

# 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

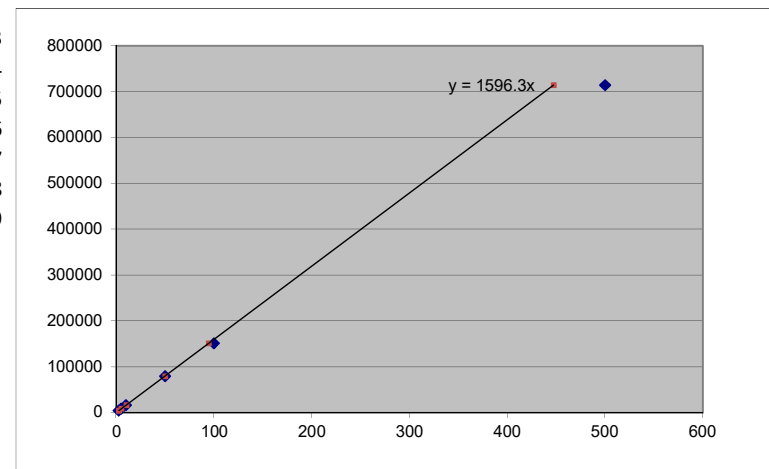
Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
14188881	Cal2	HC-METHANE-	CAL2		1/20/2021 12:00:	1	R355741		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Ethane	A	ppm		5.15876183		5	0	0	2	2	0	103%	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	1000000				
0 #12173						
Decimal	Sample	Response	Date/Time	Run Id		
Amnt, Injtd Equivalent	Conc ppm	Area Counts	Factor			
300ul						
0.0000025	2.5	4682	1872.8	1/21/2021 11:54	16483	
0.000005	5	8741	1748.2	1/21/2021 12:00	16484	
0.00001	10	16844	1684.4	1/21/2021 12:04	16485	
0.00005	50	79772	1595.44	1/21/2021 12:09	16486	
0.0001	100	151345	1513.45	1/21/2021 12:14	16487	
0.0005	500	714053	1428.106	1/21/2021 12:22	16488	
0.001	1000	1331471	1331.471	1/21/2021 12:31	16489	



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

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

Sample	Area Count	Dilution	Temperature (°C)	Concentration ppm and mg/L	Date and Time	Analyst	Sample	Test Code	Analyte
MBLK	0	1	20	0	1/20/2021 11:50	jdww	MBLK	HC-METHANE-W	Methane
MBLK	0	1	20	0	1/20/2021 11:50	jdww	MBLK	HC-METHANE-W	Ethane
MBLK	0	1	20	0	1/20/2021 11:50	jdww	MBLK	HC-METHANE-W	Ethene
Cal1	4682	1	20	2.9330938	1/20/2021 11:54	jdww	CCV	HC-METHANE-CCV	Methane
Cal1	8164	1	20	2.66692829	1/20/2021 11:54	jdww	CCV	HC-METHANE-CCV	Ethane
Cal1	8384	1	20	2.68217219	1/20/2021 11:54	jdww	CCV	HC-METHANE-CCV	Ethene
Cal2	8741	1	20	5.47590194	1/20/2021 12:00	jdww	CCV	HC-METHANE-CCV	Methane
Cal2	15792	1	20	5.15876183	1/20/2021 12:00	jdww	CCV	HC-METHANE-CCV	Ethane
Cal2	16206	1	20	5.18455183	1/20/2021 12:00	jdww	CCV	HC-METHANE-CCV	Ethene
Cal3	16844	1	20	10.5521213	1/20/2021 12:04	jdww	CCV	HC-METHANE-CCV	Methane
Cal3	31757	1	20	10.37403746	1/20/2021 12:04	jdww	CCV	HC-METHANE-CCV	Ethane
Cal3	31917	1	20	10.21074545	1/20/2021 12:04	jdww	CCV	HC-METHANE-CCV	Ethene
Cal4	79772	1	20	49.97410476	1/20/2021 12:09	jdww	CCV	HC-METHANE-CCV	Methane
Cal4	154538	1	20	50.48282269	1/20/2021 12:09	jdww	CCV	HC-METHANE-CCV	Ethane
Cal4	158708	1	20	50.7731613	1/20/2021 12:09	jdww	CCV	HC-METHANE-CCV	Ethene
Cal5	151345	1	20	94.81184983	1/20/2021 12:14	jdww	CCV	HC-METHANE-CCV	Methane
Cal5	295835	1	20	96.64021698	1/20/2021 12:14	jdww	CCV	HC-METHANE-CCV	Ethane
Cal5	301225	1	20	96.3665695	1/20/2021 12:14	jdww	CCV	HC-METHANE-CCV	Ethene
Cal6	714053	1	20	447.3268744	1/20/2021 12:22	jdww	CCV	HC-METHANE-CCV	Methane
Cal6	1359194	1	20	444.0069737	1/20/2021 12:22	jdww	CCV	HC-METHANE-CCV	Ethane
Cal6	1391019	1	20	445.0086452	1/20/2021 12:22	jdww	CCV	HC-METHANE-CCV	Ethene
Cal7	1331471	1	20	834.11562	1/20/2021 12:22	jdww	CCV	HC-METHANE-CCV	Methane
LCS	154662	1	20	96.88982337	1/20/2021 12:36	jdww	CCV	HC-METHANE-CCV	Methane
LCS	297724	1	20	97.25729532	1/20/2021 12:36	jdww	CCV	HC-METHANE-CCV	Ethane
LCS	303645	1	20	97.1407652	1/20/2021 12:36	jdww	CCV	HC-METHANE-CCV	Ethene

