

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

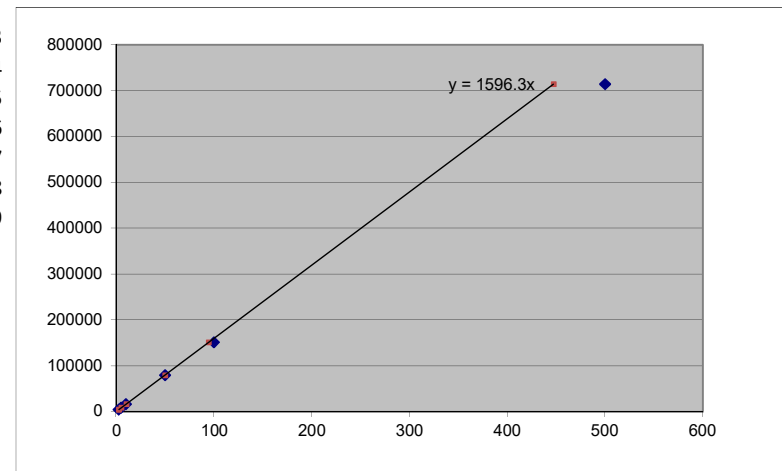
Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
14188881	Cal2	HC-METHANE-	CAL2		1/20/2021 12:00:	1	R355741		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Ethane	A	ppm		5.15876183		5	0	0	2	2	0	103%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

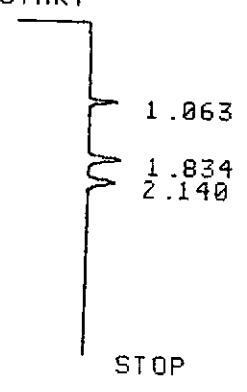


RUN# 16482 JAN 20, 2021 11:50:13

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%

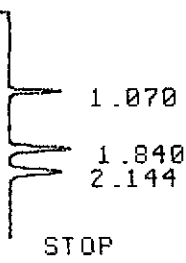
RT	AREA	TYPE	WIDTH	AREA%
1.063	4682	PP	.048	22.05370
1.834	8384	PV	.078	39.49128
2.140	8164	UP	.087	38.45502

