

Energy Laboratories Inc

ANALYTICAL RUN Summary

17-Feb-22

Run ID FID-HEADSPACE_220131B

Run Start Date: 1/31/2022
Analyst: Jeff Whitmer
Ical:
Column ID: porapak Q
Comments: 2022 Calibration for methane, ethane, and ethene. 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					
15038722	CCV	HC-METHANE-	CCV		1/31/2022 10:32:	1	R374783		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Ethane	A	ppm		103.519361		100	0	0	2	2	0	104%	85	115	0%	
Ethene	A	ppm		103.057616		100	0	0	2	2	0	103%	85	115	0%	
Methane	A	ppm		103.620197		100	0	0	2	2	0	104%	85	115	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15038723	LCS	HC-METHANE-	LCS		1/31/2022 10:37:	1	R374783		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Ethane	A	ppm		99.5410871		100	0	0	2	2	0	100%	85	115	0%	
Ethene	A	ppm		99.2906216		100	0	0	2	2	0	99%	85	115	0%	
Methane	A	ppm		100.809349		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					
15038724	MBLK	HC-METHANE-	MBLK		1/31/2022 11:15:	1	R374783		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q

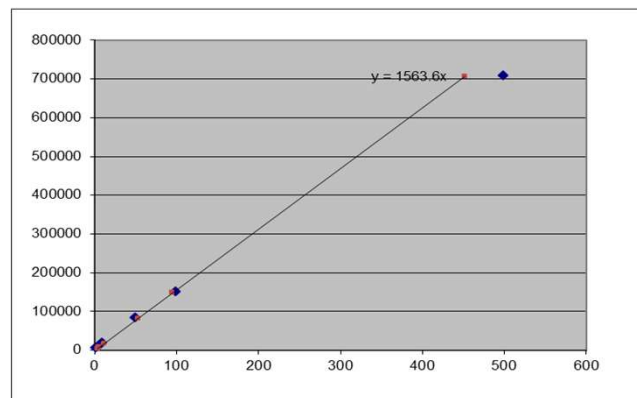
Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15038724	MBLK	HC-METHANE-	MBLK		1/31/2022 11:15:	1	R374783		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Ethane	A	ppm		0			0	0	2	2	0	0%	0	0	0%	
Ethene	A	ppm		0			0	0	2	2	0	0%	0	0	0%	
Methane	A	ppm		0			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					
15038725	CAL1	HC-METHANE-	CAL1		1/31/2022 11:22:	1	R374783		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Ethane	A	ppm		2.73020074		2.5	0	0	2	2	0	109%	50	150	0%	
Ethene	A	ppm		2.71682887		2.5	0	0	2	2	0	109%	50	150	0%	
Methane	A	ppm		2.85177946		2.5	0	0	2	2	0	114%	50	150	0%	
Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15038726	CAL2	HC-METHANE-	CAL2		1/31/2022 11:28:	1	R374783		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Ethane	A	ppm		5.21991748		5	0	0	2	2	0	104%	85	115	0%	
Ethene	A	ppm		5.31883543		5	0	0	2	2	0	106%	85	115	0%	
Methane	A	ppm		4.91242836		5	0	0	2	2	0	98%	85	115	0%	
Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15038727	CAL3	HC-METHANE-	CAL3		1/31/2022 11:34:	1	R374783		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Ethane	A	ppm		10.3282735		10	0	0	2	2	0	103%	85	115	0%	
Ethene	A	ppm		10.1476990		10	0	0	2	2	0	101%	85	115	0%	
Methane	A	ppm		10.5936028		10	0	0	2	2	0	106%	85	115	0%	
Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15038728	CAL4	HC-METHANE-	CAL4		1/31/2022 11:40:	1	R374783		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					
15038728	CAL4	HC-METHANE-	CAL4		1/31/2022 11:40:	1	R374783		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Ethane	A	ppm		51.5359147		50	0	0	2	2	0	103%	85	115	0%	
Ethene	A	ppm		51.3647987		50	0	0	2	2	0	103%	85	115	0%	
Methane	A	ppm		52.2491534		50	0	0	2	2	0	104%	85	115	0%	
Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15038729	CAL5	HC-METHANE-	CAL5		1/31/2022 11:45:	1	R374783		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Ethane	A	ppm		93.9925939		100	0	0	2	2	0	94%	85	115	0%	
Ethene	A	ppm		93.8651881		100	0	0	2	2	0	94%	85	115	0%	
Methane	A	ppm		94.7521155		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					
15038730	CAL6	HC-METHANE-	CAL6		1/31/2022 11:51:	1	R374783		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Ethane	A	ppm		430.232311		500	0	0	2	2	0	86%	85	115	0%	
Ethene	A	ppm		434.391804		500	0	0	2	2	0	87%	85	115	0%	
Methane	A	ppm		451.873058		500	0	0	2	2	0	90%	85	115	0%	
Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15038731	CAL7	HC-METHANE-	CAL7		1/31/2022 12:02:	1	R374783		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	ppm		921.191920		1000	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					
15038732	CCV	HC-METHANE-	CCV		1/31/2022 12:08:	1	R374783		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Ethane	A	ppm		101.850441		100	0	0	2	2	0	102%	85	115	0%	
Ethene	A	ppm		102.540441		100	0	0	2	2	0	103%	85	115	0%	
Methane	A	ppm		103.796714		100	0	0	2	2	0	104%	85	115	0%	