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

\*ID MB

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

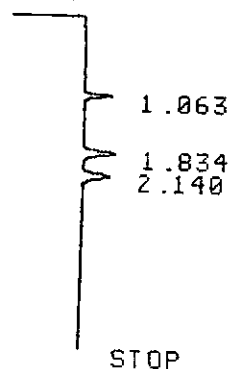


RUN# 16482      JAN 20, 2021    11:50:13

IDENTIFIER : MB  
NO RUN PERKS STORED

\*ID CAL1-2.5PPM

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



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

IDENTIFIER : CAL1-2.5PPM  
AREA%

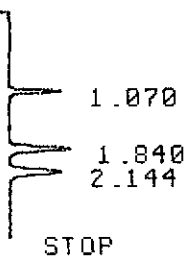
RT	AREA	TYPE	WIDTH	AREA%
1.063	4682	PP	.048	22.05370
1.834	8384	PV	.078	39.49128
2.140	8164	UP	.087	38.45502

TOTAL AREA= 21230  
MUL FACTOR=1.0000E+00

\*ID CAL2-5PPM

\* RUN #16484 JAN 20, 2021 12:00:03

START



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

IDENTIFIER : CAL2-5PPM

AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.070	8741	UP	.049	21.45610
1.840	16206	PU	.076	39.78006
2.144	15792	UU	.088	38.76384

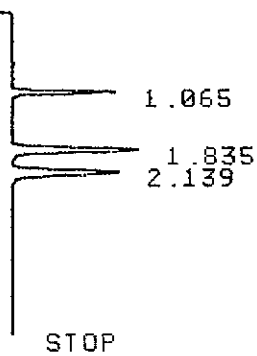
TOTAL AREA= 40739

MUL FACTOR=1.0000E+00

\*ID CAL3-10PPM

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

START



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

IDENTIFIER : CAL3-10PPM

AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.065	16844	PU	.047	20.91955
1.835	31917	UP	.074	39.63958
2.139	31757	PU	.087	39.44088

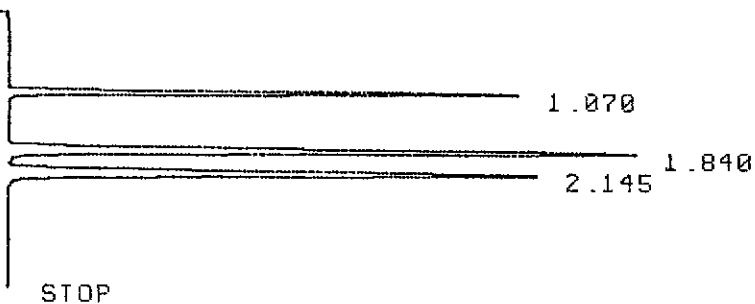
TOTAL AREA= 80518

MUL FACTOR=1.0000E+00

\*ID CAL4-50PPM

\* RUN #16486 JAN 20, 2021 12:09:55

START



RUN# 16486 JAN 20, 2021 12:09:55

IDENTIFIER : CAL4-50PPM  
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.070	79772	PB	.046	20.29729
1.840	158708	PB	.075	40.38187
2.145	154538	BB	.087	39.32085

TOTAL AREA= 393018  
MUL FACTOR=1.0000E+00

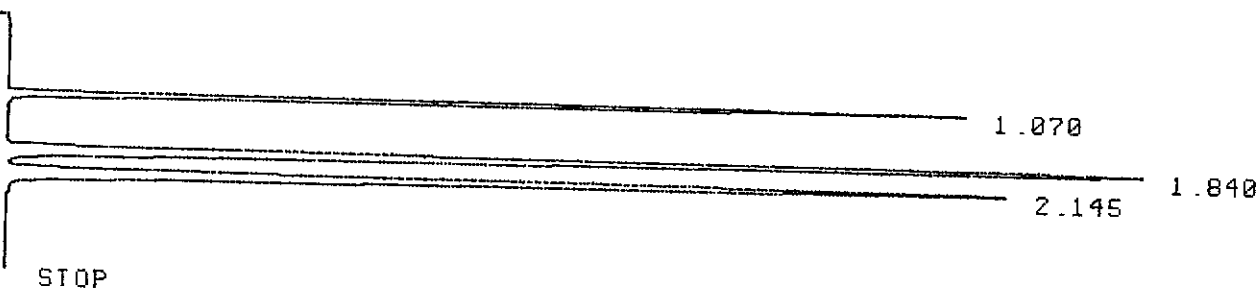
\*CAL5-100PPM

INVALID SYSTEM COMMAND

\*ID CAL5-100PPM

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

START



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

IDENTIFIER : CAL5-100PPM  
AREA%

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

TOTAL AREA= 748405  
MUL FACTOR=1.0000E+00



\*ID CAL6-500PPM

\* RUN #16488      JAN 20, 2021    12:22:48  
START



RUN# 16488      JAN 20, 2021    12:22:48

IDENTIFIER : CAL6-500PPM  
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.070	714053	PB	.047	20.61195
1.838	1391019	PB	.077	40.15334
2.141	1359194	BB	.090	39.23469

