



SOURCE EMISSIONS SURVEY
OF
COMM ENGINEERING
MODEL 3 THERMAL COMBUSTOR INLET DUCT
AND OUTLET STACK
LAFAYETTE, LOUISIANA

SEPTEMBER 2016

TESTING COMPANY: TESTAMERICA AIR EMISSIONS CORP.
dba METCO ENVIRONMENTAL
3226 COMMANDER DR.
CARROLLTON, TEXAS 75006
972-931-7127
FILE NUMBER 16-323A

"I certify that I have personally checked and am familiar with the information submitted herein. The analytical results for laboratory methods performed by METCO Environmental met all the requirements of NELAC Standard, if applicable. Based on my inquiries of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate, and complete"

A handwritten signature in black ink, appearing to read "James R. Monfries", written over a horizontal line.

James R. Monfries
Senior Quality Assurance Manager

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INTRODUCTION

METCO Environmental, 3226 Commander Dr., Carrollton, Texas, conducted an NSPS Subpart OOOO manufacturer certification test of COMM Engineering, Model 3 Thermal Combustor, located in Lafayette, Louisiana, on September 19 through 23, 2016. The purpose of these tests was to determine the concentrations of carbon monoxide and total hydrocarbons being emitted to the atmosphere via the Model 3 Thermal Combustor Outlet Stack, in order to meet the requirements of 40 CFR 60 Subpart OOOO. The visible emissions were also determined. The concentrations of total hydrocarbons were also determined at the Model 3 Thermal Combustor Inlet Duct in order to determine the removal efficiency. The testing was performed at four different operating conditions. Condition I was performed while the unit was operating at 90-100% of the maximum design rate; Condition II at 70-100-70%; Condition III at 30-70-30%; and Condition IV at 0-30-0%. The fuel used during the testing had a minimal purity of 99.5%+ propylene based on the manufacturers' specifications.

METCO Environmental is an accredited Air Emission Testing Body (AETB) having demonstrated conformance to the ASTM D-7036-04 standard by the Stack Accreditation Council (Certificate Number 2007.003.0113.1217). The sampling was performed by the following METCO personnel: Jeremiah Johnson – Project Supervisor, Benson Ho, Brandon Rios, and Alexander Madden. Jeremiah Johnson served as the Qualified Individual on-site. The credentials for the Qualified Individual can be found in Appendix I of the report.

The sampling was performed according to Sampling Protocol 16-323 following the

procedures set forth in the Code of Federal Regulations, Title 40, Chapter I, Part 60, Appendix A, Methods 1, 2, 3C, 4, 10, 18, 22, and 25A; and Subpart OOOO. Any modifications are described in the Sampling and Analytical Procedures section of the report.

SUMMARY OF RESULTS

Model 3 Thermal Combustor Outlet Stack

Design Rate: 90-100%	Condition-Run Number I-1	Condition-Run Number I-2	Condition-Run Number I-3	Average	Allowable
Emission Parameter					
Carbon Monoxide Emissions – ppmvd ¹	0.19	0.12	0.23	0.18	≤ 10
Total Hydrocarbons Emissions as Propane – ppmvw ¹	0.05	0.05	0.07	0.06	≤ 10
Excess Air @ Sampling Point - %	382.9	396.8	636.3	472.0	≥ 150
Total Hydrocarbons Destruction Efficiency - %	>99.99	>99.99	>99.99	>99.99	≥ 95

Design Rate: 70-100-70%	Condition-Run Number II-2	Condition-Run Number II-4	Condition-Run Number II-5	Average	Allowable
Emission Parameter					
Carbon Monoxide Emissions – ppmvd ¹	0.54	2.76	1.45	1.58	≤ 10
Total Hydrocarbons Emissions as Propane – ppmvw ¹	0.06	0.07	0.06	0.06	≤ 10
Excess Air @ Sampling Point - %	812.8	1,260.7	540.6	871.4	≥ 150
Total Hydrocarbons Destruction Efficiency - %	>99.99	>99.99	>99.99	>99.99	≥ 95

Design Rate: 30-70-30%	Condition-Run Number III-1	Condition-Run Number III-2	Condition-Run Number III-3	Average	Allowable
Emission Parameter					
Carbon Monoxide Emissions – ppmvd ¹	0.07	1.49	0.96	0.84	≤ 10
Total Hydrocarbons Emissions as Propane – ppmvw ¹	0.04	0.12	0.09	0.08	≤ 10
Excess Air @ Sampling Point - %	361.6	703.8	488.6	518.0	≥ 150
Total Hydrocarbons Destruction Efficiency - %	>99.99	>99.99	>99.99	>99.99	≥ 95

Design Rate: 0-30-0%	Condition-Run Number IV-1	Condition-Run Number IV-2	Condition-Run Number IV-3	Average	Allowable
Emission Parameter					
Carbon Monoxide Emissions – ppmvd ¹	0.53	0.74	0.63	0.63	≤ 10
Total Hydrocarbons Emissions as Propane – ppmvw ¹	< 0.01	0.08	0.11	< 0.07	≤ 10
Excess Air @ Sampling Point - %	185.8	239.5	211.8	212.4	≥ 150
Total Hydrocarbons Destruction Efficiency - %	>99.99	>99.99	>99.99	>99.99	≥ 95

¹ Corrected to 3% carbon dioxide.

Note: Run Numbers 1 and 3 at Condition II were aborted due to plant operational problems.

SUMMARY OF RESULTS

Model 3 Thermal Combustor Outlet Stack

Condition- Run <u>Number</u>	<u>Date</u>	<u>Time</u>	Visible Emissions (min:sec)
I-1A (90-100%)	09/21/16	0922-1026	00:00
I-1B (90-100%)	09/21/16	1045-1149	00:00
I-1C (90-100%)	09/21/16	1210-1314	00:00
Average			00:00
II-2A (70-100-70%)	09/22/16	0840-0944	00:00
II-2B (70-100-70%)	09/22/16	1530-1634	00:00
II-2C (70-100-70%)	09/22/16	1700-1804	00:00
Average			00:00
III-3A (30-70-30%)	09/23/16	0850-0954	00:00
III-3B (30-70-30%)	09/23/16	1015-1119	00:00
III-3C (30-70-30%)	09/23/16	1140-1244	00:00
Average			00:00
IV-4A (0-30-0%)	09/23/16	1440-1544	00:00
IV-4B (0-30-0%)	09/23/16	1557-1701	00:00
IV-4C (0-30-0%)	09/23/16	1715-1819	00:00
Average			00:00
Allowable Visible Emissions			02:00

SUMMARY OF RESULTS

Model 3 Thermal Combustor

Condition- Run Number	<u>Inlet Duct</u> Average Total Hydrocarbons Concentration as Propylene (lbs/hr)	<u>Outlet Stack</u> Average Total Hydrocarbons Emissions as Propylene (lbs/hr)	Destruction Efficiency (%)
I-1 (90-100%)	217.55	< 0.001	> 99.99
I-2 (90-100%)	217.55	< 0.001	> 99.99
I-3 (90-100%)	<u>217.55</u>	< <u>0.001</u>	> <u>99.99</u>
Average	217.55	< 0.001	> 99.99
II-2 (70-100-70%)	190.40	< 0.001	> 99.99
II-4 (70-100-70%)	190.40	< 0.001	> 99.99
II-5 (70-100-70%)	<u>190.40</u>	< <u>0.001</u>	> <u>99.99</u>
Average	190.40	< 0.001	> 99.99
III-1 (30-70-30%)	115.89	< 0.001	> 99.99
III-2 (30-70-30%)	115.89	< 0.001	> 99.99
III-3 (30-70-30%)	<u>115.89</u>	< <u>0.001</u>	> <u>99.99</u>
Average	115.89	< 0.001	> 99.99
IV-1 (0-30-0%)	40.71	< 0.001	> 99.99
IV-2 (0-30-0%)	40.71	< 0.001	> 99.99
IV-3 (0-30-0%)	<u>40.71</u>	< <u>0.001</u>	> <u>99.99</u>
Average	40.71	< 0.001	> 99.99

Notes: Only one canister sample was collected over the duration of the testing condition.

Run Numbers 1 and 3 at Condition II were aborted due to plant operational problems.

SUMMARY OF RESULTS
Model 3 Thermal Combustor Inlet Duct
Design Rate: 90-100%

Condition-Run Number	I-1	I-2	I-3	Average
Date	09/21/16	09/21/16	09/21/16	----
Time	0922-1028	1045-1151	1210-1316	----
Flow Rate – SCFH ¹	2,064.25	2,045.37	2,059.30	2,056.31
% Carbon Dioxide - % Vol. (Canister)	----	----	----	< 0.463
% Hydrogen - % Vol. (Canister)	----	----	----	< 0.728
% Carbon Monoxide - % Vol. (Canister)	----	----	----	< 0.324
% Nitrogen - % Vol. (Canister)	----	----	----	2.01
% Oxygen - % Vol. (Canister)	----	----	----	0.573
% Methane - % Vol. (Canister)	----	----	----	< 0.000427
Higher Heating Value – Btu/scf	----	----	----	2,078
Duct Temperature -°F ¹	81.82	88.97	92.35	87.71
Total Hydrocarbons Concentration as Propylene - ppmv	----	----	----	967,952
Total Hydrocarbons Concentration as Propylene - lbs/hr	----	----	----	217.55

¹ Provided by COMM Engineering.

Note: Only one canister sample was collected over the duration of the testing condition.

SUMMARY OF RESULTS
Model 3 Thermal Combustor Outlet Stack
Design Rate: 90-100%

Condition-Run Number	I-1	I-2	I-3	Average
Date	09/21/16	09/21/16	09/21/16	----
Time	0922-1028	1045-1151	1210-1316	----
Stack Flow Rate – ACFM	2,664	2,965	2,085	2,571
Stack Flow Rate – DSCFM ¹	562	622	443	556
% Water Vapor - % Volume	8.23	8.22	7.46	7.97
% Carbon Dioxide - % Vol. ²	4.4	4.4	3.4	4.1
% Oxygen - % Vol. ²	16.6	16.7	18.0	17.1
% Nitrogen - % Vol. ²	79.0	78.9	78.6	78.8
% Methane - % Vol.	< 0.0310	< 0.0310	< 0.0310	< 0.0310
Molecular Weight - lb/lb-mole	28.43	28.44	28.42	28.43
% Excess Air @ Sampling Point	382.9	396.8	636.3	472.0
Stack Temperature - °F	1,849	1,866	1,852	1,856
Stack Pressure - "Hg	29.98	29.98	29.98	29.98

¹ 29.92 "Hg, 68°F (760 mm Hg, 20°C)

² Method 3C analytical results are normalized to 100%

SUMMARY OF RESULTS
Model 3 Thermal Combustor Outlet Stack
Design Rate: 90-100%

Condition-Run Number	I-1	I-2	I-3	Average
Date	09/21/16	09/21/16	09/21/16	----
Time	0922-1028	1045-1151	1210-1316	----
Stack Flow Rate – DSCFM ¹	562	622	443	556
% Carbon Dioxide - % Vol. (Int. Bag)	4.4	4.4	3.4	4.1
% Water Vapor - % Volume	8.23	8.22	7.46	7.97
Carbon Monoxide Emissions - ppmvd	0.28	0.17	0.26	0.24
Carbon Monoxide Emissions - ppmvd ²	0.19	0.12	0.23	0.18
Carbon Monoxide Emissions - lbs/hr	0.001	< 0.001	0.001	< 0.001
Total Hydrocarbons Emissions as Propane - ppmvw	0.08	0.07	0.08	0.08
Total Hydrocarbons Emissions as Propane - ppmvw ²	0.05	0.05	0.07	0.06
Total Hydrocarbons Emissions as Propane - ppmvd	0.09	0.08	0.09	0.09
Total Hydrocarbons Emissions as Propylene - lbs/hr	< 0.001	< 0.001	< 0.001	< 0.001

¹ 29.92 "Hg, 68°F (760 mm Hg, 20°C)

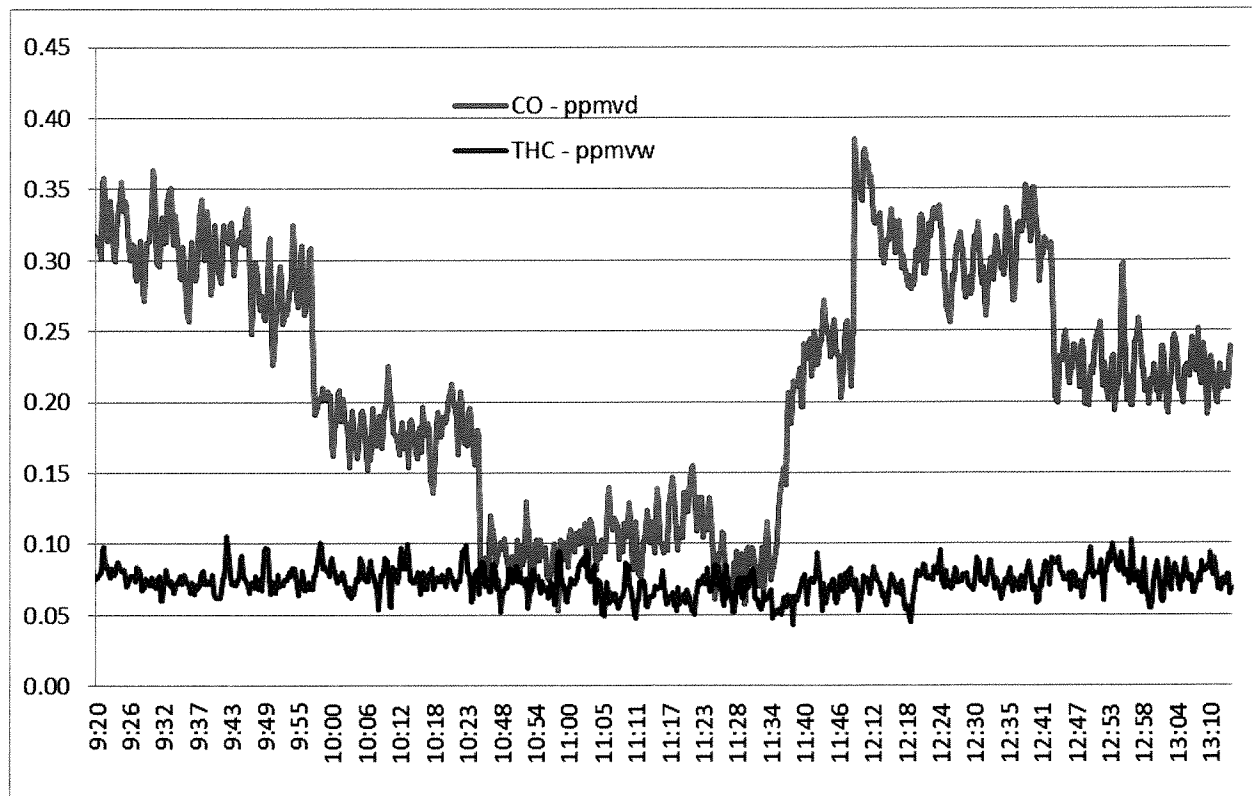
² Corrected to 3% carbon dioxide

SUMMARY OF RESULTS

Model 3 Thermal Combustor Outlet Stack

Condition I - Design Rate: 90-100%

Reference Method Monitors CO and THC Graph Summary



SUMMARY OF RESULTS
Model 3 Thermal Combustor Inlet Duct
Design Rate: 70-100-70%

Condition-Run Number	II-2	II-4	II-5	Average
Date	09/22/16	09/22/16	09/22/16	----
Time	0840-0946	1530-1636	1700-1808	----
Flow Rate – SCFH ¹	1,815.41	1,830.91	1,827.82	1,824.71
% Carbon Dioxide - % Vol. (Canister)	----	----	----	< 0.469
% Hydrogen - % Vol. (Canister)	----	----	----	< 0.737
% Carbon Monoxide - % Vol. (Canister)	----	----	----	< 0.328
% Nitrogen - % Vol. (Canister)	----	----	----	2.23
% Oxygen - % Vol. (Canister)	----	----	----	0.634
% Methane - % Vol. (Canister)	----	----	----	< 0.000432
Higher Heating Value – Btu/scf	----	----	----	2,048
Duct Temperature -°F ¹	84.11	88.54	84.13	85.59
Total Hydrocarbons Concentration as Propylene - ppmv	----	----	----	954,686
Total Hydrocarbons Concentration as Propylene - lbs/hr	----	----	----	190.40

¹ Provided by COMM Engineering.

Notes: Only one canister sample was collected over the duration of the testing condition.
Run Numbers 1 and 3 at Condition II were aborted due to plant operational problems.

SUMMARY OF RESULTS
Model 3 Thermal Combustor Outlet Stack
Design Rate: 70-100-70%

Condition-Run Number	II-2	II-4	II-5	Average
Date	09/22/16	09/22/16	09/22/16	----
Time	0840-0946	1530-1636	1700-1808	----
Stack Flow Rate – ACFM	2,388	2,953	3,235	2,859
Stack Flow Rate – DSCFM ¹	544	585	629	586
% Water Vapor - % Volume	7.93	8.73	7.99	8.22
% Carbon Dioxide - % Vol. ²	3.1	2.6	3.7	3.1
% Oxygen - % Vol. ²	18.5	19.2	17.6	18.4
% Nitrogen - % Vol. ²	78.4	78.2	78.7	78.4
% Methane - % Vol.	< 0.0310	< 0.0310	< 0.0310	< 0.0310
Molecular Weight – lb/lb-mole	28.34	28.21	28.39	28.34
% Excess Air @ Sampling Point	812.8	1,260.7	540.6	871.4
Stack Temperature -°F	1,691	1,982	2,045	1,906
Stack Pressure - "Hg	29.98	29.93	29.92	29.94

¹ 29.92 "Hg, 68°F (760 mm Hg, 20°C)

² Method 3C analytical results are normalized to 100%

Note: Run Numbers 1 and 3 at Condition II were aborted due to plant operational problems.

SUMMARY OF RESULTS
Model 3 Thermal Combustor Outlet Stack
Design Rate: 70-100-70%

Condition-Run Number	II-2	II-4	II-5	Average
Date	09/22/16	09/22/16	09/22/16	----
Time	0840-0946	1530-1636	1700-1808	----
Stack Flow Rate – DSCFM ¹	544	585	629	586
% Carbon Dioxide - % Vol. (Int. Bag)	3.1	2.6	3.7	3.1
% Water Vapor - % Volume	7.93	8.73	7.99	8.22
Carbon Monoxide Emissions - ppmvd	0.56	2.39	1.79	1.58
Carbon Monoxide Emissions - ppmvd ²	0.54	2.76	1.45	1.58
Carbon Monoxide Emissions - lbs/hr	0.001	0.006	0.005	0.004
Total Hydrocarbons Emissions as Propane - ppmvw	0.06	0.06	0.07	0.06
Total Hydrocarbons Emissions as Propane - ppmvw ²	0.06	0.07	0.06	0.06
Total Hydrocarbons Emissions as Propane - ppmvd	0.07	0.07	0.08	0.07
Total Hydrocarbons Emissions as Propylene - lbs/hr	< 0.001	< 0.001	< 0.001	< 0.001

¹ 29.92 "Hg, 68°F (760 mm Hg, 20°C)

² Corrected to 3% carbon dioxide

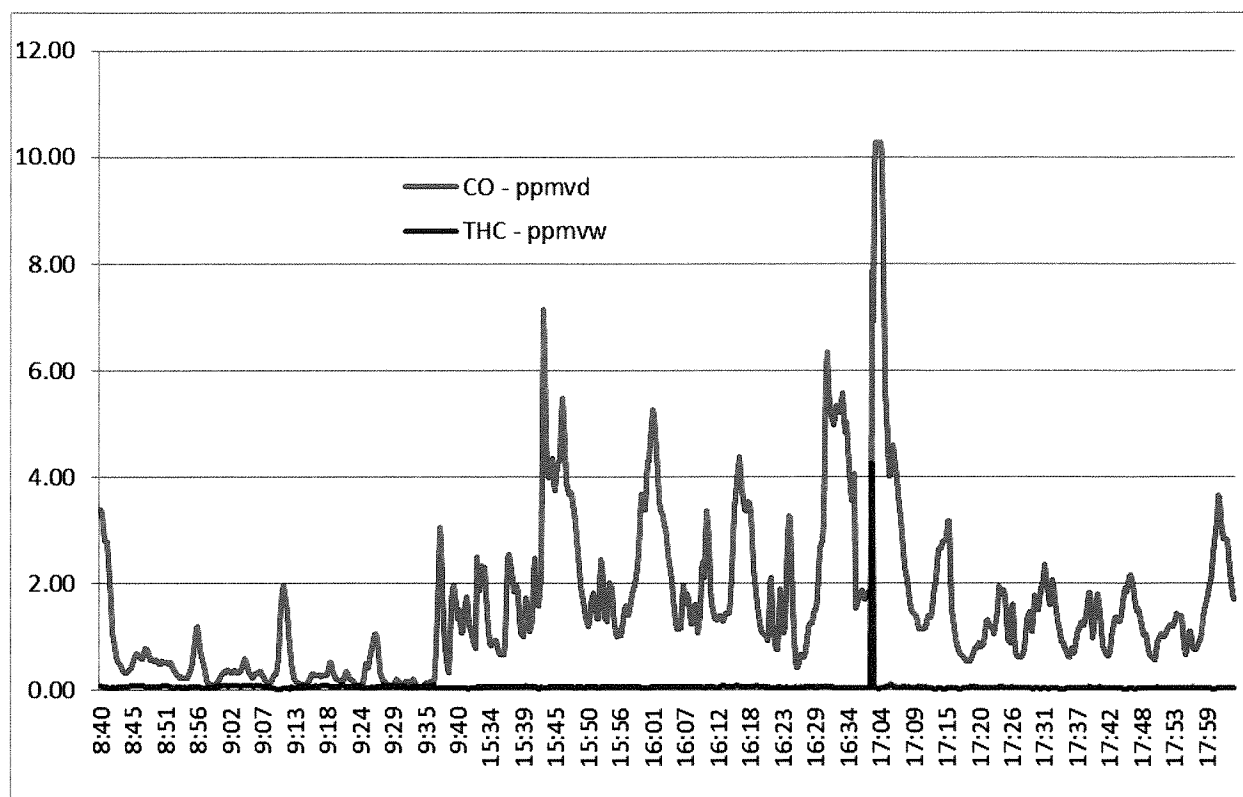
Note: Run Numbers 1 and 3 at Condition II were aborted due to plant operational problems.

SUMMARY OF RESULTS

Model 3 Thermal Combustor Outlet Stack

Condition II - Design Rate: 70-100-70%

Reference Method Monitors CO and THC Graph Summary



SUMMARY OF RESULTS
Model 3 Thermal Combustor Inlet Duct
Design Rate: 30-70-30%

Condition-Run Number	III-1	III-2	III-3	Average
Date	09/23/16	09/23/16	09/23/16	----
Time	0850-0956	1015-1121	1140-1246	----
Flow Rate – SCFH ¹	1,139.35	1,137.17	1,145.11	1,140.54
% Carbon Dioxide - % Vol. (Canister)	----	----	----	< 0.611
% Hydrogen - % Vol. (Canister)	----	----	----	< 0.961
% Carbon Monoxide - % Vol. (Canister)	----	----	----	< 0.428
% Nitrogen - % Vol. (Canister)	----	----	----	2.14
% Oxygen - % Vol. (Canister)	----	----	----	0.683
% Methane - % Vol. (Canister)	----	----	----	< 0.000563
Higher Heating Value – Btu/scf	----	----	----	1,995
Duct Temperature -°F ¹	81.63	86.37	90.39	86.13
Total Hydrocarbons Concentration as Propylene - ppmv	----	----	----	929,647
Total Hydrocarbons Concentration as Propylene - lbs/hr	----	----	----	115.89

¹ Provided by COMM Engineering.

Note: Only one canister sample was collected over the duration of the testing condition.

SUMMARY OF RESULTS

Model 3 Thermal Combustor Outlet Stack

Design Rate: 30-70-30%

Condition-Run Number	III-1	III-2	III-3	Average
Date	09/23/16	09/23/16	09/23/16	----
Time	0850-0956	1015-1121	1140-1246	----
Stack Flow Rate – ACFM	2,582	2,546	2,457	2,528
Stack Flow Rate – DSCFM ¹	557	549	526	544
% Water Vapor - % Volume	8.85	8.81	8.23	8.63
% Carbon Dioxide - % Vol. ²	4.6	2.3	3.5	3.5
% Oxygen - % Vol. ²	16.4	18.4	17.4	17.4
% Nitrogen - % Vol. ²	79.0	79.3	79.1	79.1
% Methane - % Vol.	< 0.0310	< 0.0310	< 0.0310	< 0.0310
Molecular Weight – lb/lb-mole	28.38	29.10	29.26	28.91
% Excess Air @ Sampling Point	361.6	703.8	488.6	518.0
Stack Temperature - °F	1,788	1,790	1,817	1,798
Stack Pressure - "Hg	30.02	30.02	30.00	30.01

¹ 29.92 "Hg, 68°F (760 mm Hg, 20°C)

² Method 3C analytical results are normalized to 100%

Note: The bag sample results for Run Number 3 were not considered a representative sample. The average carbon dioxide and oxygen values for Run Numbers 1 and 2 were used for Run Number 3.

