

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

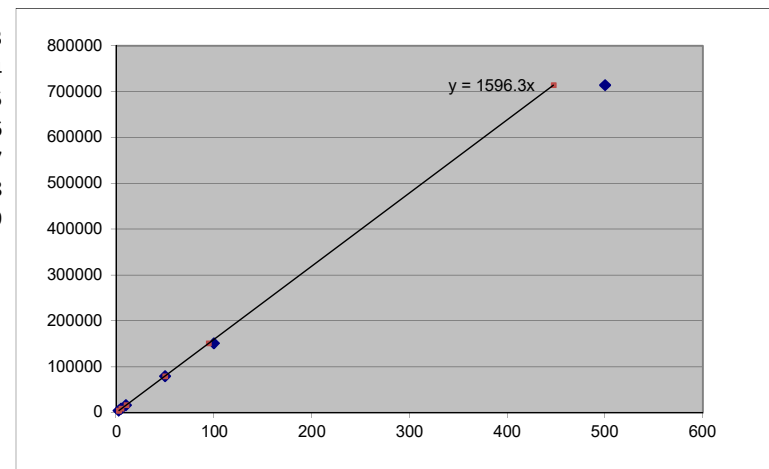
Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
14188881	Cal2	HC-METHANE-	CAL2		1/20/2021 12:00:	1	R355741		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Ethane	A	ppm		5.15876183		5	0	0	2	2	0	103%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



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

[PPM]	Area Cnts	Calculated Recoveries	
		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

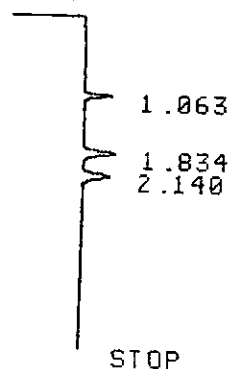


RUN# 16482 JAN 20, 2021 11:50:13

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%

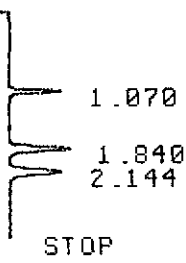
RT	AREA	TYPE	WIDTH	AREA%
1.063	4682	PP	.048	22.05370
1.834	8384	PV	.078	39.49128
2.140	8164	UP	.087	38.45502