TOTAL AREA=3464266  
MUL FACTOR=1.0000E+00

\*ID CAL7-1000PPM

\* RUN #16489      JAN 20, 2021    12:31:25  
START



RUN# 16489      JAN 20, 2021    12:31:25

IDENTIFIER : CAL7-1000PPM  
AREA%

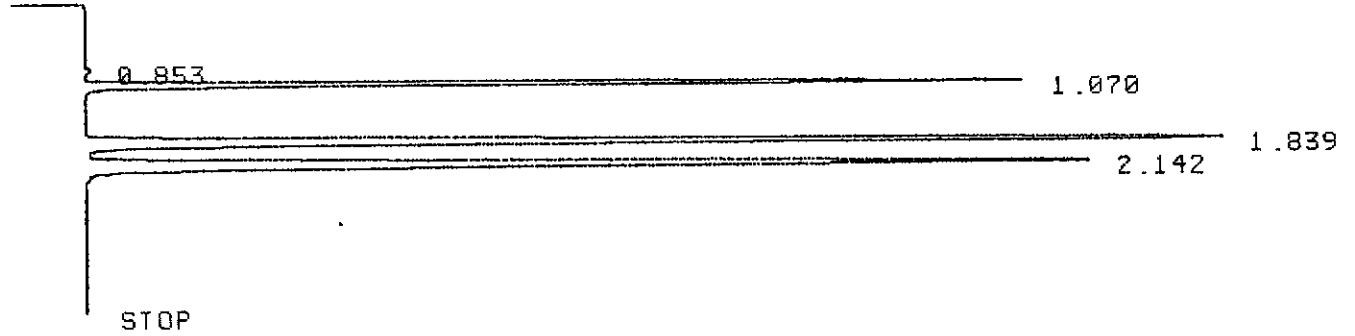
RT	AREA	TYPE	WIDTH	AREA%
1.070	1331471	PB	.049	21.86952