SUMMARY OF RESULTS
Model 3 Thermal Combustor Outlet Stack
Design Rate: 30-70-30%

Condition-Run Number	III-1	III-2	III-3	Average
Date	09/23/16	09/23/16	09/23/16	----
Time	0850-0956	1015-1121	1140-1246	----
Stack Flow Rate – DSCFM ¹	557	549	526	544
% Carbon Dioxide - % Vol.	4.6	2.3	3.5	3.5
% Water Vapor - % Volume	8.85	8.81	8.23	8.63
Carbon Monoxide Emissions - ppmvd	0.10	1.14	1.12	0.79
Carbon Monoxide Emissions - ppmvd ²	0.07	1.49	0.96	0.84
Carbon Monoxide Emissions - lbs/hr	< 0.001	0.003	0.003	< 0.002
Total Hydrocarbons Emissions as Propane - ppmvw	0.06	0.09	0.11	0.09
Total Hydrocarbons Emissions as Propane - ppmvw ²	0.04	0.12	0.09	0.08
Total Hydrocarbons Emissions as Propane - ppmvd	0.07	0.10	0.12	0.10
Total Hydrocarbons Emissions as Propylene - lbs/hr	< 0.001	< 0.001	< 0.001	< 0.001

¹ 29.92 "Hg, 68°F (760 mm Hg, 20°C)

² Corrected to 3% carbon dioxide

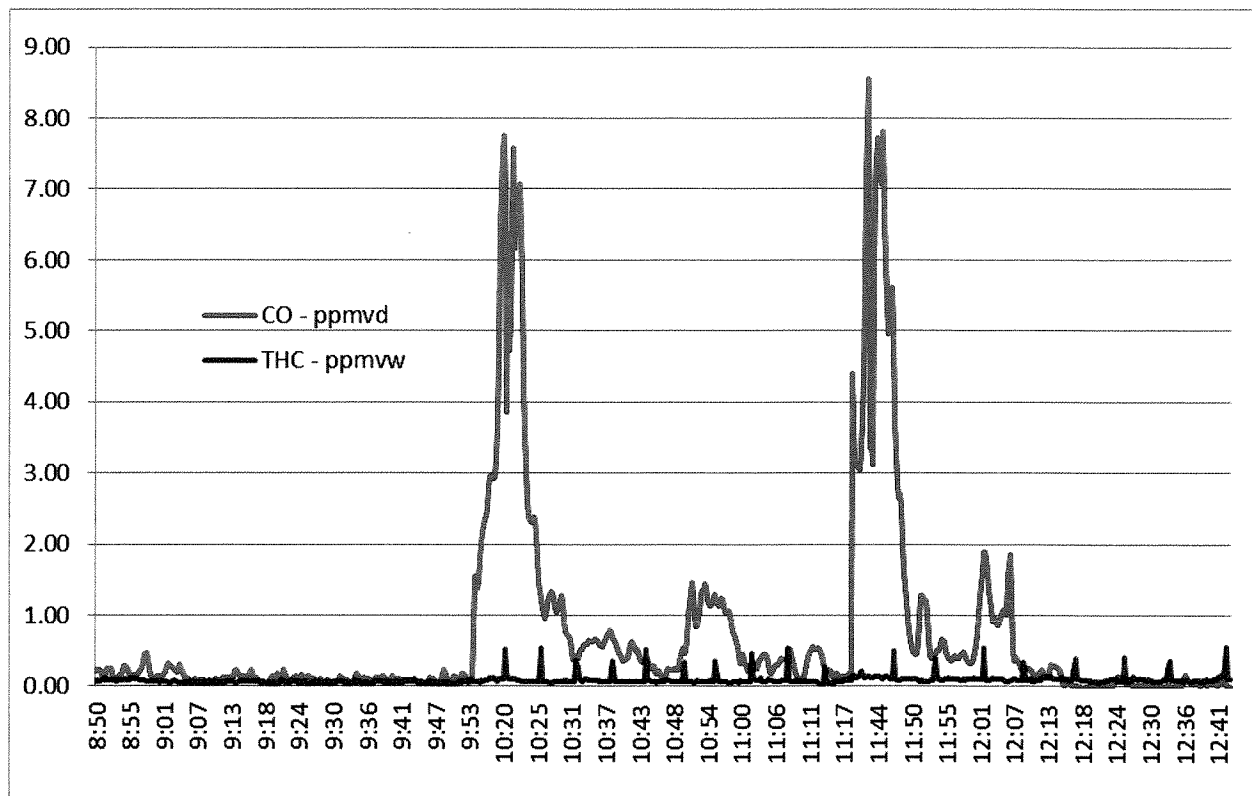
Note: The bag sample results for Run Number 3 were not considered a representative sample. The average carbon dioxide and oxygen values for Run Numbers 1 and 2 were used for Run Number 3.

SUMMARY OF RESULTS

Model 3 Thermal Combustor Outlet Stack

Condition III - Design Rate: 30-70-30%

Reference Method Monitors CO and THC Graph Summary



SUMMARY OF RESULTS
Model 3 Thermal Combustor Inlet Duct
Design Rate: 0-30-0%

Condition-Run Number	IV-1	IV-2	IV-3	Average
Date	09/23/16	09/23/16	09/23/16	----
Time	1440-1546	1557-1703	1715-1821	----
Flow Rate – SCFH ¹	415.32	413.67	417.44	415.48
% Carbon Dioxide - % Vol. (Canister)	----	----	----	< 0.438
% Hydrogen - % Vol. (Canister)	----	----	----	< 0.689
% Carbon Monoxide - % Vol. (Canister)	----	----	----	< 0.307
% Nitrogen - % Vol. (Canister)	----	----	----	1.93
% Oxygen - % Vol. (Canister)	----	----	----	0.517
% Methane - % Vol. (Canister)	----	----	----	< 0.000404
Higher Heating Value – Btu/scf	----	----	----	1,924
Duct Temperature -°F ¹	89.82	88.22	87.20	88.41
Total Hydrocarbons Concentration as Propylene - ppmv	----	----	----	896,568
Total Hydrocarbons Concentration as Propylene - lbs/hr	----	----	----	40.71

¹ Provided by COMM Engineering.

Note: Only one canister sample was collected over the duration of the testing condition.

SUMMARY OF RESULTS
Model 3 Thermal Combustor Outlet Stack
Design Rate: 0-30-0%

Condition-Run Number	IV-1	IV-2	IV-3	Average
Date	09/23/16	09/23/16	09/23/16	----
Time	1440-1546	1557-1703	1715-1821	----
Stack Flow Rate – ACFM	1,728	1,781	1,787	1,765
Stack Flow Rate – DSCFM ¹	389	399	398	395
% Water Vapor - % Volume	8.86	8.68	8.67	8.74
% Carbon Dioxide - % Vol. ²	6.1	5.4	5.6	5.7
% Oxygen - % Vol. ²	13.8	14.9	14.4	14.4
% Nitrogen - % Vol. ²	80.1	79.7	80.0	79.9
% Methane - % Vol.	< 0.0310	< 0.0310	< 0.0310	< 0.0310
Molecular Weight – lb/lb-mole	28.51	28.47	28.48	28.49
% Excess Air @ Sampling Point	185.8	239.5	211.8	212.4
Stack Temperature - °F	1,691	1,701	1,715	1,702
Stack Pressure - "Hg	29.96	29.93	29.93	29.94

¹ 29.92 "Hg, 68°F (760 mm Hg, 20°C)

² Method 3C analytical results are normalized to 100%

SUMMARY OF RESULTS
Model 3 Thermal Combustor Outlet Stack
Design Rate: 0-30-0%

Condition-Run Number	IV-1	IV-2	IV-3	Average
Date	09/23/16	09/23/16	09/23/16	----
Time	1440-1546	1557-1703	1715-1821	----
Stack Flow Rate – DSCFM ¹	389	399	398	395
% Carbon Dioxide - % Vol.	6.1	5.4	5.6	5.7
% Water Vapor - % Volume	8.86	8.68	8.67	8.74
Carbon Monoxide Emissions - ppmvd	1.08	1.34	1.17	1.20
Carbon Monoxide Emissions - ppmvd ²	0.53	0.74	0.63	0.63
Carbon Monoxide Emissions - lbs/hr	0.002	0.002	0.002	0.002
Total Hydrocarbons Emissions as Propane - ppmvw	< 0.01	0.15	0.20	< 0.12
Total Hydrocarbons Emissions as Propane - ppmvw ²	< 0.01	0.08	0.11	< 0.07
Total Hydrocarbons Emissions as Propane - ppmvd	< 0.01	0.16	0.22	< 0.13
Total Hydrocarbons Emissions as Propylene - lbs/hr	< 0.001	< 0.001	0.001	< 0.001

¹ 29.92 "Hg, 68°F (760 mm Hg, 20°C)

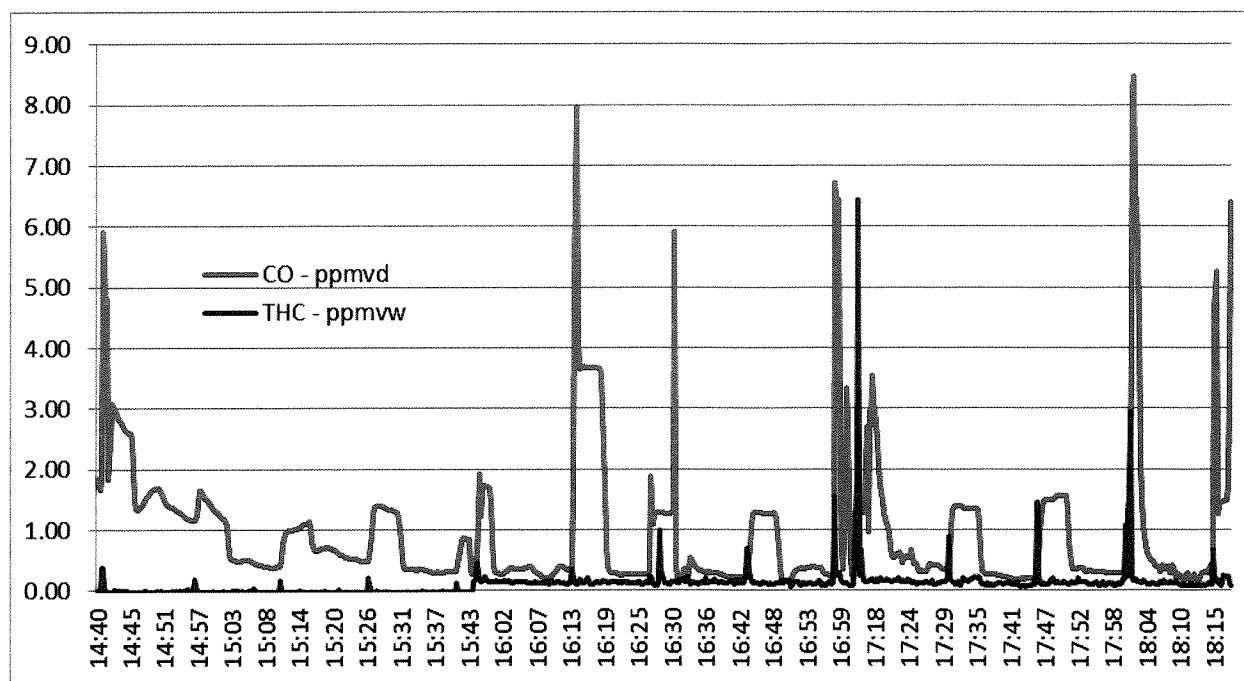
² Corrected to 3% carbon dioxide

SUMMARY OF RESULTS

Model 3 Thermal Combustor Outlet Stack

Condition IV - Design Rate: 0-30-0%

Reference Method Monitors CO and THC Graph Summary



DISCUSSION OF RESULTS

Model 3 Thermal Combustor Inlet Duct

The test for total hydrocarbons and fixed gases at each of the four operating conditions appeared to be valid representations of the actual inlet duct hydrocarbons amounts during the tests. All leak checks performed on the canister sampling system showed no leaks before or after each test.

Model 3 Thermal Combustor Outlet Stack

Condition I - (90-100%)

The three tests for carbon monoxide, total hydrocarbons, and fixed gases appeared to be valid representations of the actual emissions during the tests. All leak checks performed on the sampling train, the pitot tubes, the integrated bag sampling system, and the reference method monitors sampling systems showed no leaks before or after each test. The zero and calibration drift tests of the reference method monitors were stable with no variations greater than 3.0 percent. The calibration error check and the sampling system bias check performed on the reference method monitors prior to testing were valid. The indicative parameters calculated from the field data were in close agreement. The moisture percentages for the three tests were within 6.4 percent of the mean value. The measured flow rates (Q_s) for the tests were within 18.3 percent of the mean value.

The calculated emissions (pounds per hour) of carbon monoxide for the three tests showed no variation from the mean value.

The calculated emissions (pounds per hour) of total hydrocarbons for the three tests showed no variation from the mean value.

Condition II - 70-100-70%

Run Numbers 1 and 3 at Condition II were aborted due to plant operational problems.

The three completed tests for carbon monoxide, total hydrocarbons, and fixed gases appeared to be valid representations of the actual emissions during the tests. All leak checks performed on the sampling train, the pitot tubes, the integrated bag sampling system, and the reference method monitors sampling systems showed no leaks before or after each test. The zero and calibration drift tests of the reference method monitors were stable with no variations greater than 3.0 percent. The calibration error check and the sampling system bias check performed on the reference method monitors prior to testing were valid. The indicative parameters calculated from the field data were in close agreement. The moisture percentages for the three completed tests were within 6.2 percent of the mean value. The measured flow rates (Q_s) for the tests were within 7.3 percent of the mean value.

The calculated emissions (pounds per hour) of carbon monoxide for the three completed tests showed a range of -75.0 percent to +50.0 percent variation from the mean value.

The calculated emissions (pounds per hour) of total hydrocarbons for the three tests showed no variation from the mean value.

Condition III - 30-70-30%

The bag sample results for Run Number 3 were not considered a representative sample. The average carbon dioxide and oxygen values for Run Numbers 1 and 2 were used for Run Number 3.

The three tests for carbon monoxide, total hydrocarbons, and Run Numbers 1 and 2 for fixed gases appeared to be valid representations of the actual emissions during the tests. All leak checks performed on the sampling train, the pitot tubes, the integrated bag sampling system, and the reference method monitors sampling systems showed no leaks before or after each test. The zero and calibration drift tests of the reference method monitors were stable with no variations greater than 3.0 percent. The calibration

error check and the sampling system bias check performed on the reference method monitors prior to testing were valid. The indicative parameters calculated from the field data were in close agreement. The moisture percentages for the three tests were within 4.6 percent of the mean value. The measured flow rates (Q_s) for the tests were within 3.3 percent of the mean value.

The calculated emissions (pounds per hour) of carbon monoxide for the three tests showed a range of -57.1 percent to +28.6 percent variation from the mean value.

The calculated emissions (pounds per hour) of total hydrocarbons for the three tests showed no variation from the mean value.

Condition IV - 0-30-0%

The three tests for carbon monoxide, total hydrocarbons, and fixed gases appeared to be valid representations of the actual emissions during the tests. All leak checks performed on the sampling train, the pitot tubes, the integrated bag sampling system, and the reference method monitors sampling systems showed no leaks before or after each test. The zero and calibration drift tests of the reference method monitors were stable with no variations greater than 3.0 percent. The calibration error check and the sampling system bias check performed on the reference method monitors prior to testing were valid. The indicative parameters calculated from the field data were in close agreement. The moisture percentages for the three tests were within 1.4 percent of the mean value. The measured flow rates (Q_s) for the tests were within 1.6 percent of the mean value.

The calculated emissions (pounds per hour) of carbon monoxide for the three tests showed no variation from the mean value.

The concentrations of total hydrocarbons for one of the three tests were below the minimum detectable limit of the method.

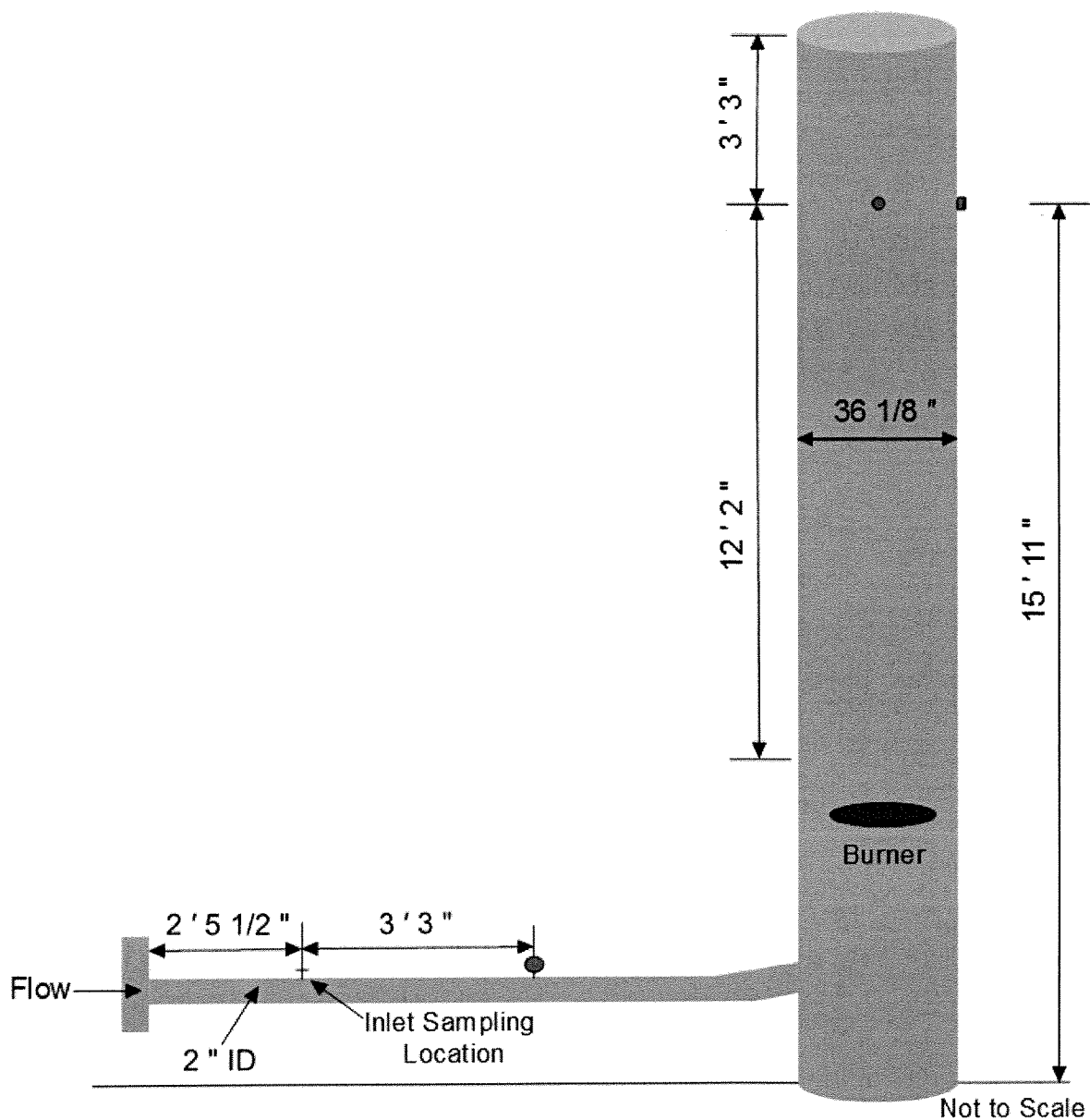
DESCRIPTION OF SAMPLING LOCATIONS

The sampling location on the Model 3 Thermal Combustor Inlet is located at ground level. The inlet pipe from the propylene trailer was a 2 inch pipe. The sampling location was located 2 feet 5 1/2 inches (14.75 inlet diameters) downstream from a disturbance in the inlet and 3 feet 3 inches (19.50 inlet diameters) upstream from a disturbance in the inlet.

The sampling location on the Model 3 Thermal Combustor Outlet Stack is 15 feet 11 inches above the ground. The sampling ports are located 12 feet 2 inches (4.04 stack diameters) downstream from the top of the flame tip in the stack and 3 feet 3 inches (1.08 stack diameters) upstream from the outlet to the stack.

SAMPLING LOCATION

Model 3 Thermal Combustor Outlet Stack



SAMPLING AND ANALYTICAL PROCEDURES

The sampling followed the procedures set forth in the Code of Federal Regulations, Title 40, Chapter I, Part 60, Appendix A, Methods 1, 2, 3C, 4, 10, 18, 22, and 25A; and Subpart OOOO.

A velocity traverse was made at each of the two ports on the Model 3 Thermal Combustor Outlet Stack, in order to determine the uniformity and magnitude of the flow during each test. Several traverse points were checked for cyclonic flow and none was found to be present. Alternate procedures would be required if the angle of flow was greater than 20 degrees. Eight traverse points were sampled from each of the two ports for a total of sixteen traverse points.

The sampling trains were leak-checked before each test and again after each test. This was done to predetermine the possibility of a diluted sample.

The pitot tube lines were checked for leaks before and after each test under both a vacuum and a pressure. The lines were also checked for clearance and the manometer was zeroed before each test.

The reference method monitors sampling systems were leak checked prior to testing.

Moisture

Triplicate samples for moisture were collected from the stack at each of the four operating conditions. The samples were taken according to EPA Methods 1, 2, 3C, and 4. For each run, samples of four-minute duration were taken at each of the sixteen traverse points for a total sampling time of 64 minutes.

The " front-half " of the sampling train contained the following components:

Stainless Steel Probe w/ glass wool plug
Teflon Sample Line

The " back-half " of the sampling train contained the following components:

<u>Impinger Number</u>	<u>Contents</u>	<u>Amount</u>	<u>Parameter Collected</u>
1	Deionized Water	100 ml	Moisture
2	Deionized Water	100 ml	Moisture
3	Empty	----	Moisture
4	Silica Gel	200 g	Moisture

Fixed Gases

Triplicate samples for fixed gases were collected from the stack at each of the four operating conditions. The samples were taken according to EPA Method 3C. For each run, samples of four-minute duration were taken at each of the sixteen traverse points for a total sampling time of 64 minutes. The reference method sampling system consisted of a stainless steel probe, Teflon sample line, a Tedlar bag in a rigid container, and a VOST dry gas meter. The samples were analyzed by GC/TCD by Enthalpy's Analytical Laboratory in Durham, North Carolina. The analytical report can be found in Appendix E.

Total Hydrocarbons and Fixed Gases

One integrated sample for total hydrocarbons and fixed gases was collected from the inlet duct at each of the four operating conditions. The samples were taken according to EPA Method 18. The reference method sampling system consisted of a stainless steel probe, Teflon sample line, and an evacuated canister. The samples were analyzed by GC/FID and GC/TCD by Enthalpy's Analytical Laboratory in Durham, North Carolina. The analytical report can be found in Appendix E.

Carbon Monoxide

The carbon monoxide sampling was performed according to EPA Method 10 using the continuous sampling procedure. A Thermo Environmental Model 48C Carbon Monoxide Analyzer (Serial Number 208845) was used to monitor the concentrations of carbon monoxide during each run. The reference method analyzer was operated at a range of 0 to 10 parts per million, with a calibration span of 9.86 parts per million. A multi-point calibration was performed on the reference method analyzer prior to testing. An analyzer calibration error check and a sampling system bias check were also conducted prior to testing. After each run, the zero and calibration drift of the reference method monitor was checked. The calibration gases were as follows:

Zero Nitrogen

5.06 ppm CO in N₂ (ALM018547)

9.86 ppm CO in N₂ (BLM000616)

The reference method sampling system consisted of a heated probe, a heated Teflon sample line, and an electronic chiller prior to the reference method monitors manifold system. The calibration gases for the bias and drift checks were introduced upstream of the heated Teflon sample line.

Calibration gas certifications are included in Appendix C.

Total Hydrocarbons

The total hydrocarbons sampling was performed according to EPA Method 25A. A Total Hydrocarbon Model 51i Analyzer (Serial Number 1125748714) was used to monitor the concentrations of total hydrocarbons during each run. The reference method analyzer was operated at a range of 10 parts per million. A multi-point calibration was performed on the reference method analyzer prior to testing. An analyzer calibration error check and a sampling system bias check were also conducted prior to testing. After each run, the zero and calibration drift of the reference

method monitor was checked. The calibration gases were as follows:

Zero Nitrogen

3.13 ppm C₃H₈ in N₂ (BLM005063)

5.01 ppm C₃H₈ in N₂ (ET0010875)

8.48 ppm C₃H₈ in N₂ (ET0010859)

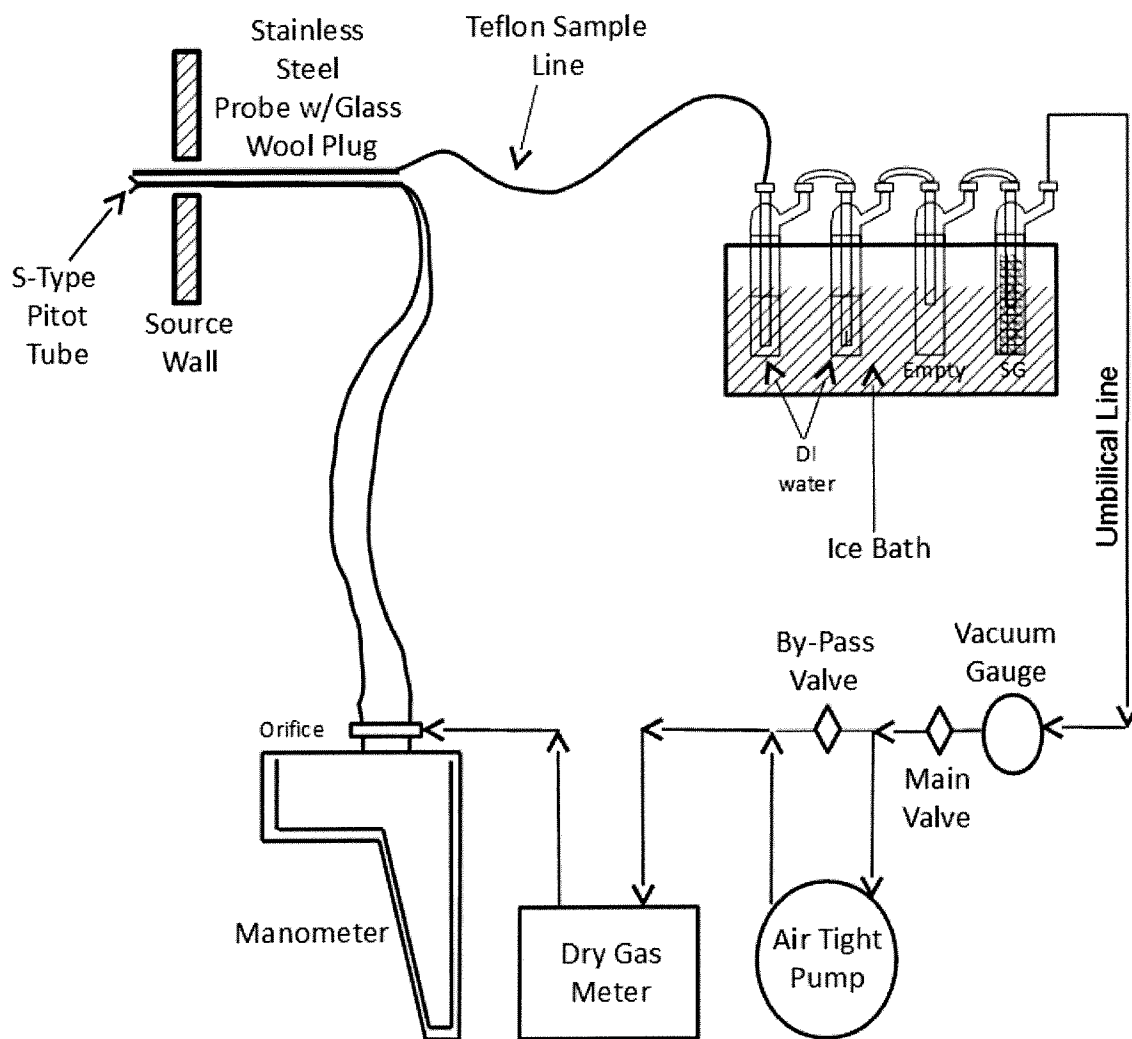
The reference method sampling system consisted of a heated probe and a heated Teflon sample line. The calibration gases for the bias and drift checks were introduced upstream of the heated Teflon sample line.