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

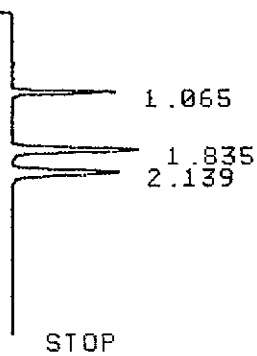
TOTAL AREA= 40739

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

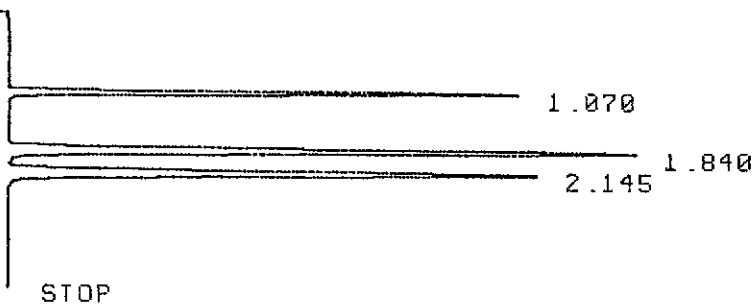
TOTAL AREA= 80518

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

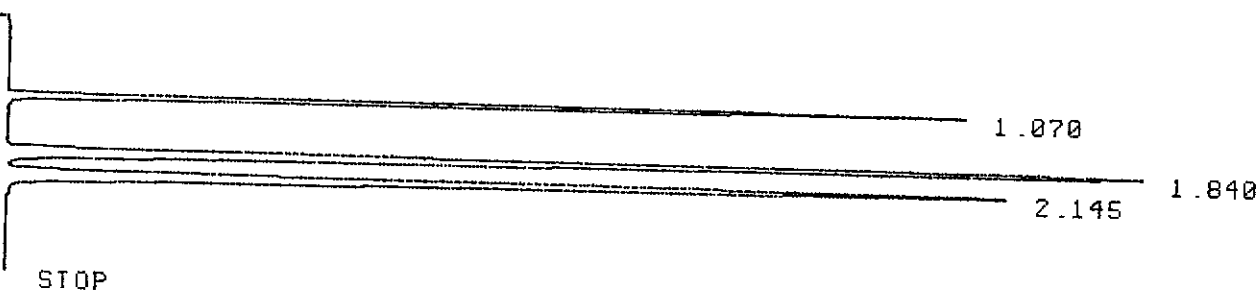
*CAL5-100PPM

INVALID SYSTEM COMMAND

*ID CAL5-100PPM

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

START



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

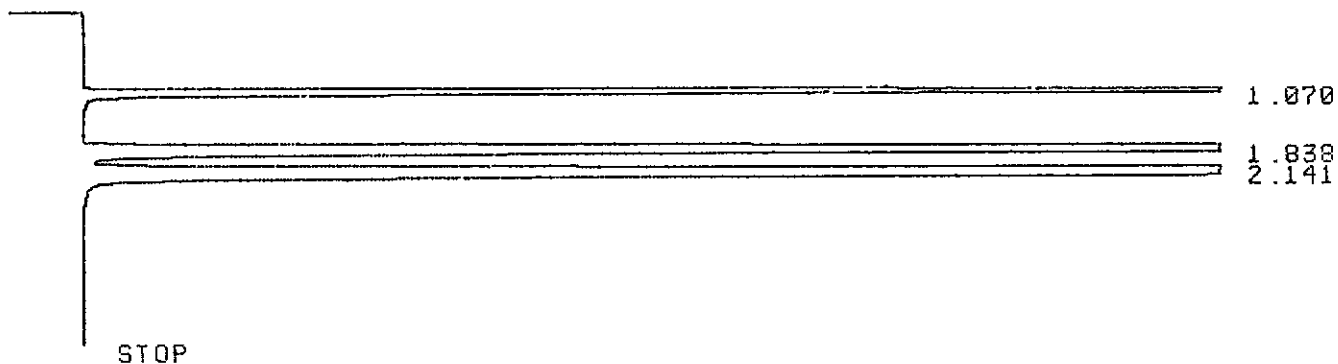
IDENTIFIER : CAL5-100PPM
AREA%

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

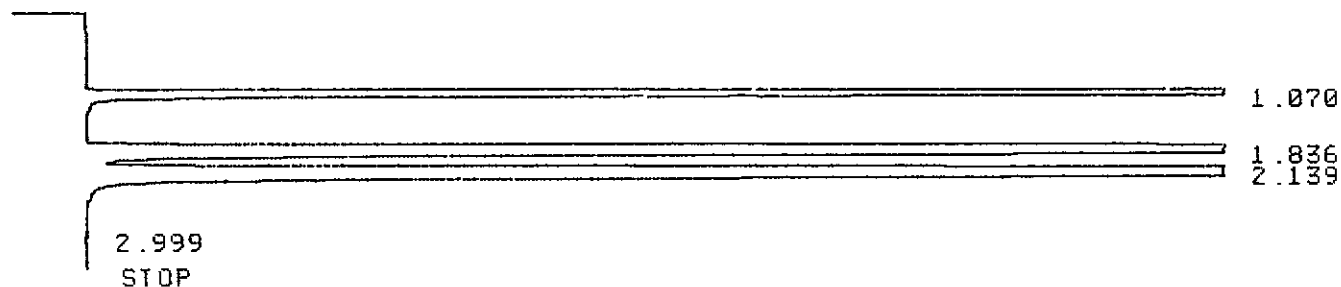
IDENTIFIER : CAL6-500PPM
AREA%

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%

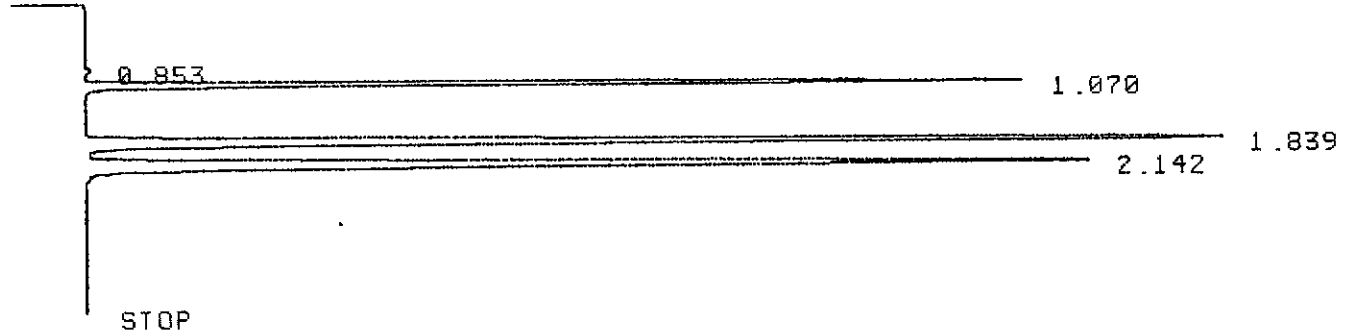
RT	AREA	TYPE	WIDTH	AREA%
1.070	1331471	PB	.049	21.86052

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

21-Jan-22

Run ID FID-HEADSPACE_220121A

Run Start Date: 1/21/2022
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					
14992203	CCV	HC-METHANE-	CCV		1/21/2022 8:35:0	1	R373537		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	ppm		95.1031545		100	0	0	2	2	0	95%	85	115	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
14992204	LCS	HC-METHANE-	LCS		1/21/2022 8:39:0	1	R373537		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	ppm		96.7375932		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					
14992205	LCSD	HC-METHANE-	LCSD		1/21/2022 8:43:0	1	R373537		0	1E+07						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	ppm		96.9073643		100	0	96.737593	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					