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\_220103A

**Run Start Date:** 1/3/2022  
**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					
14959575	CCV	HC-METHANE-	CCV		1/3/2022 9:04:00	1	R372625		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	ppm		96.8014923		100	0	0	2	2	0	97%	85	115	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
14959576	LCS	HC-METHANE-	LCS		1/3/2022 9:09:00	1	R372625		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	ppm		96.5859894		100	0	0	2	2	0	97%	85	115	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
14959577	LCSD	HC-METHANE-	LCSD		1/3/2022 9:14:00	1	R372625		0	1E+07						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	ppm		97.0144893		100	0	96.585989	2	2	0	97%	85	115	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
14959578	MBLK	HC-METHANE-	MBLK		1/3/2022 10:23:0	1	R372625		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					
14959579	B21122077-001I	HC-METHANE-	SAMP		1/3/2022 10:29:0	1	R372625		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					
14959580	B21122077-005	HC-METHANE-	SAMP		1/3/2022 10:35:0	1	R372625		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					
14959581	B21122088-001I	HC-METHANE-	SAMP		1/3/2022 10:40:0	1	R372625		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					
14959582	B21122088-005	HC-METHANE-	SAMP		1/3/2022 10:46:0	1	R372625		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					
14959583	B21122090-001I	HC-METHANE-	SAMP		1/3/2022 10:55:0	1	R372625		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0.00266356			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					
14959584	B21122090-001I	HC-METHANE-	DUP		1/3/2022 11:06:0	1	R372625		0	1E+07						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0.00277938			0	0.0026636	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					
14959585	B21122090-005	HC-METHANE-	SAMP		1/3/2022 11:17:0	1	R372625		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					
14959586	B21122105-001I	HC-METHANE-	SAMP		1/3/2022 11:24:0	1	R372625		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					
14959587	B21122105-005	HC-METHANE-	SAMP		1/3/2022 11:33:0	1	R372625		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					
14959588	B21122168-001I	HC-METHANE-	SAMP		1/3/2022 11:40:0	1	R372625		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,T
Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
14959589	B21122168-001I	HC-METHANE-	DUP		1/3/2022 11:47:0	1	R372625		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					
14959591	B21122168-005	HC-METHANE-	SAMP		1/3/2022 11:54:0	1	R372625		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0.0023228			0	0	0.000704	0.002	0	0%	0	0	0%	T
Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
14959592	B21122168-006I	HC-METHANE-	SAMP		1/3/2022 12:31:0	78	R372625		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0.56496173			0	0	0.054912	0.156	0	0%	0	0	0%	T
Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
14959594	B21122168-012	HC-METHANE-	SAMP		1/3/2022 12:41:0	1	R372625		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,T
Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
14959595	B21122180-001I	HC-METHANE-	SAMP		1/3/2022 12:49:0	1	R372625		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					
14959596	B21122180-005	HC-METHANE-	SAMP		1/3/2022 12:55:0	1	R372625		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					
14959597	B21122188-001I	HC-METHANE-	SAMP		1/3/2022 1:01:00	1	R372625		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					
14959598	B21122188-007	HC-METHANE-	SAMP		1/3/2022 1:07:00	1	R372625		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					
14959599	B21122190-001I	HC-METHANE-	SAMP		1/3/2022 1:24:00	78	R372625		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		3.04555002			0	0	0.054912	0.156	0	0%	0	0	0%	
Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
14959600	B21122190-005	HC-METHANE-	SAMP		1/3/2022 1:34:00	1	R372625		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					
14959601	CCV	HC-METHANE-	CCV		1/3/2022 1:40:00	1	R372625		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	ppm		96.904232		100	0	0	2	2	0	97%	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	154521	1	20	96.80149227	1/3/2022 9:04	jdw	CCV	HC-METHANE-CCV	Methane		
LCS	154177	1	20	96.58598943	1/3/2022 9:09	jdw	LCS	HC-METHANE-CCV	Methane		
LCS	154861	1	20	97.01448925	1/3/2022 9:14	jdw	LCS	HC-METHANE-CCV	Methane		
MBLK	1042	1	20	0.000151613	1/3/2022 10:23	jdw	MBLK	HC-METHANE-W	Methane	10	32
B21122077-001I	1115	1	20	1.06217E-05	1/3/2022 10:29	jdw	SAMP	HC-METHANE-W	Methane	10	32
B21122077-005A	3343	1	20	0.000334801	1/3/2022 10:35	jdw	SAMP	HC-METHANE-W	Methane	10	32
B21122088-001I	3684	1	20	0.000384417	1/3/2022 10:40	jdw	SAMP	HC-METHANE-W	Methane	10	32
B21122088-005A	4305	1	20	0.000474774	1/3/2022 10:46	jdw	SAMP	HC-METHANE-W	Methane	10	32
B21122090-001I	19348	1	20	0.002663563	1/3/2022 10:55	jdw	SAMP	HC-METHANE-W	Methane	10	32
B21122090-001IDUP	20144	1	20	0.002779383	1/3/2022 11:06	jdw	DUP	HC-METHANE-W	Methane	10	32
B21122090-005A	1411	1	20	5.36903E-05	1/3/2022 11:17	jdw	SAMP	HC-METHANE-W	Methane	10	32
B21122105-001I	3805	1	20	0.000402023	1/3/2022 11:24	jdw	SAMP	HC-METHANE-W	Methane	10	32
B21122105-005A	1029	1	20	-1.89153E-06	1/3/2022 11:33	jdw	SAMP	HC-METHANE-W	Methane	10	32
B21122168-001I	588	1	20	-6.6058E-05	1/3/2022 11:40	jdw	SAMP	HC-METHANE-W	Methane	10	32
B21122168-001IDUP	0	1	20	-0.000151613	1/3/2022 11:47	jdw	DUP	HC-METHANE-W	Methane	10	32
B21122168-005A	17006	1	20	0.002322797	1/3/2022 11:54	jdw	SAMP	HC-METHANE-W	Methane	10	32
B21122168-006I	50822	78	20	0.564961729	1/3/2022 12:31	jdw	SAMP	HC-METHANE-W	Methane	10	32
B21122168-012A	4359	1	20	0.000482631	1/3/2022 12:41	jdw	SAMP	HC-METHANE-W	Methane	10	32
B21122180-001I	2711	1	20	0.000242843	1/3/2022 12:49	jdw	SAMP	HC-METHANE-W	Methane	10	32
B21122180-005A	1607	1	20	8.22087E-05	1/3/2022 12:55	jdw	SAMP	HC-METHANE-W	Methane	10	32
B21122188-001I	1655	1	20	8.91928E-05	1/3/2022 13:01	jdw	SAMP	HC-METHANE-W	Methane	10	32
B21122188-007A	1563	1	20	7.58066E-05	1/3/2022 13:07	jdw	SAMP	HC-METHANE-W	Methane	10	32
B21122190-001I	269392	78	20	3.04555002	1/3/2022 13:24	jdw	SAMP	HC-METHANE-W	Methane	10	32
B21122190-005A	1689	1	20	9.41399E-05	1/3/2022 13:34	jdw	SAMP	HC-METHANE-W	Methane	10	32
CCV	154685	1	20	96.90423199	1/3/2022 13:40	jdw	CCV	HC-METHANE-CCV	Methane		

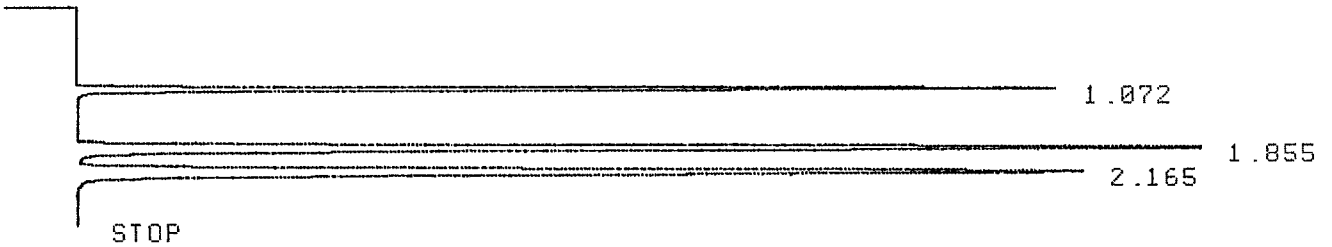


JDW  
1/3/2022

\*ID 12173-500X-CCU

\* RUN #18831      JAN 3, 2022 09:04:45

START



RUN# 18831      JAN 3, 2022 09:04:45

IDENTIFIER : 12173-500X-C

AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.072	154521	PB	.046	20.17506
1.855	308502	BB	.075	40.27962
2.165	302878	BB	.088	39.54531