Calibration gas certifications are included in Appendix C.

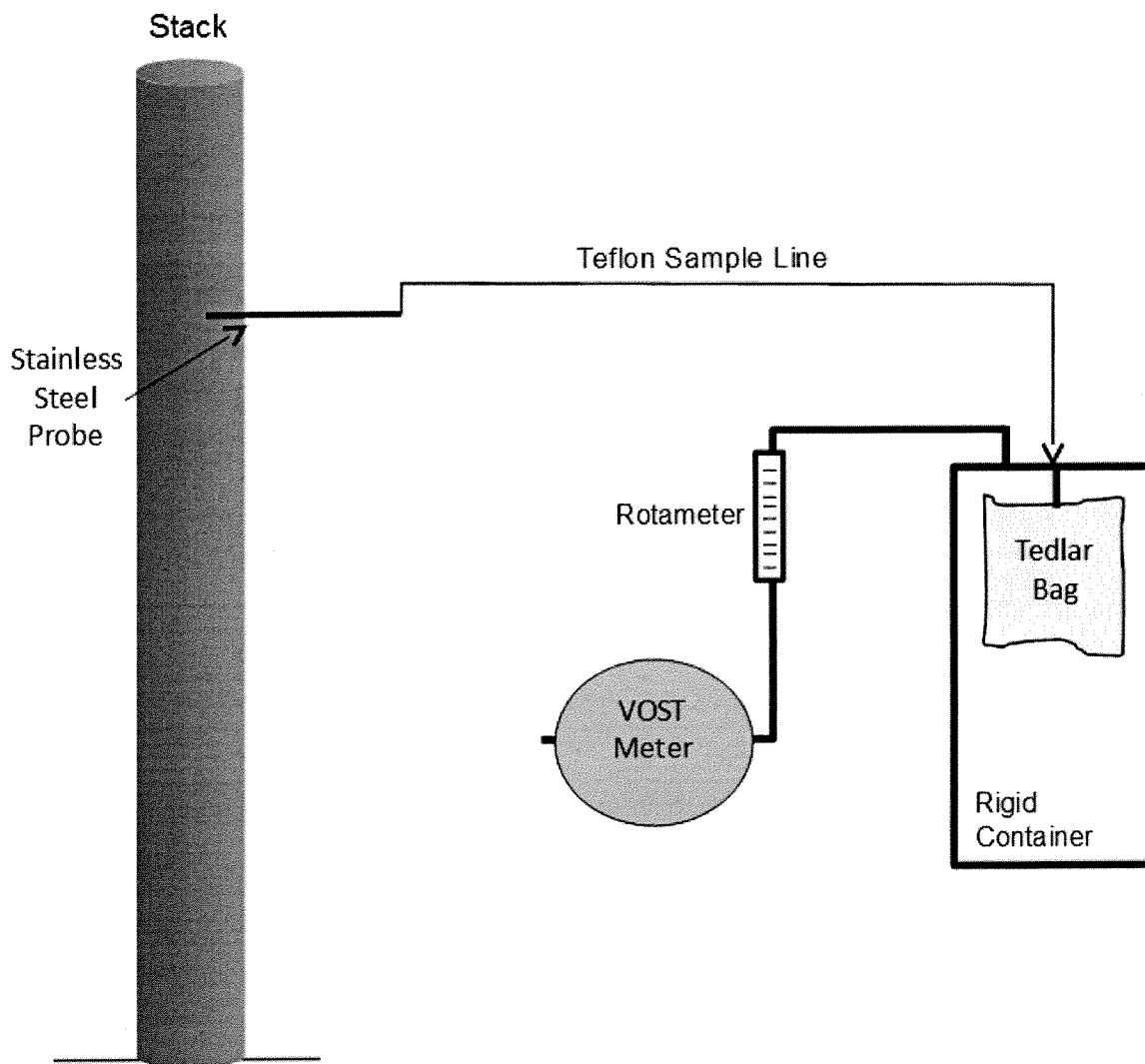
Visible Emissions

Visible emissions observations were taken according to EPA Method 22 by COMM Engineering personnel. For each of the three runs at each of the four operating conditions, visible emissions were observed over a sixty-four minute period. No visible emissions were observed during any of the test runs.

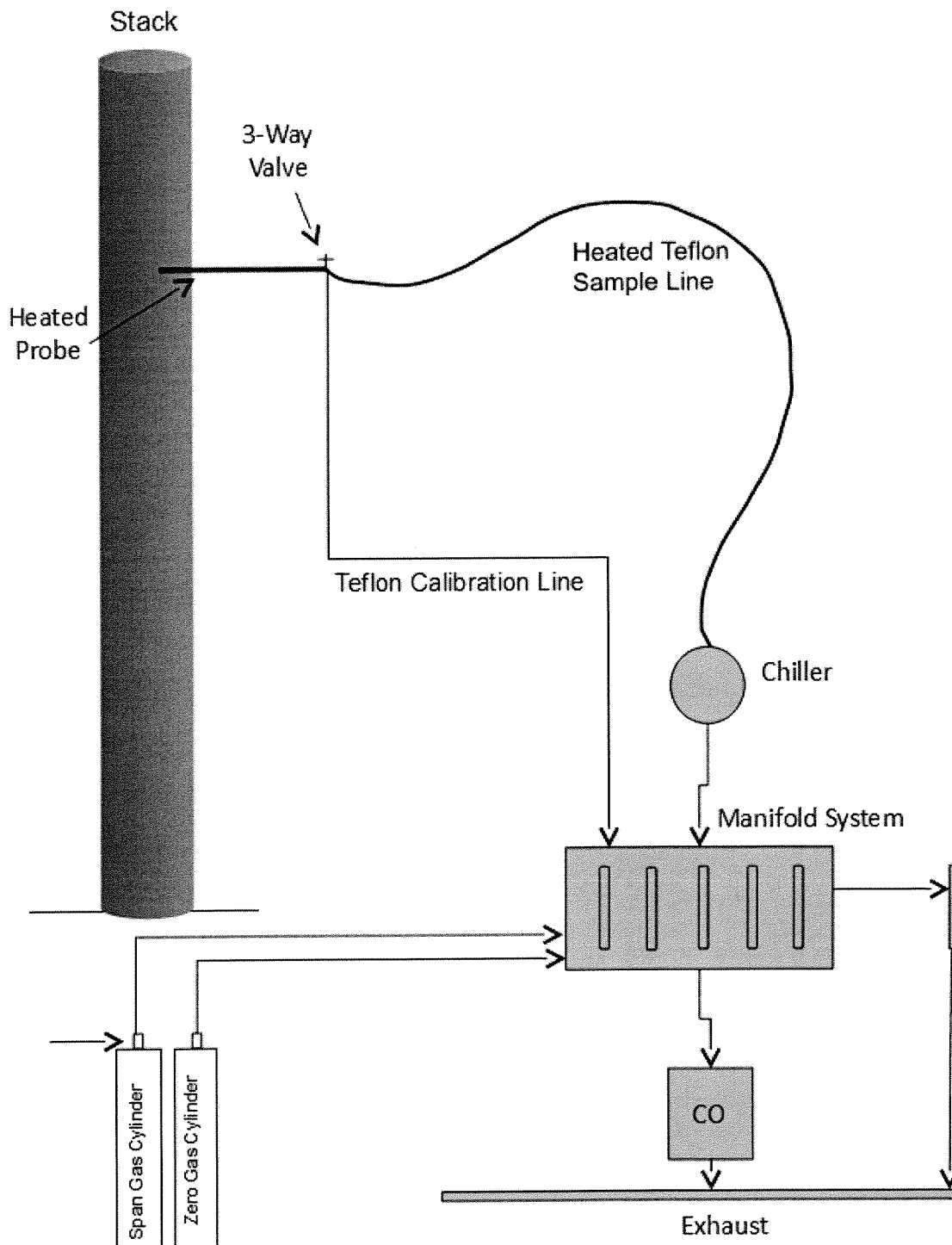
Schematic Diagram of the EPA Method 4 Sampling Train for Flow Rate



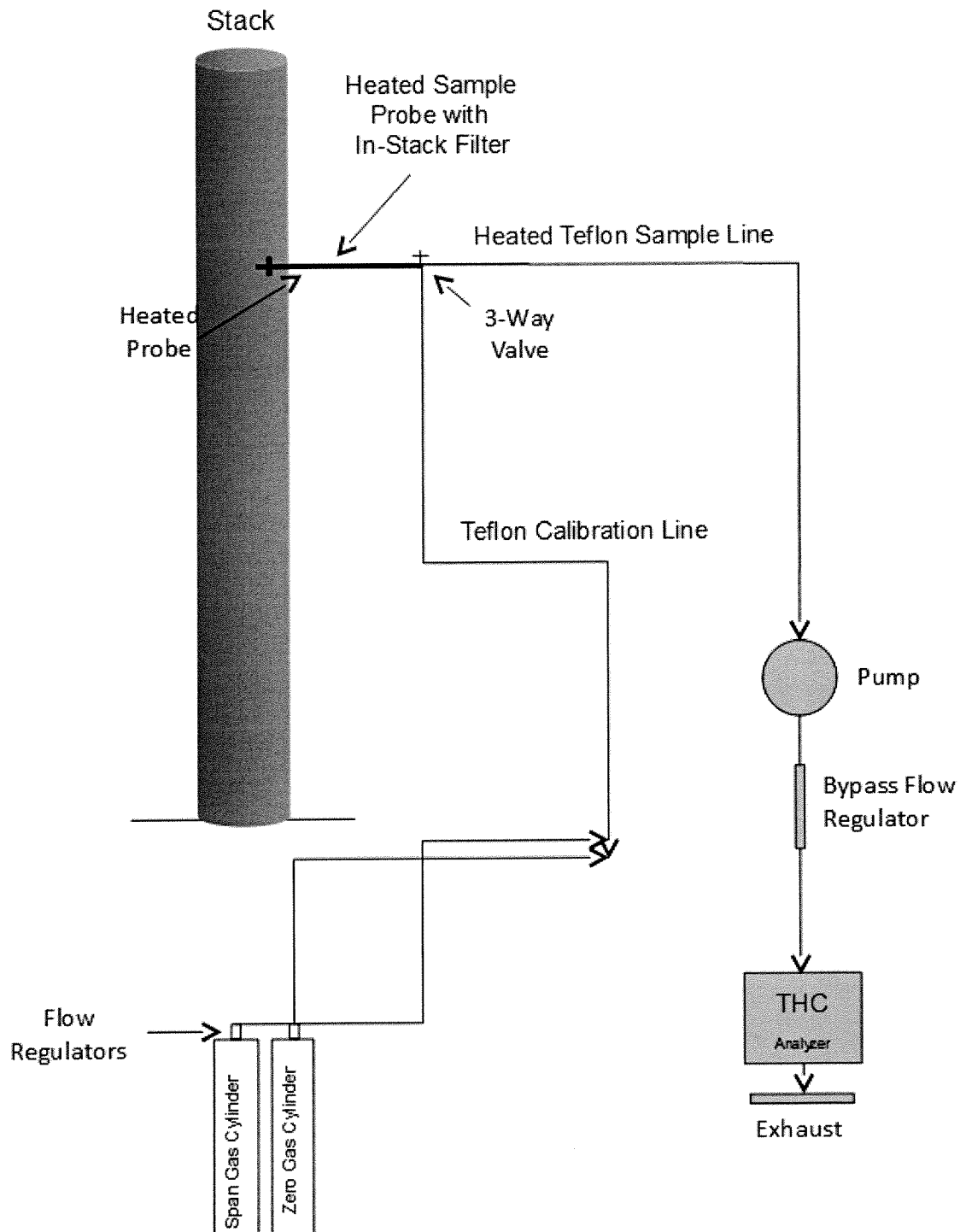
EPA Method 3C Sampling Train



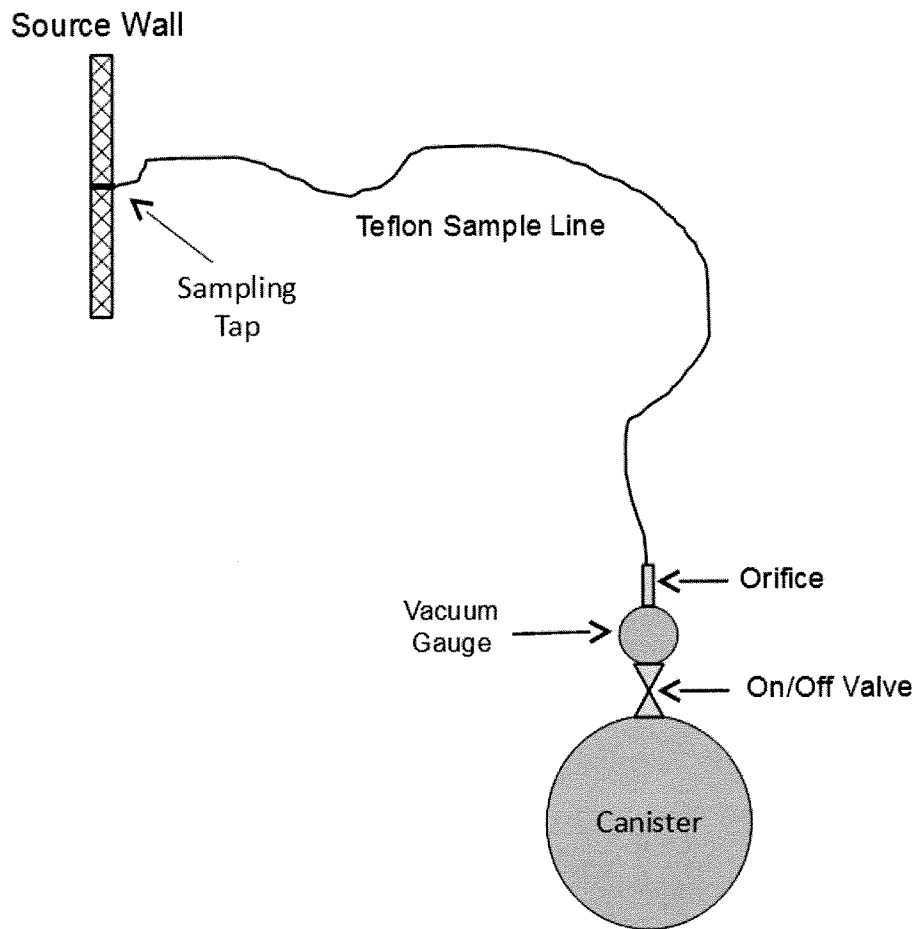
Reference Method Monitor Sampling System (EPA Method 10)



Reference Method Monitor Sampling System (EPA Method 25A)



Canister Sampling System





TO-Can® Air Sampling Canisters with RAVE™ Valve

Optimized for Methods TO-14A, TO-15, IP-1A, ASTM D5466, OSHA PV 2120, and NJ DEP Low Level TO-15

- Proprietary electropolished surface maintains compound stability.
- High-quality, metal-to-metal seal, 2/3-turn valve with stainless steel diaphragms prevent sample adsorption for more-accurate results.
- Both 2-port and 3-port valves available; 3-port valve includes -30"Hg/60 psi vacuum/pressure gauge (other gauges available).
- SUMMA canister equivalent.
- Featuring the proven long life, leak-free performance, and effortless operation of the new RAVE™ valve.

U.S. EPA Methods TO-14A and TO-15 regulate the collection, storage, and analysis of volatile organic compounds (VOCs) using treated air sampling canisters. Restek offers a complete line of TO-Can® canisters (SUMMA can equivalent), electropolished using a proprietary process and extensively cleaned using an ultrasonic method. This ensures a high-quality, passivated surface that maintains the stability of TO-14A/TO-15 compounds during storage. A frame surrounds the electropolished canister, eliminating the need for weld marks on the sphere, thereby preventing active sites on the canister. The RAVE™ valve supports the excellent performance of the canister. A unique holder attaches the handle and base to the canister without welds and protects the canister,

tube stub, and valve. The 2/3-turn diaphragm valve has a metal-to-metal seat and a temperature limit of 250 °C. Each canister is slightly pressurized with contaminant-free nitrogen prior to shipment.

Dimensions/Weights of Air Canisters

Can Volume— Dimensions: height x sphere diameter— Weight

1 liter— 8.5 x 5.25" (21.6 x 13.3 cm)— 2.25 lbs (1.02 kg)

3 liter— 11.5 x 7.25" (29.2 x 18.4 cm)— 3.50 lbs (1.59 kg)

6 liter— 12.5 x 9.25" (31.8 x 23.5 cm)— 5.75 lbs (2.61 kg)

15 liter— 17.0 x 12.25" (43.2 x 31.1 cm)— 11.75 lbs (5.33 kg)

*Range of standard gauge is -30" Hg to 60 psi.

Do not exceed canister maximum pressure of 40 psig (2.75 bar).

DESCRIPTION OF TESTS

Personnel from METCO Environmental arrived at the plant at 11:15 a.m. on Monday, September 19, 2016. After meeting with plant personnel and attending a brief safety orientation, the equipment was moved onto the Model 3 Thermal Combustor Inlet Duct and Outlet Stack. The equipment was secured for the night and all work was completed at 3:00 p.m.

On Tuesday, September 20, work began at 7:00 a.m. The reference method monitors were calibrated and the equipment was prepared for testing. Testing was delayed until the unit was operating at the desired testing condition. The equipment was secured for the night and all work was completed at 6:00 p.m.

On Wednesday, September 21, work began at 7:00 a.m. The reference method monitors were calibrated and the equipment was prepared for testing. The first set of tests (Condition I) for carbon monoxide, total hydrocarbons, fixed gases, and visible emissions on the stack; and for total hydrocarbons and fixed gases on the inlet duct began at 9:22 a.m. Testing continued until completion of the third set of tests (Condition I) at 1:16 p.m. The first set of tests (Condition II) for carbon monoxide, total hydrocarbons, fixed gases, and visible emissions on the stack; and for total hydrocarbons and fixed gases on the inlet duct began at 1:50 p.m. and was aborted at 3:48 p.m. due to plant operational problems. The reference method monitors were calibrated and the samples were recovered. The equipment was secured for the night and all work was completed at 4:15 p.m.

On Thursday, September 22, work began at 7:00 a.m. The reference method monitors were calibrated and the equipment was prepared for testing. The second set of tests (Condition II) for carbon monoxide, total hydrocarbons, fixed gases, and visible emissions on the stack; and for total hydrocarbons and fixed gases on the inlet duct began at 8:40 a.m. Testing continued until completion of the fifth set of tests

(Condition II) at 6:08 p.m. Run Number 3 was aborted due to plant operational problems. The reference method monitors were calibrated and the samples were recovered. The equipment was secured for the night and all work was completed at 6:30 p.m.

On Friday, September 23, work began at 7:00 a.m. The reference method monitors were calibrated and the equipment was prepared for testing. The first set of tests (Condition III) for carbon monoxide, total hydrocarbons, fixed gases, and visible emissions on the stack; and for total hydrocarbons and fixed gases on the inlet duct began at 8:50 a.m. Testing continued until completion of the third set of tests (Condition IV) at 6:21 p.m.

The reference method monitors were calibrated. The equipment was moved off of the sampling locations and loaded into the sampling van. The samples were recovered and transported to METCO Environmental's laboratory in Carrollton, Texas, for analysis and evaluation.

Field operations at COMM Engineering, Model 3 Thermal Combustor Inlet Duct and Outlet Stack, located in Lafayette, Louisiana, were completed at 6:45 p.m. on Friday, September 23, 2016.

APPENDICES

- A. Location of Sampling Points
- B. Source Emissions Calculations
- C. Calibration Data
- D. Field Testing Data
- E. Analytical Data
- F. Reference Method Monitors Data
- G. Visible Emissions Data
- H. Plant Operational Data, Schematic, Fuel Analysis,
and Inlet Flow Meter Calibration Data
- I. Resumes of Test Personnel

APPENDIX A

Location of Velocity and EPA Method 3C Sampling Points Model 3 Thermal Combustor Outlet Stack

The sampling ports are located 12 feet 2 inches (4.04 stack diameters) downstream from the top of the flame tip in the stack and 3 feet 3 inches (1.08 stack diameters) upstream from the outlet to the stack. The locations of the sampling points were calculated as follows:

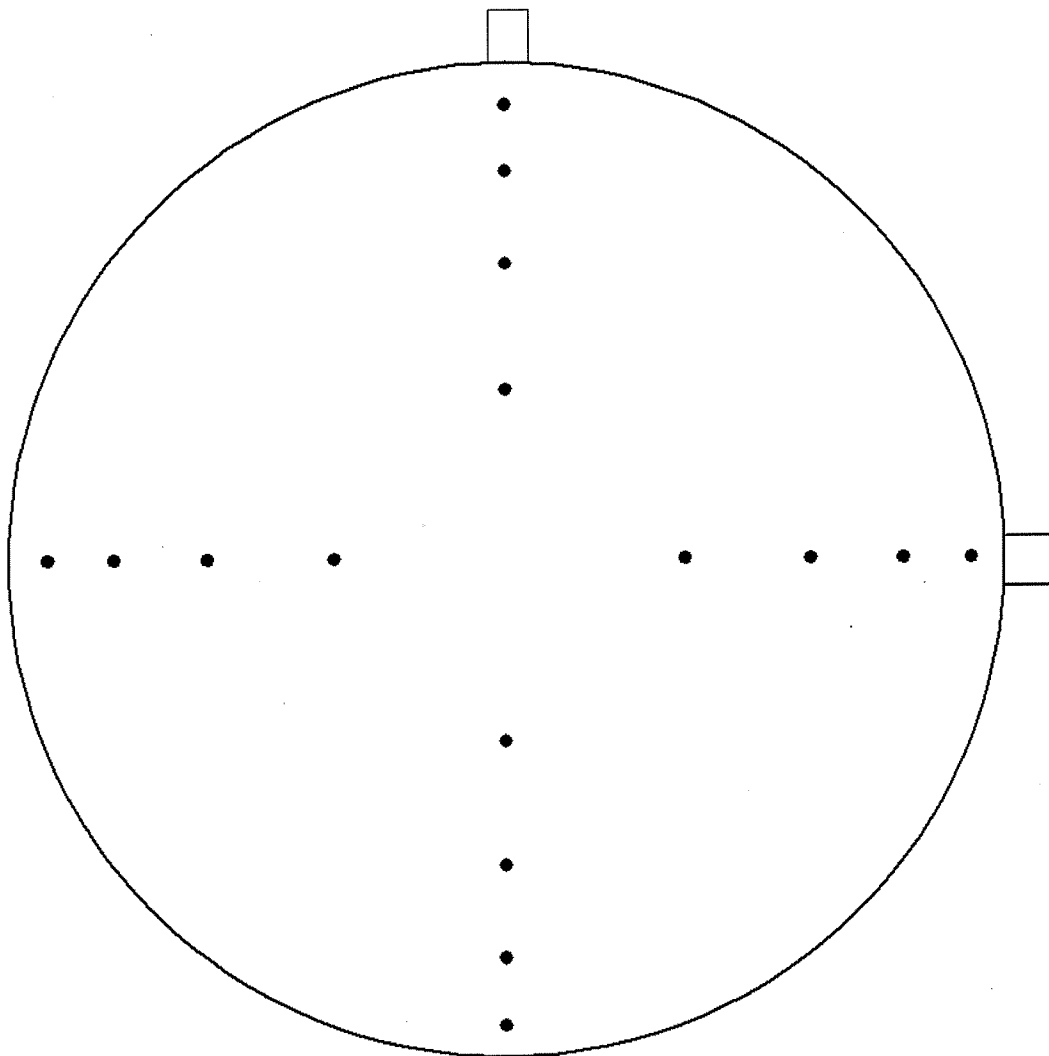
Port and Wall Thickness = 3 1/8 inches

Inside Stack Diameter = 36 1/8 inches

<u>Point Number</u>	<u>Percent of Diameter From Wall</u>	<u>Distance From Wall</u>
1	3.2	1 1/8 "
2	10.5	3 13/16 "
3	19.4	7 "
4	32.3	11 11/16 "
5	67.7	24 7/16 "
6	80.6	29 1/8 "
7	89.5	32 5/16 "
8	96.8	35 "

APPENDIX A

Location of Velocity and EPA Method 3C Sampling Points Model 3 Thermal Combustor Outlet Stack