14992206	MBLK	HC-METHANE-	MBLK		1/21/2022 9:43:0	1	R373537		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					
14992207	B22011134-001I	HC-METHANE-	SAMP		1/21/2022 10:04:	78	R373537		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0.56181801			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					
14992208	B22011134-001I	HC-METHANE-	DUP		1/21/2022 10:11:	78	R373537		0	1E+07						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0.56168182			0	0.5618180	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					
14992209	B22011134-006	HC-METHANE-	SAMP		1/21/2022 10:21:	1	R373537		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					
14992210	B22011135-001I	HC-METHANE-	SAMP		1/21/2022 10:26:	1	R373537		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					
14992211	B22011135-005	HC-METHANE-	SAMP		1/21/2022 10:32:	1	R373537		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					
14992212	B22011136-001I	HC-METHANE-	SAMP		1/21/2022 10:38:	1	R373537		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					
14992213	B22011136-005	HC-METHANE-	SAMP		1/21/2022 10:43:	1	R373537		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					
14992214	B22011137-001I	HC-METHANE-	SAMP		1/21/2022 11:00:	78	R373537		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		3.76377095			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					
14992215	B22011137-005	HC-METHANE-	SAMP		1/21/2022 11:09:	1	R373537		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					
14992216	B22011214-001I	HC-METHANE-	SAMP		1/21/2022 11:15:	1	R373537		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					
14992217	B22011214-005	HC-METHANE-	SAMP		1/21/2022 11:22:	1	R373537		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