Inst ID FID-HeadSpace

Blank,cts	STD ID	Sample	Response	Date/Time	Run Id
0	#12173	1000000			
Decimal	Conc ppm	Area Counts	Factor		
Amnt, Injtd/ Equivalent					
300uL					
0.0000025	2.5	4459	1783.6	1/31/2022 11:22	19265
0.000005	5	7681	1536.2	1/31/2022 11:28	19266
0.00001	10	16564	1656.4	1/31/2022 11:34	19267
0.00005	50	81696	1633.92	1/31/2022 11:40	19268
0.0001	100	148153	1481.53	1/31/2022 11:45	19269
0.0005	500	706542	1413.084	1/31/2022 11:51	19270
0.001	1000	1440362	1440.362	1/31/2022 12:02	19271

StdDev 133.7196
 Avg RF 1563.585
 %RSD 8.552118



Methane MW= 16.04

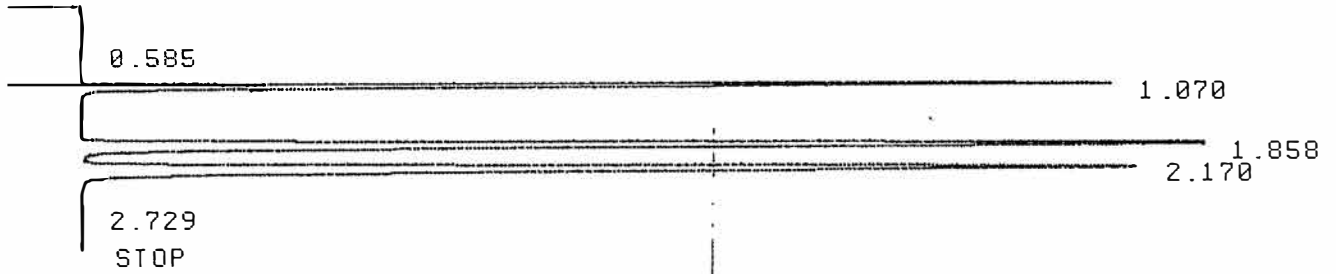
[PPM]	Calculated Recoveries		
	Area Cnts	PPM	% recovery
2.5	4459	2.851779464	114.07%
5	7681	4.912428361	98.25%
10	16564	10.59360283	105.94%
50	81696	52.24915341	104.50%
100	148153	94.75211547	94.75%
500	706542	451.873058	90.37%
1000	1440362	921.1919201	92.12%

