029000	B22020415-006I	HC-METHANE-	SAMP		2/9/2022 11:14:0	78	R374500		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0.3771443			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					
15029001	B22020415-010	HC-METHANE-	SAMP		2/9/2022 11:22:0	1	R374500		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					
15029002	B22020415-011I	HC-METHANE-	SAMP		2/9/2022 11:29:0	1	R374500		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					
15029003	B22020415-015	HC-METHANE-	SAMP		2/9/2022 11:35:0	1	R374500		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					
15029004	B22020415-017I	HC-METHANE-	SAMP		2/9/2022 11:41:0	1	R374500		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					
15029005	B22020415-021	HC-METHANE-	SAMP		2/9/2022 11:49:0	1	R374500		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					
15029006	B22020415-022I	HC-METHANE-	SAMP		2/9/2022 12:03:0	1	R374500		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					
15029007	B22020415-026	HC-METHANE-	SAMP		2/9/2022 12:11:0	1	R374500		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					
15029008	B22020415-027I	HC-METHANE-	SAMP		2/9/2022 12:17:0	1	R374500		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					
15029009	B22020415-031	HC-METHANE-	SAMP		2/9/2022 12:25:0	1	R374500		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					
15029010	B22020415-032I	HC-METHANE-	SAMP		2/9/2022 12:32:0	1	R374500		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					
15029011	B22020415-036	HC-METHANE-	SAMP		2/9/2022 12:38:0	1	R374500		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					
15029012	CCV	HC-METHANE-	CCV		2/9/2022 12:47:0	1	R374500		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	ppm		99.5178303		100	0	0	2	2	0	100%	85	115	0%	

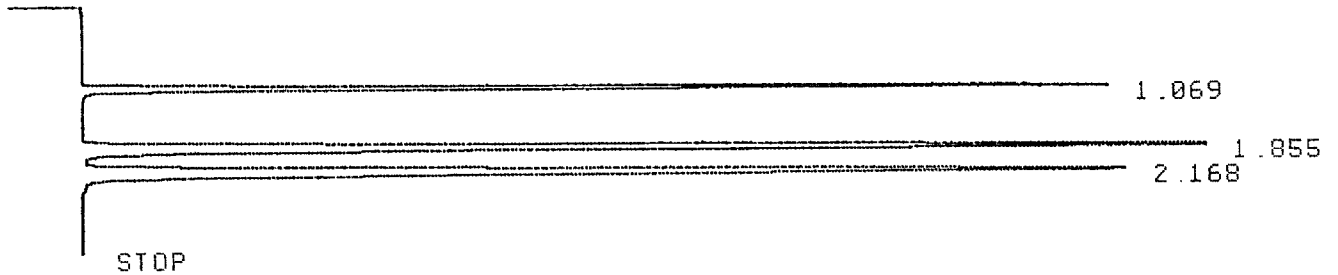
Sample ID	Area Count	Dilution Factor	Temperature (C)	Concentration	Date/Time Analyzed	Analyst	Sample Type	Test Code	Analyte	Headspace Volume	Liquid Volume
CCV	160923	1	20	100.8121002	2/9/2022 9:14	jdw	CCV	HC-METHANE-CCV	Methane		
LCS	154146	1	20	96.56656912	2/9/2022 9:19	jdw	LCS	HC-METHANE-CCV	Methane		
LCS	157681	1	20	98.78111132	2/9/2022 9:23	jdw	LCS	HC-METHANE-CCV	Methane		
MBLK	833	1	20	0.000121203	2/9/2022 10:30	jdw	MBLK	HC-METHANE-W	Methane	10	32
B22020415-001I	14904	1	20	0.002047361	2/9/2022 10:39	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22020415-001IDUP	15303	1	20	0.002105417	2/9/2022 10:45	jdw	DUP	HC-METHANE-W	Methane	10	32
B22020415-005A	945	1	20	1.62962E-05	2/9/2022 10:50	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22020415-006I	34064	78	20	0.377144299	2/9/2022 11:14	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22020415-010A	1108	1	20	4.00131E-05	2/9/2022 11:22	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22020415-011I	756	1	20	-1.12037E-05	2/9/2022 11:29	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22020415-015A	1425	1	20	8.61373E-05	2/9/2022 11:35	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22020415-017I	1879	1	20	0.000152195	2/9/2022 11:41	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22020415-021A	1028	1	20	2.83729E-05	2/9/2022 11:49	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22020415-022I	837	1	20	5.82009E-07	2/9/2022 12:03	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22020415-026A	993	1	20	2.32804E-05	2/9/2022 12:11	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22020415-027I	933	1	20	1.45502E-05	2/9/2022 12:17	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22020415-031A	1187	1	20	5.15078E-05	2/9/2022 12:25	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22020415-032I	993	1	20	2.32804E-05	2/9/2022 12:32	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22020415-036A	1025	1	20	2.79364E-05	2/9/2022 12:38	jdw	SAMP	HC-METHANE-W	Methane	10	32
CCV	158857	1	20	99.51783031	2/9/2022 12:47	jdw	CCV	HC-METHANE-CCV	Methane		