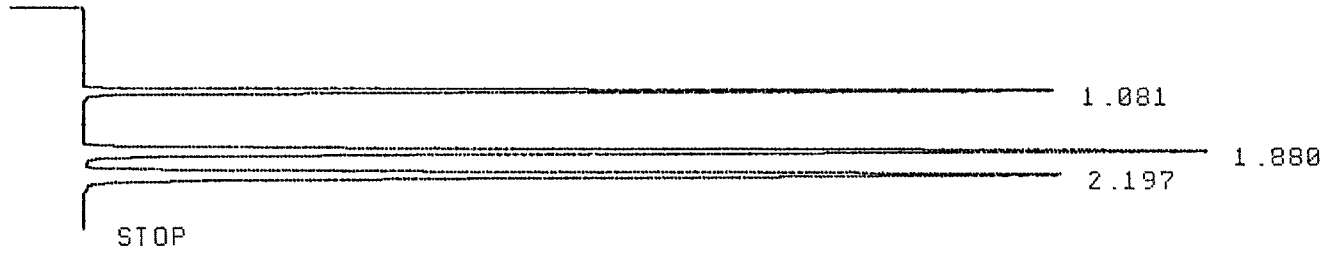
Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
14992218	B22011227-001I	HC-METHANE-	SAMP		1/21/2022 11:29:	1	R373537		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0			0	0	0.000704	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					
14992220	B22011227-005	HC-METHANE-	SAMP		1/21/2022 11:34:	1	R373537		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					
14992221	B22011228-001I	HC-METHANE-	SAMP		1/21/2022 11:40:	1	R373537		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					
14992222	B22011228-005	HC-METHANE-	SAMP		1/21/2022 11:46:	1	R373537		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					
14992223	CCV	HC-METHANE-	CCV		1/21/2022 11:50:	1	R373537		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	ppm		94.6765341		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	151810	1	20	95.10315453	1/21/2022 8:35	jdw	CCV	HC-METHANE-CCV	Methane		
LCS	154419	1	20	96.73759317	1/21/2022 8:39	jdw	LCS	HC-METHANE-CCV	Methane		
LCS	154690	1	20	96.9073643	1/21/2022 8:43	jdw	LCS	HC-METHANE-CCV	Methane		
MBLK	627	1	20	9.12299E-05	1/21/2022 9:43	jdw	MBLK	HC-METHANE-W	Methane	10	32
B22011134-001I	50130	78	20	0.561818009	1/21/2022 10:04	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22011134-001IDUP	50118	78	20	0.561681819	1/21/2022 10:11	jdw	DUP	HC-METHANE-W	Methane	10	32
B22011134-006A	614	1	20	-1.89153E-06	1/21/2022 10:21	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22011135-001I	2503	1	20	0.000272962	1/21/2022 10:26	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22011135-005A	850	1	20	3.2447E-05	1/21/2022 10:32	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22011136-001I	988	1	20	5.25263E-05	1/21/2022 10:38	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22011136-005A	1623	1	20	0.00014492	1/21/2022 10:43	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22011137-001I	332261	78	20	3.763770954	1/21/2022 11:00	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22011137-005A	1179	1	20	8.03172E-05	1/21/2022 11:09	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22011214-001I	3217	1	20	0.000376851	1/21/2022 11:15	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22011214-005A	1481	1	20	0.000124259	1/21/2022 11:22	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22011227-001I	0	1	20	-9.12299E-05	1/21/2022 11:29	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22011227-005A	1186	1	20	8.13357E-05	1/21/2022 11:34	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22011228-001I	1210	1	20	8.48278E-05	1/21/2022 11:40	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22011228-005A	1374	1	20	0.00010869	1/21/2022 11:46	jdw	SAMP	HC-METHANE-W	Methane	10	32
CCV	151129	1	20	94.6765341	1/21/2022 11:50	jdw	CCV	HC-METHANE-CCV	Methane		