Sample	Area Count	Dilution	Temp (°C)	Concentration (ppm)	Date/Time	Analyst	Sample	Test Code	Analyte
CCV	162019	1	20	103.6201967	1/31/2022 10:32	jdw	CCV	HC-METHANE-CCV	Methane
CCV	321986	1	20	103.5193612	1/31/2022 10:32	jdw	CCV	HC-METHANE-CCV	Ethane
CCV	325807	1	20	103.057616	1/31/2022 10:32	jdw	CCV	HC-METHANE-CCV	Ethane
LCS	157624	1	20	100.8093488	1/31/2022 10:37	jdw	LCS	HC-METHANE-CCV	Methane
LCS	309612	1	20	99.54108708	1/31/2022 10:37	jdw	LCS	HC-METHANE-CCV	Ethane
LCS	313898	1	20	99.29062161	1/31/2022 10:37	jdw	LCS	HC-METHANE-CCV	Ethane
MBLK	432	1	20	0.27628812	1/31/2022 11:15	jdw	MBLK	HC-METHANE-CCV	Methane
MBLK	0	1	20	0	1/31/2022 11:15	jdw	MBLK	HC-METHANE-CCV	Ethane
MBLK	0	1	20	0	1/31/2022 11:15	jdw	MBLK	HC-METHANE-CCV	Ethane
CAL1	4459	1	20	2.851779464	1/31/2022 11:22	jdw	CAL1	HC-METHANE-CCV	Methane
CAL1	8492	1	20	2.73020074	1/31/2022 11:22	jdw	CAL1	HC-METHANE-CCV	Ethane
CAL1	8589	1	20	2.716828871	1/31/2022 11:22	jdw	CAL1	HC-METHANE-CCV	Ethane
CAL2	7681	1	20	4.912428361	1/31/2022 11:28	jdw	CAL2	HC-METHANE-CCV	Methane
CAL2	16236	1	20	5.219917477	1/31/2022 11:28	jdw	CAL2	HC-METHANE-CCV	Ethane
CAL2	16815	1	20	5.318835425	1/31/2022 11:28	jdw	CAL2	HC-METHANE-CCV	Ethane
CAL3	16564	1	20	10.59360283	1/31/2022 11:34	jdw	CAL3	HC-METHANE-CCV	Methane
CAL3	32125	1	20	10.32827352	1/31/2022 11:34	jdw	CAL3	HC-METHANE-CCV	Ethane
CAL3	32081	1	20	10.14769904	1/31/2022 11:34	jdw	CAL3	HC-METHANE-CCV	Ethane
CAL4	81696	1	20	52.24915341	1/31/2022 11:40	jdw	CAL4	HC-METHANE-CCV	Methane
CAL4	160297	1	20	51.53591474	1/31/2022 11:40	jdw	CAL4	HC-METHANE-CCV	Ethane
CAL4	162385	1	20	51.36479873	1/31/2022 11:40	jdw	CAL4	HC-METHANE-CCV	Ethane
CAL5	148153	1	20	94.75211547	1/31/2022 11:45	jdw	CAL5	HC-METHANE-CCV	Methane
CAL5	292354	1	20	93.99259386	1/31/2022 11:45	jdw	CAL5	HC-METHANE-CCV	Ethane
CAL5	296746	1	20	93.86518806	1/31/2022 11:45	jdw	CAL5	HC-METHANE-CCV	Ethane
CAL6	706542	1	20	451.873058	1/31/2022 11:51	jdw	CAL6	HC-METHANE-CCV	Methane
CAL6	1338192	1	20	430.2323114	1/31/2022 11:51	jdw	CAL6	HC-METHANE-CCV	Ethane
CAL6	1373289	1	20	434.3918039	1/31/2022 11:51	jdw	CAL6	HC-METHANE-CCV	Ethane
CAL7	1440362	1	20	921.1919201	1/31/2022 12:02	jdw	CAL7	HC-METHANE-CCV	Methane
CCV	162295	1	20	103.7967141	1/31/2022 12:08	jdw	CCV	HC-METHANE-CCV	Methane
CCV	316795	1	20	101.8504408	1/31/2022 12:08	jdw	CCV	HC-METHANE-CCV	Ethane
CCV	324172	1	20	102.5404411	1/31/2022 12:08	jdw	CCV	HC-METHANE-CCV	Ethane

Calibration: Methane, Ethane, Ethene
JAW
1/31/2022

*ID 12173-500X-CCU

* RUN #19262 JAN 31, 2022 10:32:58
START



RUN# 19262 JAN 31, 2022 10:32:58

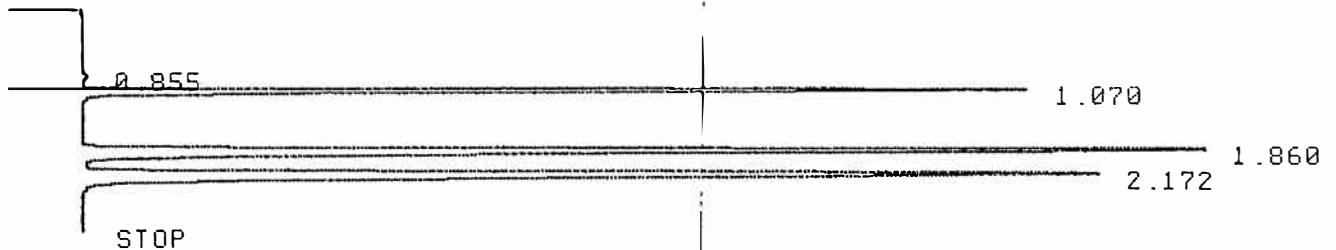
IDENTIFIER : 12173-500X-C
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.585	553	PP	.073	.06822
1.070	162019	PB	.046	19.98594
1.858	325807	UU	.076	40.19010
2.170	321986	UU	.089	39.71875
2.729	300	PV	.045	.03701

TOTAL AREA= 810665
MUL FACTOR=1.0000E+00

*ID 10711-LCS

* RUN #19263 JAN 31, 2022 10:37:36
START



RUN# 19263 JAN 31, 2022 10:37:36

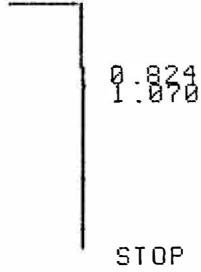
IDENTIFIER : 10711-LCS
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.855	975	PV	.051	.12466
1.070	157624	PB	.049	20.15372
1.860	313898	BB	.076	40.13482
2.172	309612	BV	.089	39.58600

TOTAL AREA= 782109
MUL FACTOR=1.0000E+00

*ID MB

* RUN #19264 JAN 31, 2022 11:15:04
START



RUN# 19264 JAN 31, 2022 11:15:04

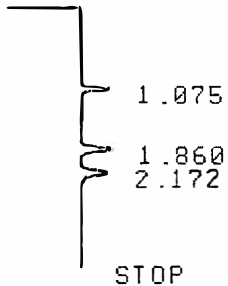
IDENTIFIER : MB
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.070	432	UU	.049	100.00000

