

# 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

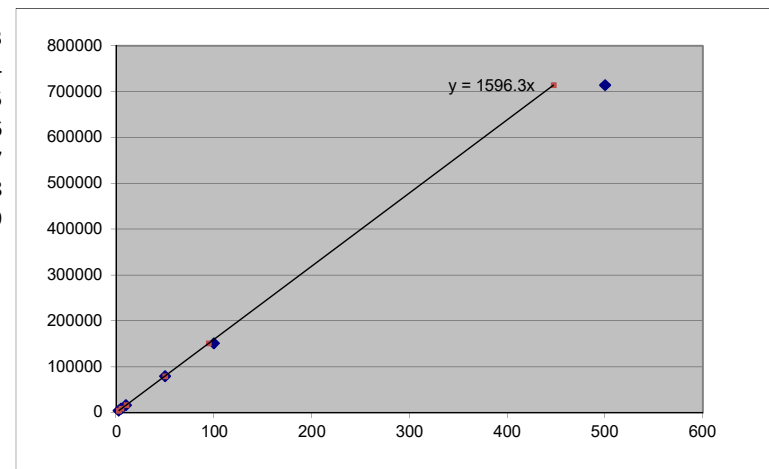
Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
14188881	Cal2	HC-METHANE-	CAL2		1/20/2021 12:00:	1	R355741		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Ethane	A	ppm		5.15876183		5	0	0	2	2	0	103%	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	jdw	MBLK	HC-METHANE-W	Methane
MBLK	0	1	20	0	1/20/2021 11:50	jdw	MBLK	HC-METHANE-W	Ethane
MBLK	0	1	20	0	1/20/2021 11:50	jdw	MBLK	HC-METHANE-W	Ethene
Cal1	4682	1	20	2.9330938	1/20/2021 11:54	jdw	CCV	HC-METHANE-CCV	Methane
Cal1	8164	1	20	2.66692829	1/20/2021 11:54	jdw	CCV	HC-METHANE-CCV	Ethane
Cal1	8384	1	20	2.68217219	1/20/2021 11:54	jdw	CCV	HC-METHANE-CCV	Ethene
Cal2	8741	1	20	5.47590194	1/20/2021 12:00	jdw	CCV	HC-METHANE-CCV	Methane
Cal2	15792	1	20	5.15876183	1/20/2021 12:00	jdw	CCV	HC-METHANE-CCV	Ethane
Cal2	16206	1	20	5.18455183	1/20/2021 12:00	jdw	CCV	HC-METHANE-CCV	Ethene
Cal3	16844	1	20	10.5521213	1/20/2021 12:04	jdw	CCV	HC-METHANE-CCV	Methane
Cal3	31757	1	20	10.37403746	1/20/2021 12:04	jdw	CCV	HC-METHANE-CCV	Ethane
Cal3	31917	1	20	10.21074545	1/20/2021 12:04	jdw	CCV	HC-METHANE-CCV	Ethene
Cal4	79772	1	20	49.97410476	1/20/2021 12:09	jdw	CCV	HC-METHANE-CCV	Methane
Cal4	154538	1	20	50.48282269	1/20/2021 12:09	jdw	CCV	HC-METHANE-CCV	Ethane
Cal4	158708	1	20	50.7731613	1/20/2021 12:09	jdw	CCV	HC-METHANE-CCV	Ethene
Cal5	151345	1	20	94.81184983	1/20/2021 12:14	jdw	CCV	HC-METHANE-CCV	Methane
Cal5	295835	1	20	96.64021698	1/20/2021 12:14	jdw	CCV	HC-METHANE-CCV	Ethane
Cal5	301225	1	20	96.3665695	1/20/2021 12:14	jdw	CCV	HC-METHANE-CCV	Ethene
Cal6	714053	1	20	447.3268744	1/20/2021 12:22	jdw	CCV	HC-METHANE-CCV	Methane
Cal6	1359194	1	20	444.0069737	1/20/2021 12:22	jdw	CCV	HC-METHANE-CCV	Ethane
Cal6	1391019	1	20	445.0086452	1/20/2021 12:22	jdw	CCV	HC-METHANE-CCV	Ethene
Cal7	1331471	1	20	834.11562	1/20/2021 12:22	jdw	CCV	HC-METHANE-CCV	Methane
LCS	154662	1	20	96.88982337	1/20/2021 12:36	jdw	CCV	HC-METHANE-CCV	Methane
LCS	297724	1	20	97.25729532	1/20/2021 12:36	jdw	CCV	HC-METHANE-CCV	Ethane
LCS	303645	1	20	97.1407652	1/20/2021 12:36	jdw	CCV	HC-METHANE-CCV	Ethene