*ID 12173-500X-CCU

JW
1/21/2022

* RUN #19146 JAN 21, 2022 08:35:23
START



RUN# 19146 JAN 21, 2022 08:35:23

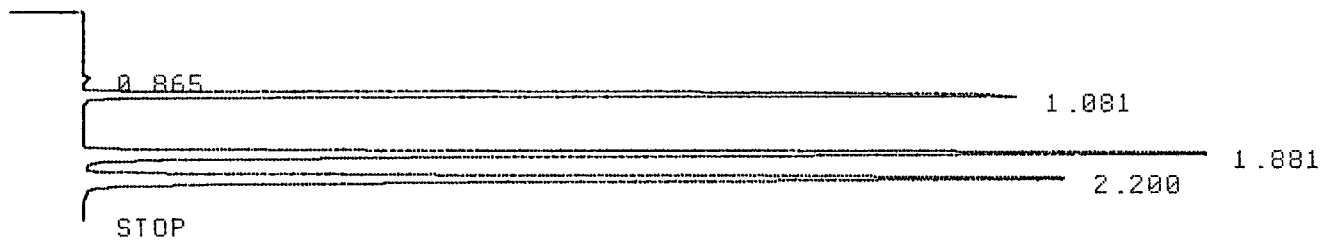
IDENTIFIER : 12173-500X-C
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.081	151810	PB	.046	20.22954
1.880	301860	PB	.076	40.22456
2.197	296767	PB	.089	39.54590

TOTAL AREA= 750437
MUL FACTOR=1.0000E+00

*ID 10711-LCS

* RUN #19147 JAN 21, 2022 08:39:33
START



RUN# 19147 JAN 21, 2022 08:39:33

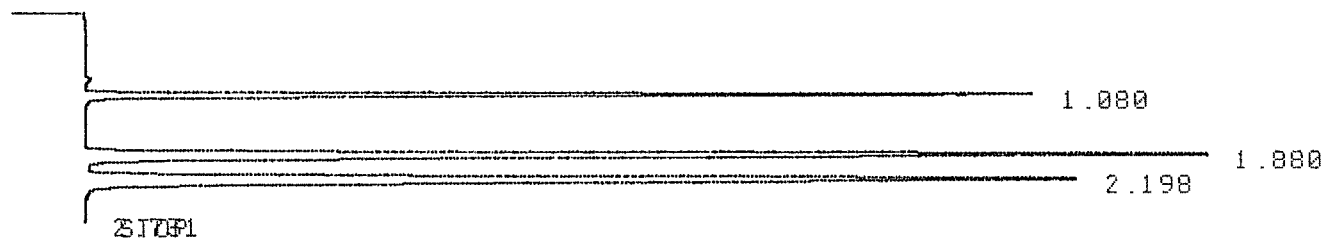
IDENTIFIER : 10711-LCS
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.865	1201	PP	.053	.15791
1.081	154419	PB	.048	20.30295
1.881	306286	PB	.076	40.27037
2.200	298668	BB	.089	39.26877

TOTAL AREA= 760574
MUL FACTOR=1.0000E+00

*ID 10711-LCSD

* RUN #19148 JAN 21, 2022 08:43:40
START



RUN# 19148 JAN 21, 2022 08:43:40

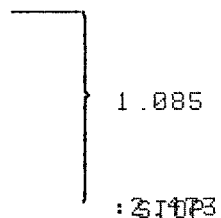
IDENTIFIER : 10711-LCSD
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.080	154690	BB	.048	20.16532
1.880	308625	PV	.076	40.23222
2.198	303794	UV	.089	39.60245

TOTAL AREA= 767109
MUL FACTOR=1.0000E+00

*ID MB

* RUN #19149 JAN 21, 2022 09:43:51
START



RUN# 19149 JAN 21, 2022 09:43:51

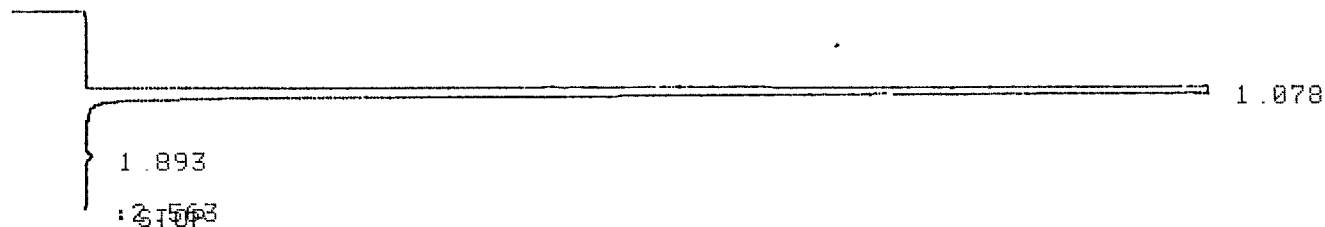
IDENTIFIER : MB
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.085	627	BP	.046	100.00000