TOTAL AREA= 432
MUL FACTOR=1.0000E+00

*ID CAL1-2.5PPM

* RUN #19265 JAN 31, 2022 11:22:01
START



RUN# 19265 JAN 31, 2022 11:22:01

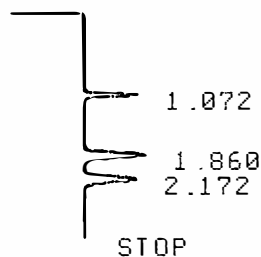
IDENTIFIER : CAL1-2.5PPM
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.075	4891	UU	.048	22.26014
1.860	8589	UP	.079	39.09067
2.172	8492	UP	.091	38.64918

TOTAL AREA= 21972
MUL FACTOR=1.0000E+00

*ID CAL2-5PPM

* RUN #19266 JAN 31, 2022 11:28:46
START



RUN# 19266 JAN 31, 2022 11:28:46

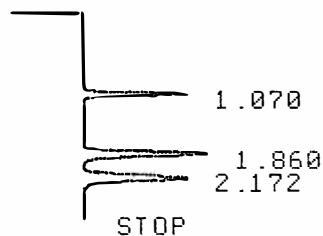
IDENTIFIER : CAL2-5PPM
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.072	8113	BP	.045	19.70897
1.860	16815	PV	.078	40.84880
2.172	16236	UP	.089	39.44222

TOTAL AREA= 41164
MUL FACTOR=1.0000E+00

*ID CAL3-10PPM

* RUN #19267 JAN 31, 2022 11:34:40
START



RUN# 19267 JAN 31, 2022 11:34:40

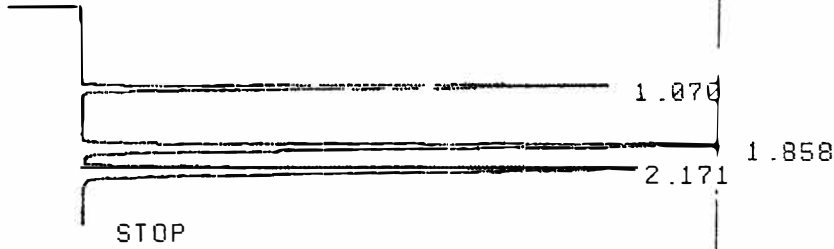
IDENTIFIER : CAL3-10PPM
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.070	16996	PP	.047	20.93052
1.860	32081	PV	.075	39.50765
2.172	32125	UP	.089	39.56184

TOTAL AREA= 81202
MUL FACTOR=1.0000E+00

*ID CAL4-50PPM

* RUN #19268 JAN 31, 2022 11:40:12
START



RUN# 19268 JAN 31, 2022 11:40:12

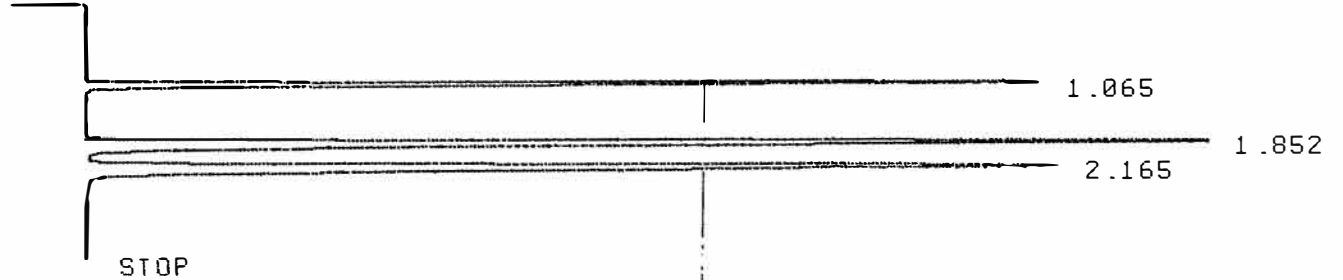
IDENTIFIER : CAL4-50PPM
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.070	82128	PB	.045	20.28803
1.858	162385	PB	.075	40.11387
2.171	160297	BB	.088	39.59808