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

\*ID MB

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

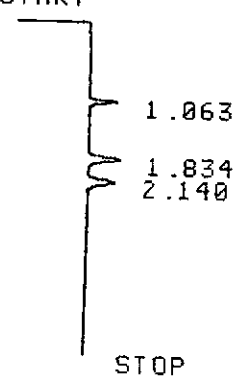


RUN# 16482      JAN 20, 2021    11:50:13

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%

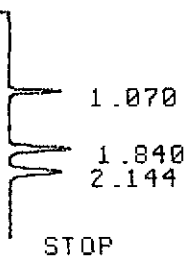
RT	AREA	TYPE	WIDTH	AREA%
1.063	4682	PP	.048	22.05370
1.834	8384	PV	.078	39.49128
2.140	8164	UP	.087	38.45502

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

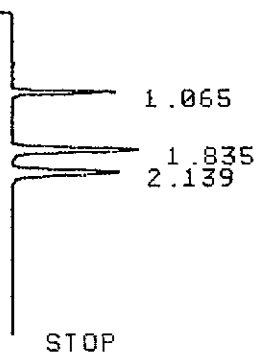
TOTAL AREA= 40739

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

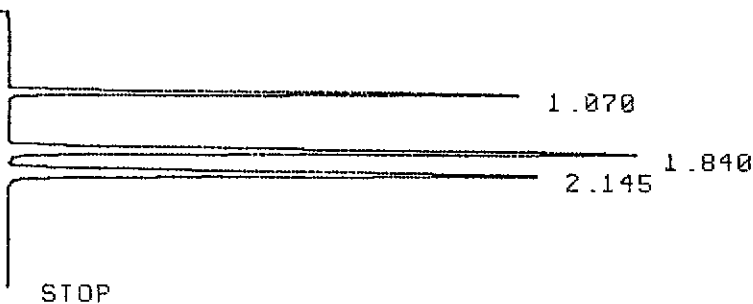