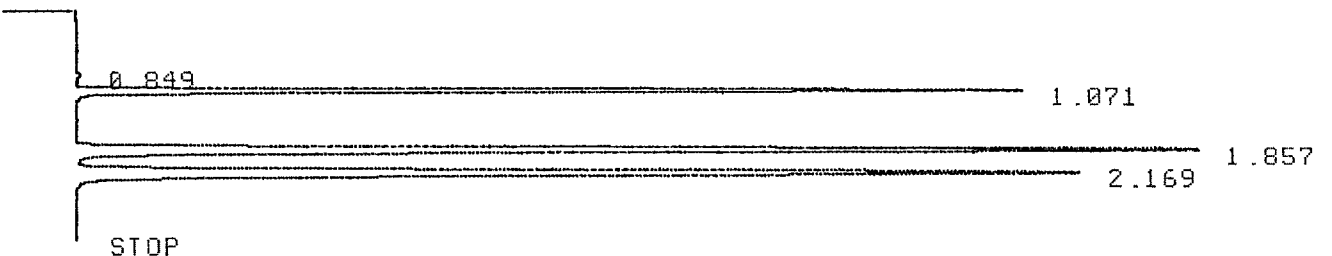
TOTAL AREA= 765901

MUL FACTOR=1.0000E+00

\*ID 10711-LCS

\* RUN #18832      JAN 3, 2022 09:09:48

START



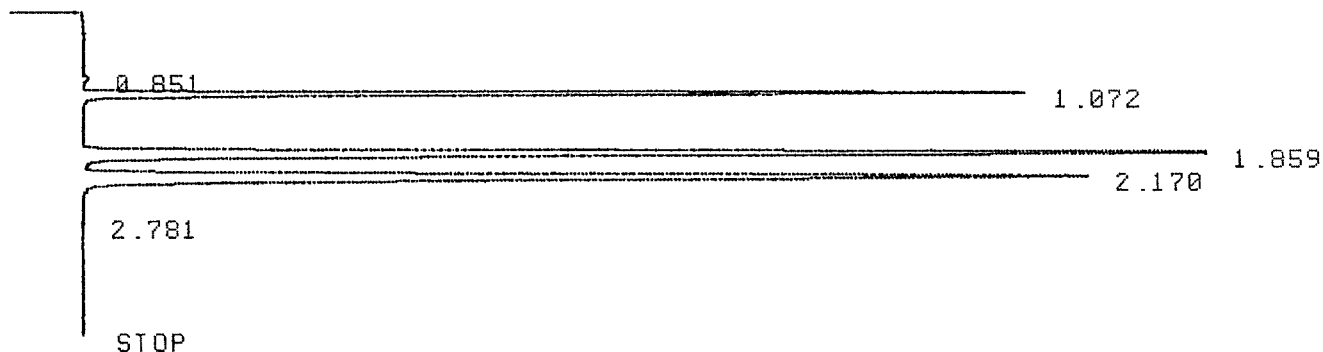
IDENTIFIER : 10711-LCS  
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.849	1057	PU	.058	.13865
1.071	154177	BB	.048	20.22317
1.857	306951	BB	.075	40.26232
2.169	300193	BB	.088	39.37587

TOTAL AREA= 762378  
MUL FACTOR=1.0000E+00

\*ID 10711-LCSD

\* RUN #18833      JAN 3, 2022 09:14:08  
START



RUN# 18833      JAN 3, 2022 09:14:08

IDENTIFIER : 10711-LCSD  
AREA%

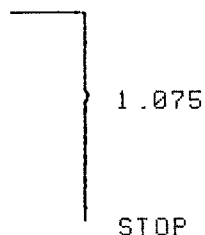
RT	AREA	TYPE	WIDTH	AREA%
.851	880	VU	.052	.11451
1.072	154861	PB	.048	20.15146
1.859	309257	PB	.075	40.24243
2.170	303107	BB	.088	39.44216
2.781	380	I PB	.067	.04945

TOTAL AREA= 768485  
MUL FACTOR=1.0000E+00

\*

\*ID MB

\* RUN #18834            JAN 3, 2022 10:23:41  
START



RUN# 18834            JAN 3, 2022 10:23:41

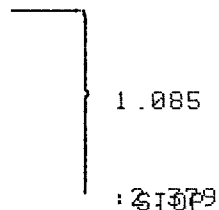
IDENTIFIER : MB  
AREA%

RT	AREA TYPE	WIDTH	AREA%
1.075	1042 PP	.065	100.00000

TOTAL AREA= 1042  
MUL FACTOR=1.0000E+00

\*ID 2077-1I

\* RUN #18835            JAN 3, 2022 10:29:33  
START



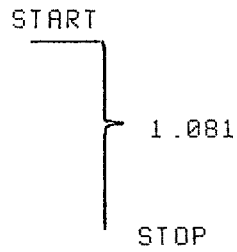
RUN# 18835            JAN 3, 2022 10:29:33