TOTAL AREA= 627
MUL FACTOR=1.0000E+00

*ID 1134-1I

* RUN #19150 JAN 21, 2022 09:49:10
START



RUN# 19150 JAN 21, 2022 09:49:10

IDENTIFIER : 1134-1I
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.078	2908554	PB	.055	99.91651
1.893	2430	PP	.100	.08348

TOTAL AREA=2910984
MUL FACTOR=1.0000E+00

* PLOT

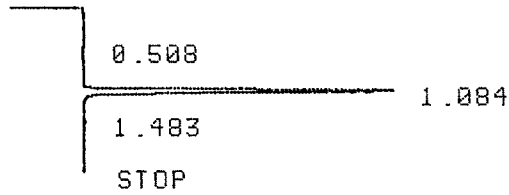


STOP

*

*ID 1134-1I-78X

* RUN #19151 JAN 21, 2022 10:04:15
START



RUN# 19151 JAN 21, 2022 10:04:15

IDENTIFIER : 1134-1I-78X
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.508	748	PU	.101	1.47018
1.084	50130	UU	.047	98.52982

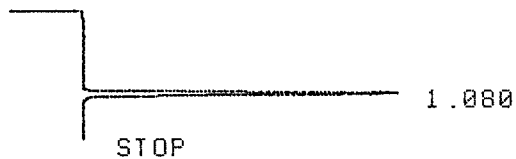
TOTAL AREA= 50878
MUL FACTOR=1.0000E+00

* PLOT



*ID 1134-1I-78XDUP

* RUN #19152 JAN 21, 2022 10:11:49
START



RUN# 19152 JAN 21, 2022 10:11:49

IDENTIFIER : 1134-1I-78XD
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.080	50118	PU	.046	100.00000

TOTAL AREA= 50118
MUL FACTOR=1.0000E+00

* PLOT

STOP

*ID 1134-6A

* RUN #19153 JAN 21, 2022 10:21:00
START

1.078
STOP

RUN# 19153 JAN 21, 2022 10:21:00

IDENTIFIER : 1134-6A
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.078	614	BP	.053	100.00000

TOTAL AREA= 614
MUL FACTOR=1.0000E+00

*ID 1135-1I

* RUN #19154 JAN 21, 2022 10:26:31
START

1.083
STOP

RUN# 19154 JAN 21, 2022 10:26:31

IDENTIFIER : 1135-1I
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.083	2503	BP	.047	100.00000

TOTAL AREA= 2503

*ID 1135-5A

* RUN #19155 JAN 21, 2022 10:32:43
START

┌───┐
│ 0.209
│ }
│ 1.083
│ }
└───┘
STOP

RUN# 19155 JAN 21, 2022 10:32:43

IDENTIFIER : 1135-5A
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.209	529	PP	.063	38.36114
1.083	850	PV	.055	61.63885

TOTAL AREA= 1379
MUL FACTOR=1.00000E+00

*ID 1136-1I

* RUN #19156 JAN 21, 2022 10:38:00
START

┌───┐
│ 1.089
│ }
│ 2.092
└───┘
STOP

RUN# 19156 JAN 21, 2022 10:38:00

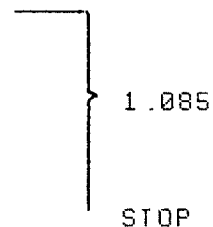
IDENTIFIER : 1136-1I
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.089	988	UP	.058	100.00000