TOTAL AREA= 404810
MUL FACTOR=1.0000E+00

*ID CAL5-100PPM

* RUN #19269 JAN 31, 2022 11:45:49
START



RUN# 19269 JAN 31, 2022 11:45:49

IDENTIFIER : CAL5-100PPM
AREA%

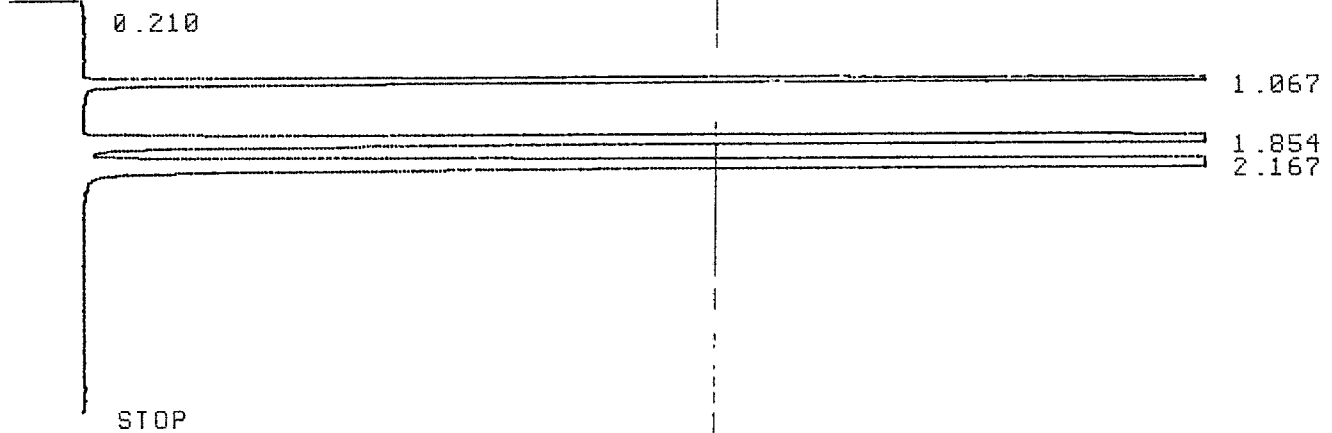
RT	AREA	TYPE	WIDTH	AREA%
1.065	148585	PB	.046	20.14206
1.852	296746	UU	.075	40.22666
2.165	292354	UP	.088	39.63126

TOTAL AREA= 737685
MUL FACTOR=1.0000E+00

~~*ID CAL5-500PPM~~ *30w*
1/31/2022

*ID CAL6-500PPM

* RUN #19270 JAN 31, 2022 11:51:57
START



RUN# 19270 JAN 31, 2022 11:51:57

IDENTIFIER : CAL6-500PPM
AREA%

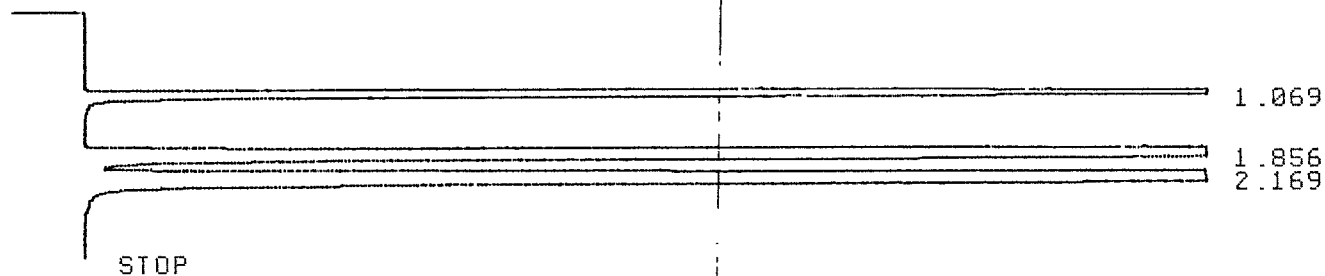
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1.067	706974	BB	.047	20.68110
1.854	1373289	PB	.078	40.17278
2.167	1338192	BB	.091	39.14610

TOTAL AREA=3418454
MUL FACTOR=1.0000E+00

*

*ID CAL7-1000PPM

* RUN #19271 JAN 31, 2022 12:02:20
START



RUN# 19271 JAN 31, 2022 12:02:20

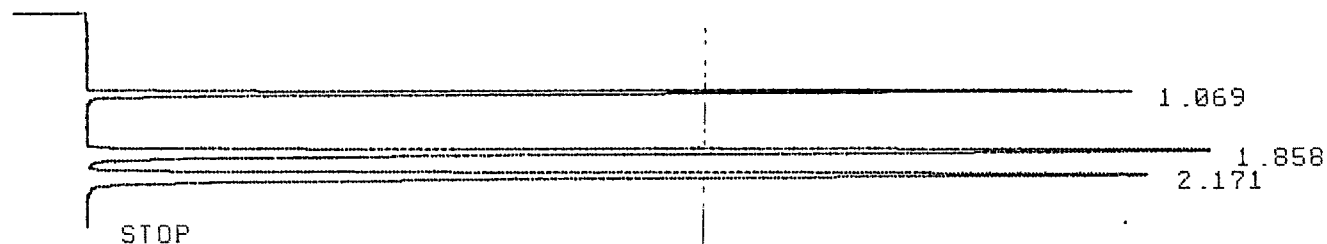
IDENTIFIER : CAL7-1000PPM
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.069	1440794	PB	.048	22.10318
1.856	2645432	PB	.082	40.58349
2.169	2432269	BB	.097	37.31334