TOTAL AREA= 80518

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

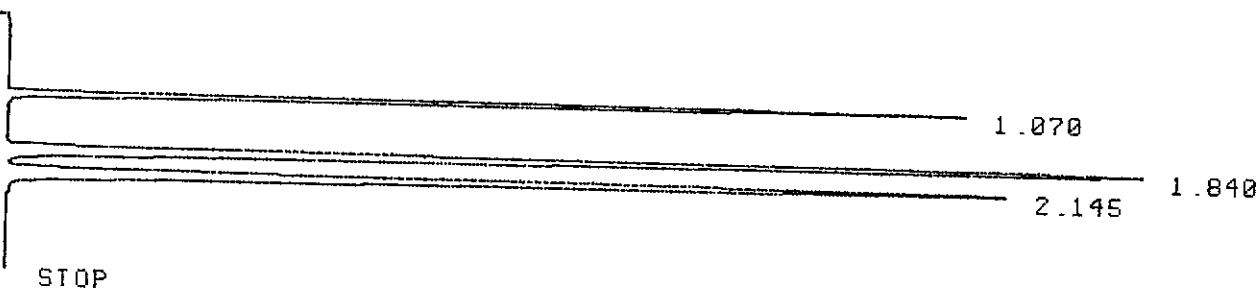
\*CAL5-100PPM

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%

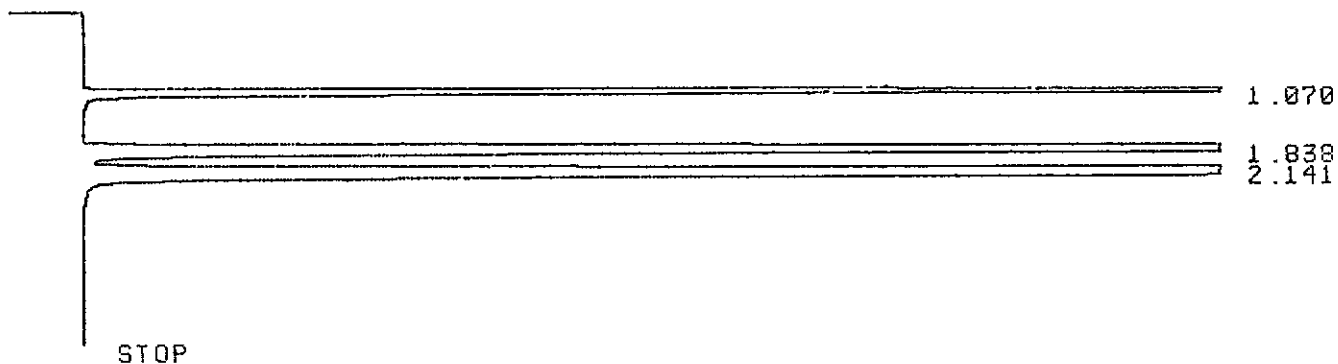
RT	AREA	TYPE	WIDTH	AREA%
1.070	151345	PB	.047	20.22234
1.840	301225	PB	.075	40.24893
2.145	295835	BB	.088	39.52874

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

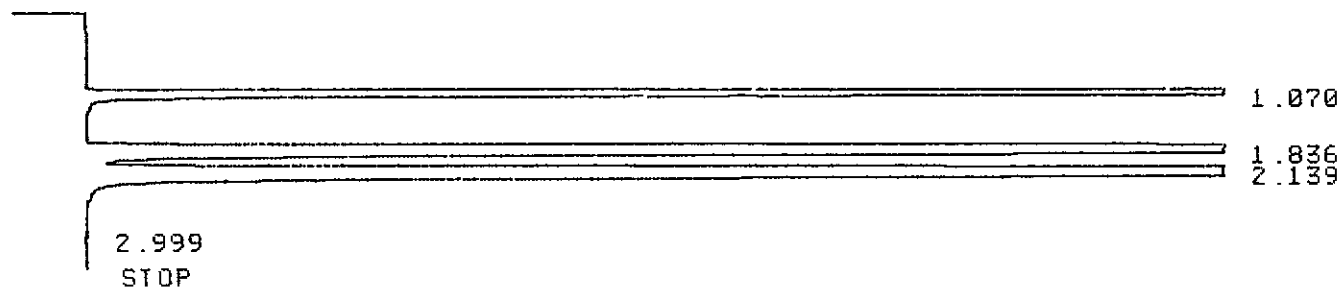
IDENTIFIER : CAL6-500PPM  
AREA%

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%

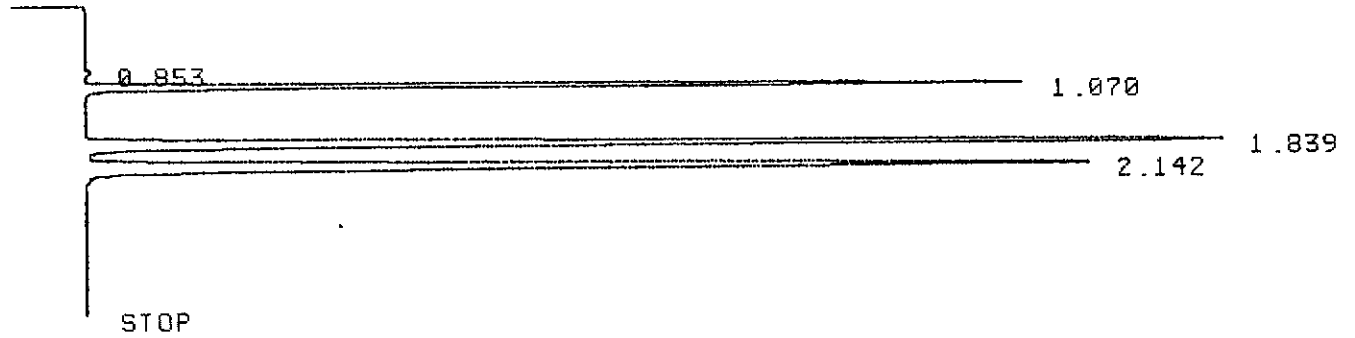
RT	AREA	TYPE	WIDTH	AREA%
1.070	1331471	PB	.049	21.86952

