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

1

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

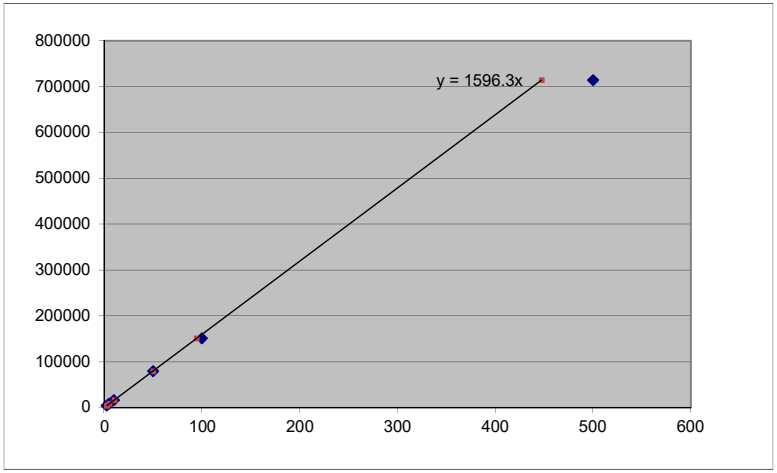
Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14188893	LCS	HC-METHANE- CCV			1/20/2021 12:36:	1	R355741		0	0	

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

Blank,cts	STD ID	Curve Data for samples analyzed after 1/29/2021
0	#12173	1000000

Amnt, Injtd 300ul	Decimal Equivalent	Conc ppm	Sample Area Counts	Response Factor	Date/Time	Run Id
	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

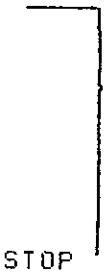
		Calculated Recoveries	
[PPM]	Area Cnts	PPM	% recovery
2.5	4682	2.933094	1.1732375
5	8741	5.475902	1.0951804
10	16844	10.55212	1.0552121
50	79772	49.9741	0.9994821
100	151345	94.81185	0.9481185
500	714053	447.3269	0.8946537
1000	1331471	834.1156	0.8341156

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
JDW
1/20/2021

*ID MB

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



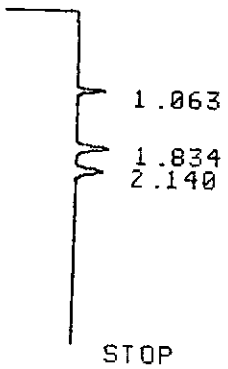
STOP

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

IDENTIFIER : MB
NO RUN PEAKS STORED

*ID CAL1-2.5PPM

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



STOP

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

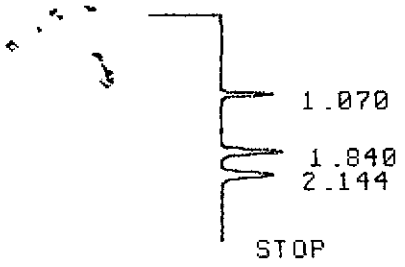
IDENTIFIER : CAL1-2.5PPM
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.063	4682	PP	.048	22.05370
1.834	8384	PU	.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
```



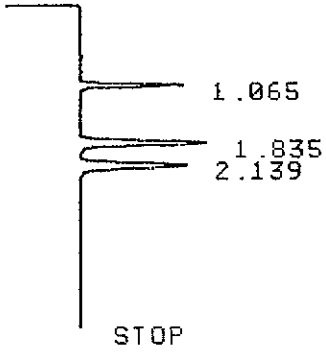

```
RUN# 16484           JAN 20, 2021   12:00:03

IDENTIFIER : CAL2-5PPM
AREA%
      RT       AREA TYPE  WIDTH       AREA%
   1.070       8741   VP    .049    21.45610
   1.840      16206   PV    .076    39.78006
   2.144      15792   VV    .088    38.76384