IDENTIFIER : 2077-1I  
AREA%

RT	AREA TYPE	WIDTH	AREA%
1.085	1115 PU	.078	100.00000

TOTAL AREA= 1115  
MUL FACTOR=1.0000E+00

\*ID 2077-5A



RUN# 18836                    JAN 3, 2022 10:35:17

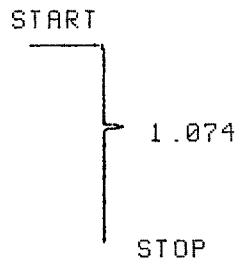
IDENTIFIER : 2077-5A  
AREA%

RT	AREA TYPE	WIDTH	AREA%
1.081	3343 PU	.050	100.00000

TOTAL AREA= 3343  
MUL FACTOR=1.0000E+00

\*ID 2088-1I

\* RUN #18837                    JAN 3, 2022 10:40:32



RUN# 18837                    JAN 3, 2022 10:40:32

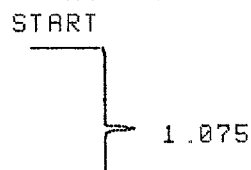
IDENTIFIER : 2088-1I  
AREA%

RT	AREA TYPE	WIDTH	AREA%
1.074	3684 UP	.055	100.00000

TOTAL AREA= 3684  
MUL FACTOR=1.0000E+00

\*ID 2088-5A

\* RUN #18838                    JAN 3, 2022 10:46:19



STOP

RUN# 18838                    JAN 3, 2022 10:46:19

IDENTIFIER : 2088-5A  
AREA%

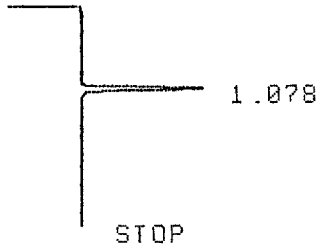
RT	AREA	TYPE	WIDTH	AREA%
1.075	4305	BP	.045	100.00000

TOTAL AREA= 4305  
MUL FACTOR=1.0000E+00

\*ID 2090-1I

\* RUN #18839                    JAN 3, 2022 10:55:49

START



RUN# 18839                    JAN 3, 2022 10:55:49

IDENTIFIER : 2090-1I  
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.078	19348	BU	.046	100.00000

TOTAL AREA= 19348  
MUL FACTOR=1.0000E+00

\* PLOT

STOP

\* PLOT

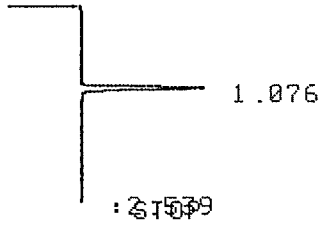


STOP

STOP

\*ID 2090-1I-DUP

\* RUN #18840      JAN 3, 2022 11:06:43  
START



RUN# 18840              JAN 3, 2022 11:06:43

IDENTIFIER : 2090-1I-DUP  
AREA%

RT	AREA TYPE	WIDTH	AREA%
1.076	20144 PU	.047	100.00000

TOTAL AREA= 20144  
MUL FACTOR=1.0000E+00

\* PLOT



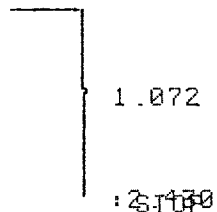
\* PLOT



\*

\*ID 2090-5A

\* RUN #18841            JAN 3, 2022 11:17:55  
START



RUN# 18841            JAN 3, 2022 11:17:55

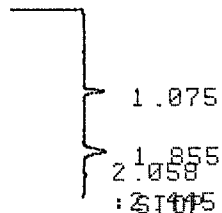
IDENTIFIER : 2090-5A  
AREA%

RT	AREA TYPE	WIDTH	AREA%
1.072	1411 PU	.087	100.00000

TOTAL AREA= 1411  
MUL FACTOR=1.0000E+00

\*ID 2105-1I

\* RUN #18842            JAN 3, 2022 11:24:12  
START



RUN# 18842            JAN 3, 2022 11:24:12

IDENTIFIER : 2105-1I  
AREA%

RT	AREA TYPE	WIDTH	AREA%
1.075	3805 UP	.052	34.13781
1.855	6947 PP	.086	62.32730
2.050	394 PU	.053	3.53490

TOTAL AREA= 11146  
MUL FACTOR=1.0000E+00

STOP

\* PLOT

STOP

\*ID 2105-5A

\* RUN #18843            JAN 3, 2022 11:33:39  
START

1.068

:2.334  
STOP

RUN# 18843            JAN 3, 2022 11:33:39

IDENTIFIER : 2105-5A

AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.068	1029	PV	.061	100.00000