JAW
2/9/2022

*ID 12173-500X-CCU

* RUN #19315 FEB 9, 2022 09:14:15

START



RUN# 19315 FEB 9, 2022 09:14:15

IDENTIFIER : 12173-500X-C

AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.069	160923	PU	.046	20.22283
1.855	319909	PB	.075	40.20226
2.168	314917	BB	.088	39.57493

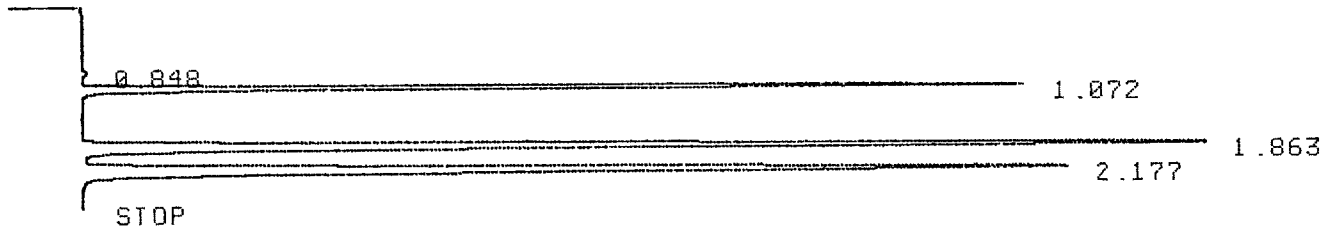
TOTAL AREA= 795749

MUL FACTOR=1.0000E+00

*ID 10711-LCS

* RUN #19316 FEB 9, 2022 09:19:14

START



IDENTIFIER : 10711-LCS

AREA%

RT	AREA	TYPE	WIDTH	AREA%
.848	1244	UU	.063	.16426
1.072	154146	PB	.048	20.35425
1.863	305017	PB	.076	40.27606
2.177	296909	BP	.088	39.20542

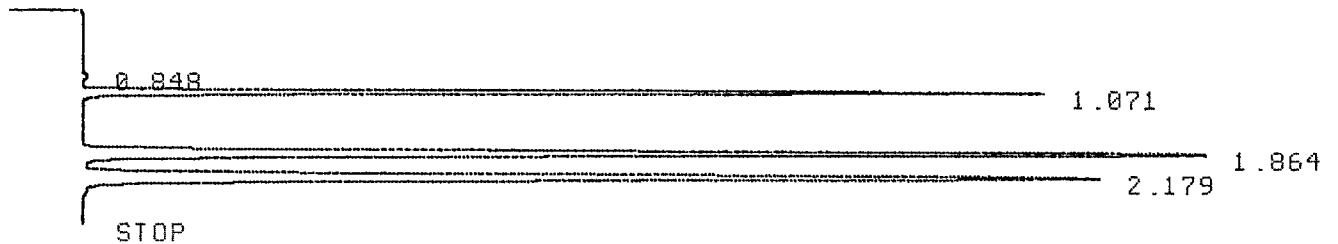
TOTAL AREA= 757316

MUL FACTOR=1.0000E+00

*ID 10711-LCSD

* RUN #19317 FEB 9, 2022 09:23:34

START



RUN# 19317 FEB 9, 2022 09:23:34

IDENTIFIER : 10711-LCSD

AREA%

RT	AREA	TYPE	WIDTH	AREA%
.848	1143	PV	.055	.14630
1.071	157681	PB	.048	20.18247
1.864	314103	PB	.076	40.20379
2.179	308350	BV	.089	39.46744