TOTAL AREA=  40739
MUL FACTOR=1.0000E+00
```

```
*ID CAL3-10PPM

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



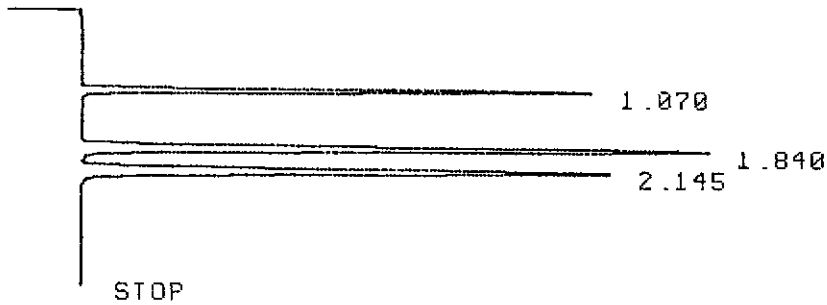

```
RUN# 16485           JAN 20, 2021   12:04:08

IDENTIFIER : CAL3-10PPM
AREA%
      RT       AREA TYPE  WIDTH       AREA%
   1.065      16844   PV    .047    20.91955
   1.835      31917   VP    .074    39.63958
   2.139      31757   PV    .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

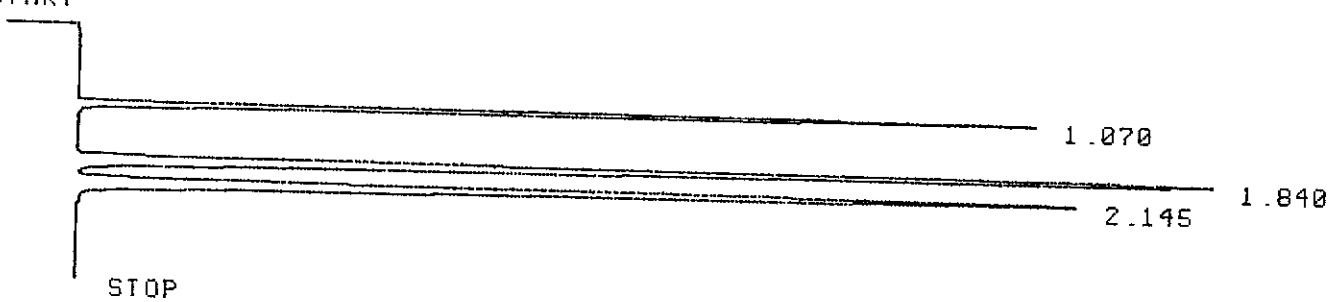
TOTAL AREA= 393018
MUL FACTOR=1.0000E+00

*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

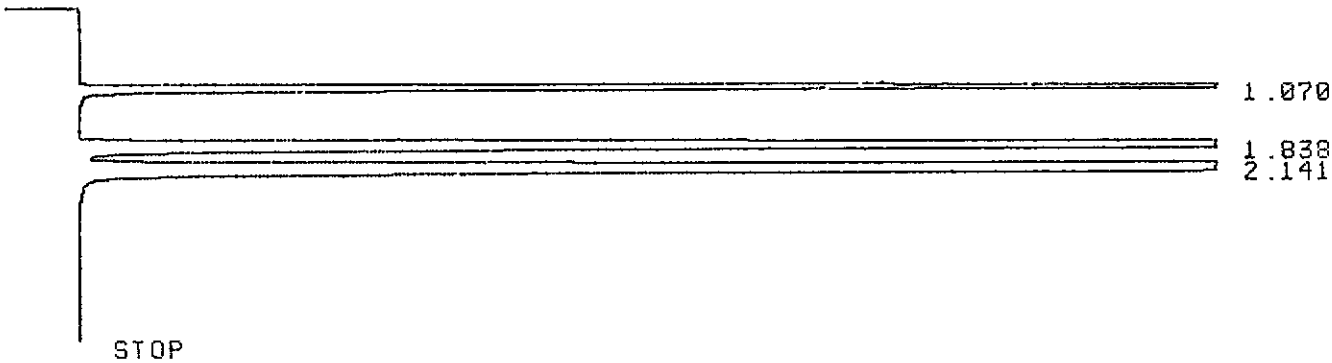
IDENTIFIER : CAL5-100PPM
AREA%

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

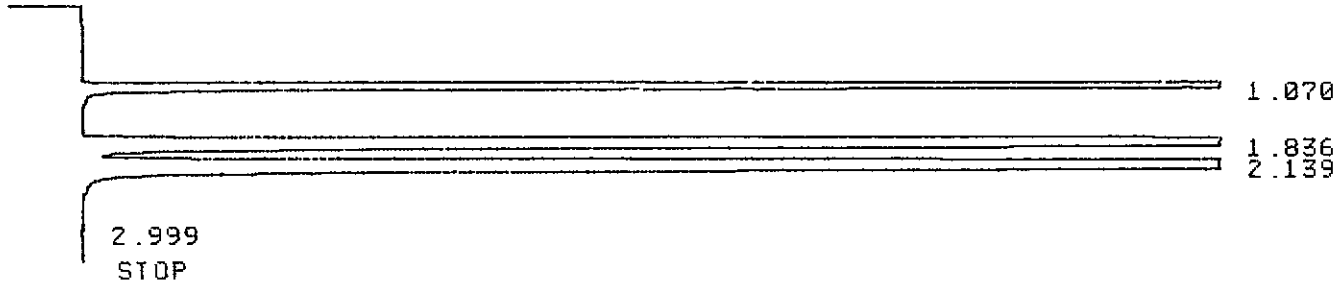
IDENTIFIER : CAL6-500PPM
AREA%

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%

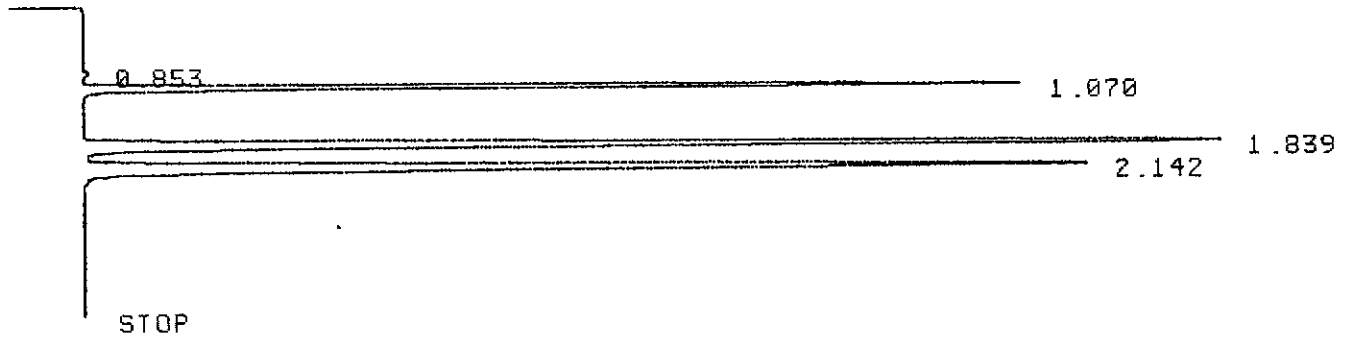
RT	AREA	TYPE	WIDTH	AREA%
1.070	1331471	PB	.049	21.86852

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

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Energy Laboratories Inc

ANALYTICAL RUN Summary

17-Dec-21

Run ID FID-HEADSPACE_211216B

Run Start Date: 12/16/2021
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
14933072	CCV	HC-METHANE-	CCV		12/16/2021 2:00:	1	R371986		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	ppm		99.1695176		100	0	0	2	2	0	99%	85	115	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14933073	LCS	HC-METHANE-	LCS		12/16/2021 2:06:	1	R371986		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	ppm		96.3817629		100	0	0	2	2	0	96%	85	115	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14933074	LCSD	HC-METHANE-	LCSD		12/16/2021 2:10:	1	R371986		0	1E+07	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	ppm		96.5928805		100	0	96.381763	2	2	0	97%	85	115	0%	

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Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14933075	MBLK	HC-METHANE-	MBLK		12/16/2021 2:43:	1	R371986		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