TOTAL AREA= 1029  
MUL FACTOR=1.0000E+00

\*ID 2168-1I

\* RUN #18844            JAN 3, 2022 11:40:06  
START

1.080

STOP

RUN# 18844            JAN 3, 2022 11:40:06

IDENTIFIER : 2168-1I

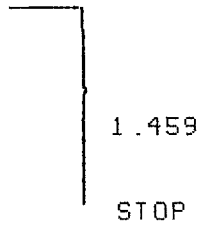
AREA%



TOTAL AREA= 588  
MUL FACTOR=1.0000E+00

\*ID 2168-1I-DUP

\* RUN #18845 JAN 3, 2022 11:47:38  
START



RUN# 18845 JAN 3, 2022 11:47:38

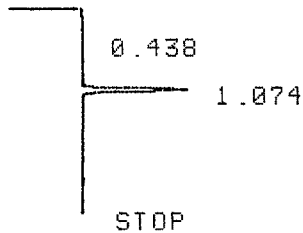
IDENTIFIER : 2168-1I-DUP  
AREA%

RT	AREA TYPE	WIDTH	AREA%
1.459	332 PU	.041	100.00000

TOTAL AREA= 332  
MUL FACTOR=1.0000E+00

\*ID 2168-5A

\* RUN #18846 JAN 3, 2022 11:54:29  
START



RUN# 18846 JAN 3, 2022 11:54:29

IDENTIFIER : 2168-5A  
AREA%

RT	AREA TYPE	WIDTH	AREA%
.438	423 PU	.055	2.42699
1.074	17006 UP	.046	97.57299

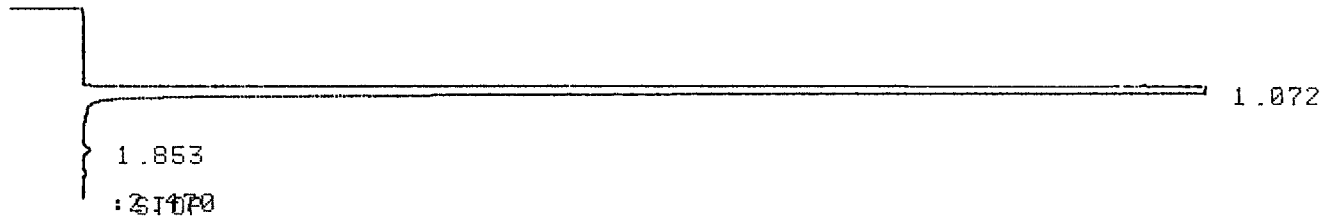
TOTAL AREA= 17429  
MUL FACTOR=1.0000E+00

\* PLOT



\*ID 2168-6I

\* RUN #18847            JAN 3, 2022 12:06:28  
START



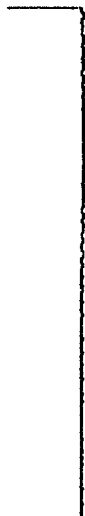
RUN# 18847            JAN 3, 2022 12:06:28

IDENTIFIER : 2168-6I  
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.072	3065517	BB	.055	99.92154
1.853	2407	PV	.088	.07846

TOTAL AREA=3067923  
MUL FACTOR=1.0000E+00

\* PLOT



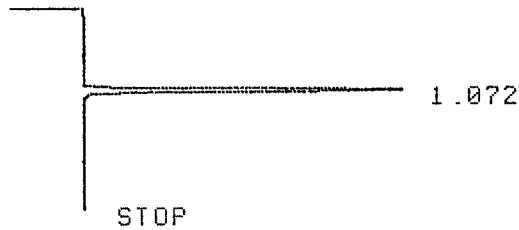
STOP

\* PLOT



\*ID 2168-6I-78X

\* RUN #18848      JAN 3, 2022 12:31:20  
START



RUN# 18848              JAN 3, 2022 12:31:20

IDENTIFIER : 2168-6I-78X  
AREA%

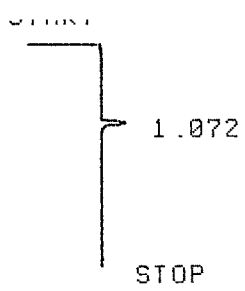
RT	AREA	TYPE	WIDTH	AREA%
1.072	50822	PB	.046	100.00000

TOTAL AREA= 50822  
MUL FACTOR=1.0000E+00

\* PLOT



\*ID 2168-12A



RUN# 18849                    JAN 3, 2022 12:41:30

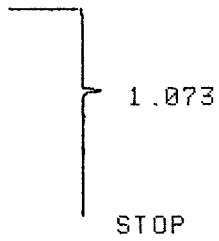
IDENTIFIER : 2168-12A  
 AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.072	4359	PP	.051	100.00000

TOTAL AREA= 4359  
 MUL FACTOR=1.0000E+00

\*ID 2180-1I

\* RUN #18850                    JAN 3, 2022 12:49:02  
 START



RUN# 18850                    JAN 3, 2022 12:49:02

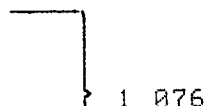
IDENTIFIER : 2180-1I  
 AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.073	2711	BP	.045	100.00000

TOTAL AREA= 2711  
 MUL FACTOR=1.0000E+00

\*ID 2180-5A

\* RUN #18851                    JAN 3, 2022 12:55:14  
 START



2.069  
: 2.172

RUN# 18851                    JAN 3, 2022 12:55:14

IDENTIFIER : 2180-5A  
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.076	1607	PP	.064	73.14522
2.069	590	PU	.066	26.85480

TOTAL AREA= 2197  
MUL FACTOR=1.0000E+00

\*ID 2188-1I

\* RUN #18852                    JAN 3, 2022 13:01:33  
START

0.879  
1.083  
STOP

RUN# 18852                    JAN 3, 2022 13:01:33

IDENTIFIER : 2188-1I  
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.879	564	PU	.064	25.41686
1.083	1655	UP	.066	74.58317

TOTAL AREA= 2219  
MUL FACTOR=1.0000E+00

\*ID 2188-7A

\* RUN #18853                    JAN 3, 2022 13:07:06  
START

1.078  
STOP

RUN# 18853                    JAN 3, 2022 13:07:06

IDENTIFIER : 2188-7A  
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.078	1563	BP	.048	100.00000