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

05-Jan-22

Run ID FID-HEADSPACE\_211229A

**Run Start Date:** 12/29/2021  
**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					
14953772	CCV	HC-METHANE-	CCV		12/29/2021 9:06:	1	R372471		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	ppm		92.2051426		100	0	0	2	2	0	92%	85	115	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
14953774	LCS	HC-METHANE-	LCS		12/29/2021 9:10:	1	R372471		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	ppm		95.4163854		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					
14953776	LCSD	HC-METHANE-	LCSD		12/29/2021 9:15:	1	R372471		0	1E+07						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	ppm		95.8724495		100	0	95.416385	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					
14953778	MBLK	HC-METHANE-	MBLK		12/29/2021 10:3	1	R372471		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					
14953780	B21121967-001I	HC-METHANE-	SAMP		12/29/2021 10:3	1	R372471		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0.03422401			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					
14953783	B21121967-001I	HC-METHANE-	DUP		12/29/2021 10:5	1	R372471		0	1E+07						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0.03393358			0	0.0342240	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					
14953785	B21121967-006	HC-METHANE-	SAMP		12/29/2021 11:1	1	R372471		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					
14953787	B21121968-001I	HC-METHANE-	SAMP		12/29/2021 11:1	1	R372471		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					
14953790	B21121968-006	HC-METHANE-	SAMP		12/29/2021 11:2	1	R372471		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					
14953792	B21121977-001I	HC-METHANE-	SAMP		12/29/2021 11:3	1	R372471		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					
14953794	B21121977-002I	HC-METHANE-	SAMP		12/29/2021 11:3	1	R372471		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					
14953797	B21121977-006	HC-METHANE-	SAMP		12/29/2021 11:4	1	R372471		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					
14953799	B21121979-001I	HC-METHANE-	SAMP		12/29/2021 11:4	1	R372471		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					
14953801	B21121979-003I	HC-METHANE-	SAMP		12/29/2021 11:5	1	R372471		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0.00209087			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					
14953803	B21121979-007	HC-METHANE-	SAMP		12/29/2021 12:0	1	R372471		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