APPENDIX A

Location of Reference Method Monitors Sampling Points

Model 3 Thermal Combustor Outlet Stack

The sampling ports are located 12 feet 2 inches (4.04 stack diameters) downstream from the top of the flame tip in the stack and 3 feet 3 inches (1.08 stack diameters) upstream from the outlet to the stack. The locations of the sampling points were calculated as follows:

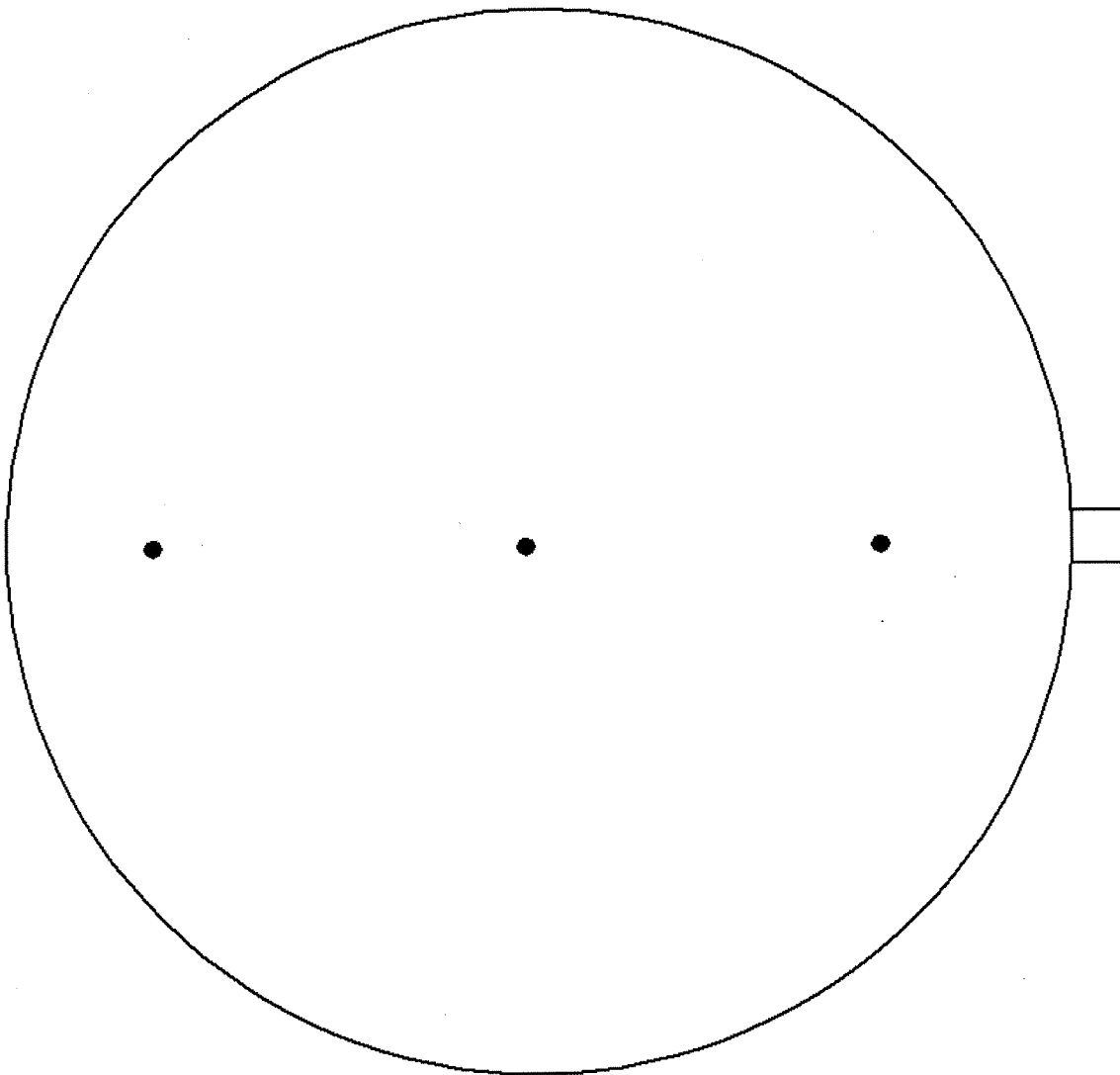
Port and Wall Thickness = 3 1/8 inches

Inside Stack Diameter = 36 1/8 inches

<u>Point Number</u>	<u>Percent of Diameter From Wall</u>	<u>Distance From Wall</u>
1	16.7	6 1/16 "
2	50.0	18 1/16 "
3	83.3	30 1/16 "

APPENDIX A

Location of Reference Method Monitors Sampling Points Model 3 Thermal Combustor Outlet Stack



APPENDIX B

Nomenclature and Equations for Calculation of Source Emissions

NOMENCLATURE FOR FLOW RATE CALCULATIONS

<u>Symbol</u>	<u>English Units</u>	<u>Metric Units</u>	<u>Description</u>
A_s	in.^2	m^2	Stack Area
C_p			Pitot Tube Calibration Factor
%EA			Percent Excess Air @ Sampling Point
g	32.174 ft/sec^2		Acceleration of Gravity
%M			Percent Moisture in the stack gas by Volume
M_d			Mole fraction of dry gas
M_{water}	18 lb/lb-mole		Molecular Weight of water
MW	lb/lb-mole	g/g-mole	Molecular Weight of stack gas
MW_{air}	28.96 lb/lb-mole		Molecular Weight of air
MW_d	lb/lb-mole	g/g-mole	Molecular Weight of dry stack gas
P_b	"Hg Absolute	mm Hg	Barometric Pressure
P_m	"H ₂ O	mm H ₂ O	Orifice Pressure Drop
P_s	"Hg Absolute	mm Hg	Stack Pressure
ΔP	"H ₂ O	mm H ₂ O	Velocity Head of stack gas
P_{std}	29.92"Hg	760 mmHg	Standard Barometric Pressure
Q_a	ACFM	m^3/hr	Stack Gas Volume at actual stack conditions
Q_s	DSCFM*	dscm/hr*	Stack Gas Volume at 29.92"Hg, 528°R, dry
R	$21.83 \text{ "Hg-ft}^3/\text{lb-mole } ^\circ\text{R}$		Universal Gas Constant
T_m	$^\circ\text{F}$	$^\circ\text{C}$	Average Gas Meter Temperature
T_t	min	min	Net time of test
T_s	$^\circ\text{F}$	$^\circ\text{C}$	Stack Temperature
T_{std}	528°R	293°K	Standard Temperature

* 29.92 "Hg, 68°F (760 mm Hg, 20°C)

<u>Symbol</u>	<u>English Units</u>	<u>Metric Units</u>	<u>Description</u>
V_m	ft ³	m ³	Volume of dry gas sampled @ meter conditions
$V_{m_{std}}$	dscf*	dscm*	Volume of dry gas sampled @ standard conditions
V_s	fpm	m/sec	Stack velocity @ stack conditions
V_w	ml	ml	Total water collected in impingers and silica gel
VW_{gas}	scf*	scm*	Volume of water vapor collected @ standard conditions
ρ_{air}	0.0752 lbs/ ft ³		Density of Air
ρ_{water}	1 g/ml		Density of Water
ρ_{man}	62.32 lbs/ft ³		Density of Manometer Oil

* 29.92 "Hg, 68°F (760 mm Hg, 20°C)

EXAMPLE CALCULATIONS

1. Volume of dry gas sampled at standard conditions.*

$$Vm_{std} = Vm \left(\frac{T_{std}}{T_m + 460} \right) \left[\frac{P_b + \frac{P_m}{13.6}}{P_{std}} \right]$$

$$Vm_{std} = 17.65 Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460} \right] = dscf *$$

$$Vm_{std} = dscf \times 0.028317 = dscm *$$

2. Volume of water vapor collected at standard conditions.*

$$Vw_{gas} = \frac{(V_w - \text{grams SO}_2^{**}) \times \rho_{water} \times R \times T_{std}}{P_{std} \times M_{water} \times 453.6}$$

$$Vw_{gas} = 0.0472 (V_w - \text{grams SO}_2^{**}) = scf *$$

$$Vw_{gas} = scf \times 0.028317 = scm *$$

3. Percent moisture in stack gas.

$$\%M = \left(\frac{Vw_{gas}}{Vm_{std} + Vw_{gas}} \right) \times 100 = \%$$

* 29.92 "Hg, 68°F (760 mm Hg, 20°C)

** Grams SO₂ subtracted only when SO₂ is collected in the sampling train being used to determine the volume of water vapor collected.

4. Mole fraction of dry gas.

$$M_d = \left(\frac{100 - \%M}{100} \right)$$

5. Average molecular weight of dry stack gas.

$$MW_d = \left[\%CO_2 \times \frac{44}{100} \right] + \left[\%O_2 \times \frac{32}{100} \right] + \left[\%N_2 \times \frac{28}{100} \right] + \left[\%CO \times \frac{28}{100} \right] = \text{lb/lb - mole}$$

$$= \text{g/g-mole}$$

6. Molecular weight of stack gas.

$$MW = MW_d \times M_d + 18(1 - M_d) = \frac{\text{lb}}{\text{lb - mole}} = \text{g/g - mole}$$

7. Percent excess air at sampling point.

$$\%EA = \frac{100 [\%O_2 - (0.5\%CO)]}{0.265 (\%N_2) - [\%O_2 - (0.5\%CO)]}$$

8. Stack Pressure.

$$P_s = P_b + \frac{\text{Stack Pressure "H}_2\text{O}}{13.6} = \text{"Hg Absolute}$$

$$P_s = \text{"Hg Abs.} \times 25.4 = \text{mm Hg}$$

9. Stack velocity at stack conditions.

$$V_s = C_p \times 60 \left[\frac{2 g \times \rho_{man} \times P_{std} \times MW_{air} \times (T_s + 460)}{12 \times \rho_{air} \times P_s \times MW \times T_{std}} \right]^{1/2} \times \sqrt{\Delta P} \text{ average}$$

$$V_s = 5,123.8 \times C_p \left[\frac{(T_s + 460)}{P_s \times MW} \right]^{1/2} \times \sqrt{\Delta P} \text{ average} = \text{fpm}$$

$$V_s = \text{fpm} \times 0.00508 = \text{m/sec}$$

10. Dry stack gas volume at standard conditions.*

$$Q_s = \frac{1}{144} V_s \times A_s \times M_d \times \frac{T_{std}}{T_s + 460} \times \frac{P_s}{P_{std}}$$

$$Q_s = \frac{0.123 V_s \times A_s \times M_d \times P_s}{T_s + 460} = \text{DSCFM}$$

$$Q_s = \text{DSCFM} \times 1.6990 = \text{dscm/hr}$$

11. Actual stack gas volume at stack conditions.

$$Q_a = \frac{V_s \times A_s}{144} = \text{ACFM}$$

$$Q_a = \text{ACFM} \times 1.6990 = \text{m}^3/\text{hr}$$

* 29.92 "Hg, 68°F (760 mm Hg, 20°C)

EXAMPLE CALCULATIONS

$$\text{lbs/hr} = \text{ppm} \times \text{CF} \times 60 \text{ min/hr} \times \text{DSCFM}^*$$

$\text{CF} = \text{Conversion Factor for ppm to lbs/scf}^*$

<u>Compound</u>	<u>Conversion Factor</u>
CO	7.273×10^{-8}
THC as Propylene	1.093×10^{-7}

$$\text{ppmvd} = \frac{\text{ppmvw}}{M_d}$$

$M_d = \text{mole fraction of dry gas}$

* 29.92 "Hg, 68°F (760 mm Hg, 20°C)

EXAMPLE CALCULATIONS

$$E \text{ corr.} = E \text{ meas.} \times \frac{3\% \text{CO}_2}{(\% \text{CO}_2 \text{ meas.})}$$

E corr. = Emission Rate corrected for Carbon Dioxide

E meas. = Emission Rate measured

% CO₂ corr. = The Carbon Dioxide content to be corrected to (ie. 3.0%CO₂)

% CO₂ meas. = The Carbon Dioxide content measured

EXAMPLE CALCULATIONS

$$\% DRE = \frac{\text{mass rate of pollutant in (lbs/hr)} - \text{mass rate of pollutant emitted (lbs/hr)}}{\text{mass rate of pollutant in (lbs/hr)}} \times 100$$

% DRE = percent destruction removal efficiency.

mass rate of pollutant in (lbs/hr) = mass rate of pollutant into the Model as determined by the applicable testing method and flow rate determination.

mass rate of pollutant out (lbs/hr) = mass rate of pollutant emitted from the Model as determined by the applicable testing method and flow rate determination.

EXAMPLE CALCULATIONS

Equation 7E-5

$$C_{\text{gas}} = (\bar{C} - C_o) \frac{C_{\text{ma}}}{C_m - C_o}$$

Where: C_{gas} = Effluent gas concentration - dry basis (ppm)

$\bar{C}$ = Average gas concentration indicated by gas analyzer - dry basis (ppm)

C_o = Average of initial and final system calibration bias check responses for the zero gas (ppm)

C_m = Average of initial and final system calibration bias check responses for the upscale calibration gas (ppm)

C_{ma} = Actual concentration of the upscale calibration gas (ppm)

SOURCE EMISSION SURVEY

JOB NUMBER: 16-323
 JOB NAME: COMM ENGINEERING
 LOCATION: LAFAYETTE, LOUISIANA
 UNIT TESTED: UNIT 3 - CONDITION I

SOURCE EMISSION CALCULATIONS

SYMBOL	DESCRIPTION	UNITS	RUN NUMBER		
			1	2	3
DATE			09/21/16	09/21/16	09/21/16
BEGIN TIME			0922	1045	1210
END TIME			1028	1151	1316
P(b)	BAROMETRIC PRESSURE	"Hg Abs. (mm Hg)	29.97 (761.00)	29.97 (761.00)	29.97 (761.00)
P(m)	ORIFICE PRESSURE DROP	"H2O (mm H2O)	1.000 (25.400)	1.000 (25.400)	1.000 (25.400)
	DGM CALIBRATION FACTOR		0.984	0.984	0.984
V(m)	VOLUME DRY GAS SAMPLED @ METER CONDITIONS	ft.^3 (m^3)	27.230 (0.771)	33.810 (0.957)	33.555 (0.950)
	LEAK CHECK VOLUME	ft.^3	0.000	0.000	0.000
T(m)	AVERAGE GAS METER TEMPERATURE	DEG.F (DEG.C)	75 (24)	80 (27)	83 (28)
V(m[std])*	VOLUME DRY GAS SAMPLED @ STANDARD CONDITIONS*	DSCF (DSCM)	26.989 (0.764)	33.201 (0.940)	32.768 (0.928)
V(w)	TOTAL WATER COLLECTED, IMPINGERS & SILICA GEL	ml	51.3	63.0	56.0
V(w[gas])	VOLUME WATER VAPOR COLLECTED @ STANDARD CONDITIONS*	SCF (SCM)	2.421 (0.069)	2.974 (0.084)	2.643 (0.075)
%M	MOISTURE IN STACK GAS BY VOLUME	%	8.23	8.22	7.46
Md	MOL FRACTION OF DRY GAS		0.9177	0.9178	0.9254
Tt	NET TIME OF TEST	MINUTES	64	64	64

* 68 Deg.F, 29.92 "Hg (20 Deg.C, 760 mm Hg)

SOURCE EMISSION CALCULATIONS

JOB NUMBER: 16-323
 JOB NAME: COMM ENGINEERING
 LOCATION: LAFAYETTE, LOUISIANA
 UNIT TESTED: UNIT 3 - CONDITION 1

SYMBOL	DESCRIPTION	UNITS	RUN NUMBER		
			1	2	3
CO2		%	4.4	4.4	3.4
O2		%	16.6	16.7	18.0
CO		%	0.0	0.0	0.0
N2		%	79.0	78.9	78.6
%EA	EXCESS AIR @ SAMPLING POINT	%	382.9	396.8	636.3
MWd	MOLECULAR WEIGHT OF DRY STACK GAS	LB/LB-MOLE (g/g-MOLE)	29.37 (29.37)	29.37 (29.37)	29.26 (29.26)
MW	MOLECULAR WEIGHT OF STACK GAS	LB/LB-MOLE (g/g-MOLE)	28.43 (28.43)	28.44 (28.44)	28.42 (28.42)
Cp	PITOT TUBE CALIBRATION		0.807	0.807	0.807
DELTA P	VELOCITY HEAD OF STACK GAS	"H2O (mm H2O)	0.003 (0.100)	0.004 (0.100)	0.002 (0.100)
DELTA P ^{^(1/2)}		"H2O	0.055	0.061	0.043
Ts	STACK TEMPERATURE	DEG. F (DEG. C)	1,849 (1,009)	1,866 (1,019)	1,852 (1,011)
Ps	STACK PRESSURE	"Hg Abs. (mm Hg) "H2O	29.98 (761.00) 0.20	29.98 (761.00) 0.20	29.98 (761.00) 0.20
Vs	STACK VELOCITY @ STACK CONDITIONS	FPM (m/SEC.)	374 (2)	417 (2)	293 (1)
As	STACK AREA	(SQ.INCHES) (SQ.METERS)	1,025 (1)	1,025 (1)	1,025 (1)
Qs	DRY STACK GAS VOLUME @ STANDARD CONDITIONS* WET STACK GAS VOLUME @ STANDARD CONDITIONS*	DSCFM (DSCM/HR) WSCFH	562 (955) 36,744	622 (1,057) 40,662	443 (753) 28,723
Qa	ACTUAL STACK GAS VOLUME @ STACK CONDITIONS	ACFM (m^3/HR)	2,664 (4,526)	2,965 (5,038)	2,085 (3,542)

* 68 Deg.F, 29.92 "Hg (20 Deg.C, 760 mm Hg)

SOURCE EMISSION SURVEY

JOB NUMBER: 16-323
 JOB NAME: COMM ENGINEERING
 LOCATION: LAFAYETTE, LOUISIANA
 UNIT TESTED: MODEL 3 - CONDITION II

SOURCE EMISSION CALCULATIONS

SYMBOL	DESCRIPTION	UNITS	RUN NUMBER		
			2	4	5
DATE			09/22/16	09/22/16	09/22/16
BEGIN TIME			0840	1530	1700
END TIME			0946	1636	1808
P(b)	BAROMETRIC PRESSURE	"Hg Abs. (mm Hg)	29.97 (761.00)	29.92 (760.00)	29.91 (760.00)
P(m)	ORIFICE PRESSURE DROP	"H2O (mm H2O)	1.000 (25.400)	1.000 (25.400)	1.000 (25.400)
	DGM CALIBRATION FACTOR		0.984	0.984	0.984
V(m)	VOLUME DRY GAS SAMPLED @ METER CONDITIONS	ft.^3 (m^3)	33.863 (0.959)	34.233 (0.969)	33.744 (0.956)
	LEAK CHECK VOLUME	ft.^3	0.000	0.000	0.000
T(m)	AVERAGE GAS METER TEMPERATURE	DEG.F (DEG.C)	70 (21)	74 (23)	73 (23)
V(m[std])*	VOLUME DRY GAS SAMPLED @ STANDARD CONDITIONS*	DSCF (DSCM)	33.880 (0.959)	33.937 (0.961)	33.504 (0.949)
V(w)	TOTAL WATER COLLECTED, IMPINGERS & SILICA GEL	ml	61.8	68.8	61.6
V(w[gas])	VOLUME WATER VAPOR COLLECTED @ STANDARD CONDITIONS*	SCF (SCM)	2.917 (0.083)	3.247 (0.092)	2.908 (0.082)
%M	MOISTURE IN STACK GAS BY VOLUME	%	7.93	8.73	7.99
Md	MOL FRACTION OF DRY GAS		0.9207	0.9127	0.9201
Tt	NET TIME OF TEST	MINUTES	64	64	64

* 68 Deg.F, 29.92 "Hg (20 Deg.C, 760 mm Hg)

SOURCE EMISSION CALCULATIONS

JOB NUMBER: 16-323
 JOB NAME: COMM ENGINEERING
 LOCATION: LAFAYETTE, LOUISIANA
 UNIT TESTED: MODEL 3 - CONDITION II

SYMBOL	DESCRIPTION	UNITS	RUN NUMBER		
			2	4	5
CO2		%	3.1	2.6	3.7
O2		%	18.5	19.2	17.6
CO		%	0.0	0.0	0.0
N2		%	78.4	78.2	78.7
%EA	EXCESS AIR @ SAMPLING POINT	%	812.8	1,260.7	540.6
MWd	MOLECULAR WEIGHT OF DRY STACK GAS	LB/LB-MOLE (g/g-MOLE)	29.24 (29.24)	29.18 (29.18)	29.30 (29.30)
MW	MOLECULAR WEIGHT OF STACK GAS	LB/LB-MOLE (g/g-MOLE)	28.34 (28.34)	28.21 (28.21)	28.39 (28.39)
Cp	PITOT TUBE CALIBRATION		0.807	0.807	0.807
DELTA P	VELOCITY HEAD OF STACK GAS	"H2O (mm H2O)	0.003 (0.100)	0.004 (0.100)	0.004 (0.100)
DELTA P ^{^(1/2)}		"H2O	0.051	0.059	0.064
Ts	STACK TEMPERATURE	DEG. F (DEG. C)	1,691 (922)	1,982 (1,083)	2,045 (1,118)
Ps	STACK PRESSURE	"Hg Abs. (mm Hg) "H2O	29.98 (761.00) 0.20	29.93 (760.00) 0.20	29.92 (760.00) 0.20
Vs	STACK VELOCITY @ STACK CONDITIONS	FPM (m/SEC.)	336 (2)	415 (2)	454 (2)
As	STACK AREA	(SQ.INCHES) (SQ.METERS)	1,025 (1)	1,025 (1)	1,025 (1)
Qs	DRY STACK GAS VOLUME @ STANDARD CONDITIONS* WET STACK GAS VOLUME @ STANDARD CONDITIONS*	DSCFM (DSCM/HR) WSCFH	544 (924) 35,451	585 (994) 38,457	629 (1,069) 41,017
Qa	ACTUAL STACK GAS VOLUME @ STACK CONDITIONS	ACFM (m^3/HR)	2,388 (4,057)	2,953 (5,017)	3,235 (5,496)

* 68 Deg.F, 29.92 "Hg (20 Deg.C, 760 mm Hg)

SOURCE EMISSION SURVEY

JOB NUMBER: 16-323
 JOB NAME: COMM ENGINEERING
 LOCATION: LAFAYETTE, LOUISIANA
 UNIT TESTED: MODEL 3 - CONDITION III

SOURCE EMISSION CALCULATIONS

SYMBOL	DESCRIPTION	UNITS	RUN NUMBER		
			1	2	3
DATE			09/23/16	09/23/16	09/23/16
BEGIN TIME			0850	1015	1140
END TIME			0956	1121	1246
P(b)	BAROMETRIC PRESSURE	"Hg Abs. (mm Hg)	30.01 (762.00)	30.01 (762.00)	29.99 (762.00)
P(m)	ORIFICE PRESSURE DROP	"H2O (mm H2O)	1.000 (25.400)	1.000 (25.400)	1.000 (25.400)
	DGM CALIBRATION FACTOR		0.984	0.984	0.984
V(m)	VOLUME DRY GAS SAMPLED @ METER CONDITIONS	ft.^3 (m^3)	33.205 (0.940)	33.606 (0.952)	33.280 (0.942)
	LEAK CHECK VOLUME	ft.^3	0.000	0.000	0.000
T(m)	AVERAGE GAS METER TEMPERATURE	DEG.F (DEG.C)	70 (21)	75 (24)	78 (26)
V(m[std])*	VOLUME DRY GAS SAMPLED @ STANDARD CONDITIONS*	DSCF (DSCM)	33.266 (0.942)	33.353 (0.944)	32.824 (0.929)
V(w)	TOTAL WATER COLLECTED, IMPINGERS & SILICA GEL	ml	68.4	68.3	62.4
V(w[gas])	VOLUME WATER VAPOR COLLECTED @ STANDARD CONDITIONS*	SCF (SCM)	3.228 (0.091)	3.224 (0.091)	2.945 (0.083)
%M	MOISTURE IN STACK GAS BY VOLUME	%	8.85	8.81	8.23
Md	MOL FRACTION OF DRY GAS		0.9115	0.9119	0.9177
Tt	NET TIME OF TEST	MINUTES	64	64	64

* 68 Deg.F, 29.92 "Hg (20 Deg.C, 760 mm Hg)

SOURCE EMISSION CALCULATIONS

JOB NUMBER: 16-323
 JOB NAME: COMM ENGINEERING
 LOCATION: LAFAYETTE, LOUISIANA
 UNIT TESTED: MODEL 3 - CONDITION III

SYMBOL	DESCRIPTION	UNITS	RUN NUMBER		
			1	2	3
CO2		%	4.6	2.3	3.5
O2		%	16.4	18.4	17.4
CO		%	0.0	0.0	0.0
N2		%	79.0	79.3	79.1
%EA	EXCESS AIR @ SAMPLING POINT	%	361.6	703.8	488.6
MWd	MOLECULAR WEIGHT OF DRY STACK GAS	LB/LB-MOLE (g/g-MOLE)	29.39 (29.39)	29.10 (29.10)	29.26 (29.26)
MW	MOLECULAR WEIGHT OF STACK GAS	LB/LB-MOLE (g/g-MOLE)	28.38 (28.38)	28.13 (28.13)	28.33 (28.33)
Cp	PITOT TUBE CALIBRATION		0.807	0.807	0.807
DELTA P	VELOCITY HEAD OF STACK GAS	"H2O (mm H2O)	0.003 (0.100)	0.003 (0.100)	0.003 (0.100)
DELTA P ^{^(1/2)}		"H2O	0.054	0.053	0.051
Ts	STACK TEMPERATURE	DEG. F (DEG. C)	1,788 (976)	1,790 (977)	1,817 (992)
Ps	STACK PRESSURE	"Hg Abs. (mm Hg) "H2O	30.02 (763.00) 0.20	30.02 (763.00) 0.20	30.00 (762.00) 0.20
Vs	STACK VELOCITY @ STACK CONDITIONS	FPM (m/SEC.)	363 (2)	358 (2)	345 (2)
As	STACK AREA	(SQ.INCHES) (SQ.METERS)	1,025 (1)	1,025 (1)	1,025 (1)
Qs	DRY STACK GAS VOLUME @ STANDARD CONDITIONS* WET STACK GAS VOLUME @ STANDARD CONDITIONS*	DSCFM (DSCM/HR) WSCFH	557 (946) 36,665	549 (933) 36,122	526 (894) 34,390
Qa	ACTUAL STACK GAS VOLUME @ STACK CONDITIONS	ACFM (m^3/HR)	2,582 (4,387)	2,546 (4,326)	2,457 (4,174)