14933076	B21121402-001	HC-METHANE-	SAMP		12/16/2021 2:56:	1	R371986		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
14933077	B21121402-002	HC-METHANE-	SAMP		12/16/2021 3:06:	1	R371986		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
14933078	B21121402-002	HC-METHANE-	DUP		12/16/2021 3:15:	1	R371986		0	1E+07	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0			0	0	0.000704	0.002	0	0%	0	0		

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
14933079	B21121402-009	HC-METHANE-	SAMP		12/16/2021 3:24:	1	R371986		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
14933080	B21121402-014	HC-METHANE-	SAMP		12/16/2021 3:34:	1	R371986		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
14933081	CCV	HC-METHANE-	CCV		12/16/2021 3:40:	1	R371986		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	ppm		98.8343606		100	0	0	2	2	0	99%	85	115	0%	

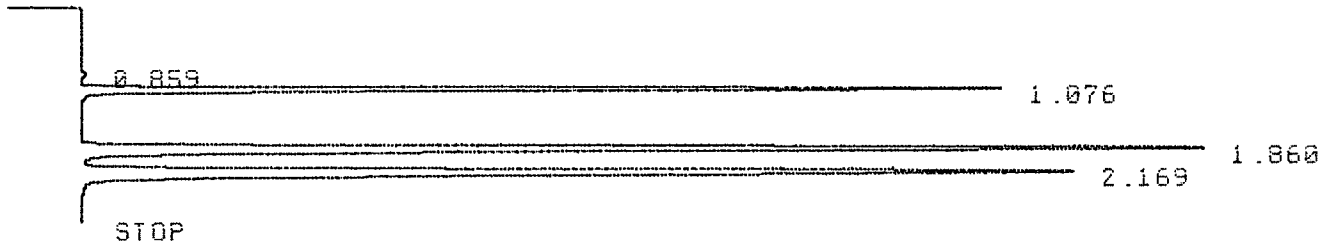
Sample ID	Area Count	Dilution Factor	Temperature (C)	Concentration	Date/Time Analyzed	Analyst	Sample Type	Test Code	Analyte	Headspace Volume	Liquid Volume
CCV	158301	1	20	99.16951759	12/16/2021 14:00	jdw	CCV	HC-METHANE-CCV	Methane		
LCS	153851	1	20	96.38176291	12/16/2021 14:06	jdw	LCS	HC-METHANE-CCV	Methane		
LCSD	154188	1	20	96.59288051	12/16/2021 14:10	jdw	LCSD	HC-METHANE-CCV	Methane		
MBLK	877	1	20	0.000127605	12/16/2021 14:43	jdw	MBLK	HC-METHANE-W	Methane	10	32
B21121402-001H	2084	1	20	0.000175621	12/16/2021 14:56	jdw	SAMP	HC-METHANE-W	Methane	10	32
B21121402-002H	2084	1	20	0.000175621	12/16/2021 15:06	jdw	SAMP	HC-METHANE-W	Methane	10	32
B21121402-002HDUP	1991	1	20	0.000162089	12/16/2021 15:15	jdw	DUP	HC-METHANE-W	Methane	10	32
B21121402-009A	3090	1	20	0.000321996	12/16/2021 15:24	jdw	SAMP	HC-METHANE-W	Methane	10	32
B21121402-014A	2354	1	20	0.000214907	12/16/2021 15:34	jdw	SAMP	HC-METHANE-W	Methane	10	32
CCV	157766	1	20	98.83436057	12/16/2021 15:40	jdw	CCV	HC-METHANE-CCV	Methane		