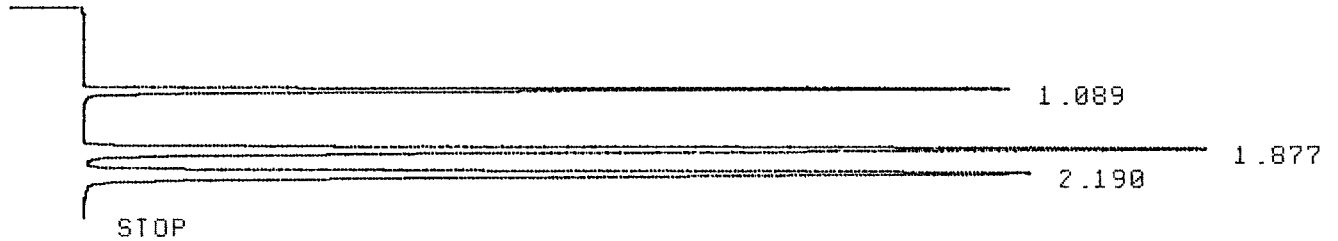
Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
14953805	CCV	HC-METHANE-	CCV		12/29/2021 12:0	1	R372471		0	0						
Methane	A	ppm		96.4331328		100	0	0	2	2	0	96%	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	147184	1	20	92.20514259	12/29/2021 9:06	jdw	CCV	HC-METHANE-CCV	Methane		
LCS	152310	1	20	95.41638539	12/29/2021 9:10	jdw	LCS	HC-METHANE-CCV	Methane		
LCSD	153038	1	20	95.87244953	12/29/2021 9:15	jdw	LCSD	HC-METHANE-CCV	Methane		
MBLK	687	1	20	9.996E-05	12/29/2021 10:33	jdw	MBLK	HC-METHANE-W	Methane	10	32
B21121967-001I	235900	1	20	0.034224007	12/29/2021 10:37	jdw	SAMP	HC-METHANE-W	Methane	10	32
B21121967-001IDUP	233904	1	20	0.033933585	12/29/2021 10:55	jdw	DUP	HC-METHANE-W	Methane	10	32
B21121967-006A	755	1	20	9.89415E-06	12/29/2021 11:13	jdw	SAMP	HC-METHANE-W	Methane	10	32
B21121968-001I	1159	1	20	6.8677E-05	12/29/2021 11:19	jdw	SAMP	HC-METHANE-W	Methane	10	32
B21121968-006A	1031	1	20	5.00528E-05	12/29/2021 11:24	jdw	SAMP	HC-METHANE-W	Methane	10	32
B21121977-001I	984	1	20	4.32142E-05	12/29/2021 11:30	jdw	SAMP	HC-METHANE-W	Methane	10	32
B21121977-002I	1113	1	20	6.19839E-05	12/29/2021 11:36	jdw	SAMP	HC-METHANE-W	Methane	10	32
B21121977-006A	1188	1	20	7.28966E-05	12/29/2021 11:41	jdw	SAMP	HC-METHANE-W	Methane	10	32
B21121979-001I	2025	1	20	0.000194682	12/29/2021 11:46	jdw	SAMP	HC-METHANE-W	Methane	10	32
B21121979-003I	15057	1	20	0.002090866	12/29/2021 11:52	jdw	SAMP	HC-METHANE-W	Methane	10	32
B21121979-007A	2897	1	20	0.00032156	12/29/2021 12:02	jdw	SAMP	HC-METHANE-W	Methane	10	32
CCV	153933	1	20	96.43313277	12/29/2021 12:07	jdw	CCV	HC-METHANE-CCV	Methane		

JDW  
12/29/2021

\*ID 12173-500X-CCU

\* RUN #18804      DEC 29, 2021    09:06:18  
START



RUN# 18804      DEC 29, 2021    09:06:18

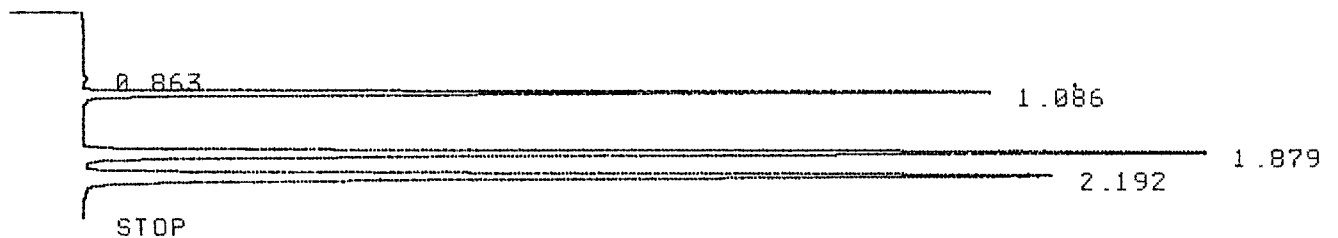
IDENTIFIER : 12173-500X-C  
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.089	147184	BB	.046	20.25961
1.877	293856	BB	.076	40.44874
2.190	285450	BB	.089	39.29166