* 68 Deg.F, 29.92 "Hg (20 Deg.C, 760 mm Hg)

SOURCE EMISSION SURVEY

JOB NUMBER: 16-323
 JOB NAME: COMM ENGINEERING
 LOCATION: LAFAYETTE, LOUISIANA
 UNIT TESTED: MODEL 3 - CONDITION IV

SOURCE EMISSION CALCULATIONS

SYMBOL	DESCRIPTION	UNITS	RUN NUMBER		
			1	2	3
DATE			09/23/16	09/23/16	09/23/16
BEGIN TIME			1440	1557	1715
END TIME			1546	1703	1821
P(b)	BAROMETRIC PRESSURE	"Hg Abs. (mm Hg)	29.95 (761.00)	29.92 (760.00)	29.92 (760.00)
P(m)	ORIFICE PRESSURE DROP	"H2O (mm H2O)	1.000 (25.400)	1.000 (25.400)	1.000 (25.400)
	DGM CALIBRATION FACTOR		0.984	0.984	0.984
V(m)	VOLUME DRY GAS SAMPLED @ METER CONDITIONS	ft.^3 (m^3)	33.345 (0.944)	33.748 (0.956)	33.118 (0.938)
	LEAK CHECK VOLUME	ft.^3	0.000	0.000	0.000
T(m)	AVERAGE GAS METER TEMPERATURE	DEG.F (DEG.C)	80 (27)	81 (27)	80 (27)
V(m[std])*	VOLUME DRY GAS SAMPLED @ STANDARD CONDITIONS*	DSCF (DSCM)	32.722 (0.927)	33.023 (0.935)	32.467 (0.919)
V(w)	TOTAL WATER COLLECTED, IMPINGERS & SILICA GEL	ml	67.4	66.5	65.3
V(w[gas])	VOLUME WATER VAPOR COLLECTED @ STANDARD CONDITIONS*	SCF (SCM)	3.181 (0.090)	3.139 (0.089)	3.082 (0.087)
%M	MOISTURE IN STACK GAS BY VOLUME	%	8.86	8.68	8.67
Md	MOL FRACTION OF DRY GAS		0.9114	0.9132	0.9133
Tt	NET TIME OF TEST	MINUTES	64	64	64

* 68 Deg.F, 29.92 "Hg (20 Deg.C, 760 mm Hg)

SOURCE EMISSION CALCULATIONS

JOB NUMBER: 16-323
 JOB NAME: COMM ENGINEERING
 LOCATION: LAFAYETTE, LOUISIANA
 UNIT TESTED: MODEL 3 - CONDITION IV

SYMBOL	DESCRIPTION	UNITS	RUN NUMBER		
			1	2	3
CO2		%	6.1	5.4	5.6
O2		%	13.8	14.9	14.4
CO		%	0.0	0.0	0.0
N2		%	80.1	79.7	80.0
%EA	EXCESS AIR @ SAMPLING POINT	%	185.8	239.5	211.8
MWd	MOLECULAR WEIGHT OF DRY STACK GAS	LB/LB-MOLE (g/g-MOLE)	29.53 (29.53)	29.46 (29.46)	29.47 (29.47)
MW	MOLECULAR WEIGHT OF STACK GAS	LB/LB-MOLE (g/g-MOLE)	28.51 (28.51)	28.47 (28.47)	28.48 (28.48)
Cp	PITOT TUBE CALIBRATION		0.807	0.807	0.807
DELTA P	VELOCITY HEAD OF STACK GAS	"H2O (mm H2O)	0.001 (0.000)	0.002 (0.100)	0.002 (0.100)
DELTA P ^{^(1/2)}		"H2O	0.037	0.038	0.038
Ts	STACK TEMPERATURE	DEG. F (DEG. C)	1,691 (922)	1,701 (927)	1,715 (935)
Ps	STACK PRESSURE	"Hg Abs. (mm Hg) "H2O	29.96 (761.00) 0.10	29.93 (760.00) 0.20	29.93 (760.00) 0.20
Vs	STACK VELOCITY @ STACK CONDITIONS	FPM (m/SEC.)	243 (1)	250 (1)	251 (1)
As	STACK AREA	(SQ.INCHES) (SQ.METERS)	1,025 (1)	1,025 (1)	1,025 (1)
Qs	DRY STACK GAS VOLUME @ STANDARD CONDITIONS*	DSCFM (DSCM/HR)	389 (661)	399 (678)	398 (676)
	WET STACK GAS VOLUME @ STANDARD CONDITIONS*	WSCFH	25,609	26,216	26,147
Qa	ACTUAL STACK GAS VOLUME @ STACK CONDITIONS	ACFM (m^3/HR)	1,728 (2,936)	1,781 (3,026)	1,787 (3,036)

* 68 Deg.F, 29.92 "Hg (20 Deg.C, 760 mm Hg)

Normalization of Method 3C Data - Model 3

	Condition I					
	Run 1 Actual	Run 1 Normalized	Run 2 Actual	Run 2 Normalized	Run 3 Actual	Run 3 Normalized
Hydrogen	0	0	0	0	0	0
Oxygen	15.5	16.6	15.5	16.7	16.4	18.0
Nitrogen	73.5	78.9	73.5	79.0	71.5	78.6
Carbon Monoxide	0	0	0	0	0	0
Methane	0	0	0	0	0	0
Carbon Dioxide	4.14	4.4	4.08	4.4	3.11	3.4
Total	93.14	99.9	93.08	100.1	91.01	100.0

	Condition II					
	Run 2 Actual	Run 2 Normalized	Run 4 Actual	Run 4 Normalized	Run 5 Actual	Run 5 Normalized
Hydrogen	0	0	0	0	0	0
Oxygen	16.9	18.5	17.7	19.2	16.1	17.6
Nitrogen	71.7	78.4	72.0	78.2	72.2	78.7
Carbon Monoxide	0	0	0	0	0	0
Methane	0	0	0	0	0	0
Carbon Dioxide	2.86	3.1	2.39	2.6	3.41	3.7
Total	91.46	100.0	92.09	100.0	91.71	100.0

	Condition III					
	Run 1 Actual	Run 1 Normalized	Run 2 Actual	Run 2 Normalized	Run 3 Actual*	Run 3 Normalized
Hydrogen	0	0	0	0	0	0
Oxygen	15.1	16.4	16.8	18.4	20.8	22.7
Nitrogen	72.6	79.0	72.4	79.3	70.8	77.3
Carbon Monoxide	0	0	0	0	0	0
Methane	0	0	0	0	0	0
Carbon Dioxide	4.20	4.6	2.07	2.3	0	0
Total	91.9	100.0	91.3	100.0	91.6	100.0

	Condition IV					
	Run 1 Actual	Run 1 Normalized	Run 2 Actual	Run 2 Normalized	Run 3 Actual	Run 3 Normalized
Hydrogen	0	0	0	0	0	0
Oxygen	12.6	13.8	13.7	14.9	13.1	14.4
Nitrogen	73.2	80.1	73.2	79.7	72.6	79.9
Carbon Monoxide	0	0	0	0	0	0
Methane	0	0	0	0	0	0
Carbon Dioxide	5.54	6.1	4.95	5.4	5.12	5.6
Total	91.34	100.0	91.85	100.0	90.82	99.9

* Result is not considered a representative sample.

APPENDIX C

Calibration Data

<u>Equipment</u>	<u>Calibration Factor</u>	<u>Calibration Date</u>
Pitot Tube #9-3-2	0.807	07/05/16
Dry Gas Meter #9-1	0.984	07/19/16
Stack Model Orifice #9-1		07/19/16
Digital Temperature Indicator #9-1		07/19/16
Barometer #9-2		09/20/16

Pitot Tube Calibration

Date: 7-5-16
Pitot No: 9-3-2
Pitot Dimensions: 3' x 1/4"

Time: 0915
Ts: 79
C_{pstd}: 0.990

Pitot Inspections

Pitot tips level and perpendicular
Pitot tips free from obstruction
Pitot tips damaged

YES / NO
YES / NO
YES / NO

Motor Setting	fps mark	Calibration Standard		Standard Average	High	$\sqrt{\text{High}}$	Cal. Factor	Low	$\sqrt{\text{Low}}$	Cal. Factor
7	20	0.10	0.10	0.316	0.15	0.387	0.808	0.15	0.387	0.808
14	30	0.20	0.20	0.447	0.30	0.548	0.808	0.30	0.548	0.808
20	40	0.36	0.36	0.600	0.54	0.735	0.808	0.55	0.742	0.801
28	50	0.56	0.56	0.748	0.84	0.917	0.808	0.84	0.917	0.808
35	60	0.80	0.80	0.894	1.20	1.095	0.808	1.20	1.095	0.808
41	70	1.10	1.10	1.049	1.70	1.304	0.796	1.70	1.304	0.796
50	80	1.40	1.40	1.183	2.10	1.449	0.808	2.10	1.449	0.808
62	90	1.80	1.80	1.342	2.70	1.643	0.808	2.70	1.643	0.808
28*	50*	0.56	0.56	0.748	0.84	0.917	0.808	0.84	0.917	0.808
28*	50*	0.56	0.56	0.748	0.84	0.917	0.808	0.84	0.917	0.808
Average							0.807			0.806

* not included in average

$$C_p = C_{pstd} \left(\frac{\sqrt{\Delta P_{std}}}{\sqrt{\Delta P}} \right)$$

Summary of Results:

Normal high side calibration factor 0.807
variation + 0.12% variation - 1.36%
Normal low side calibration factor 0.806
variation + 0.25% variation - 1.24%

Calibrator: Keith Lorio

Office: Barton Rouge

QA/QC Check
Completeness ✓ Legibility ✓ Accuracy ✓ Specifications ✓ Reasonableness ✓

Checked By: [Signature]

Version 4
April 2016

Dry Gas Meter Calibration

Dry Gas Meter Number 9-1
Date: 7/19/16

ΔH ("H ₂ O)	C_{dg}
0.50	<u>0.977</u>
1.00	<u>0.982</u>
1.50	<u>0.986</u>
2.00	<u>0.988</u>
3.00	<u>0.987</u>
4.00	<u>0.983</u>
Average	<u>0.984</u>

Variation: + 0.41%
- 0.71%

Adjustment Required: Yes _____ No ✓
Calibrator: R Russo
Office: BR

QA/QC Check
Completeness ✓ Legibility ✓ Accuracy ✓ Specifications ✓ Reasonableness ✓

Checked by: BH

DRY GAS METER CALIBRATION

Meter Number: 9-1
Date: 7/19/16

Wet Test Meter No: 7
Calibrator: R Russo

$$\text{Wet Test Meter VM}_{\text{std}} = 17.65 \times V_m \times \frac{P_b + \frac{P_m}{13.6}}{T_m + 460} \times C_f = \text{scfm}$$

$$\text{Dry Test Meter VM}_{\text{std}} = 17.65 \times V_m \times \frac{P_b + \frac{P_m}{13.6}}{T_m + 460} = \text{scfm}$$

Run No: 1 @ 0.50" H₂O
Wet Test Meter C_f: 1.000

P_b: 30.21 "Hg
Control Module Vacuum: 5.0 "Hg

Wet Test Meter

Dry Gas Meter

	Time	Meter Reading	T _m	P _m	Meter Reading	T _m Inlet	T _m Outlet	P _m
End		5.595	72 °F	-1.5 "H ₂ O	29.340	74 °F	71 °F	0.5 "H ₂ O
Start		0.000	72 °F	-1.5 "H ₂ O	23.644	71 °F	70 °F	0.5 "H ₂ O
		cf ^A	°F _{avg}	"H ₂ O _{avg}	cf ^A	°F _{avg}		"H ₂ O _{avg}

cf^A = V_m

$$\text{Wet Test Meter VM}_{\text{std}} = 17.65 \times \frac{5.595}{\frac{30.21 + \frac{-1.5}{13.6}}{72 + 460}} \times 1.000 C_f = 5.587 \text{ scfm}$$

$$\text{Dry Gas Meter VM}_{\text{std}} = 17.65 \times \frac{5.696}{\frac{30.21 + \frac{0.50}{13.6}}{72 + 460}} = 5.716 \text{ scfm}$$

$$\text{Calibration Factor (C}_{\text{dg}}) = \frac{\text{Wet Test Meter VM}_{\text{std}}}{\text{Dry Gas Meter VM}_{\text{std}}}$$

$$C_{\text{dg}} = \frac{5.587}{5.716} = 0.977$$

QA/QC Check
Completeness ☒ Legibility ☒ Accuracy ☒ Specifications ☒ Reasonableness ☒

Checked by: B.H.

DRY GAS METER CALIBRATION

Meter Number: 9-1
Date: 7/19/16

Wet Test Meter No: 7
Calibrator: R Russo

$$\text{Wet Test Meter VM}_{\text{std}} = 17.65 \times V_m \times \frac{P_b + \frac{P_m}{13.6}}{T_m + 460} \times C_f = \text{scfm}$$

$$\text{Dry Test Meter VM}_{\text{std}} = 17.65 \times V_m \times \frac{P_b + \frac{P_m}{13.6}}{T_m + 460} = \text{scfm}$$

Run No: 1 @ 1.00 "H₂O
Wet Test Meter C_f: 1.000

P_b: 30.21 "Hg
Control Module Vacuum: 5.0 "Hg

Wet Test Meter

Dry Gas Meter

	Time	Meter Reading	T _m	P _m	Meter Reading	T _m		P _m
						Inlet	Outlet	
End		<u>5.712</u>	<u>72</u> °F	<u>-2.2</u> "H ₂ O	<u>30.028</u>	<u>76</u> °F	<u>72</u> °F	<u>1.00</u> "H ₂ O
Start		<u>0.000</u>	<u>72</u> °F	<u>-2.2</u> "H ₂ O	<u>30.248</u>	<u>73</u> °F	<u>71</u> °F	<u>1.00</u> "H ₂ O
		cf ^Δ	°F _{avg}	"H ₂ O _{avg}	cf ^Δ	°F _{avg}	"H ₂ O _{avg}	

cf^Δ = V_m

$$\text{Wet Test Meter VM}_{\text{std}} = 17.65 \times \text{cf}^{\Delta} \times \frac{30.21 + \frac{-2.2}{13.6}}{72 + 460} \times 1.000 C_f = 5.694 \text{ scfm}$$

$$\text{Dry Gas Meter VM}_{\text{std}} = 17.65 \times \text{cf}^{\Delta} \times \frac{30.21 + \frac{1.00}{13.6}}{73 + 460} = 5.796 \text{ scfm}$$

$$\text{Calibration Factor (C}_{\text{dg}}) = \frac{\text{Wet Test Meter VM}_{\text{std}}}{\text{Dry Gas Meter VM}_{\text{std}}}$$

$$C_{\text{dg}} = \frac{5.694}{5.796} = 0.982$$

QA/QC Check
Completeness ☒ Legibility ☒ Accuracy ☒ Specifications ☒ Reasonableness ☒

Checked by: BH

DRY GAS METER CALIBRATION

Meter Number: 9-1
Date: 7/19/16

Wet Test Meter No: 7
Calibrator: R Russo

$$\text{Wet Test Meter VM}_{\text{std}} = 17.65 \times V_m \times \frac{P_b + \frac{P_m}{13.6}}{T_m + 460} \times C_f = \text{scfm}$$

$$\text{Dry Test Meter VM}_{\text{std}} = 17.65 \times V_m \times \frac{P_b + \frac{P_m}{13.6}}{T_m + 460} = \text{scfm}$$

Run No: 1 @ 1.50" H₂O
Wet Test Meter C_f: 1.000

P_b: 30.21 "Hg
Control Module Vacuum: 5.0 "Hg

Wet Test Meter

Dry Gas Meter

	Time	Meter Reading	T _m	P _m	Meter Reading	T _m		P _m
						Inlet	Outlet	
End		<u>11.057</u>	<u>73°F</u>	<u>-2.8" H₂O</u>	<u>49.423</u>	<u>80°F</u>	<u>74°F</u>	<u>1.50" H₂O</u>
Start		<u>0.000</u>	<u>73°F</u>	<u>-2.8" H₂O</u>	<u>38.260</u>	<u>77°F</u>	<u>73°F</u>	<u>1.50" H₂O</u>
		cf ^A	°F _{avg}	"H ₂ O _{avg}	cf ^A	°F _{avg}	"H ₂ O _{avg}	

cf^A = V_m

$$\text{Wet Test Meter VM}_{\text{std}} = 17.65 \times \frac{11.057}{1} \times \frac{30.21 + \frac{-2.8}{13.6}}{73 + 460} \times 1.000 C_f = 10.986 \text{ scfm}$$

$$\text{Dry Gas Meter VM}_{\text{std}} = 17.65 \times \frac{11.163}{1} \times \frac{30.21 + \frac{1.50}{13.6}}{76 + 460} = 11.145 \text{ scfm}$$

$$\text{Calibration Factor (C}_{\text{dg}}) = \frac{\text{Wet Test Meter VM}_{\text{std}}}{\text{Dry Gas Meter VM}_{\text{std}}} \quad C_{\text{dg}} = \frac{10.986}{11.145} = 0.986$$

QA/QC Check
Completeness ☒ Legibility ☒ Accuracy ☒ Specifications ☒ Reasonableness ☒

Checked by: B.A.

DRY GAS METER CALIBRATION

Meter Number: 9-1
Date: 7/19/16

Wet Test Meter No: 7
Calibrator: R Russo

$$\text{Wet Test Meter VM}_{\text{std}} = 17.65 \times V_m \times \frac{P_b + \frac{P_m}{13.6}}{T_m + 460} \times C_f = \text{scfm}$$

$$\text{Dry Test Meter VM}_{\text{std}} = 17.65 \times V_m \times \frac{P_b + \frac{P_m}{13.6}}{T_m + 460} = \text{scfm}$$

Run No: 1 @ 2.0" H₂O
Wet Test Meter C_f: 1.000

P_b: 30.21 "Hg
Control Module Vacuum: 5.0 "Hg

Wet Test Meter

Dry Gas Meter

	Time	Meter Reading	T _m	P _m	Meter Reading	T _m Inlet	T _m Outlet	P _m
End		10.720	74°F	-3.3" H ₂ O	76.893	81°F	75°F	2.0" H ₂ O
Start		0.000	74°F	-3.3" H ₂ O	66.104	79°F	75°F	2.0" H ₂ O
		cf ^A	°F _{avg}	"H ₂ O _{avg}	cf ^A	°F _{avg}		"H ₂ O _{avg}

cf^A = V_m

$$\text{Wet Test Meter VM}_{\text{std}} = 17.65 \times \frac{10.720}{-3.3} \times \frac{30.21 + \frac{13.6}{74}}{460} \times 1.000 C_f = 10.618 \text{ scfm}$$

$$\text{Dry Gas Meter VM}_{\text{std}} = 17.65 \times \frac{10.789}{78} \times \frac{30.21 + \frac{2.0}{13.6}}{460} = 10.745 \text{ scfm}$$

$$\text{Calibration Factor (C}_{\text{dg}}) = \frac{\text{Wet Test Meter VM}_{\text{std}}}{\text{Dry Gas Meter VM}_{\text{std}}}$$

$$C_{\text{dg}} = \frac{10.618}{10.745} = 0.988$$

QA/QC Check
Completeness ☒ Legibility ☒ Accuracy ☒ Specifications ☒ Reasonableness ☒

Checked by: B.H.

DRY GAS METER CALIBRATION

Meter Number: 9-1
Date: 7/19/16

Wet Test Meter No: 7
Calibrator: R Russo

$$\text{Wet Test Meter VM}_{\text{std}} = 17.65 \times V_m \times \frac{P_b + \frac{P_m}{13.6}}{T_m + 460} \times C_f = \text{scfm}$$

$$\text{Dry Test Meter VM}_{\text{std}} = 17.65 \times V_m \times \frac{P_b + \frac{P_m}{13.6}}{T_m + 460} = \text{scfm}$$

Run No: 1 @ 3.0 "H₂O
Wet Test Meter C_f: 1.000

P_b: 30.21 "Hg
Control Module Vacuum: 5.0 "Hg

Wet Test Meter

Dry Gas Meter

	Time	Meter Reading	T _m	P _m	Meter Reading	T _m		P _m
						Inlet	Outlet	
End		<u>11.412</u>	<u>74°F</u>	<u>-4.3</u> "H ₂ O	<u>88.737</u>	<u>83°F</u>	<u>76°F</u>	<u>3.00</u> "H ₂ O
Start		<u>0.000</u>	<u>74°F</u>	<u>-4.3</u> "H ₂ O	<u>77.268</u>	<u>80°F</u>	<u>75°F</u>	<u>3.00</u> "H ₂ O
		cf ^A	°F _{avg}	"H ₂ O _{avg}	cf ^A	°F _{avg}		"H ₂ O _{avg}

cf^A = V_m

$$\text{Wet Test Meter VM}_{\text{std}} = 17.65 \times \frac{11.412}{1} \times \frac{30.21 + \frac{-4.3}{13.6}}{74 + 460} \times 1.000 C_f = 11.276 \text{ scfm}$$

$$\text{Dry Gas Meter VM}_{\text{std}} = 17.65 \times \frac{11.469}{1} \times \frac{30.21 + \frac{3.00}{13.6}}{79 + 460} = 11.429 \text{ scfm}$$

$$\text{Calibration Factor (C}_{\text{dg}}) = \frac{\text{Wet Test Meter VM}_{\text{std}}}{\text{Dry Gas Meter VM}_{\text{std}}}$$

$$C_{\text{dg}} = \frac{11.276}{11.429} = 0.987$$

QA/QC Check
Completeness ☒ Legibility ☒ Accuracy ☒ Specifications ☒ Reasonableness ☒

Checked by: BH

DRY GAS METER CALIBRATION

Meter Number: 9-1
Date: 7/19/16

Wet Test Meter No: 7
Calibrator: R Russo

$$\text{Wet Test Meter VM}_{\text{std}} = 17.65 \times V_m \times \frac{P_b + \frac{P_m}{13.6}}{T_m + 460} \times C_f = \text{scfm}$$

$$\text{Dry Test Meter VM}_{\text{std}} = 17.65 \times V_m \times \frac{P_b + \frac{P_m}{13.6}}{T_m + 460} = \text{scfm}$$

Run No: 1 @ 4.0" H₂O
Wet Test Meter C_f: 1.000

P_b: 30.21 "Hg
Control Module Vacuum: 5.0 "Hg

Wet Test Meter

Dry Gas Meter

	Meter Reading	T _m	P _m	Meter Reading	T _m Inlet	T _m Outlet	P _m
End	10.969	73°F	-5.5" H ₂ O	65.798	82°F	75°F	4.00" H ₂ O
Start	0.000	73°F	-5.5" H ₂ O	54.769	83°F	75°F	4.00" H ₂ O
	cf ^A	°F _{avg}	"H ₂ O _{avg}	cf ^A	°F _{avg}		"H ₂ O _{avg}

cf^A = V_m

$$\text{Wet Test Meter VM}_{\text{std}} = 17.65 \times \frac{10.969}{1} \times \frac{30.21 + \frac{-5.5}{13.6}}{73 + 460} \times 1.000 = 10.826 \text{ scfm}$$

$$\text{Dry Gas Meter VM}_{\text{std}} = 17.65 \times \frac{11.029}{1} \times \frac{30.21 + \frac{4.00}{13.6}}{79 + 460} = 11.017 \text{ scfm}$$

$$\text{Calibration Factor (C}_{\text{dg}}) = \frac{\text{Wet Test Meter VM}_{\text{std}}}{\text{Dry Gas Meter VM}_{\text{std}}} = \frac{10.826}{11.017} = 0.983$$

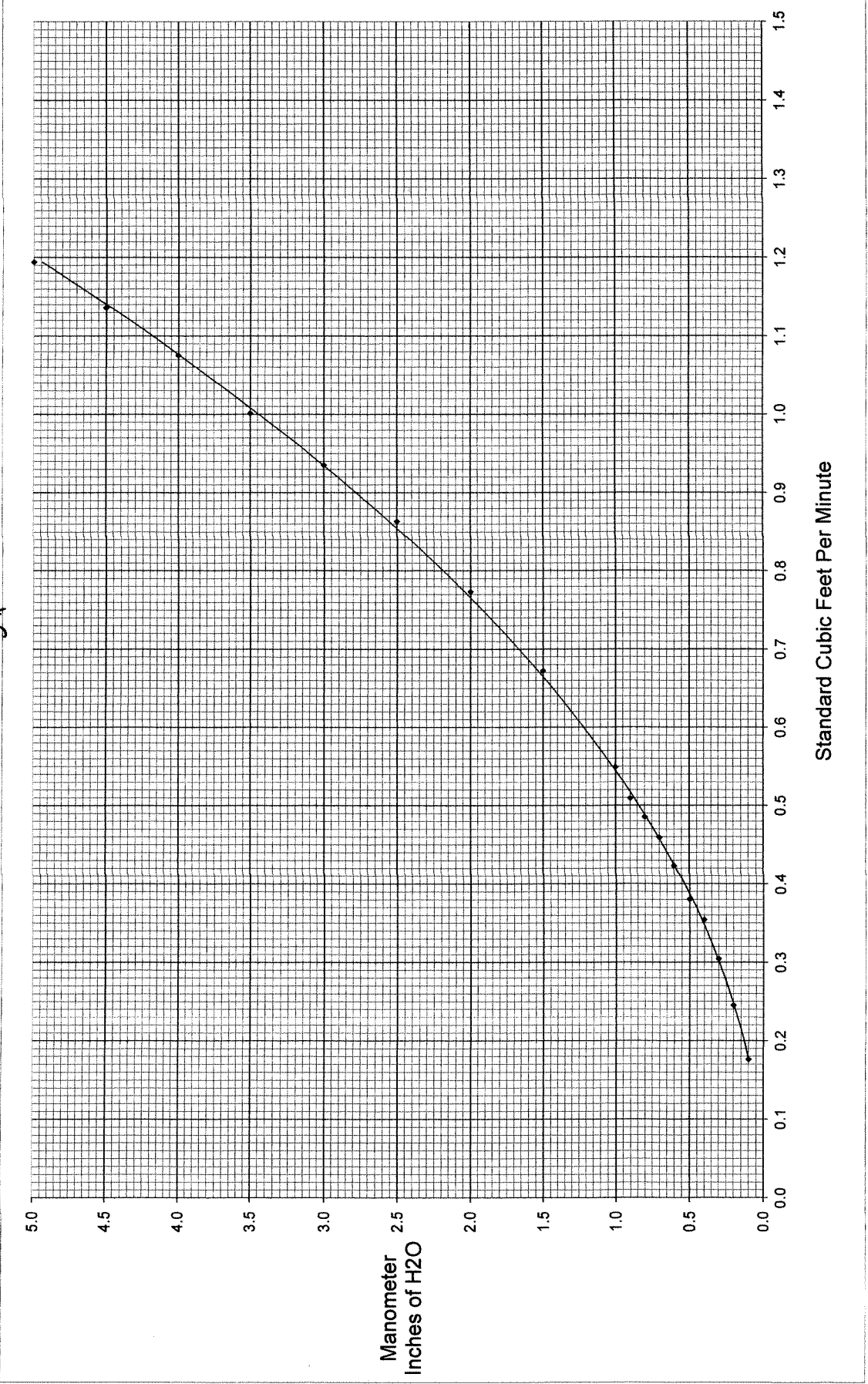
QA/QC Check
Completeness ☒ Legibility ☒ Accuracy ☒ Specifications ☒ Reasonableness ☒

Checked by: B.H.