TOTAL AREA= 781277

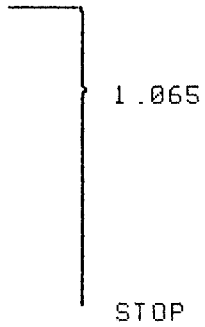
MUL FACTOR=1.0000E+00

*

*

*ID MB

* RUN #19318 FEB 9, 2022 10:30:54
START



RUN# 19318 FEB 9, 2022 10:30:54

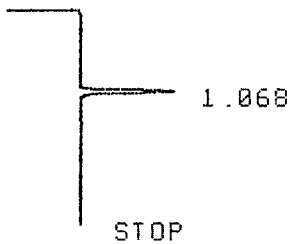
IDENTIFIER : MB
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.065	833	UU	.057	100.00000

TOTAL AREA= 833
MUL FACTOR=1.00000E+00

*ID 415-1I

* RUN #19319 FEB 9, 2022 10:39:11
START



RUN# 19319 FEB 9, 2022 10:39:11

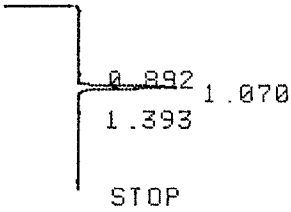
IDENTIFIER : 415-1I
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.068	14904	PU	.046	100.00000

TOTAL AREA= 14904
MUL FACTOR=1.00000E+00

*
*ID 415-1IDUP

* RUN #19320 FEB 9, 2022 10:45:16
START



RUN# 19320 FEB 9, 2022 10:45:16

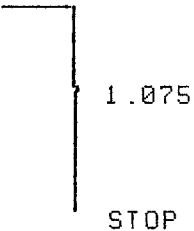
IDENTIFIER : 415-1IDUP
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.892	427	PP	.056	2.64658
1.070	15303	BU	.045	94.84941
1.393	404	PU	.048	2.50403

TOTAL AREA= 16134
MUL FACTOR=1.0000E+00

*ID 415-5A

* RUN #19321 FEB 9, 2022 10:50:59
START



RUN# 19321 FEB 9, 2022 10:50:59

IDENTIFIER : 415-5A
AREA%

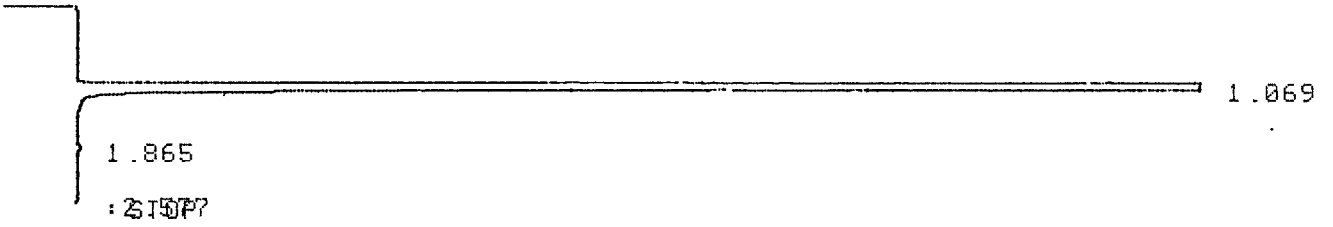
RT	AREA	TYPE	WIDTH	AREA%
1.075	945	PP	.063	100.00000

TOTAL AREA= 945
MUL FACTOR=1.0000E+00

*ID 415-6I

*
*ID 415-6I

* RUN #19322 FEB 9, 2022 10:56:51
START



RUN# 19322 FEB 9, 2022 10:56:51

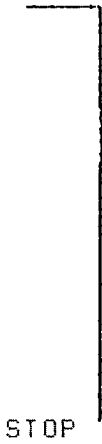
IDENTIFIER : 415-6I

AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.069	2230485	PB	.052	99.93654
1.865	1416	PU	.091	.06344