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

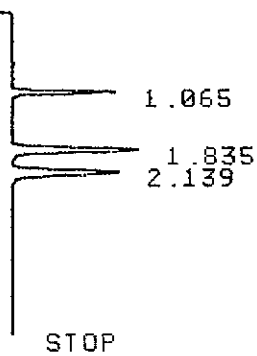
TOTAL AREA= 40739

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

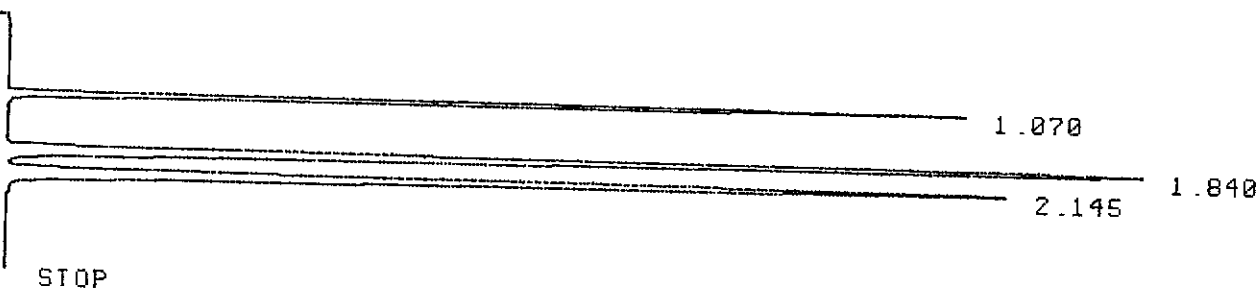
*CAL5-100PPM

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%

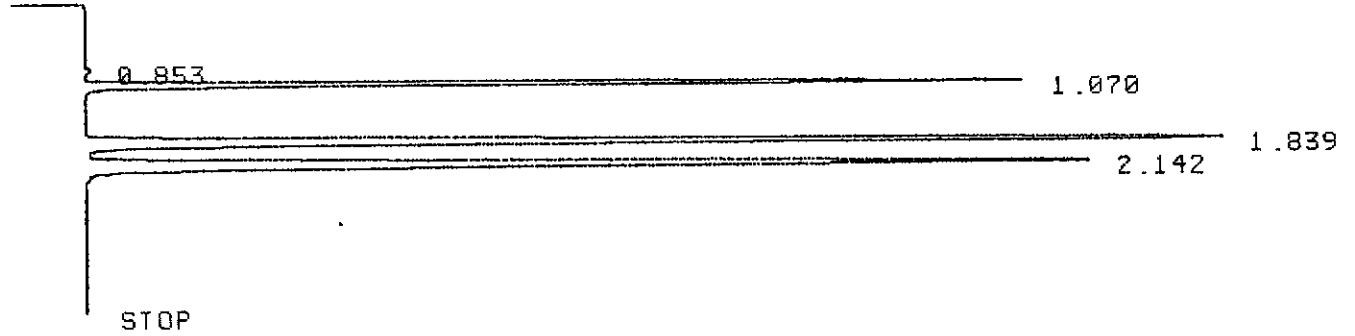
RT	AREA	TYPE	WIDTH	AREA%
1.070	1331471	PB	.049	21.86052

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

06-Jan-22

Run ID FID-HEADSPACE_220104A

Run Start Date: 1/4/2022
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					
14961654	CCV	HC-METHANE-	CCV		1/4/2022 8:42:00	1	R372666		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	ppm		98.4954448		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					
14961655	LCS	HC-METHANE-	LCS		1/4/2022 8:48:00	1	R372666		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	ppm		98.2436072		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					
14961656	LCSD	HC-METHANE-	LCSD		1/4/2022 8:52:00	1	R372666		0	1E+07						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	ppm		97.4454949		100	0	98.243607	2	2	0	97%	85	115	1%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
14961657	MBLK	HC-METHANE-	MBLK		1/4/2022 9:52:00	1	R372666		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					
14961658	B21122198-001I	HC-METHANE-	SAMP		1/4/2022 9:57:00	1	R372666		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					
14961659	B21122198-005	HC-METHANE-	SAMP		1/4/2022 10:04:0	1	R372666		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					
14961660	B21122198-006	HC-METHANE-	SAMP		1/4/2022 10:13:0	1	R372666		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					
14961661	B21122204-001I	HC-METHANE-	SAMP		1/4/2022 10:19:0	1	R372666		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0.00593173			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					
14961662	B21122204-001I	HC-METHANE-	DUP		1/4/2022 10:39:0	1	R372666		0	1E+07						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0.00589478			0	0.0059317	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					
14961663	B21122204-007	HC-METHANE-	SAMP		1/4/2022 11:04:0	1	R372666		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					
14961664	B21122211-001I	HC-METHANE-	SAMP		1/4/2022 11:10:0	1	R372666		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					
14961665	B21122211-006	HC-METHANE-	SAMP		1/4/2022 11:16:0	1	R372666		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					
14961666	B22010002-001I	HC-METHANE-	SAMP		1/4/2022 11:22:0	1	R372666		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0.00249802			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					
14961667	B22010002-002I	HC-METHANE-	SAMP		1/4/2022 11:36:0	1	R372666		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0.00220215			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					
14961668	B22010002-003	HC-METHANE-	SAMP		1/4/2022 11:47:0	1	R372666		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0.00249320			0	0	0.000704	0.002	0	0%	0	0	0%	