STACK UNIT ORIFICE NO: 9-1

DATE: 07/19/16 CALIBRATED BY: R Russo

CHECKED BY: *BJH*



Digital Temperature Indicator No. 9-1

Calibration Data

Date: 7/19/16

Reference Thermometer No. 2692 0201WS

<u>Media</u>	<u>Time</u>	Reference	DTI
		Thermometer (°F)	(°F)
Ambient Air	<u>0850</u>	<u>74</u>	<u>74</u>
Ice Bath	<u>0852</u>	<u>34</u>	<u>34</u>
Boiling Water	<u>0859</u>	<u>211</u>	<u>212</u>
Oven	<u>0905</u>	<u>250</u>	<u>251</u>
Oven	<u>0912</u>	<u>301</u>	<u>302</u>
Oven	<u>0919</u>	<u>351</u>	<u>352</u>
Oven	<u>0928</u>	<u>372</u>	<u>373</u>

Meter Adjusted? YES _____ NO ✓

Calibrator R Russo

Office: BR

QA/QC Check
Completeness ✓ Legibility ✓ Accuracy ✓ Specifications ✓ Reasonableness ✓

Checked by: B.H.



Barometer Calibration

Barometer Number	9-2
Date	9/20/2016
Time	8:45
Location	Lafayette, LA
Latitude	30.23144
Longitude	-92.04158
E _o - Elevation	37.12

Name of Closest Airport Weather Station

E_{ws} - Elevation of Weather Station (ft above sea level)

P_{bws} - Barometric Pressure at Weather Station¹ ("Hg)

P_{ba} - Actual Barometric Pressure @ Weather Station ("Hg)

P_b - Actual Barometric Pressure @ Location ("Hg)

Reading on Barometer ("Hg)

Difference Between Actual and Barometer Reading²

Reading on Barometer after Correction (if applicable)

Lafayette Airport
39
30.06
30.021
30.02288
30.02
0.00288

¹ corrected to sea level

² no correction necessary if reading is within 0.05"Hg

Calculations:

Eq. B1

$$P_{ba} = P_{bws} - \frac{E_{ws}}{1000}$$

Eq. B2

$$P_b = P_{ba} + \frac{E_{ws} - E_o}{1000}$$

Calibrated by

J. Johnson

0

0

**AIR LIQUIDE**Air Liquide America
Specialty Gases LLC**Scott****RATA CLASS****Guaranteed +/- 1% Accuracy**

1290 COMBERMERE STREET, TROY, MI 48083

Phone: 248-589-2950

Fax: 248-589-2134

CERTIFICATE OF ACCURACY: EPA Protocol Gas**Assay Laboratory - PGVP Vendor ID: A22015**AIR LIQUIDE AMERICA SPECIALTY GASES LLC P.O. No.: 61933-70-65000
1290 COMBERMERE STREET Document #: 58797787-001
TROY, MI 48083**Customer**CLEAN AIR ENGINEERING
500 WEST WOOD STREET
PALATINE IL 60067
US**ANALYTICAL INFORMATION Gas Type : CO,BALN**This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards;
Procedure G-1. EPA/600/R-12/531; May 2012. Do not use this standard if pressure is less than 100 psig.Cylinder Number: ALM018547
Cylinder Pressure: 2000 PSIG

Certification Date: 26Feb2015

Exp. Date: 27Feb2023
Batch No: TRO0127728**COMPONENT**
CARBON MONOXIDE
NITROGEN**CERTIFIED CONCENTRATION (Moles)**
5.06 PPM
BALANCE**ACCURACY (ABSOLUTE / RELATIVE)**
0.05 PPM / 1.0 %**TRACEABILITY****REFERENCE STANDARD**

COMPONENT	CONCENTRATION	UNCERTAINTY	CYLINDER	TYPE/SRM SAMPLE	EXP. DATE
CARBON MONOXIDE	9.8550 PPM	0.0500 PPM	KAL003992	NTRM 1677	14Mar2018

ANALYTICAL METHOD

1st Analysis: 26Feb2015

COMPONENT
CARBON MONOXIDE**INSTRUMENT**
SIEMENS I/ULTRAMAT 6E/N1-VN-0545**ANALYTICAL/PRINCIPLE**
NDIR**CALIBRATED**
30Jan2015**CONCENTRATION**
5.080 PPM

Special Notes:

DELIVERY DOCUMENT 58797248

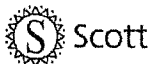
APPROVED BY:

JEFF CROTEAU

Page 1 of 1



Air Liquide America
Specialty Gases LLC



COMPLIANCE CLASS

Dual-Analyzed Calibration Standard

11426 FAIRMONT PKWY, LA PORTE, TX 77571

Phone: 800-248-1427

Fax: 281-474-8419

CERTIFICATE OF ACCURACY: EPA Protocol Gas

say Laboratory - PGVP Vendor ID: A32010

R LIQUIDE AMERICA SPECIALTY GASES LLC
426 FAIRMONT PKWY
LA PORTE, TX 77571

P.O. No.: 569781
Document #: 38846888-001

Customer
METCO TESTAMERICA

6655 COMPLEX DR
BATON ROUGE LA 70809
US

ANALYTICAL INFORMATION Gas Type : CO,BALN

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure G-1; September, 1997.

Cylinder Number: BLM000616 Certification Date: 09Sep2010 Exp. Date: 10Sep2018
Cylinder Pressure***: 1284 PSIG Batch No: LAP0024726

COMPONENT	CERTIFIED CONCENTRATION (Moles)	ACCURACY**	TRACEABILITY
CARBON MONOXIDE	9.86 PPM	+/- 2%	NIST and VSL
NITROGEN	BALANCE		

* Do not use when cylinder pressure is below 150 psig.
Analytical accuracy is based on the requirements of EPA Protocol procedures , September 1997.

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
TRM 1677	01Jun2012	KAL004005	9.855 PPM	CARBON MONOXIDE

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
FTIR/MG-09-149	03Sep2010	FTIR

Special Notes: The expiration date has been extended without re-assay per EPA 600/R23-23/542.

APPROVED BY: GARY WRIGHT



Air Liquide America
Specialty Gases LLC



RATA CLASS

Dual-Analyzed Calibration Standard

1290 COMBERMERE STREET, TROY, MI 48083

Phone: 248-589-2950

Fax: 248-589-2134

CERTIFICATE OF ACCURACY: EPA Protocol Gas

Assay Laboratory

AIR LIQUIDE AMERICA SPECIALTY GASES LLC
1290 COMBERMERE STREET
TROY, MI 48083

P.O. No.: 569677

Document #: 39345307-001

Customer

METCO ENVIRONMENTAL C/O AIR LIQUIDE

HOLD FOR PICKUP
18222 E PETROLEUM DR
HOLD FOR PICK UP
BATON ROUGE LA 70809
US

ANALYTICAL INFORMATION

Gas Type : PPN,BALN

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards;
Procedure G-1; September, 1997.

Cylinder Number: BLM005063
Cylinder Pressure***: 1000 PSIG

Certification Date: 20Oct2010
Prev Certification Date: 06Dec2008

Exp. Date: 21Oct2018
Batch No: TRO0011436

COMPONENT

PROPANE
NITROGEN

CERTIFIED CONCENTRATION (Moles)
3.13 PPM
BALANCE

ACCURACY**
+/- 1%

TRACEABILITY
Direct NIST and VSL

*** Do not use when cylinder pressure is below 150 psig.

** Analytical accuracy is based on the requirements of EPA Protocol Procedure G1, September 1997.

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM 1668	02Oct2012	ALM011480	9.470 PPM	PROPANE

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#
VARIAN/3400/7508

DATE LAST CALIBRATED
05Oct2010

ANALYTICAL PRINCIPLE
TCD/FID

ANALYZER READINGS

(Z = Zero Gas R = Reference Gas T = Test Gas r = Correlation Coefficient)

First Triad Analysis

Second Triad Analysis

Calibration Curve

PROPANE

Date: 20Oct2010 Response Unit: AREA
Z1 = 0.00000 R1 = 251250.0 T1 = 82986.00
R2 = 251026.0 Z2 = 0.00000 T2 = 82699.00
Z3 = 0.00000 T3 = 82862.00 R3 = 251718.0
Avg. Concentration: 3.130 PPM

Concentration = A + Bx + Cx2 + Dx3 + Ex4
r = 0.999998
Constants: A = 0.03279928
B = 3.80209E-05 C = 0
D = 0 E = 0

Special Notes:

The expiration date has been extended without re-assay per EPA 800/R23-23/542.
Supplemental to test report 05-92991-001 for BLM005063. Amended 11-15-2013, Thatcher.

APPROVED BY:

ROBERT LESNIAK

EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

Cylinder Number:	ET0010875	Certification Date:	01/04/2016
Product ID Number:	125971	Expiration Date:	01/02/2024
Cylinder Pressure:	1900 PSIG	MFG Facility:	RBTGS-Shreveport-LA
COA #	ET0010875.20151229-0	Lot Number:	ET0010875.20151229
Customer PO. NO.:		Tracking Number:	084265050
Customer:		Previous Certification Dates:	

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).

Certified Concentration(s)

Component	Concentration	Uncertainty	Analytical Principle	Assigned On
Propane	5.01 PPM	±0.03 PPM	FTIR	01/04/2016
Nitrogen	Balance			

Analytical Measurement Data Available Online.

Reference Standard(s)

Serial Number	Lot	Expiration	Type	Balance	Component	Concentration	Uncertainty(%)	NIST Reference
CC238370	LD131122.095512.1GMIS	09/30/2021	GMIS	N2	C3H8	106.2 PPM	0.409	2644a

Analytical Instrumentation

Component	Analytical Principle	Make	Model	Serial	MPC Date
C3H8	FTIR	MKS	MKS 2031DJG2EKVS13T	017146467	01/04/2016

Red Ball Technical Gas Service
PGVP Vendor ID # G12016
Information and Ordering
800-551-8150
Fax (318-425-6309)



PJLA
Calibration and Testing
Accreditation #62754

Fred Holt

Fred Holt
Analyst

Version 02-C, Revised on 2015-07-16

EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

Cylinder Number:	ET0010859	Certification Date:	01/04/2016
Product ID Number:	125972	Expiration Date:	01/02/2024
Cylinder Pressure:	1900 PSIG	MFG Facility:	RBTGS-Shreveport-LA
COA #	ET0010859.20151229-0	Lot Number:	ET0010859.20151229
Customer PO. NO.:		Tracking Number:	084265041
Customer:		Previous Certification Dates:	

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).

Certified Concentration(s)

Component	Concentration	Uncertainty	Analytical Principle	Assayed On
Propane	8.48 PPM	±0.03 PPM	FTIR	01/04/2016
Nitrogen	Balance			

Analytical Measurement Data Available Online.

Reference Standard(s)

Serial Number	Lot	Expiration	Type	Balance	Component	Concentration	Uncertainty(%)	NIST Reference
CC236370	LD131122.095512 1GMIS	09/30/2021	GMIS	N2	C3H8	106.2 PPM	0.409	2644a

Analytical Instrumentation

Component	Analytical Principle	Make	Model	Serial	MPC Date
C3H8	FTIR	MKS	MKS 2031DJG2EKVS13T	017146467	01/04/2016

Red Ball Technical Gas Service
PGVP Vendor ID # G12016
Information and Ordering
800-551-8150
Fax (318-425-6309)



Accreditation #62754

Fred Holt

Fred Holt
Analyst

Version 02-C, Revised on 2015-07-16

APPENDIX D

Field Testing Data

METCO Environmental

Job Number 16-323 / Positive w/flow Field Data
 Job Name Comm. Eng / 16-1
 Run Number 1 @ Cond. 1 / 16-1-2000-1
 Unit 11.13 / 2000.0
 Date 9-21-16 / 1999.9
 Operator 16/Ros/Johnson / 0-1
 Sample Box # 52-3 / ✓ Final ✓
 Purge To (cf): ✓ Final ✓
 Ambient Temperature - °F 85
 Assumed Moisture - % -
 Probe Length 4'
 C Factor - to reference
 Initial Leak @ 15.0 "Hg = 2.000 cfm
 Final Leak @ 7.5 "Hg = 0.000 cfm
 Pitot Tips Damaged during Test? Yes (NO)

* must be equal to or less than 0.5 g

Note: Read and record at the start of each test point

Point	Clock Time	Dry Gas Meter (cf)	Pitot "H ₂ O"	Orifice ΔH "H ₂ O" Desired	Orifice ΔH "H ₂ O" Actual	Pump Vacuum "Hg"	Stack Temp. °F	T _s			T _m			Remarks
								Probe Temp. °F	Oven/Filter Temp. °F	Effluent Temp. °F	Dry Gas Inlet Temp. °F	Dry Gas Outlet Temp. °F	Aux Temp. °F	
A	0922	401.376	0.002	1.00	1.00	5.0	1047	-	-	66	74	73	-	
1	0926	403.71	0.002	1.00	1.00	5.0	1055	-	-	60	74	73	-	
6	0930	405.91	0.001	1.00	1.00	5.0	1053	-	-	60	74	73	-	
5	0934	407.89	0.003	1.00	1.00	5.0	1051	-	-	58	74	73	-	
4	0938	410.25	0.007	1.00	1.00	5.0	1046	-	-	57	74	73	-	
3	0942	412.67	0.006	1.00	1.00	5.0	1047	-	-	57	74	73	-	
2	0946	413.49	0.002	1.00	1.00	5.0	1045	-	-	56	74	73	-	
1	0950	415.63	0.002	1.00	1.00	5.0	1050	-	-	54	74	74	-	
End	0954	416.713	-	-	-	-	-	-	-	-	-	-	-	
B	0957	416.793	0.002	1.00	1.00	5.0	1033	-	-	59	77	74	-	
7	1001	418.27	0.003	1.00	1.00	5.0	1047	-	-	53	77	45	-	
6	1005	419.13	0.003	1.00	1.00	5.0	1045	-	-	57	77	45	-	
5	1009	420.17	0.003	1.00	1.00	5.0	1051	-	-	57	78	75	-	
4	1013	421.65	0.006	1.00	1.00	5.0	1053	-	-	58	78	76	-	
3	1017	422.93	0.007	1.00	1.00	5.0	1059	-	-	61	79	76	-	
2	1020	424.59	0.003	1.00	1.00	5.0	1044	-	-	62	79	76	-	
1	1024	426.96	0.001	1.00	1.00	5.0	1057	-	-	64	79	77	-	
End	1028	429.049	-	-	-	-	-	-	-	-	-	-	-	

C_p Pitot Tube Cal. Factor 0.807 / ✓ Pitot Tube # 9-3-2 / ✓ Barometer # 9-2 / ✓ Nozzle # -
 V_m Volume Collected - cf 27.230 / ✓ P_b Barometric Pressure - "Hg 29.97 / ✓ Total Volume of leak checks after start - cf -
 V_w Water Collected - ml 51.3 / ✓ D_n Nozzle Diameter - in. - / ✓ V_m = (DGM Cal Factor) 0.98 / ✓ x (Net Volume Collected) 27.673
 T₁ Time of Test - min. 64 / ✓ %CO₂ 6.4 / ✓ %CO 0.2 / ✓ A_s = Area of Stack - in² 1025 / ✓
 P_s Stack Pressure - "H₂O 40.2 / ✓ %O₂ 14.8 / ✓ %N₂ 84.8 / ✓ {Dry Gas Meter Reading - ft3 - (T₁ - m)n. X Leak Rate - cfm} -
 QA/QC Check Completeness ✓ / ✓ Legibility ✓ / ✓ Accuracy ✓ / ✓ Specification ✓ / ✓ Reasonableness ✓ / ✓ Checked By ✓
 Version 3 April 2013

METCO Environmental

Job Number 16-323 / Montana v. Flours Field Data Ambient Temperature - °F 85
 Job Name Comm. Eng. Balance ID MA-1 Assumed Moisture - % -
 Run Number 20 Check Weight ID MA-2000-1 Probe Length 4'
 Unit Unit 3 Actual Mass (g) 2000.0 C Factor - to reference
 Date 9-21-16 Measured Mass (g) 1992.5 Initial Leak @ 15.0 "Hg = 0.000 cfm
 Operator HP/Ris/Johnson Difference (g)* 0.1 Final Leak @ 10.0 "Hg = 0.000 cfm
 Sample Box # 52-3 Meter # 9-1 Pitot Leak Check: Initial - Final ✓ Pitot Tips Damaged during Test? Yes (X)
 Purge To (cf): - Purge Time -

Note: Read and record at the start of each test point

* must be equal to or less than 0.5 g

Point	Clock Time	Dry Gas Meter (cf)	Pitot "H ₂ O"	Orifice ΔH "H ₂ O" Desired	Orifice ΔH "H ₂ O" Actual	Pump Vacuum "Hg"	Stack Temp. °F	T _s			T _m			Remarks
								Probe Temp. °F	Oven/Filter Temp. °F	Effluent Temp. °F	Dry Gas Inlet Temp. °F	Dry Gas Outlet Temp. °F	Aux Temp. °F	
B 8	1045	429.591	0.001	1.00	1.00	5.0	1856	-	-	69	79	78	-	
7	1049	431.87	0.002	1.00	1.00	5.0	1870	-	-	63	79	78	-	
6	1053	433.98	0.004	1.00	1.00	5.0	1862	-	-	61	79	78	-	
5	1057	436.22	0.004	1.00	1.00	5.0	1866	-	-	60	79	78	-	
4	1101	438.75	0.007	1.00	1.00	5.0	1870	-	-	63	80	78	-	
3	1105	440.91	0.008	1.00	1.00	5.0	1863	-	-	65	80	79	-	
2	1109	442.41	0.009	1.00	1.00	5.0	1865	-	-	64	81	79	-	
1	1113	445.32	0.006	1.00	1.00	5.0	1863	-	-	65	81	75	-	
End	1117	446.275	-	-	-	-	-	-	-	-	-	-	-	
A 8	1119	446.275	0.003	1.00	1.00	5.0	1866	-	-	69	81	79	-	
7	1123	448.17	0.002	1.00	1.00	5.0	1869	-	-	64	81	79	-	
6	1127	451.57	0.002	1.00	1.00	5.0	1868	-	-	61	81	80	-	
5	1131	453.58	0.005	1.00	1.00	5.0	1860	-	-	57	82	80	-	
4	1135	455.43	0.002	1.00	1.00	5.0	1863	-	-	59	82	80	-	
3	1139	457.73	0.003	1.00	1.00	5.0	1871	-	-	59	83	80	-	
2	1143	460.39	0.002	1.00	1.00	5.0	1872	-	-	61	83	81	-	
1	1147	461.82	0.002	1.00	1.00	5.0	1869	-	-	62	83	81	-	
End	1151	463.951	-	-	-	-	-	-	-	-	-	-	-	

C_p Pitot Tube Cal. Factor 0.807 / Pitot Tube # 9-5-2 / Barometer # 9-2 / Nozzle # -
 V_m Volume Collected - cf 33.810 / P_b Barometric Pressure - "Hg 29.97 / Total Volume of leak checks after start - cf -
 V_w Water Collected - ml 63.0 / D_n Nozzle Diameter - in. 0.2 / V_m = (DGM Cal Factor) 0.984 / x (Net Volume Collected) 34.360
 T_t Time of Test - min. 64 / %CO₂ 4.4 / %CO 0.2 / A_s = Area of Stack - in² 1025 /
 P_s Stack Pressure - "H₂O +0.2 / %O₂ 12.10 / %N₂ 87.89 / {Dry Gas Meter Reading - ft³ - (T_t - min. X Leak Rate - cfm)]
 QA/QC Check ✓ Legibility ✓ Accuracy ✓ Specification ✓ Reasonableness ✓ Checked By ✓
 Completeness ✓

Impinger Box No. 52-3

			<u>Water Weight Gain</u>			
Impinger 1	Final Weight	<u>807.3</u>			Impinger 1	<u>43.6</u>
	Initial Weight	<u>823.7</u>			Impinger 2	<u>9.5</u>
	Increase	<u>43.6</u>			Impinger 3	<u>2.2</u>
Impinger 2	Final Weight	<u>769.5</u>			Impinger 4	<u>7.7</u>
	Initial Weight	<u>760.0</u>			Impinger 5	
	Increase	<u>9.5</u>	SO ₂ correction (if applicable)		Impinger 6	
Impinger 3	Final Weight	<u>651.5</u>	V _w = _____		Impinger 7	
	Initial Weight	<u>649.3</u>	g SO ₂ = _____		Total	<u>63.0</u> = V _w
	Increase	<u>2.2</u>	V _w = _____		%CO ₂ =	<u>62.44</u> /
Impinger 4	Final Weight	<u>942.9</u>			%O ₂ =	<u>12616.7</u> /
	Initial Weight	<u>935.2</u>			%CO =	<u>00</u> /
	Increase	<u>7.7</u>			%N ₂ =	<u>8278.9</u> /
Impinger 5	Final Weight				A _s =	<u>1025</u> /
	Initial Weight				D _n =	
	Increase				T _t =	<u>6.1</u> /
Impinger 6	Final Weight					
	Initial Weight					
	Increase					
Impinger 7	Final Weight					
	Initial Weight					
	Increase					

$$\begin{aligned}
 P_b &= \underline{29.97} / \\
 V_m &= \underline{33.810} / \\
 V_w &= \underline{63.0} / \\
 P_m &= \underline{1.000} / \\
 \text{Avg } \Delta P &= \underline{0.004} / \\
 \text{Avg } \sqrt{\Delta P} &= \underline{0.061} / \\
 C_p &= \underline{0.807} / \\
 P_s &= \underline{0.2} / \text{ "H}_2\text{O} \\
 T_m &= \underline{80} / \text{ }^\circ\text{F} \\
 T_s &= \underline{1866} / \text{ }^\circ\text{F}
 \end{aligned}$$

$$\begin{aligned}
 \% \text{CO}_2 &= \underline{62.44} / \\
 \% \text{O}_2 &= \underline{12616.7} / \\
 \% \text{CO} &= \underline{00} / \\
 \% \text{N}_2 &= \underline{8278.9} / \\
 A_s &= \underline{1025} / \\
 D_n &= \underline{\quad} / \\
 T_t &= \underline{6.1} /
 \end{aligned}$$

$$\text{Moisture Content: } \%M = \underline{0.22} / \quad M_d = \underline{0.9178} \quad MW_d = \underline{29.496} \quad MW = \underline{28.85}$$

$$V_{m_{std}} = 17.65 \times V_m \left| \frac{P_m}{P_b + 13.6} \right| = 17.65 \times \frac{33.810}{29.97 + 13.6} \times \frac{1.000}{80 + 460} = \frac{33.201}{0.519} \text{ sft}^3$$

$$V_{w_{gas}} = 0.0472 \times V_w = 0.0472 \times 63.0 = 2.974 \text{ sft}^3$$

$$\% \text{ Moisture} = \frac{V_{w_{gas}}}{V_{m_{std}} + V_{w_{gas}}} \times 100 = \frac{2.974}{2.974 + 33.201} \times 100 = 8.22 \%$$

$$V_s = 5123.8 \times \frac{0.061}{\sqrt{\frac{2326}{29.98 \times 28.85}}} \times \frac{0.807}{44} = 416 \text{ fpm}$$

$$\text{ACFM} = \underline{2960}$$

$$\text{SCFM} = \underline{6282}$$

$$\%I = \frac{1039 \times \dots}{\dots} = \dots \%$$

$$\%EA = \underline{141.3}$$

$$V_s = 5123.8 \times \text{Avg } \sqrt{\Delta P} \times \sqrt{\frac{T_s(R)}{P_s(\text{"Hg}) \times MW}} \times C_p = \text{fpm}$$

$$\text{ACFM} = (V_s \times A_s) / 144$$

$$\text{SCFM} = \frac{0.123 \times V_s \times A_s \times M_d \times P_s}{T_s}$$

$$\%I = \frac{1039 \times V_{m_{std}} \times T_s(R)}{P_s(\text{"Hg}) \times M_d \times V_s \times T_t \times (D_n)^2}$$