*ID 12173-500X-CCU
* RUN #18690 DEC 16, 2021 14:00:31
START
1.072
1.855
2.165
3.088
3.328
STOP
RUN# 18690 DEC 16, 2021 14:00:31
IDENTIFIER : 12173-500X-C
AREA%
RT AREA TYPE WIDTH AREA%
1.072 158301 PB .046 20.12208
1.855 316647 BB .075 40.24987
2.165 310995 BP .088 39.53144
3.088 348 VV .020 .04424
3.328 412 PV .061 .05237
TOTAL AREA= 786703
FUL FACTOR=1.00000E+00
*ID 10711-LCS
* RUN #18691 DEC 16, 2021 14:06:15
START
0.862
1.075
1.860
2.170
STOP
RUN# 18691 DEC 16, 2021 14:06:15
IDENTIFIER : 10711-LCS
AREA%
RT AREA TYPE WIDTH AREA%
.862 1230 PP .061 .16255
1.075 153851 PB .048 20.33240
1.860 304123 PB .075 40.19182
2.170 297475 PB .088 39.31323

TOTAL AREA= 756679
MUL FACTOR=1.0000E+00

*ID 10711-LCSD

* RUN #18692   DEC 16, 2021 14:10:45
START



RUN# 18692   DEC 16, 2021 14:10:45

IDENTIFIER : 10711-LCSD
AREA%

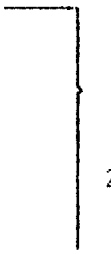
RT	AREA	TYPE	WIDTH	AREA%
.859	1044	PP	.052	.13715
1.076	154188	VB	.049	20.25636
1.860	306562	PB	.076	40.27442
2.169	299389	BB	.088	39.33206

TOTAL AREA= 761183
MUL FACTOR=1.0000E+00

*

*ID MB

* RUN #18693   DEC 16, 2021 14:43:17
START



RUN# 18693   DEC 16, 2021 14:43:17

IDENTIFIER : MB
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.079	877	PU	.056	59.41736
2.171	599	PU	.079	40.58266

TOTAL AREA= 1476
MUL FACTOR=1.0000E+00

*ID 1402-1H

* RUN #18694   DEC 16, 2021 14:56:18
START

RUN# 18694   DEC 16, 2021 14:56:18

IDENTIFIER : 1402-1H
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.058	2084	UP	.049	100.00000

TOTAL AREA= 2084
MUL FACTOR=1.0000E+00

STOP

* PLOT

STOP

*ID 1402-2H

* RUN #18695   DEC 16, 2021 15:06:12
START

STOP

RUN# 18695   DEC 16, 2021 15:06:12

IDENTIFIER : 1402-2H
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.078	2084	PP	.056	100.00000

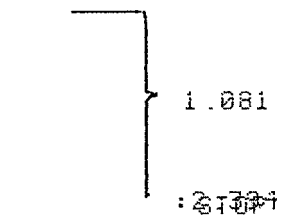
TOTAL AREA= 2084
MUL FACTOR=1.0000E+00

* PLOT

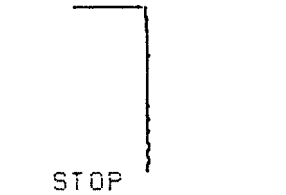
STOP

* PLOT

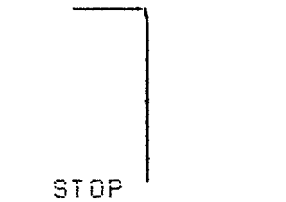
```
STOP