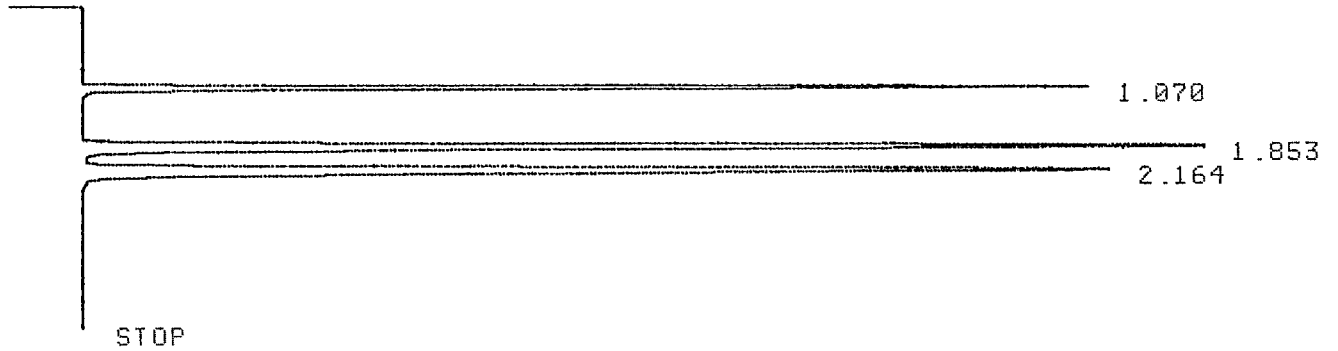
Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
14961669	B22010002-008	HC-METHANE-	SAMP		1/4/2022 11:58:0	1	R372666		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0			0	0	0.000704	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					
14961670	B22010002-009	HC-METHANE-	SAMP		1/4/2022 12:03:0	1	R372666		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					
14961671	CCV	HC-METHANE-	CCV		1/4/2022 12:11:0	1	R372666		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	ppm		98.9878437		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	157225	1	19.5	98.49544477	1/4/2022 8:42	jdw	CCV	HC-METHANE-CCV	Methane		
LCS	156823	1	19.5	98.24360716	1/4/2022 8:48	jdw	LCS	HC-METHANE-CCV	Methane		
LCS D	155549	1	19.5	97.44549492	1/4/2022 8:52	jdw	LCS D	HC-METHANE-CCV	Methane		
MBLK	1709	1	19.5	0.000249583	1/4/2022 9:52	jdw	MBLK	HC-METHANE-W	Methane	10	32
B21122198-001I	796	1	19.5	-0.000133335	1/4/2022 9:57	jdw	SAMP	HC-METHANE-W	Methane	10	32
B21122198-005A	2978	1	19.5	0.000185325	1/4/2022 10:04	jdw	SAMP	HC-METHANE-W	Methane	10	32
B21122198-006A	5590	1	19.5	0.000566783	1/4/2022 10:13	jdw	SAMP	HC-METHANE-W	Methane	10	32
B21122204-001I	42326	1	19.5	0.005931729	1/4/2022 10:19	jdw	SAMP	HC-METHANE-W	Methane	10	32
B21122204-001IDUP	42073	1	19.5	0.00589478	1/4/2022 10:39	jdw	DUP	HC-METHANE-W	Methane	10	32
B21122204-007A	1918	1	19.5	3.05225E-05	1/4/2022 11:04	jdw	SAMP	HC-METHANE-W	Methane	10	32
B21122211-001I	1443	1	19.5	-3.88468E-05	1/4/2022 11:10	jdw	SAMP	HC-METHANE-W	Methane	10	32
B21122211-006A	1919	1	19.5	3.06685E-05	1/4/2022 11:16	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22010002-001I	18814	1	19.5	0.002498023	1/4/2022 11:22	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22010002-002I	16788	1	19.5	0.002202145	1/4/2022 11:36	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22010002-003F	18781	1	19.5	0.002493204	1/4/2022 11:47	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22010002-008A	1480	1	19.5	-3.34433E-05	1/4/2022 11:58	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22010002-009A	3495	1	19.5	0.000260828	1/4/2022 12:03	jdw	SAMP	HC-METHANE-W	Methane	10	32
CCV	158011	1	19.5	98.98784369	1/4/2022 12:11	jdw	CCV	HC-METHANE-CCV	Methane		