TOTAL AREA= 988
MUL FACTOR=1.00000E+00

*ID 1136-5A

* RUN #19157 JAN 21, 2022 10:43:04
START



RUN# 19157 JAN 21, 2022 10:43:04

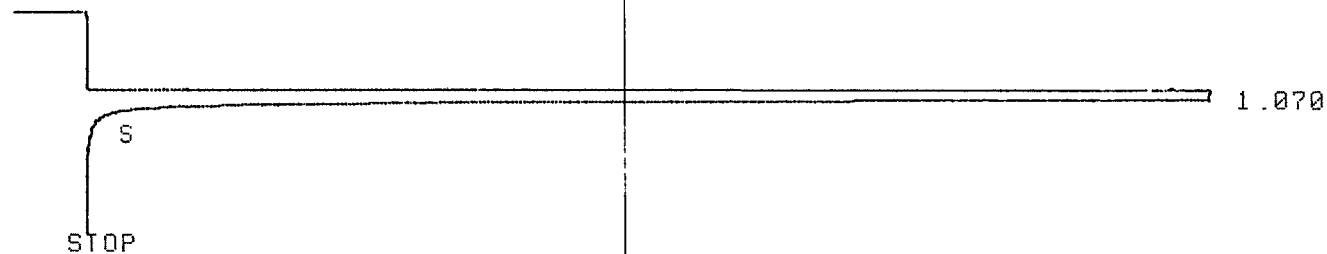
IDENTIFIER : 1136-5A
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.085	1623	UP	.050	100.00000

TOTAL AREA= 1623
MUL FACTOR=1.0000E+00

*ID 1137-1I

* RUN #19158 JAN 21, 2022 10:48:37
START



RUN# 19158 JAN 21, 2022 10:48:37

IDENTIFIER : 1137-1I
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.070	6181667	SBB	.066	100.00000

TOTAL AREA=6181667
MUL FACTOR=1.0000E+00

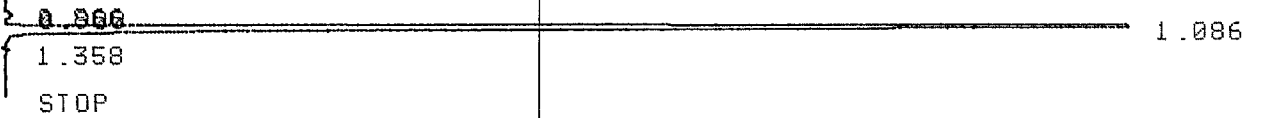
STOP

* PLOT

STOP

*ID 1137-1I-78X

* RUN #19159 JAN 21, 2022 11:00:19
START



RUN# 19159 JAN 21, 2022 11:00:19

IDENTIFIER : 1137-1I-78X
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.866	894	PV	.050	.26683
.900	1208	UP	.045	.36055
1.086	332261	PB	.049	99.16995
1.358	679	BU	.028	.20266

TOTAL AREA= 335042
MUL FACTOR=1.0000E+00

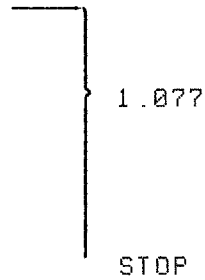
* PLOT

STOP

*

*ID 1137-5A

* RUN #19160 JAN 21, 2022 11:09:10
START



RUN# 19160 JAN 21, 2022 11:09:10

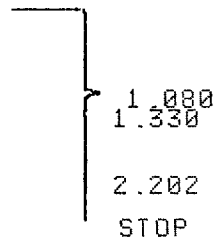
IDENTIFIER : 1137-5A
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.077	1179	PV	.061	100.00000

TOTAL AREA= 1179
MUL FACTOR=1.0000E+00

*ID 1214-1I

* RUN #19161 JAN 21, 2022 11:15:23
START



RUN# 19161 JAN 21, 2022 11:15:23

IDENTIFIER : 1214-1I
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.000	3217	UU	.059	88.54941
2.202	416	PV	.058	11.45059