TOTAL AREA= 726490  
MUL FACTOR=1.0000E+00

\*ID 10711-LCS

\* RUN #18805      DEC 29, 2021    09:10:37  
START





IDENTIFIER : 10711-LCS  
AREA%

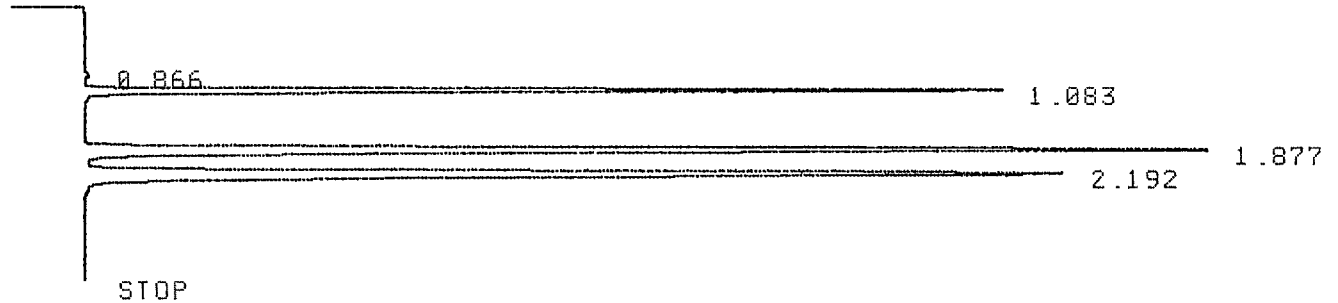
RT	AREA	TYPE	WIDTH	AREA%
.863	1006	UU	.058	.13400
1.086	152310	PB	.049	20.28717
1.879	301916	PU	.076	40.21419
2.192	295538	UB	.089	39.36466

TOTAL AREA= 750770  
MUL FACTOR=1.0000E+00

\*ID 10711-LCS

\*ID 10711-LCSD

\* RUN #18806            DEC 29, 2021    09:15:28  
START



RUN# 18806            DEC 29, 2021    09:15:28

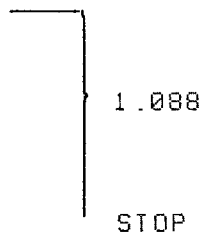
IDENTIFIER : 10711-LCSD  
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.866	1025	UU	.062	.13580
1.083	153038	PB	.049	20.27619
1.877	303327	PB	.076	40.18816
2.192	297377	BB	.089	39.39984

TOTAL AREA= 754767  
MUL FACTOR=1.0000E+00

\*

\* RUN #18807      DEC 29, 2021 10:33:27  
START



RUN# 18807      DEC 29, 2021 10:33:27

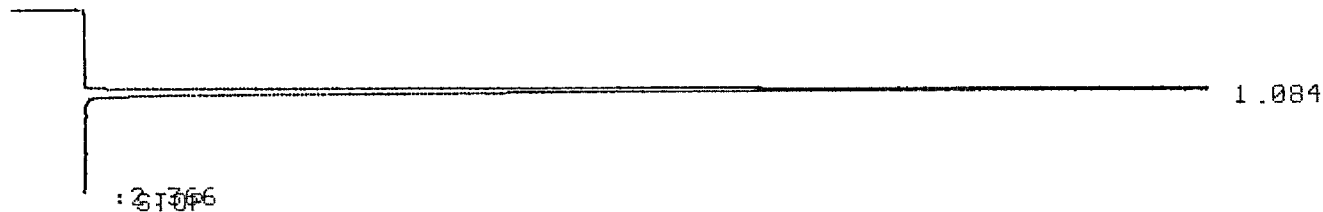
IDENTIFIER : MB  
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.088	687	PU	.053	100.00000

TOTAL AREA= 687  
MUL FACTOR=1.0000E+00

\*ID 1967-1I

\* RUN #18808      DEC 29, 2021 10:37:10  
START



RUN# 18808      DEC 29, 2021 10:37:10

IDENTIFIER : 1967-1I  
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.084	235900	PB	.047	100.00000