JDW
1/4/2022

*ID 12173-500X-CCU

* RUN #18858 JAN 4, 2022 08:42:18
START



RUN# 18858 JAN 4, 2022 08:42:18

IDENTIFIER : 12173-500X-C
AREA%

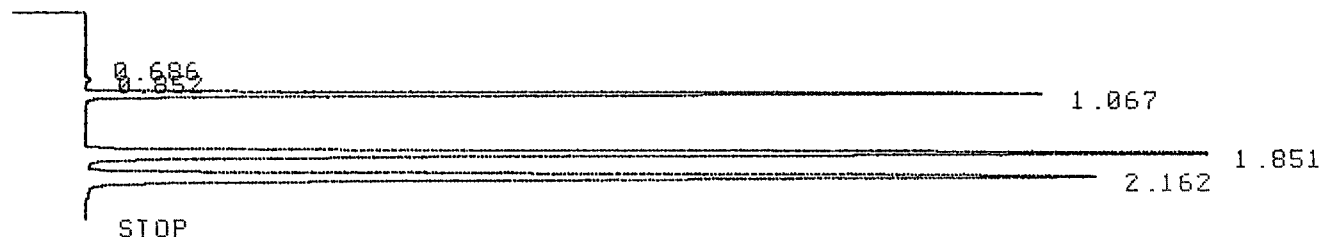
RT	AREA	TYPE	WIDTH	AREA%
1.070	157225	PB	.045	20.26035
1.853	312864	PB	.075	40.31634
2.164	305934	BB	.087	39.42331

TOTAL AREA= 776023
MUL FACTOR=1.0000E+00

*

*ID 10711-LCS

* RUN #18859 JAN 4, 2022 08:48:29
START



RUN# 18859 JAN 4, 2022 08:48:29

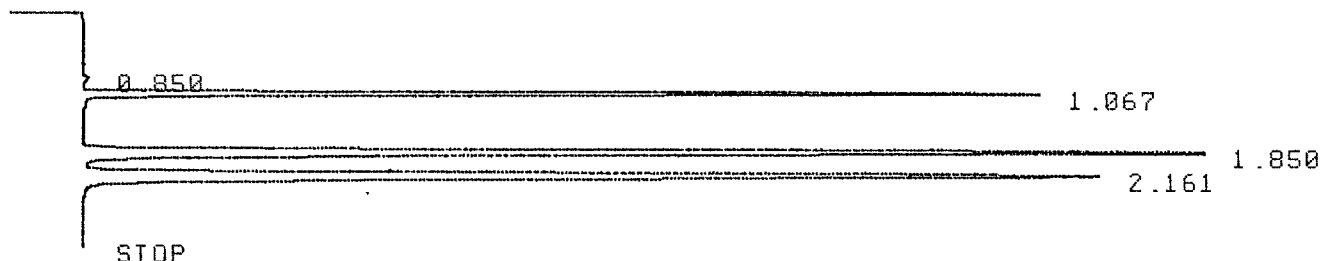
IDENTIFIER : 10711-LCS
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.686	426	PV	.053	.05536
.852	1336	UP	.060	.17362
1.067	156823	UB	.048	20.38022
1.851	308562	PB	.075	40.09974
2.162	302339	BB	.088	39.29102

TOTAL AREA= 769486
MUL FACTOR=1.0000E+00

*ID 10711-LCSD

* RUN #18860 JAN 4, 2022 08:52:45
START



RUN# 18860 JAN 4, 2022 08:52:45

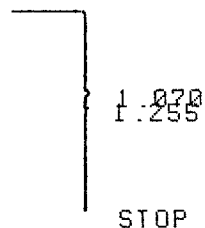
IDENTIFIER : 10711-LCSD
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.850	979	UP	.050	.12760
1.067	155549	PB	.047	20.27410
1.850	309542	PB	.075	40.34539
2.161	301160	BB	.087	39.25290

TOTAL AREA= 767230

*ID MB

* RUN #18861 JAN 4, 2022 09:52:29
START



RUN# 18861 JAN 4, 2022 09:52:29

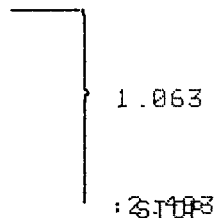
IDENTIFIER : MB
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.070	1709	UU	.090	100.00000