TOTAL AREA= 3633
MUL FACTOR=1.0000E+00

*

*ID 1214-5A

* RUN #19162 JAN 21, 2022 11:22:43
START

┌───
└─── } 1.084
 |
 └─── STOP

RUN# 19162 JAN 21, 2022 11:22:43

IDENTIFIER : 1214-5A
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.084	1481	PP	.072	100.00000

TOTAL AREA= 1481
MUL FACTOR=1.0000E+00

*ID 1227-1I

* RUN #19163 JAN 21, 2022 11:29:25
START

┌───
└─── }
 |
 └─── STOP

RUN# 19163 JAN 21, 2022 11:29:25

IDENTIFIER : 1227-1I
NO RUN PEAKS STORED

*

*ID 1227-5A

* RUN #19164 JAN 21, 2022 11:34:51

START

┌───┐
│ │
│ │ } 1.079
│ │
└───┘
STOP

RUN# 19164 JAN 21, 2022 11:34:51

IDENTIFIER : 1227-5A

AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.079	1186	PU	.054	100.00000

TOTAL AREA= 1186
MUL FACTOR=1.0000E+00

*ID 1228-1I

* RUN #19165 JAN 21, 2022 11:40:44

START

┌───┐
│ │
│ │ } 1.079
│ │
│ │ } 2.175
│ │
└───┘
STOP

RUN# 19165 JAN 21, 2022 11:40:44

IDENTIFIER : 1228-1I

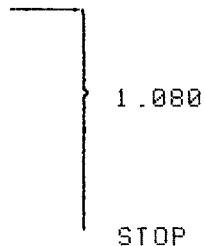
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.079	1210	UP	.058	72.93549
2.175	449	PU	.068	27.06450

TOTAL AREA= 1659
MUL FACTOR=1.0000E+00

*ID 1228-5A

* RUN #19166 JAN 21, 2022 11:46:42
START



RUN# 19166 JAN 21, 2022 11:46:42

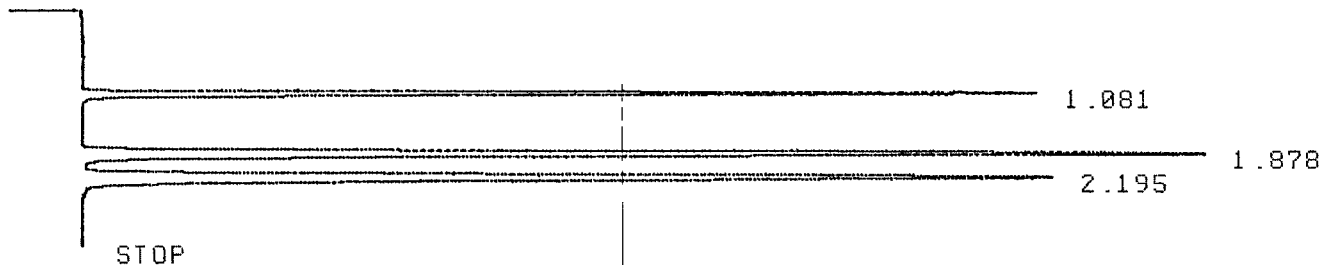
IDENTIFIER : 1228-5A
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.080	1374	UP	.069	100.00000

TOTAL AREA= 1374
MUL FACTOR=1.0000E+00

*ID 12173-500X-CCU

* RUN #19167 JAN 21, 2022 11:50:40
START



RUN# 19167 JAN 21, 2022 11:50:40

IDENTIFIER : 12173-500X-C
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.081	151129	BB	.046	20.13662
1.878	302236	PB	.077	40.27032
2.195	297153	BU	.090	39.59306

TOTAL AREA= 750518
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: _____

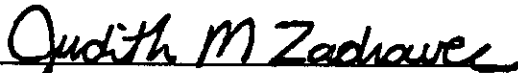
3 Multi-Component Gas Standard in Nitrogen

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

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