METCO Environmental

Job Number 16-323 / Moisture of Flows Field Data Ambient Temperature - °F 88

Job Name Comm Eng. / Balance ID M9-1 Assumed Moisture - % -

Run Number 23 @ Cond. 1 / Check Weight ID M9-2000-1 Probe Length 4'

Unit Unit 3 / Actual Mass (g) 2000.0 C Factor - to reference

Date 9-21-10 / Measured Mass (g) 1999.9 Initial Leak @ 15.0 "Hg = 0.000 cfm

Operator Hb/Dios/Johnson / Difference (g)* 0.1 Final ✓ Final Leak @ 7.5 "Hg = 0.000 cfm

Sample Box # 52-3 Meter # 9-1 Pitot Leak Check: Initial ✓ Final ✓ Pitot Tips Damaged during Test? Yes(No)

Purge To (cf): - Purge Time -

* must be equal to or less than 0.5 g

Note: Read and record at the start of each test point

Point	Clock Time	Dry Gas Meter (cf)	Pitot "H ₂ O"	Orifice ΔH "H ₂ O" Desired	Orifice ΔH "H ₂ O" Actual	Pump Vacuum "Hg"	Stack Temp. °F	T _s	Probe Temp. °F	Oven/Filter Temp. °F	Effluent Temp. °F	Dry Gas Inlet Temp. °F	Dry Gas Outlet Temp. °F	Aux Temp. °F	Remarks
A 8	1210	464.205	0.001	1.00	1.00	5.0	1851	1851	-	-	72	83	82	-	
7	1214	464.87	0.002	1.00	1.00	5.0	1862	1862	-	-	68	82	82	-	
6	1218	468.72	0.002	1.00	1.00	5.0	1855	1855	-	-	65	83	82	-	
5	1222	470.07	0.001	1.00	1.00	5.0	1851	1851	-	-	61	83	82	-	
4	1224	473.21	0.001	1.00	1.00	5.0	1842	1842	-	-	60	83	82	-	
3	1230	475.19	0.001	1.00	1.00	5.0	1857	1857	-	-	60	83	82	-	
2	1234	477.13	0.001	1.00	1.00	5.0	1842	1842	-	-	62	84	82	-	
1	1238	479.89	0.002	1.00	1.00	5.0	1852	1852	-	-	62	84	82	-	
End	1242	481.362	-	-	-	-	-	-	-	-	-	-	-	-	
B 9	1244	481.302	0.001	1.00	1.00	5.0	1868	1868	-	-	68	84	83	-	
7	1248	483.62	0.002	1.00	1.00	5.0	1851	1851	-	-	64	84	83	-	
6	1252	485.93	0.002	1.00	1.00	5.0	1841	1841	-	-	61	84	83	-	
5	1256	488.12	0.002	1.00	1.00	5.0	1852	1852	-	-	59	84	83	-	
4	1300	490.35	0.003	1.00	1.00	5.0	1850	1850	-	-	59	84	84	-	
3	1304	492.13	0.004	1.00	1.00	5.0	1843	1843	-	-	61	84	82	-	
2	1308	494.52	0.004	1.00	1.00	5.0	1853	1853	-	-	61	84	82	-	
1	1312	497.07	0.003	1.00	1.00	5.0	1849	1849	-	-	63	85	82	-	
End	1316	498.306	-	-	-	-	-	-	-	-	-	-	-	-	

C_p Pitot Tube Cal. Factor 0.807 / Pitot Tube # 9-3-2 / Barometer # 9-1 / Nozzle # -

V_m Volume Collected - cf 33.555 / P_b Barometric Pressure - "Hg 29.97 / Total Volume of leak checks after start - cf -

V_w Water Collected - ml 54.0 / D_n Nozzle Diameter - in. 3.4' / V_m = (DGM Cal Factor) 0.984 / x (Net Volume Collected) 34.101

T_i Time of Test - min. 64 / %CO₂ 0.0 / %CO 0.0 / A_s = Area of Stack - in² 1025

P_s Stack Pressure - "H₂O" +0.2 / %O₂ 14.18.0' / %N₂ 82.0 / {Dry Gas Meter Reading - ft3 - (Tt - min. X Leak Rate - cfm)] 1025

QA/QC Check ✓ / Legibility ✓ / Accuracy ✓ / Reasonableness ✓ / Checked By ✓

Job Number 16-323
 Job Name Comm Engineering
 Bag/Run Number 10 Canal
 Location 44:1 3
 Date 9/21/10

Rotometer # VGSF 10
 Operator Johanson
 Ambient Temp. 85 °F
 Barometer Number 9-2

Probe Length 5'
 Sample Point variable
 Baro. Pressure P_b 29.97 "Hg
 Source Pressure P_s 0.2 "H₂O

METHOD 18 FIELD DATA (Bag Sample)

CLOCK TIME	ROTOMETER READING	SOURCE TEMP. °F	PROBE TEMP. °F	REMARKS
922	0.15	1853	-	DGM = 0.600
954	0.15	1858	-	DGM = 2.323
1005 1020	0.15	1852	-	DGM = 6.268

AVG Rotometer Reading = 0.15 = 0.15 L/m
 Collected Condensate + Rinse = ml
 Volume_{TOTAL} = L/m x T₁ (min) = 0.15 x 67.90 = 9.2 Liters
100 9/21/10

QA/QC Check
 Completeness Legibility Accuracy Specifications Reasonableness
 Checked by:

Rotometer # Vest meter 10 Probe Length 5'
Operator Johansen Sample Point Variable
Ambient Temp. 22 °F Baro. Pressure P_b 29.97 "Hg
Barometer Number Q-7 Source Pressure P_s 0.2 "H₂

METHOD 18 FIELD DATA (Bag Sample)

[illegible]

AVG Rotometer Reading = 0.15 = 0.15 L/m

Volume_{TOTAL} = L/m x T_i (min) = 0.15 x 64 = 9.6 Liters

Collected Condensate + Rinse = _____ ml

QA/QC Check
Completeness ☒ Legibility ☒ Accuracy ☒ Specifications ☒ Reasonableness ☒

Checked by: _____

Rotometer # Vest meter 10 Probe Length 5'
Operator Johnson Sample Point Variable
Ambient Temp. 88 °F Baro. Pressure P_b 29.97 "Hg
Barometer Number 9-2 Source Pressure P_s 0.2 "H₂O

METHOD 18 FIELD DATA (Bag Sample)

[illegible]

AVG Rotometer Reading = 0.15 L/m Collected Condensate + Rinse = — ml

$$\text{Volume}_{\text{TOTAL}} = L/m \times T_i \text{ (min)} = 0.15 \times 64 = 9.6 \text{ Liters}$$

QA/QC Check
Completeness ☒ Legibility ☒ Accuracy ☒ Specifications ☒ Reasonableness ☒

Checked by: _____

Rotometer/Orifice # 10.0 cc/min
 Operator ج. ب. س. م.
 Ambient Temp. ٤٥ °F
 Barometer Number ٩-٢
 Initial Leak @ ١٥.٥ "Hg = ٦.٥ Δ "Hg
 Probe Length ٦٩
 Sample Point ٢٢.٦٣
 Purged Sample System ✓
 Baro. Pressure P_b ٢٩.٩٧ "
 Final Leak @ ١٥.٥ "Hg = ٦.٥

[illegible]

AVG Rotometer Reading = _____ = _____ L/m or Orifice Value = _____ L/m Collected Condensate + Rinse = _____ ml

Volume_{TOTAL} = L/m x T_i (min) = _____ x _____ = _____ Liters

QA/QC Check
Completeness / Legibility / Accuracy / Specifications / Reasonableness /

Rotometer/Orifice # 16.2 cc/min
 Operator محمد سالم
 Ambient Temp. 85 °F
 Barometer Number 9-2
 Initial Leak @ 15.5 "Hg = 5.5 Δ "Hg
 Probe Length Tap
 Sample Point Unit 3
 Purged Sample System ✓
 Baro. Pressure P_b 24.97 "H₂O
 Final Leak @ 15.5 "Hg = 5.5

CANISTER FIELD DATA

[illegible]

AVG Rotometer Reading = _____ = _____ L/m or Orifice Value = _____ L/m Collected Condensate + Rinse = _____ ml

Volume_{TOTAL} = L/m x T_i (min) = _____ x _____ = _____ Liters

QA/QC Check
Completeness / Legibility / Accuracy / Specifications / Reasonableness /

METCO Environmental

Job Number 10-523 / Moisture w/ Flows Field Data Ambient Temperature - °F 83
 Job Name Comm. Eng. Balance ID NA-1 Assumed Moisture - % —
 Run Number 2 @ Cond. 2 Check Weight ID NA-2000-1 Probe Length 4'
 Unit Unit 3 Actual Mass (g) 2000.0 C Factor — to reference
 Date 9-22-16 Measured Mass (g) 1999.5 Initial Leak @ 15.0 "Hg = 0.000 cfm
 Operator H. Davis / Johnson Difference (g)* 0.1 Final Leak @ 10.0 "Hg = 0.000 cfm
 Sample Box # 52-3 Meter # 9-1 Pitot Leak Check: Initial ✓ Final ✓ Pitot Tips Damaged during Test? Yes (No)
 Purge To (cf): —

Note: Read and record at the start of each test point

* must be equal to or less than 0.5 g

Point	Clock Time	Dry Gas Meter (cf)	Pitot "H ₂ O"	Orifice ΔH "H ₂ O" Desired	Orifice ΔH "H ₂ O" Actual	Pump Vacuum "Hg"	Stack Temp. °F	T _s			T _m			Remarks
								Probe Temp. °F	Oven/Filter Temp. °F	Effluent Temp. °F	Dry Gas Inlet Temp. °F	Dry Gas Outlet Temp. °F	Aux Temp. °F	
A 8	0840	505.761	0.001	1.00	1.00	5.0	1861	—	—	69	68	67	—	
7	0844	507.48	0.001	1.00	1.00	5.0	1855	—	—	66	68	67	—	
6	0848	509.61	0.002	1.00	1.00	5.0	1858	—	—	65	68	68	—	
5	0852	511.60	0.004	1.00	1.00	5.0	1116	—	—	62	68	68	—	
4	0856	513.59	0.003	1.00	1.00	5.0	962	—	—	61	68	68	—	
3	0900	515.17	0.004	1.00	1.00	5.0	999	—	—	61	69	68	—	
2	0904	518.27	0.005	1.00	1.00	5.0	1837	—	—	63	70	68	—	
1	0908	520.12	0.003	1.00	1.00	5.0	1823	—	—	64	71	68	—	
End	0912	522.439	—	—	—	—	—	—	—	—	—	—	—	
B 8	0914	522.439	0.003	1.00	1.00	5.0	1930	—	—	68	71	69	—	
7	0918	524.55	0.002	1.00	1.00	5.0	1914	—	—	65	71	69	—	
6	0922	526.45	0.003	1.00	1.00	5.0	1909	—	—	62	72	69	—	
5	0926	528.93	0.002	1.00	1.00	5.0	1787	—	—	62	72	69	—	
4	0930	531.26	0.004	1.00	1.00	5.0	1934	—	—	62	72	70	—	
3	0934	533.02	0.002	1.00	1.00	5.0	1833	—	—	63	72	70	—	
2	0938	535.43	0.007	1.00	1.00	5.0	1709	—	—	64	73	70	—	
1	0942	537.31	0.002	1.00	1.00	5.0	1722	—	—	64	73	70	—	
End	0946	539.695	—	—	—	—	—	—	—	—	—	—	—	

C_p Pitot Tube Cal. Factor 0.807 Pitot Tube # 9-3-2 Barometer # 9-2 Nozzle # —
 V_m Volume Collected - cf 33.863 P_b Barometric Pressure - "Hg 29.97 Total Volume of leak checks after start - cf —
 V_w Water Collected - ml 61.8 D_n Nozzle Diameter - in. 3.1 V_m = (DGM Cal Factor) 0.984 x (Net Volume Collected) 34.414
 T_i Time of Test - min. 64 %CO₂ 5.6 %CO 0.2 A_s = Area of Stack - in² 1025
 P_s Stack Pressure - "H₂O 0.2 %O₂ 12.6 %N₂ 81.8 {Dry Gas Meter Reading - ft³ - (T_i - min. X Leak Rate - cfm)]
 QA/QC Check ✓ Legibility ✓ Accuracy ✓ Specification ✓ Reasonableness ✓ Checked By ✓
 Completeness ✓

Impinger Box No. 52-3

Water Weight Gain

Impinger 1 Final Weight 814.7
 Initial Weight 776.5
 Increase 38.2

Impinger 2 Final Weight 786.2
 Initial Weight 780.2
 Increase 6.0

Impinger 3 Final Weight 658.1
 Initial Weight 656.1
 Increase 2.0

Impinger 4 Final Weight 1001.5
 Initial Weight 985.9
 Increase 15.6

Impinger 5 Final Weight _____
 Initial Weight _____
 Increase _____

Impinger 6 Final Weight _____
 Initial Weight _____
 Increase _____

Impinger 7 Final Weight _____
 Initial Weight _____
 Increase _____

SO₂ correction
 (if applicable)

V_w = _____
 g SO₂ = _____
 V_w = _____

Impinger 1 38.2

Impinger 2 6.0

Impinger 3 2.0

Impinger 4 15.6

Impinger 5 _____

Impinger 6 _____

Impinger 7 _____

Total 61.8 = V_w

%CO₂ = 5.6 3.1'
 %O₂ = 12.6 18.5' 10.26.16
 %CO = 0.0
 %N₂ = 81.8 70.4'
 A_s = 1.25
 D_n = _____
 T_t = 64

P_b = 29.97
 V_m = 33.863
 V_w = 61.8
 P_m = 1.000
 Avg ΔP = 0.003
 Avg √ΔP = 0.051
 C_p = 0.807
 P_s = 0.2 "H₂O
 T_m = 70 °F
 T_s = 1691 °F

29.98 "Hg
53.0 °R
2151 °R

Moisture Content: %M = 7.93 M_d = 0.9207 MW_d = 29.400 236'

10.26.16
 MW = 28.442 50.34'

$$V_{m_{std}} = 17.65 \times V_m \left| \frac{P_m}{P_b + 13.6} \right| = 17.65 \times \frac{33.863}{29.97 + 13.6} \times \left| \frac{1.000}{1 + 460} \right| = \frac{33.860}{0.529} \text{ sft}^3$$

$$V_{w_{gas}} = 0.0472 \times V_w = 0.0472 \times 61.8 = 2.917 \text{ sft}^3$$

$$\% \text{ Moisture} = \frac{V_{w_{gas}}}{V_{m_{std}} + V_{w_{gas}}} \times 100 = \frac{2.917}{2.917 + 33.880} \times 100 = 7.93 \%$$

$$V_s = 5123.8 \times \frac{0.051}{\sqrt{\frac{2151}{29.98 \times 28.442} \times 0.807}} = 338 \text{ fpm} \quad 6' \quad 10.26.16$$

$$ACFM = \frac{338}{4'} \quad 10.26.16$$

$$SCFM = 542$$

$$\%I = \frac{1039 \times \dots \times \dots}{\dots \times \dots \times \dots} = \dots \%$$

$$\%EA = 138.8 \quad 812.8'$$

$$V_s = 5123.8 \times \text{Avg } \sqrt{\Delta P} \times \sqrt{\frac{T_s(R)}{P_s("Hg) \times MW}} \times C_p = \text{fpm}$$

$$ACFM = (V_s \times A_s) / 144$$

$$SCFM = \frac{0.123 \times V_s \times A_s \times M_d \times P_s}{T_s}$$

$$\%I = \frac{1039 \times V_{m_{std}} \times T_s('R)}{P_s("Hg) \times M_d \times V_s \times T_t \times (D_n)^2}$$

METCO Environmental

Job Number 116-323 / Moisture of Flow Field Data
 Job Name Comma. Eng. / 114-1
 Run Number 4 e Cond. 2 / 114-2000-1
 Unit Unit 3 / 2000.0
 Date 9-12-16 / 1999.9
 Operator Ho/Ris/Johnson / 0.1
 Sample Box # 52-3 Meter # 9-1 Final ✓
 Purge To (cf): -
 Ambient Temperature - °F 91
 Assumed Moisture - % -
 Probe Length 4"
 C Factor - to reference
 Initial Leak @ 15.0 "Hg = 0.000 cfm
 Final Leak @ 10.0 "Hg = 0.000 cfm
 Pitot Tips Damaged during Test? Yes No

* must be equal to or less than 0.5 g

Note: Read and record at the start of each test point
 ΔP

Point	Clock Time	Dry Gas Meter (cf)	Pitot "H ₂ O"	Orifice ΔH "H ₂ O" Desired	Orifice ΔH "H ₂ O" Actual	Pump Vacuum "Hg"	Stack Temp. °F	Probe Temp. °F	Oven/Filter Temp. °F	Effluent Temp. °F	Dry Gas Inlet Temp. °F	Dry Gas Outlet Temp. °F	Aux Temp. °F	Remarks
B	1530	542.413	0.003	1.00	1.00	5.0	1839	-	-	70	72	72	-	
7	1534	544.55	0.003	1.00	1.00	5.0	1993	-	-	69	72	72	-	
6	1538	546.64	0.004	1.00	1.00	5.0	2038	-	-	60	72	73	-	
5	1542	549.03	0.002	1.00	1.00	5.0	1812	-	-	58	73	72	-	
4	1546	551.19	0.003	1.00	1.00	5.0	1767	-	-	58	73	73	-	
3	1550	553.30	0.004	1.00	1.00	5.0	2020	-	-	56	74	73	-	
2	1554	555.22	0.003	1.00	1.00	5.0	2124	-	-	56	75	74	-	
1	1558	557.26	0.002	1.00	1.00	5.0	2060	-	-	57	75	74	-	
End	1602	560.021	-	-	-	-	-	-	-	-	-	-	-	
A	1604	560.021	0.004	1.00	1.00	5.0	2034	-	-	63	75	73	-	
7	1608	562.11	0.004	1.00	1.00	5.0	2084	-	-	60	75	73	-	
6	1612	564.13	0.004	1.00	1.00	5.0	2040	-	-	58	76	74	-	
5	1616	566.41	0.003	1.00	1.00	5.0	1971	-	-	56	76	74	-	
4	1620	568.92	0.005	1.00	1.00	5.0	2048	-	-	60	76	74	-	
3	1624	571.52	0.004	1.00	1.00	5.0	2128	-	-	60	76	74	-	
2	1628	573.03	0.003	1.00	1.00	5.0	2024	-	-	58	77	74	-	
1	1632	575.15	0.005	1.00	1.00	5.0	1831	-	-	56	77	74	-	
End	1636	577.203	-	-	-	-	-	-	-	-	-	-	-	

C_p Pitot Tube Cal. Factor 0.807 / 9-2 Barometer # 9-2 / Nozzle # -
 V_m Volume Collected - cf 34.293 / Total Volume of leak checks after start - cf -
 V_w Water Collected - ml 68.8 / V_m = (DGM Cal Factor) 0.984 / x (Net Volume Collected) 34.790
 T_i Time of Test - min. 64 / A_s = Area of Stack - in² 1025
 P_s Stack Pressure - "H₂O" 0.2 / {Dry Gas Meter Reading - ft3 - (Tt - min. X Leak Rate - cfm)]
 QA/QC Check ✓ Legibility ✓ Accuracy ✓ Reasonableness ✓ Checked By ✓
 Completeness ✓ Specification ✓ 11-7-16

Impinger Box No. 52-3

Water Weight Gain

Impinger 1 Final Weight 864.2
Initial Weight 814.7
Increase 49.5

Impinger 2 Final Weight 792.5
Initial Weight 786.2
Increase 6.3

Impinger 3 Final Weight 660.4
Initial Weight 658.1
Increase 2.3

Impinger 4 Final Weight 1012.2
Initial Weight 1001.5
Increase 10.7

Impinger 5 Final Weight _____
Initial Weight _____
Increase _____

Impinger 6 Final Weight _____
Initial Weight _____
Increase _____

Impinger 7 Final Weight _____
Initial Weight _____
Increase _____

SO₂ correction
(if applicable)

V_w = _____
g SO₂ = _____
V_w = _____

Impinger 1 49.5

Impinger 2 6.3

Impinger 3 2.3

Impinger 4 10.7

Impinger 5 _____

Impinger 6 _____

Impinger 7 _____

Total 68.8 = V_w

%CO₂ = 50.26
%O₂ = 140.19.2 TR 11.7.16
%CO = 0.0
%N₂ = 81.078.2
A_s = 1025
D_n = _____
T_t = 64

P_b = 29.92
V_m = 34.233
V_w = 68.8
P_m = 1.000
Avg ΔP = 0.004
Avg √ΔP = 0.059
C_p = 0.807
P_s = 0.2 "H₂O
T_m = 74 °F
T_s = 1982 °F

29.93 "Hg
534 °R
2442 °R

Moisture Content: %M = 8.73 M_d = 0.9127 MW_d = 29.360

TR 11.7.16
MW = 28.31

$$V_{mstd} = 17.65 \times V_m \left| \frac{P_m}{P_b + 13.6} \right| = 17.65 \times \frac{34.233}{29.92 + 13.6} \times \frac{1.000}{74 + 460} = \frac{33.937}{0.530} \text{ sft}^3 \text{ scfm}$$

$$V_{wgas} = 0.0472 \times V_w = 0.0472 \times 68.8 = 3.247 \text{ sft}^3$$

$$\% \text{ Moisture} = \frac{V_{wgas}}{V_{mstd} + V_{wgas}} \times 100 = \frac{3.247}{3.247 + 33.937} \times 100 = 8.73 \%$$

$$V_s = 5123.8 \times 0.059 \times \sqrt{\frac{2442}{29.93 \times 28.31}} \times 0.807 = 414 \text{ fpm}$$

$$ACFM = \frac{53}{29.45} \text{ TR 11.7.16}$$

$$SCFM = 584$$

$$\%I = \frac{1039 \times \dots}{\dots} = \dots \%$$

$$\%EA = \frac{1260.7}{187.5} \text{ 1/14/16}$$

$$V_s = 5123.8 \times \text{Avg } \sqrt{\Delta P} \times \sqrt{\frac{T_s(R)}{P_s("Hg) \times MW}} \times C_p = \text{fpm}$$

$$ACFM = (V_s \times A_s) / 144$$

$$\%I = \frac{1039 \times V_{mstd} \times T_s("R)}{P_s("Hg) \times M_d \times V_s \times T_t \times (D_n)^2}$$

$$SCFM = \frac{0.123 \times V_s \times A_s \times M_d \times P_s}{T_s}$$

METCO Environmental

Job Number 16-323 / Comm. Eng. / 5 @ Cond. 2 / Unit 3 / 9-22-16 / Ab/Riss/Johnson / 52-3 Meter # 9-1 /

Job Name Comm. Eng. / 5 @ Cond. 2 / Unit 3 / 9-22-16 / Ab/Riss/Johnson / 52-3 Meter # 9-1 /

Run Number 5 @ Cond. 2 / Unit 3 / 9-22-16 / Ab/Riss/Johnson / 52-3 Meter # 9-1 /

Unit Unit 3 / 9-22-16 / Ab/Riss/Johnson / 52-3 Meter # 9-1 /

Date 9-22-16 / Ab/Riss/Johnson / 52-3 Meter # 9-1 /

Operator Ab/Riss/Johnson / 52-3 Meter # 9-1 /

Sample Box # 52-3 Meter # 9-1 /

Purge To (cf): 52-3 Meter # 9-1 /

Note: Read and record at the start of each test point ΔP

Balance ID M9-1 / M9-2000-1 / 2000.0 / 1999.9 / 0.1 / Final / ✓ /

Check Weight ID M9-2000-1 / 2000.0 / 1999.9 / 0.1 / Final / ✓ /

Actual Mass (g) 2000.0 / 1999.9 / 0.1 / Final / ✓ /

Measured Mass (g) 1999.9 / 0.1 / Final / ✓ /

Difference (g)* 0.1 / Final / ✓ /

Pitot Leak Check: Initial ✓ / Final / ✓ /

Purge Time ✓ /

Ambient Temperature - °F 82 /

Assumed Moisture - % - /

Probe Length 53 /

C Factor - /

Initial Leak @ 15.0 "Hg = 0.000 cfm

Final Leak @ 10.6 "Hg = 0.000 cfm

Pitot Tips Damaged during Test? Yes / No /

* must be equal to or less than 0.5 g

Point	Clock Time	Dry Gas Meter (cf)	Pitot "H ₂ O"	Orifice ΔH "H ₂ O" Desired	Orifice ΔH "H ₂ O" Actual	Pump Vacuum "Hg"	Stack Temp. °F	Probe Temp. °F	Oven/Filter Temp. °F	Effluent Temp. °F	Dry Gas Inlet Temp. °F	Dry Gas Outlet Temp. °F	Aux Temp. °F	Remarks
A 8	1700	517.665	0.004	1.00	1.00	5.0	2022	-	-	60	73	73	-	
1	1704	579.87	0.005	1.00	1.00	5.0	2084	-	-	59	72	73	-	
6	1708	582.25	0.004	1.00	1.00	5.0	2184	-	-	58	72	73	-	
5	1712	584.07	0.006	1.00	1.00	5.0	2067	-	-	60	72	73	-	
4	1714	586.17	0.004	1.00	1.00	5.0	2004	-	-	60	73	73	-	
3	1720	588.58	0.004	1.00	1.00	5.0	2120	-	-	62	73	73	-	
2	1724	590.73	0.003	1.00	1.00	5.0	2089	-	-	62	73	73	-	
1	1728	592.89	0.002	1.00	1.00	5.0	1958	-	-	64	73	73	-	
End	1732	594.940	-	-	-	-	-	-	-	-	-	-	-	
B 8	1736	594.940	0.002	1.00	1.00	5.0	2158	-	-	66	74	73	-	
1	1740	597.10	0.005	1.00	1.00	5.0	2091	-	-	64	74	73	-	
6	1744	599.32	0.004	1.00	1.00	5.0	1872	-	-	63	74	73	-	
5	1748	601.43	0.006	1.00	1.00	5.0	2015	-	-	61	74	73	-	
4	1752	603.64	0.008	1.00	1.00	5.0	2101	-	-	61	75	73	-	
3	1756	605.66	0.005	1.00	1.00	5.0	2046	-	-	62	75	73	-	
2	1800	607.71	0.003	1.00	1.00	5.0	1970	-	-	63	75	74	-	
1	1804	609.89	0.002	1.00	1.00	5.0	1960	-	-	63	75	74	-	
End	1808	611.958	-	-	-	-	-	-	-	-	-	-	-	