TOTAL AREA= 1709
MUL FACTOR=1.0000E+00

*ID 2198-1I

* RUN #18862 JAN 4, 2022 09:57:46
START



RUN# 18862 JAN 4, 2022 09:57:46

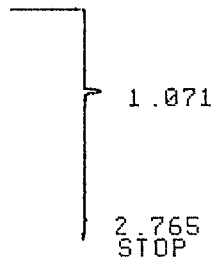
IDENTIFIER : 2198-1I
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.063	796	BP	.061	100.00000

TOTAL AREA= 796
MUL FACTOR=1.0000E+00

*ID 2198-5A

* RUN #18863 JAN 4, 2022 10:04:39
START



RUN# 18863 JAN 4, 2022 10:04:39

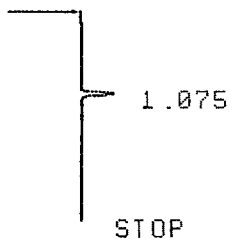
IDENTIFIER : 2198-5A
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.071	2978	UP	.049	100.00000

TOTAL AREA= 2978
MUL FACTOR=1.0000E+00

*ID 2198-6A

* RUN #18864 JAN 4, 2022 10:13:01
START



RUN# 18864 JAN 4, 2022 10:13:01

IDENTIFIER : 2198-6A
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.075	5590	UP	.048	100.00000

TOTAL AREA= 5590
MUL FACTOR=1.0000E+00

*ID 2204-1I

* RUN #18865 JAN 4, 2022 10:19:24
START



RUN# 18865 JAN 4, 2022 10:19:24

IDENTIFIER : 2204-1I
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.069	42326	PB	.046	100.00000

TOTAL AREA= 42326
MUL FACTOR=1.0000E+00

* PLOT



* PLOT



* PLOT



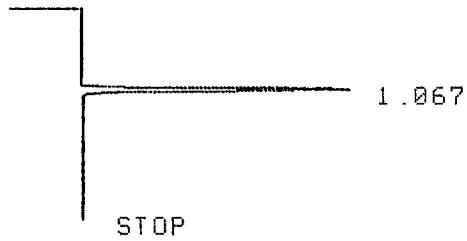
STOP

* PLOT

STOP

*ID 2204-1I-DUP

* RUN #18866 JAN 4, 2022 10:39:41
START



RUN# 18866 JAN 4, 2022 10:39:41

IDENTIFIER : 2204-1I-DUP
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.067	42073	BU	.046	100.00000

TOTAL AREA= 42073
MUL FACTOR=1.0000E+00

* PLOT

STOP

STOP

*ID 2204-7A

* RUN #18867 JAN 4, 2022 11:04:37

START

┌───┐
│ │
│ │ } 0.895
│ │ } 1.071
│ │
└───┘
STOP

RUN# 18867 JAN 4, 2022 11:04:37

IDENTIFIER : 2204-7A

AREA%

RT	AREA	TYPE	WIDTH	AREA%
.895	563	UU	.065	22.69246
1.071	1918	PU	.058	77.30755

TOTAL AREA= 2481
MUL FACTOR=1.0000E+00

*ID 2211-1I

* RUN #18868 JAN 4, 2022 11:10:14

START

┌───┐
│ │
│ │ } 1.060
│ │
└───┘
STOP

RUN# 18868 JAN 4, 2022 11:10:14

IDENTIFIER : 2211-1I

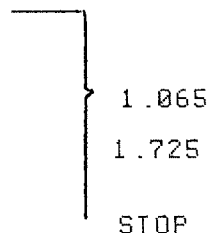
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.060	1443	UP	.068	100.00000