TOTAL AREA=6518493
MUL FACTOR=1.0000E+00

*ID 12173-500X-CCU

* RUN #19272 JAN 31, 2022 12:08:57
START



RUN# 19272 JAN 31, 2022 12:08:57

IDENTIFIER : 12173-500X-C
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.069	162295	PB	.045	20.20449
1.858	324172	PB	.075	40.35604
2.171	316795	BB	.088	39.43858

TOTAL AREA= 803262
MUL FACTOR=1.0000E+00

Energy Laboratories Inc

ANALYTICAL RUN Summary

02-Mar-22

Run ID FID-HEADSPACE_220301A

Run Start Date: 3/1/2022
 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					
15061091	CCV	HC-METHANE-	CCV		3/1/2022 8:49:00	1	R375386		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	ppm		98.0899574		100	0	0	2	2	0	98%	85	115	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15061092	LCS	HC-METHANE-	LCS		3/1/2022 8:54:00	1	R375386		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	ppm		100.628354		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					
15061093	LCSD	HC-METHANE-	LCSD		3/1/2022 9:00:00	1	R375386		0	2E+07						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	ppm		101.597282		100	0	100.62835	2	2	0	102%	85	115	1%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15061094	MBLK	HC-METHANE-	MBLK		3/1/2022 10:05:0	1	R375386		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					
15061095	B22021627-001I	HC-METHANE-	SAMP		3/1/2022 10:11:0	1	R375386		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					
15061096	B22021627-005	HC-METHANE-	SAMP		3/1/2022 10:18:0	1	R375386		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					
15061097	B22021627-006I	HC-METHANE-	SAMP		3/1/2022 10:23:0	1	R375386		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0.00324315			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					
15061099	B22021627-006I	HC-METHANE-	DUP		3/1/2022 10:39:0	1	R375386		0	2E+07						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0.00338367			0	0.0032431	0.000704	0.002	0	0%	0	0	4%	
Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15061100	B22021627-010	HC-METHANE-	SAMP		3/1/2022 10:50:0	1	R375386		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					
15061101	B22021627-011I	HC-METHANE-	SAMP		3/1/2022 10:56:0	1	R375386		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					
15061102	B22021627-015	HC-METHANE-	SAMP		3/1/2022 11:02:0	1	R375386		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					
15061103	CCV	HC-METHANE-	CCV		3/1/2022 11:06:0	1	R375386		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	ppm		97.8360537		100	0	0	2	2	0	98%	85	115	0%	

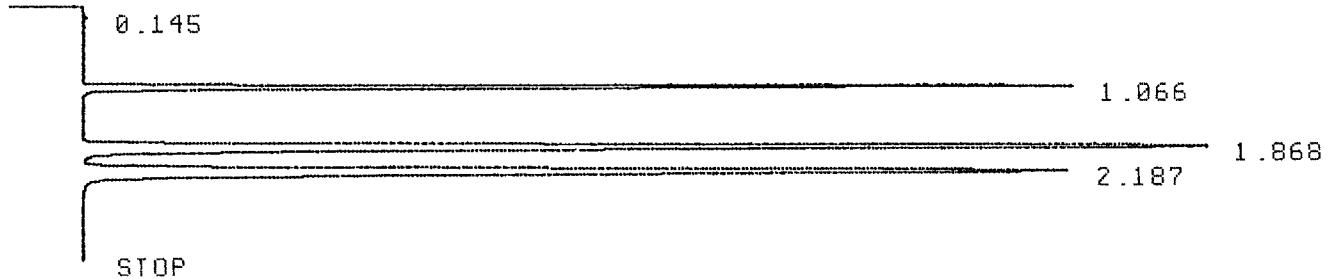
Sample ID	Area Count	Dilution Factor	Temperature (C)	Concentration	Date/Time Analyzed	Analyst	Sample Type	Test Code	Analyte	Headspace Volume	Liquid Volume
CCV	153372	1	20	98.08995737	3/1/2022 8:49	jdw	CCV	HC-METHANE-CCV	Methane		
LCS	157341	1	20	100.6283545	3/1/2022 8:54	jdw	LCS	HC-METHANE-CCV	Methane		
LCSD	158856	1	20	101.5972816	3/1/2022 9:00	jdw	LCSD	HC-METHANE-CCV	Methane		
MBLK	1110	1	20	0.000164883	3/1/2022 10:05	jdw	MBLK	HC-METHANE-W	Methane	10	32
B22021627-001I	801	1	20	-4.59E-05	3/1/2022 10:11	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22021627-005A	1046	1	20	-9.51E-06	3/1/2022 10:18	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22021627-006I	22943	1	20	3.24E-03	3/1/2022 10:23	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22021627-006IDUP	23889	1	20	3.38E-03	3/1/2022 10:39	jdw	DUP	HC-METHANE-W	Methane	10	32
B22021627-010A	854	1	20	-3.80E-05	3/1/2022 10:50	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22021627-011I	997	1	20	-1.68E-05	3/1/2022 10:56	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22021627-015A	985	1	20	-1.85679E-05	3/1/2022 11:02	jdw	SAMP	HC-METHANE-W	Methane	10	32
CCV	152975	1	20	97.8360537	3/1/2022 11:06	jdw	CCV	HC-METHANE-CCV	Methane		