TOTAL AREA=2231901
MUL FACTOR=1.0000E+00

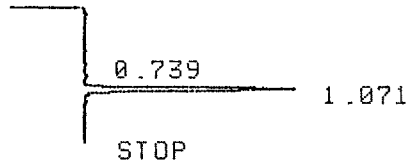
* PLOT



*

*ID 415-6I-78X

* RUN #19323 FEB 9, 2022 11:14:05
START



RUN# 19323 FEB 9, 2022 11:14:05

IDENTIFIER : 415-6I-78X
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.739	423	PU	.056	1.22655
1.071	34064	PU	.047	98.77347

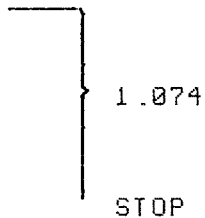
TOTAL AREA= 34487
MUL FACTOR=1.0000E+00

* PLOT



*ID 415-10A

* RUN #19324 FEB 9, 2022 11:22:35
START



RUN# 19324 FEB 9, 2022 11:22:35

IDENTIFIER : 415-10A
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.074	1108	PU	.054	100.00000

MUL FACTOR=1.0000E+00

*ID 415-11I

* RUN #19325 FEB 9, 2022 11:29:00

START

┌───┐
│ │
│ │ } 1.072
│ │
└───┘
STOP

RUN# 19325 FEB 9, 2022 11:29:00

IDENTIFIER : 415-11I

AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.072	756	PU	.049	100.00000

TOTAL AREA= 756
MUL FACTOR=1.0000E+00

*ID 415-15A

* RUN #19326 FEB 9, 2022 11:35:15

START

┌───┐
│ │
│ │ } 0.418
│ │ } 1.079
│ │
└───┘
STOP

RUN# 19326 FEB 9, 2022 11:35:15

IDENTIFIER : 415-15A

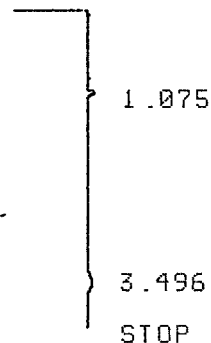
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.418	552	PU	.072	27.92110
1.079	1425	PU	.066	72.07891

TOTAL AREA= 1977
MUL FACTOR=1.0000E+00

*ID 415-17I

* RUN #19327 FEB 9, 2022 11:41:26
START



RUN# 19327 FEB 9, 2022 11:41:26

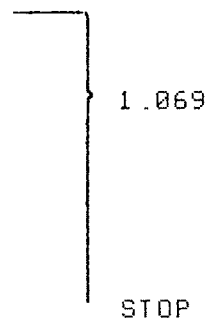
IDENTIFIER : 415-17I
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.075	1879	PP	.061	75.31062
3.496	616	UU	.045	24.68938

TOTAL AREA= 2495
MUL FACTOR=1.0000E+00

*ID 415-21A

* RUN #19328 FEB 9, 2022 11:49:58
START



RUN# 19328 FEB 9, 2022 11:49:58

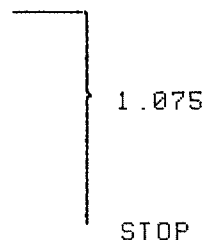
IDENTIFIER : 415-21A
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.069	1028	UP	.057	100.00000

TOTAL AREA= 1028
MUL FACTOR=1.0000E+00

*ID 415-22I

* RUN #19329 FEB 9, 2022 12:03:49
START



RUN# 19329 FEB 9, 2022 12:03:49

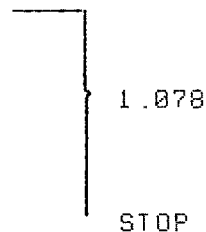
IDENTIFIER : 415-22I
AREA%

RT	AREA TYPE	WIDTH	AREA%
1.075	837 UP	.065	100.00000

TOTAL AREA= 837
MUL FACTOR=1.0000E+00

*ID 415-26A

* RUN #19330 FEB 9, 2022 12:11:00
START



RUN# 19330 FEB 9, 2022 12:11:00

IDENTIFIER : 415-26A
AREA%

RT	AREA TYPE	WIDTH	AREA%
1.078	993 PU	.056	100.00000

TOTAL AREA= 993
MUL FACTOR=1.0000E+00

*ID 415-27I

* RUN #19331 FEB 9, 2022 12:17:22
START

┌───┐
│ │ } 1.079
│ │
└───┘
STOP

RUN# 19331 FEB 9, 2022 12:17:22

IDENTIFIER : 415-27I
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.079	933	UP	.067	100.00000