TOTAL AREA= 1443
MUL FACTOR=1.0000E+00

*ID 2211-6A

* RUN #18869 JAN 4, 2022 11:16:17
START



RUN# 18869 JAN 4, 2022 11:16:17

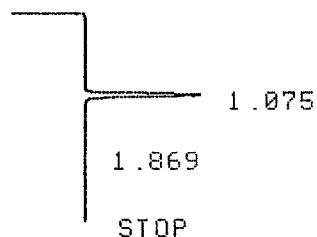
IDENTIFIER : 2211-6A
AREA%

RT	AREA TYPE	WIDTH	AREA%
1.065	1919 PU	.058	79.59354
1.725	492 PU	.060	20.40647

TOTAL AREA= 2411
MUL FACTOR=1.0000E+00

*ID 0002-1I

* RUN #18870 JAN 4, 2022 11:22:39
START



RUN# 18870 JAN 4, 2022 11:22:39

IDENTIFIER : 0002-1I
AREA%

RT	AREA TYPE	WIDTH	AREA%
1.075	18814 BB	.047	97.93856
1.869	396 PU	.051	2.06143

TOTAL AREA= 19210
MUL FACTOR=1.0000E+00

STOP

* PLOT

STOP

* PLOT

STOP

* PLOT

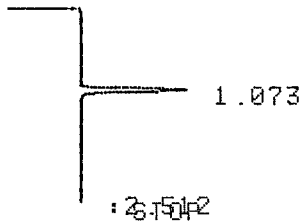
STOP

~~*ID 0002-3I~~

*JDW
1/4/2022*

*ID 0002-2I

* RUN #18871 JAN 4, 2022 11:36:18
START



RUN# 18871 JAN 4, 2022 11:36:18

IDENTIFIER : 0002-2I

AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.073	16788	BP	.046	100.00000

TOTAL AREA= 16788
MUL FACTOR=1.0000E+00

* PLOT

STOP

* PLOT

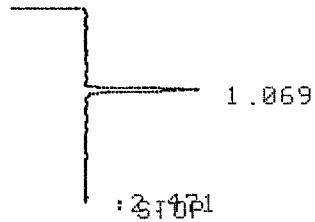
STOP

~~*ID 0002-3I~~ *30w*
1/4/2022

*ID 0002-3F

* RUN #18872 JAN 4, 2022 11:47:17

START



RUN# 18872 JAN 4, 2022 11:47:17

IDENTIFIER : 0002-3F

AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.069	18781	PV	.048	100.00000

TOTAL AREA= 18781

MUL FACTOR=1.0000E+00

* PLOT

STOP

STOP

*ID 0002-8A

* RUN #18873 JAN 4, 2022 11:58:27
START

1.070
:2.299
STOP

RUN# 18873 JAN 4, 2022 11:58:27

IDENTIFIER : 0002-8A
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.070	1480	PP	.063	100.00000

TOTAL AREA= 1480
MUL FACTOR=1.0000E+00

*ID 0002-9A

* RUN #18874 JAN 4, 2022 12:03:50
START

1.068
STOP

RUN# 18874 JAN 4, 2022 12:03:50

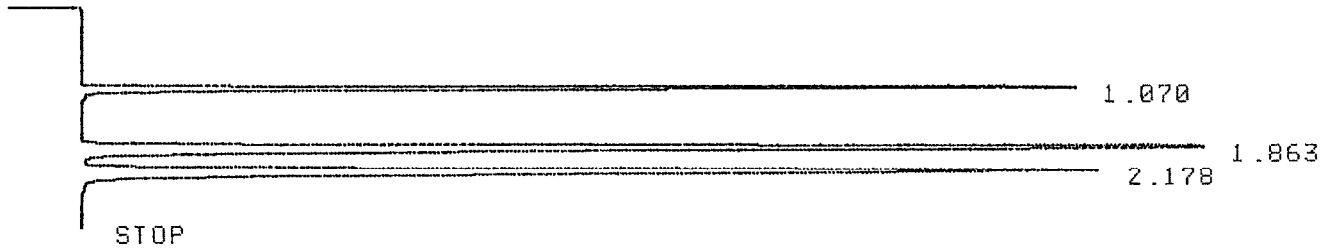
IDENTIFIER : 0002-9A
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.068	3495	PU	.052	100.00000

TOTAL AREA= 3495

#ID 12173-500X-CCU

* RUN #18875 JAN 4, 2022 12:11:48
START



RUN# 18875 JAN 4, 2022 12:11:48

IDENTIFIER : 12173-500X-C
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.070	158011	PB	.046	20.10456
1.863	315872	PU	.076	40.19005
2.178	312063	UU	.090	39.70539

TOTAL AREA= 785946
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: _____

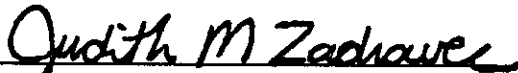
3 Multi-Component Gas Standard in Nitrogen

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