*ID 1402-2H-DUP

*  RUN #18696      DEC 16, 2021  15:15:58
START
```




```
RUN# 18696           DEC 16, 2021  15:15:58

IDENTIFIER : 1402-2H-DUP
AREA%
      RT       AREA TYPE  WIDTH       AREA%
   1.081       1991    BP    .056  100.00000

TOTAL AREA=    1991
MUL FACTOR=1.0000E+00




*  PLOT
```

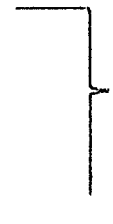


```
STOP

*  PLOT
```



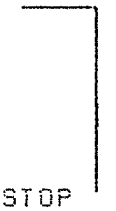
```
STOP

*ID                3DW 12/16/2021
1402-2H-DUP

*
```

```
*ID 1402-9A

*  RUN #18697     DEC 16, 2021  15:24:55
START
```




```
RUN# 18697          DEC 16, 2021  15:24:55

IDENTIFIER : 1402-9A
AREA%
       RT       AREA TYPE  WIDTH       AREA%
   1.079       3090   UP    .049  100.00000

TOTAL AREA=   3090
MUL FACTOR=1.0000E+00




*  PLOT
```


```
*  PLOT
```




```
*ID 1402-14A

*  RUN #18698     DEC 16, 2021  15:34:30
START
```

```
RUN# 18698          DEC 16, 2021  15:34:30

IDENTIFIER : 1402-14A
AREA%

     RT       AREA  TYPE  WIDTH      AREA%
  1.077       2354   UP    .057   100.00000

TOTAL AREA=   2354
MUL FACTOR=1.00000E+00
```

```
*ID 12173-500X-CCU

*  RUN #18699     DEC 16, 2021  15:40:50
START
```



```
RUN# 18699          DEC 16, 2021  15:40:50

IDENTIFIER : 12173-500X-C
AREA%

     RT       AREA  TYPE  WIDTH      AREA%
  1.080     157766   PB    .047   20.10547
  1.864     316239   PB    .076   40.30104
  2.174     310687   BB    .089   39.59349

TOTAL AREA= 784692
MUL FACTOR=1.00000E+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**
Analytes	**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 ± 2%. NIST traceable by weights or gaseous standards.

Judith M Zadravec

Judy Zadravec, Chemist

10/19/2018
DATE

Energy Laboratories Inc

Spike LOG

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

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	8/9/2

Final Volume: mL

Stock Source **Base Units** **Amount Added**

Analytes **CAS** Conc: **ug/mL**

Page: *1 of 1*

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 ± 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