TOTAL AREA= 933
MUL FACTOR=1.0000E+00

*ID 415-31A

* RUN #19332 FEB 9, 2022 12:25:56
START

┌───┐
│ │ } 1.077
│ │
└───┘
STOP

RUN# 19332 FEB 9, 2022 12:25:56

IDENTIFIER : 415-31A
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.077	1187	PV	.067	100.00000

TOTAL AREA= 1187
MUL FACTOR=1.0000E+00

*
*

*ID 415-32I

* RUN #19333 FEB 9, 2022 12:32:42
START

┌───┐
│ │ } 1.075
│ │
└───┘
STOP

RUN# 19333 FEB 9, 2022 12:32:42

IDENTIFIER : 415-32I
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.075	993	UP	.063	100.00000

TOTAL AREA= 993
MUL FACTOR=1.0000E+00

*ID 415-36A

* RUN #19334 FEB 9, 2022 12:38:58
START

┌───┐
│ │ } 1.079
│ │
└───┘
STOP

RUN# 19334 FEB 9, 2022 12:38:58

IDENTIFIER : 415-36A
AREA%

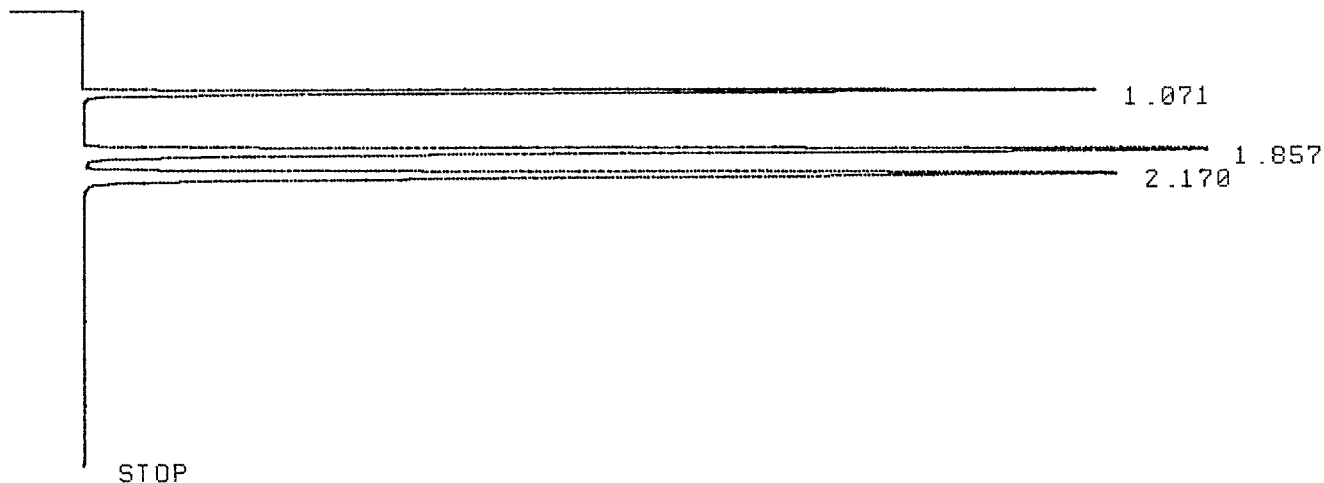
RT	AREA	TYPE	WIDTH	AREA%
1.079	1025	PU	.059	100.00000

TOTAL AREA= 1025
MUL FACTOR=1.0000E+00

*ID 12173-500X-CCU

* RUN #19335 FEB 9, 2022 12:47:10

START



RUN# 19335 FEB 9, 2022 12:47:10

IDENTIFIER : 12173-500X-C

AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.071	158857	PB	.046	20.12866
1.857	317779	PU	.076	40.26557
2.170	312572	UB	.088	39.60579

TOTAL AREA= 789208

MUL FACTOR=1.0000E+00

*

Energy Laboratories Inc

Spike LOG

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

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

Analtes

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: _____

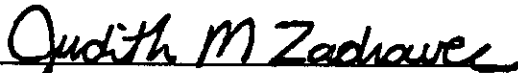
3 Multi-Component Gas Standard in Nitrogen

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

COMPONENT

CONCENTRATION

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