TOTAL AREA= 235900  
MUL FACTOR=1.0000E+00

\* PLOT



STOP

\* PLOT

STOP

\* PLOT

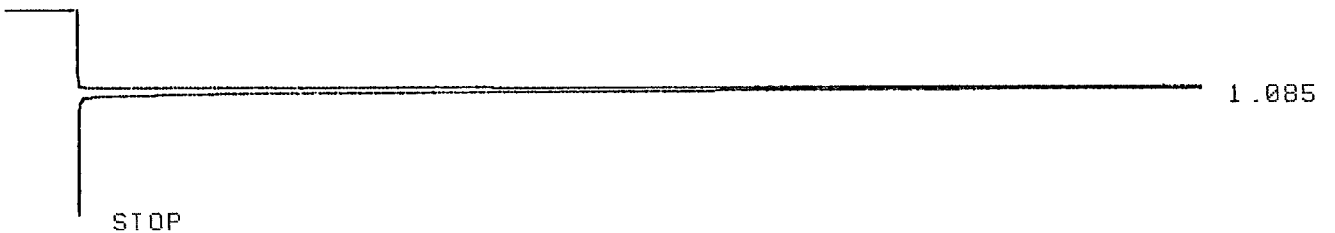
STOP

\* PLOT

STOP

\*ID 1967-1I-DUP

\* RUN #18809      DEC 29, 2021 10:55:34  
START



RUN# 18809      DEC 29, 2021 10:55:34

IDENTIFIER : 1967-1I-DUP  
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.085	233904	PB	.047	100.00000

TOTAL AREA= 233904

\* PLOT



STOP

\* PLOT



STOP

\* PLOT



STOP

\* PLOT

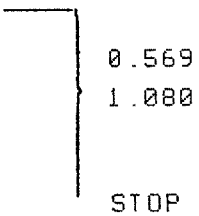


STOP

\*ID 1967-6A

\* RUN #18810  
START

DEC 29, 2021 11:13:43



0.569

1.080

STOP

IDENTIFIER : 1967-6A

AREA%

RT	AREA	TYPE	WIDTH	AREA%
.569	336	UP	.028	30.79744
1.080	755	PU	.052	69.20256

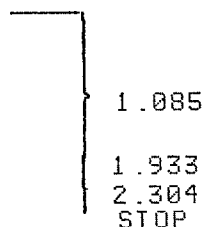
TOTAL AREA= 1091  
MUL FACTOR=1.0000E+00

\* PLOT



\*ID 1968-1I

START



IDENTIFIER : 1968-1I

AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.085	1159	PU	.056	51.78733
1.933	768	PU	.066	34.31637
2.304	311	BP	.036	13.89634

TOTAL AREA= 2238  
MUL FACTOR=1.0000E+00

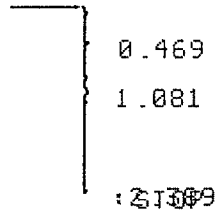
\* PLOT



\*

\*ID 1968-6A

\* RUN #18812            DEC 29, 2021 11:24:59  
START



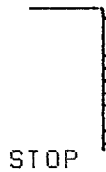
RUN# 18812                    DEC 29, 2021 11:24:59

IDENTIFIER : 1968-6A  
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.469	353	PP	.016	25.50578
1.081	1031	UP	.069	74.49424

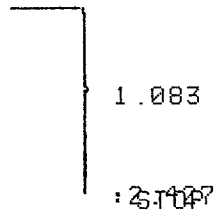
TOTAL AREA= 1384  
MUL FACTOR=1.0000E+00

\* PLOT



\*ID 1977-1I

\* RUN #18813            DEC 29, 2021 11:30:41  
START



RUN# 18813                    DEC 29, 2021 11:30:41

IDENTIFIER : 1977-1I  
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.083	984	UP	.063	100.00000

TOTAL AREA= 984  
MUL FACTOR=1.0000E+00

\* PLOT

—  
|  
STOP

\*ID 1977-2I

\* RUN #18814            DEC 29, 2021  11:36:00  
START

—  
|  
} 1.082  
|  
STOP

RUN# 18814            DEC 29, 2021  11:36:00

IDENTIFIER : 1977-2I

AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.082	1113	PP	.076	100.00000