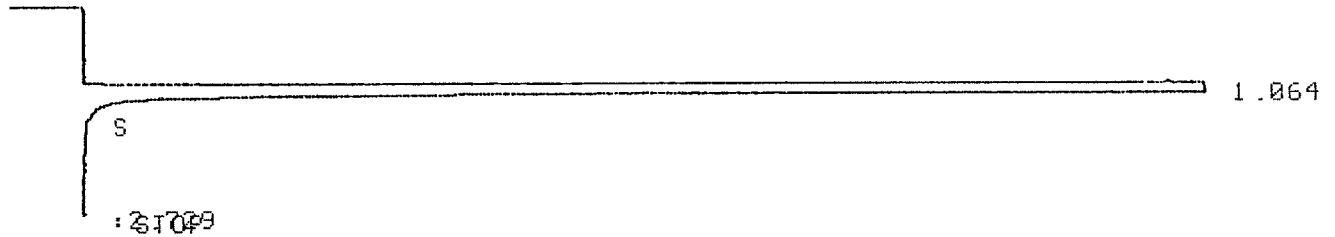
TOTAL AREA= 1563  
MUL FACTOR=1.0000E+00

*30w 1/3/2022*

~~\*ID 2188-7A~~

\*ID 2190-1I

\* RUN #18854                    JAN 3, 2022 13:12:52  
START



RUN# 18854                    JAN 3, 2022 13:12:52

IDENTIFIER : 2190-1I  
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.064	6048096	SPB	.065	100.00000

TOTAL AREA=6048096  
MUL FACTOR=1.0000E+00

\* PLOT



STOP

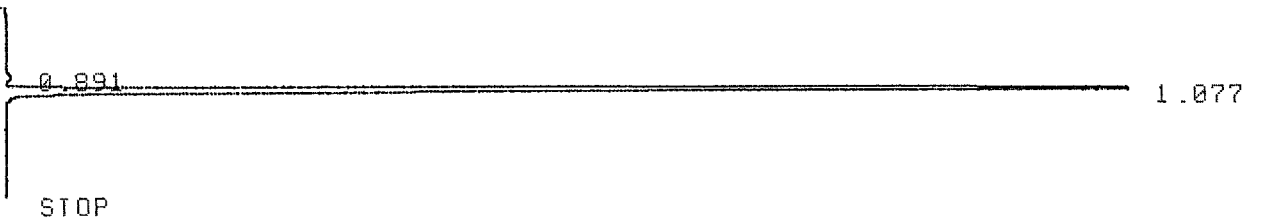
\* PLOT



STOP

\*ID 2190-1I-78X

\* RUN #18855      JAN 3, 2022 13:24:18  
START



RUN# 18855      JAN 3, 2022 13:24:18

IDENTIFIER : 2190-1I-78X  
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.891	1351	PP	.074	.49900
1.077	269392	PB	.049	99.50099

TOTAL AREA= 270743  
MUL FACTOR=1.0000E+00

\* PLOT



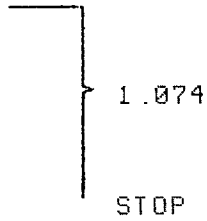
\* PLOT



\*

\*ID 2190-5A

\* RUN #18856      JAN 3, 2022 13:34:16  
START



RUN# 18856      JAN 3, 2022 13:34:16

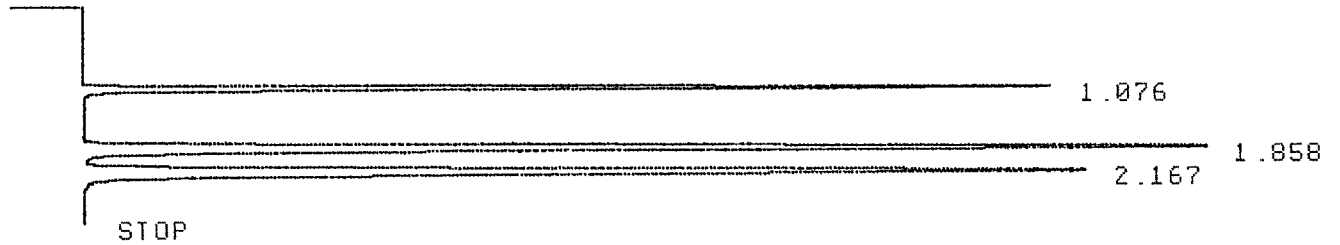
IDENTIFIER : 2190-5A  
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.074	1689	PV	.053	100.00000

TOTAL AREA= 1689  
MUL FACTOR=1.0000E+00

\*ID 12173-500X-CCU

\* RUN #18857      JAN 3, 2022 13:40:56  
START



RUN# 18857      JAN 3, 2022 13:40:56

IDENTIFIER : 12173-500X-C  
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.076	154685	PB	.047	20.15923
1.858	308664	PB	.076	40.22645
2.167	303967	PB	.089	39.61432

TOTAL AREA= 767316  
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: \_\_\_\_\_

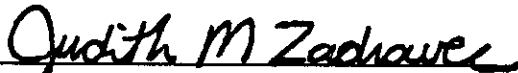
3 Multi-Component Gas Standard in Nitrogen

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	8/9/2022

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