JDW
3/1/2022

*ID 12173-500X-CCU

* RUN #19411 MAR 1, 2022 08:49:16

START



RUN# 19411 MAR 1, 2022 08:49:16

IDENTIFIER : 12173-500X-C

AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.066	153372	PB	.045	20.23607
1.868	304939	PB	.076	40.23398
2.187	299603	BB	.089	39.52995

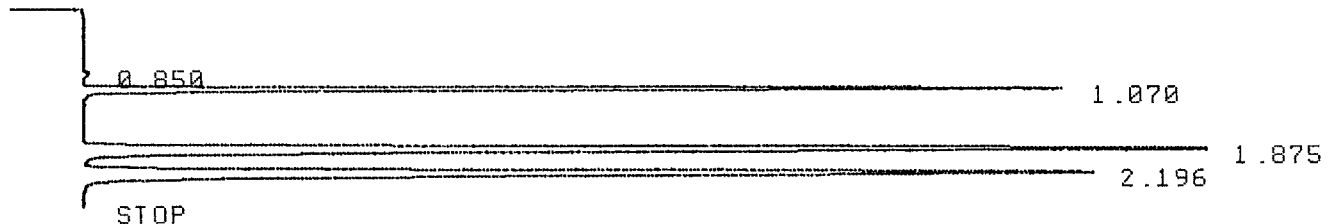
TOTAL AREA= 757914

MUL FACTOR=1.0000E+00

*ID 10711-LCS

* RUN #19412 MAR 1, 2022 08:54:35

START



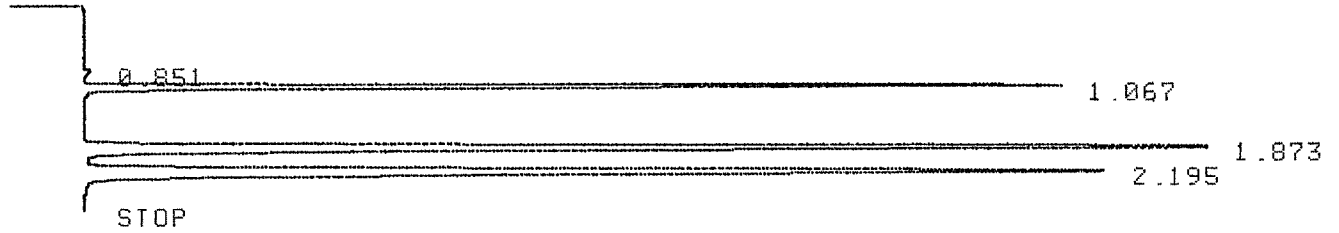
IDENTIFIER : 10711-LCS
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.850	1089	UU	.052	.13956
1.070	157341	PB	.047	20.16342
1.875	314092	PU	.076	40.25122
2.196	307807	UP	.089	39.44581

TOTAL AREA= 780329
MUL FACTOR=1.0000E+00

*ID 10711-LCSD

* RUN #19413 MAR 1, 2022 09:00:37
START



RUN# 19413 MAR 1, 2022 09:00:37

IDENTIFIER : 10711-LCSD
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.851	1119	PU	.054	.14255
1.067	158856	PB	.047	20.23698
1.873	316615	PB	.076	40.33419
2.195	308389	BP	.089	39.28627

TOTAL AREA= 784979
MUL FACTOR=1.0000E+00

*
*

*ID MB

* RUN #19414 MAR 1, 2022 10:05:30
START

┌───┐
│ │
│ │ 1.080
│ │
│ │
│ │
└───┘
STOP

RUN# 19414 MAR 1, 2022 10:05:30

IDENTIFIER : MB
AREA%

RT	AREA TYPE	WIDTH	AREA%
1.080	1110 PU	.077	100.00000

TOTAL AREA= 1110
MUL FACTOR=1.0000E+00

*ID 1627-1I

* RUN #19415 MAR 1, 2022 10:11:57
START

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

RUN# 19415 MAR 1, 2022 10:11:57

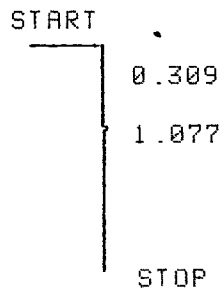
IDENTIFIER : 1627-1I
AREA%

RT	AREA TYPE	WIDTH	AREA%
1.079	801 PU	.062	100.00000

TOTAL AREA= 801
MUL FACTOR=1.0000E+00

*ID 1627-5A

* RUN #19416 MAR 1, 2022 10:18:11



RUN# 19416 MAR 1, 2022 10:18:11

IDENTIFIER : 1627-5A

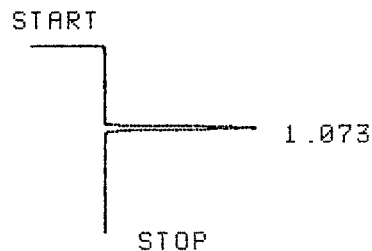
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.077	1046	UP	.064	100.00000