TOTAL AREA= 1113  
MUL FACTOR=1.0000E+00

\* PLOT

—  
|  
STOP

\*ID 1977-6A

\* RUN #18815            DEC 29, 2021  11:41:09  
START

—  
|  
} 1.075  
|  
STOP

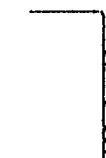
RUN# 18815            DEC 29, 2021  11:41:09

IDENTIFIER : 1977-6A

RT	AREA	TYPE	WIDTH	AREA%
1.075	1188	PP	.073	100.00000

TOTAL AREA= 1188  
MUL FACTOR=1.0000E+00

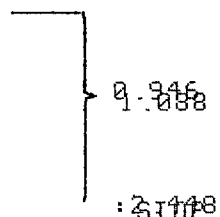
\* PLOT



STOP

\*ID 1979-1I

\* RUN #18816            DEC 29, 2021    11:46:56  
START



RUN# 18816            DEC 29, 2021    11:46:56

IDENTIFIER : 1979-1I  
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.946	377	PU	.048	15.69526
1.088	2025	UU	.056	84.30474

TOTAL AREA= 2402  
MUL FACTOR=1.0000E+00

\* PLOT



STOP

\*ID 1979-3I

\* RUN #18817            DEC 29, 2021    11:52:13  
START





{ 1.885  
2.205  
STOP

RUN# 18817                    DEC 29, 2021 11:52:13

IDENTIFIER : 1979-3I  
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.088	15057	UU	.048	83.02733
1.885	1958	UU	.081	10.79680
2.205	1120	PU	.104	6.17590

TOTAL AREA= 18135  
MUL FACTOR=1.0000E+00

\* PLOT

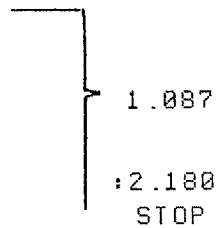


\* PLOT



\*ID 1979-7A

\* RUN #18818                    DEC 29, 2021 12:02:18  
START



RUN# 18818                    DEC 29, 2021 12:02:18

IDENTIFIER : 1979-7A  
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.087	2897	PU	.052	100.00000

MUL FACTOR=1.0000E+00

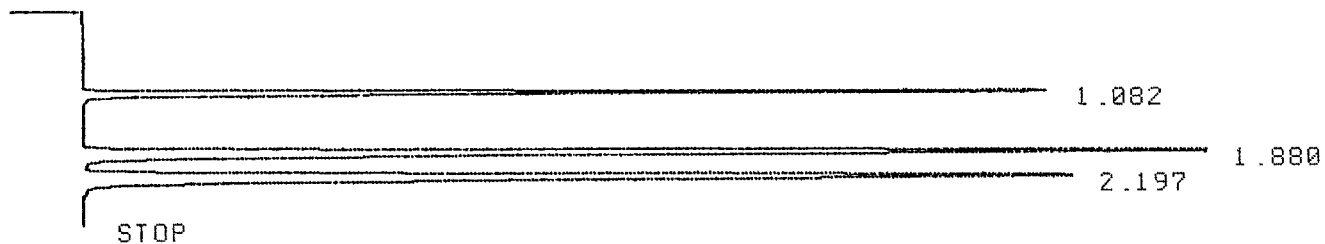
\* PLOT

STOP

\*ID 12173-500X-CCU

\* RUN #18819      DEC 29, 2021    12:07:33

START



RUN# 18819                    DEC 29, 2021    12:07:33

IDENTIFIER : 12173-500X-C  
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.082	153933	PB	.047	20.11426
1.880	308246	PB	.077	40.27816
2.197	303114	BB	.090	39.60757

TOTAL AREA= 765293  
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: \_\_\_\_\_

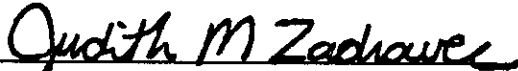
3 Multi-Component Gas Standard in Nitrogen

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