TOTAL AREA= 1046
MUL FACTOR=1.0000E+00

*ID 1627-6I

* RUN #19417 MAR 1, 2022 10:23:51



RUN# 19417 MAR 1, 2022 10:23:51

IDENTIFIER : 1627-6I

AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.073	22943	BP	.044	100.00000

TOTAL AREA= 22943
MUL FACTOR=1.0000E+00

* PLOT

STOP

* PLOT

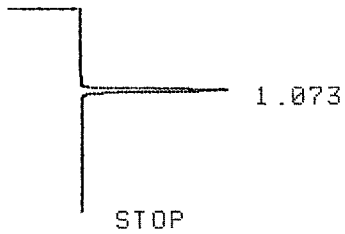
STOP

* PLOT

STOP

*ID 1627-6I-DUP

* RUN #19418 MAR 1, 2022 10:39:31
START



RUN# 19418 MAR 1, 2022 10:39:31

IDENTIFIER : 1627-6I-DUP
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.073	23889	PB	.047	100.00000

TOTAL AREA= 23889
MUL FACTOR=1.0000E+00

* PLOT

STOP

* PLOT

STOP

*ID 1627-10A

* RUN #19419 MAR 1, 2022 10:50:29
START

1.067
1.369

STOP

RUN# 19419 MAR 1, 2022 10:50:29

IDENTIFIER : 1627-10A

AREA%

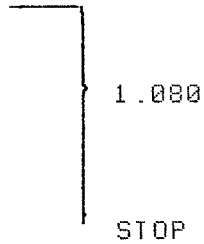
RT	AREA	TYPE	WIDTH	AREA%
1.067	854	UU	.053	53.88013
1.369	731	PP	.098	46.11987

TOTAL AREA= 1585
MUL FACTOR=1.0000E+00

*

*ID 1627-11I

* RUN #19420 MAR 1, 2022 10:56:48
START



RUN# 19420 MAR 1, 2022 10:56:48

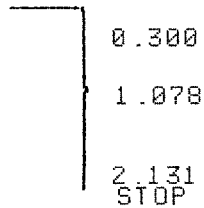
IDENTIFIER : 1627-11I
AREA%

RT	AREA TYPE	WIDTH	AREA%
1.080	997 PU	.065	100.00000

TOTAL AREA= 997
MUL FACTOR=1.0000E+00

*ID 1627-15A

* RUN #19421 MAR 1, 2022 11:02:44
START



RUN# 19421 MAR 1, 2022 11:02:44

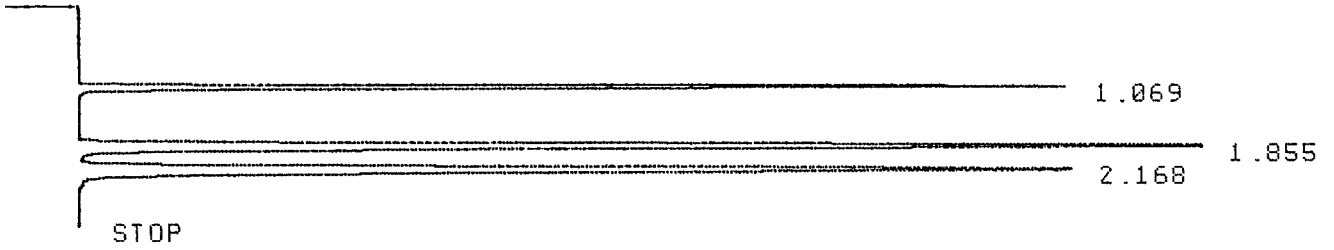
IDENTIFIER : 1627-15A
AREA%

RT	AREA TYPE	WIDTH	AREA%
.300	345 PU	.047	25.93985
1.078	985 PP	.065	74.06016

TOTAL AREA= 1330
MUL FACTOR=1.0000E+00

*ID 12173-500X-CCU

* RUN #19422 MAR 1, 2022 11:06:21
START



RUN# 19422 MAR 1, 2022 11:06:21

IDENTIFIER : 12173-500X-C
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.069	152975	PB	.045	20.28055
1.855	303018	PB	.075	40.17240
2.168	298301	BV	.088	39.54704

TOTAL AREA= 754294
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: _____

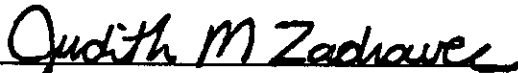
3 Multi-Component Gas Standard in Nitrogen

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