C_p Pitot Tube Cal. Factor 0.807 /

V_m Volume Collected - cf 33.744 /

V_w Water Collected - ml 61.6 /

T_i Time of Test - min. 64 /

P_s Stack Pressure - "H₂O" 0.2 /

QA/QC Check Completeness ✓ /

Pitot Tube # 9-3-2 /

Barometer # 9-2 /

Nozzle # - /

Total Volume of leak checks after start - cf - /

V_m = (DGM Cal Factor) 0.984 / x (Net Volume Collected) 34.293 /

A_s = Area of Stack - in² 1025 /

{Dry Gas Meter Reading - ft3 - (T_i - min. X Leak Rate - cfm)} 34.293 /

Reasonableness ✓ /

Checked By ✓ /

Version 3 April 2013

Impinger Box No. 52-7

Water Weight Gain

Impinger 1 Final Weight 912.6
Initial Weight 864.2
Increase 48.4

Impinger 2 Final Weight 798.9
Initial Weight 792.5
Increase 6.4

Impinger 3 Final Weight 661.3
Initial Weight 660.4
Increase 0.9

Impinger 4 Final Weight 1018.81
Initial Weight 1012.2
Increase 5.9

Impinger 5 Final Weight _____
Initial Weight _____
Increase _____

Impinger 6 Final Weight _____
Initial Weight _____
Increase _____

Impinger 7 Final Weight _____
Initial Weight _____
Increase _____

SO₂ correction
(if applicable)

V_w = _____
g SO₂ = _____
V_w = _____

Impinger 1 48.4

Impinger 2 6.4

Impinger 3 6.9

Impinger 4 5.9

Impinger 5 _____

Impinger 6 _____

Impinger 7 _____

Total 61.6 = V_w

P_b = 29.92 /
V_m = 33.744 /
V_w = 61.6 /
P_m = 1.000 /
Avg ΔP = 0.004 /

Avg √ΔP = 0.064 /
C_p = 0.807 /
P_s = 0.2 / "H₂O
T_m = 73 / °F
T_s = 2045 / °F

%CO₂ = 5.3 /
%O₂ = 13.3 /
%CO = 0.0 /
%N₂ = 81.4 /
A_s = 1025 /
D_n = _____ /
T_t = 64 /

29.92 / "Hg
533 / °R
2505 / °R

Moisture Content: %M = 7.99 / M_d = 0.1201 MW_d = 29.428

296 /
10.26.16 /
39 /
MW = 28.51

$$V_{mstd} = 17.65 \times V_m \left| \frac{P_m}{P_b + 13.6} \right| = 17.65 \times \frac{33.744}{29.92 + 13.6} \times \frac{1.000}{73 + 460} = \frac{33.504}{1.524} \frac{sft^3}{scfm}$$

$$V_{wgas} = 0.0472 \times V_w = 0.0472 \times 61.6 = 2.908 \text{ sft}^3$$

$$\% \text{ Moisture} = \frac{V_{wgas}}{V_{mstd} + V_{wgas}} \times 100 = \frac{2.908}{2.908 + 33.504} \times 100 = 7.99 \%$$

$$V_s = 5123.8 \times \frac{0.064}{\sqrt{\frac{2505}{29.92 \times 28.51}}} \times \frac{0.807}{4} = 453 \text{ fpm}$$

$$ACFM = \frac{35}{3228} \text{ TR } 10.26.16$$

$$SCFM = \frac{9}{628}$$

$$\%I = \frac{1039 \times \dots}{\dots} = \dots \%$$

$$\%EA = \frac{162.9}{540.6} \text{ TR } 10.26.16$$

$$V_s = 5123.8 \times \text{Avg } \sqrt{\Delta P} \times \sqrt{\frac{T_s(R)}{P_s("Hg) \times MW}} \times C_p = \text{fpm}$$

$$ACFM = (V_s \times A_s) / 144$$

$$SCFM = \frac{0.123 \times V_s \times A_s \times M_d \times P_s}{T_s}$$

$$\%I = \frac{1039 \times V_{mstd} \times T_s("R)}{P_s("Hg) \times M_d \times V_s \times T_t \times (D_n)^2}$$

Rotometer # Vost meter 10
 Operator Johnson
 Ambient Temp. 85 °F
 Barometer Number 9-2
 Probe Length 5'
 Sample Point Vac: 16h
 Baro. Pressure P_b 29.97 "Hg
 Source Pressure P_s 0.2 "H₂

METHOD 18 FIELD DATA (Bag Sample)

[illegible]

AVG Rotometer Reading = 0.15 = 0.15 L/m

$$\text{Volume}_{\text{TOTAL}} = L/m \times T_f (\text{min}) = \frac{6.15}{1} \times \frac{6.4}{1} = 9.6 \text{ Liters}$$

QA/QC Check
Completeness ☒ Legibility ☒ Accuracy ☒ Specifications ☒ Reasonableness ☒

Checked by: _____

Version 1
1 February 2008

Job Number 16-323
Job Name Comm Eng
Bag/Run Number 4 @ Canal 2
Location W-4 3
Date 9/22/16

Rotometer # Vost meter 10 Probe Length 5'
Operator Johnson Sample Point variable
Ambient Temp. 90 °F Baro. Pressure P_b 29.92 "Hg
Barometer Number 9-2 Source Pressure P_s 0.2 "H₂O

Rotometer # Vost meter 10
 Operator Johnson
 Ambient Temp. 88 °F
 Barometer Number 9-2
 Probe Length 5'
 Sample Point Variable
 Baro. Pressure P_b 29.91
 Source Pressure P_s 0.2

METHOD 18 FIELD DATA (Bag Sample)

[illegible]

AVG Rotometer Reading = 0.15 = 0.15 L/m

Volume_{TOTAL} = L/m x T₁ (min) = 0.15 x 24 = 3.6 Liters

Collected Condensate + Rinse = 1 ml

QA/QC Check
Completeness / Legibility / Accuracy / Specifications / Reasonableness /

Checked by: _____

Job Number 16-323
 Job Name Comm Eng.
 Run Number Cond 2 - Primary
 Date 9/22/16
 Canister Number 13271321
749 9/24/16

Rotometer/Orifice # 10.0 cc/min Probe Length Tap
 Operator Johnson Sample Point Unit 3
 Ambient Temp. °F Purged Sample System ✓
 Barometer Number 9-2 Baro. Pressure P_b 29.97 "Hg
 Initial Leak @ 15.0 "Hg = 0.0 Δ "Hg Final Leak @ 13.0 "Hg = 0.0 Δ "Hg

CANISTER FIELD DATA

CLOCK TIME	ROTOMETER READING	CANISTER PRESSURE "Hg	REMARKS
840	-	7 30.0	Start Run 2 Cond 2
944	-	29.0	End Run 2 Cond 2
1200	-	29.0	Start Run 3 Cond 2
9/22 1200 1204	-	29.0	End Run 3 Cond 2 + Run aborted due to fuel issues
1530	-	29.0	Start Run 4 Cond 2
1634	-	25.0	End Run 4 Cond 2
1700	-	25.0	Start Run 5 Cond 2
1804	-	23.0	End Run 5 Cond 2

AVG Rotometer Reading = = L/m or Orifice Value = L/m Collected Condensate + Rinse = ml
 Volume_{TOTAL} = L/m x T_i (min) = x = Liters

QA/QC Check
 Completeness ✓ Legibility ✓ Accuracy ✓ Specifications ✓ Reasonableness ✓

Job Number 16-323
 Job Name Comm Eng.
 Run Number Cond 2 - Secondary
 Date _____
 Canister Number 1620

Rotometer/Orifice # 10.2 cc/min Probe Length Tap
 Operator Johnson Sample Point Unit 3
 Ambient Temp. _____ °F Purged Sample System ☒
 Barometer Number _____ Baro. Pressure P_b 29.97 "Hg
 Initial Leak @ 15.0 "Hg = 0.0 Δ "Hg Final Leak @ 15.0 "Hg = 0.0 Δ "Hg

CANISTER FIELD DATA

CLOCK TIME	ROTOMETER READING	CANISTER PRESSURE "Hg	REMARKS
840	-	730.0	Start Run 2 Cond 2
944	-	29.0	End Run 2 Cond 2
1200	-	29.0	Start Run 3 Cond 2
1204	-	29.0	End Run 3 Cond 2 * Run 3 aborted due to fuel issues
1530	-	29.0	Start Run 4 Cond 2
1634	-	26.0	End Run 4 Cond 2
1700	-	26.0	Start Run 5 Cond 2
1804	-	24.0	End Run 5 Cond 2

AVG Rotometer Reading = _____ = _____ L/m or Orifice Value = _____ L/m Collected Condensate + Rinse = _____ ml
 Volume_{TOTAL} = L/m x T₁ (min) = _____ x _____ = _____ Liters

QA/QC Check / Legibility / Accuracy / Specifications / Reasonableness ☒

METCO Environmental

Job Number 10-323 1 Ambient Temperature - °F 65
 Job Name Common Eng Assumed Moisture - % —
 Run Number 10 Lead 3 Probe Length 55
 Unit 1000 3 C Factor — to reference
 Date 9-23-16 Initial Leak @ 15.0 "Hg = 0.000 cfm
 Operator H. P. Johnson Final Leak @ 10.0 "Hg = 0.000 cfm
 Sample Box # 52-3 Meter # 9-1 Pitot Tips Damaged during Test? Yes
 Purge To (cf): —

Note: Read and record at the start of each test point

* must be equal to or less than 0.5 g

Point	Clock Time	Dry Gas Meter (cf)	Pitot "H ₂ O"	Orifice ΔH "H ₂ O" Desired	Orifice ΔH "H ₂ O" Actual	Pump Vacuum "Hg"	Stack Temp. °F	T _s			T _m			Remarks
								Probe Temp. °F	Oven/Filter Temp. °F	Effluent Temp. °F	Dry Gas Inlet Temp. °F	Dry Gas Outlet Temp. °F	Aux Temp. °F	
A	0850	612.280	0.001	1.00	1.00	5.0	1437	—	—	68	70	68	—	
1	0854	614.41	0.002	1.00	1.00	5.0	1427	—	—	65	68	68	—	
6	0858	616.46	0.003	1.00	1.00	5.0	1703	—	—	61	69	68	—	
5	0902	618.48	0.001	1.00	1.00	5.0	1860	—	—	41	69	68	—	
4	0906	620.99	0.005	1.00	1.00	5.0	1756	—	—	62	69	68	—	
3	0910	622.95	0.006	1.00	1.00	5.0	1843	—	—	64	70	69	—	
2	0914	624.27	0.005	1.00	1.00	5.0	1819	—	—	64	71	69	—	
1	0918	627.57	0.003	1.00	1.00	5.0	1674	—	—	65	71	69	—	
End	0922	629.268	—	—	—	—	—	—	—	—	—	—	—	
B	0924	629.268	0.005	1.00	1.00	5.0	1928	—	—	69	72	70	—	
7	0928	631.55	0.003	1.00	1.00	5.0	1808	—	—	66	72	70	—	
6	0932	633.50	0.003	1.00	1.00	5.0	1823	—	—	62	72	70	—	
5	0936	635.37	0.006	1.00	1.00	5.0	1919	—	—	61	73	71	—	
4	0940	637.83	0.002	1.00	1.00	5.0	1927	—	—	61	73	71	—	
3	0944	639.57	0.004	1.00	1.00	5.0	1821	—	—	62	73	71	—	
2	0948	641.92	0.001	1.00	1.00	5.0	1802	—	—	62	74	71	—	
1	0952	643.21	0.001	1.00	1.00	5.0	1670	—	—	63	74	71	—	
End	0956	646.025	—	—	—	—	—	—	—	—	—	—	—	

C_p Pitot Tube Cal. Factor 0.807 Pitot Tube # 9-3-2 Barometer # 9-2 Nozzle # —
 V_m Volume Collected - cf 33.205 P_b Barometric Pressure - "Hg 30.01 Total Volume of leak checks after start - cf —
 V_w Water Collected - ml 68.4 D_n Nozzle Diameter - in. 5.9 4.6 %CO 00 V_m = (DGM Cal Factor) 0.904 x (Net Volume Collected) 33.745
 T_t Time of Test - min. 64 %CO₂ 12.1 16.4 %N₂ 81.4 19.0 {Dry Gas Meter Reading - ft³ - (T_t - min. X Leak Rate - cfm)}
 P_s Stack Pressure - "H₂O 0.2 Accuracy 10-26-16 Reasonableness ✓ Checked By —
 QA/QC Check Completeness — Legibility — Specification —

Impinger Box No. 52-3

Water Weight Gain

Impinger 1	Final Weight	<u>801.0</u>
	Initial Weight	<u>749.0</u>
	Increase	<u>52.0</u>
Impinger 2	Final Weight	<u>806.9</u>
	Initial Weight	<u>798.9</u>
	Increase	<u>7.9</u>
Impinger 3	Final Weight	<u>662.3</u>
	Initial Weight	<u>661.3</u>
	Increase	<u>1.0</u>
Impinger 4	Final Weight	<u>1025.6</u>
	Initial Weight	<u>1010.8</u>
	Increase	<u>7.5</u>
Impinger 5	Final Weight	_____
	Initial Weight	_____
	Increase	_____
Impinger 6	Final Weight	_____
	Initial Weight	_____
	Increase	_____
Impinger 7	Final Weight	_____
	Initial Weight	_____
	Increase	_____

SO₂ correction
(if applicable)

V_w = _____
g SO₂ = _____
V_w = _____

Impinger 1	<u>52.0</u>
Impinger 2	<u>7.9</u>
Impinger 3	<u>1.0</u>
Impinger 4	<u>7.5</u>
Impinger 5	_____
Impinger 6	_____
Impinger 7	_____

Total 60.4 = V_w

P_b = 30.01
V_m = 33.205
V_w = 60.4
P_m = 1.000
Avg ΔP = 0.003
Avg √ΔP = 0.054
C_p = 0.807
P_s = 0.2 "H₂O
T_m = 70 °F
T_s = 1788 °F

%CO₂ = 5.46
%O₂ = 12.76
%CO = 0.0
%N₂ = 81.79
A_s = 1025
D_n = _____
T_t = 64
30.02 "Hg
530 °R
2248 °R

Moisture Content: %M = 8.85 M_d = 0.9115 MW_d = 29.452

TR 10.26.16
MW = 28.43

$$V_{mstd} = 17.65 \times V_m \left| \frac{P_m}{P_b + 13.6} \right| = 17.65 \times \frac{33.205}{30.01 + 13.6} \times \frac{1.000}{70 + 460} = \frac{33.206}{0.520} \text{ sft}^3 \text{ scfm}$$

$$V_{wgas} = 0.0472 \times V_w = 0.0472 \times 60.4 = 2.838 \text{ sft}^3$$

$$\% \text{ Moisture} = \frac{V_{wgas}}{V_{mstd} + V_{wgas}} \times 100 = \frac{2.838}{3.228 + 33.206} \times 100 = 8.85 \%$$

$$V_s = 5123.8 \times 0.054 \times \sqrt{\frac{2248}{30.02 \times 28.43}} \times 0.807 = 362 \text{ fpm}$$

$$ACFM = \frac{82' \text{ TR } 10.26.16}{2579}$$

$$SCFM = \frac{556' \text{ TR } 10.26.16}{361.6'}$$

$$\%EA = \frac{60.5}{143.2}$$

$$\%I = \frac{1039 \times \dots \times \dots}{\dots \times \dots \times \dots \times \dots} = \dots \%$$

$$V_s = 5123.8 \times \text{Avg } \sqrt{\Delta P} \times \sqrt{\frac{T_s(R)}{P_s("Hg) \times MW}} \times C_p = \text{fpm}$$

$$ACFM = (V_s \times A_s) / 144$$

$$SCFM = \frac{0.123 \times V_s \times A_s \times M_d \times P_s}{T_s}$$

$$\%I = \frac{1039 \times V_{mstd} \times T_s("R)}{P_s("Hg) \times M_d \times V_s \times T_t \times (D_n)^2}$$

METCO Environmental

Job Number 16-323 / Moisture w/flow Field Data Ambient Temperature - °F 87

Job Name Comm. Eng. Balance ID M9-1 Assumed Moisture - % -

Run Number 2 @ Cond. 3 Check Weight ID M9-2020-1 Probe Length 55

Unit Unit 3 Actual Mass (g) 2000.0 C Factor - to reference

Date 9-23-16 Measured Mass (g) 1999.9 Initial Leak @ 15.0 "Hg = 0.000 cfm

Operator Hof Rios / Johnson Difference (g)* 0.1 Final Leak @ 10.0 "Hg = 0.000 cfm

Sample Box # 52-3 Meter # 9-1 Pitot Leak Check: Initial ✓ Final ✓ Pitot Tips Damaged during Test? Yes NO

Purge To (cf): -

* must be equal to or less than 0.5 g

Note: Read and record at the start of each test point

Point	Clock Time	Dry Gas Meter (cf)	Pitot "H ₂ O"	Orifice ΔH "H ₂ O" Desired	Orifice ΔH "H ₂ O" Actual	Pump Vacuum "Hg"	Stack Temp. °F	Probe Temp. °F	Oven/Filter Temp. °F	Effluent Temp. °F	Dry Gas Inlet Temp. °F	Dry Gas Outlet Temp. °F	Aux Temp. °F	Remarks
B 8	1015	646.372	0.001	1.00	1.00	5.0	1611	-	-	64	74	73	-	
7	1019	648.71	0.003	1.00	1.00	5.0	1123	-	-	65	74	73	-	
6	1023	650.97	0.005	1.00	1.00	5.0	1056	-	-	60	74	73	-	
5	1027	653.21	0.003	1.00	1.00	5.0	1032	-	-	60	75	73	-	
4	1031	655.58	0.005	1.00	1.00	5.0	1001	-	-	59	75	74	-	
3	1035	657.10	0.004	1.00	1.00	5.0	1089	-	-	59	75	74	-	
2	1039	659.71	0.002	1.00	1.00	5.0	1093	-	-	62	76	75	-	
1	1043	661.53	0.002	1.00	1.00	5.0	1746	-	-	63	76	74	-	
End	1047	663.627	-	-	-	-	-	-	-	-	-	-	-	
A 8	1049	663.627	0.002	1.00	1.00	5.0	1760	-	-	65	76	74	-	
7	1053	665.37	0.002	1.00	1.00	5.0	1756	-	-	62	77	75	-	
6	1057	667.99	0.004	1.00	1.00	5.0	1776	-	-	61	77	75	-	
5	1101	669.32	0.006	1.00	1.00	5.4	1790	-	-	61	78	75	-	
4	1105	672.50	0.002	1.00	1.00	5.0	1902	-	-	62	78	75	-	
3	1109	674.32	0.004	1.00	1.00	5.0	1872	-	-	62	78	76	-	
2	1113	676.71	0.002	1.00	1.00	5.0	1651	-	-	63	78	76	-	
1	1117	679.72	0.001	1.00	1.00	5.0	1733	-	-	63	78	76	-	
End	1121	680.524	-	-	-	-	-	-	-	-	-	-	-	

C_p Pitot Tube Cal. Factor 0.807 / Pitot Tube # 9-3-2 / Barometer # 9-2 / Nozzle # -

V_m Volume Collected - cf 33.606 / P_b Barometric Pressure - "Hg 30.01 / Total Volume of leak checks after start - cf -

V_w Water Collected - ml 68.3 / D_n Nozzle Diameter - in. 2.3 / %CO 00 / V_m = (DGM Cal Factor) 0.984 / x (Net Volume Collected) 40.152

T_i Time of Test - min. 64 / %CO₂ 12.7 / %N₂ 18.4 / A_s = Area of Stack - in² 1025

P_s Stack Pressure - "H₂O 0.7 / %O₂ 12.7 / {Dry Gas Meter Reading - ft³ - (T_i - min. X Leak Rate - cfm)]

QA/QC Check ✓ Legibility ✓ Accuracy ✓ Specification ✓ Reasonableness ✓ Checked By ✓

Impinger Box No. 52-3

Water Weight Gain

Impinger 1 Final Weight 853.9
 Initial Weight 801.0
 Increase 52.4

Impinger 2 Final Weight 813.8
 Initial Weight 806.8
 Increase 7.0

Impinger 3 Final Weight 663.7
 Initial Weight 662.3
 Increase 1.4

Impinger 4 Final Weight 952.5
 Initial Weight 945.0
 Increase 7.5

Impinger 5 Final Weight _____
 Initial Weight _____
 Increase _____

Impinger 6 Final Weight _____
 Initial Weight _____
 Increase _____

Impinger 7 Final Weight _____
 Initial Weight _____
 Increase _____

SO₂ correction
(if applicable)

V_w = _____
 g SO₂ = _____
 V_w = _____

Impinger 1 52.4

Impinger 2 7.0

Impinger 3 1.4

Impinger 4 7.5

Impinger 5 _____

Impinger 6 _____

Impinger 7 _____

Total 68.3 = V_w

%CO₂ = 2.3
 %O₂ = 12.7
 %CO = 0.0
 %N₂ = 81.2
 A_s = 1025
 D_n = _____
 T_t = 64

P_b = 30.01
 V_m = 33.606
 V_w = 68.3
 P_m = 1.000
 Avg ΔP = 0.003
 Avg √ΔP = 0.053
 C_p = 0.807
 P_s = 0.2
 T_m = 75
 T_s = 1790

"H₂O"
 °F
 °F

"Hg"
 °R
 °R

Moisture Content: %M = 0.81 M_d = 0.9119 MW_d = 29.489

TR 10.2616
 MW = 20.47

$$V_{m_{std}} = 17.65 \times V_m \left| \frac{P_m}{T_m + 460} \right| = 17.65 \times \frac{33.606}{75 + 460} \times \left| \frac{30.01 + 13.6}{75 + 460} \right| = \frac{33.353}{0.521} \text{ sft}^3 \text{ scfm}$$

$$V_{w_{gas}} = 0.0472 \times V_w = 0.0472 \times 68.3 = 3.224 \text{ sft}^3$$

$$\% \text{ Moisture} = \frac{V_{w_{gas}}}{V_{m_{std}} + V_{w_{gas}}} \times 100 = \frac{3.224}{3.224 + 33.353} \times 100 = 8.81 \%$$

$$V_s = 5123.8 \times 0.053 \times \sqrt{\frac{2250}{3002 \times 20.47}} \times 0.807 = 356 \text{ fpm}$$

$$ACFM = \frac{46}{2531} \text{ TR 11.7.16}$$

$$\%I = \frac{1039 \times \dots}{\dots} = \dots \%$$

$$SCFM = \frac{546}{9} \text{ TR 11.7.16}$$

$$V_s = 5123.8 \times \text{Avg } \sqrt{\Delta P} \times \sqrt{\frac{T_s(R)}{P_s("Hg) \times MW}} \times C_p = \text{fpm}$$

$$ACFM = (V_s \times A_s) / 144$$

$$\%I = \frac{1039 \times V_{m_{std}} \times T_s("R)}{P_s("Hg) \times M_d \times V_s \times T_t \times (D_n)^2}$$

$$SCFM = \frac{0.123 \times V_s \times A_s \times M_d \times P_s}{T_s}$$

METCO Environmental

Job Number 10-323 / Moisture flow / Field Data Ambient Temperature - °F 90
 Job Name Comm. Eng. / Balance ID M19-1 Assumed Moisture - % -
 Run Number Start 3 @ Cond. 3 / Check Weight ID M19-2000-1 Probe Length 55
 Unit 9-23-10 Unit 3 / Actual Mass (g) 2000.0 C Factor - to reference
 Date 9-23-16 / Measured Mass (g) 1999.9 Initial Leak @ 15.0 "Hg = 0.000 cfm
 Operator Hb / Rios / Johnson / Difference (g)* 0.1 Final Leak @ 10.0 "Hg = 0.000 cfm
 Sample Box # 52-3 Meter # 9-1 Pitot Leak Check: Initial ✓ Final ✓ Pitot Tips Damaged during Test? Yes
 Purge To (cf): - Purge Time -

Note: Read and record at the start of each test point

Point	Clock Time	Dry Gas Meter (cf)	Pitot "H ₂ O"	Orifice ΔH "H ₂ O" Desired	Orifice ΔH "H ₂ O" Actual	Pump Vacuum "Hg"	Stack Temp. °F	T _s			T _m			Remarks
								Probe Temp. °F	Oven/Filter Temp. °F	Effluent Temp. °F	Dry Gas Inlet Temp. °F	Dry Gas Outlet Temp. °F	Aux Temp. °F	
A 8	1140	680.865	0.002	1.00	1.00	5.0	1692	-	-	70	77	75	-	
7	1144	683.21	0.002	1.00	1.00	5.0	1765	-	-	68	77	75	-	
6	1148	685.12	0.004	1.00	1.00	5.0	1956	-	-	64	77	76	-	
5	1152	687.57	0.005	1.00	1.00	5.0	1721	-	-	62	78	76	-	
4	1156	689.92	0.005	1.00	1.00	5.0	1872	-	-	62	78	77	-	
3	1200	691.97	0.002	1.00	1.00	5.0	1878	-	-	61	78	77	-	
2	1204	693.64	0.005	1.00	1.00	5.0	1827	-	-	62	79	77	-	
1	1208	695.63	0.002	1.00	1.00	5.0	1698	-	-	63	79	78	-	
End	1212	697.744	-	-	-	-	-	-	-	-	-	-	-	
B 8	1214	697.744	0.001	1.00	1.00	5.0	1937	-	-	66	79	78	-	
7	1218	699.31	0.002	1.00	1.00	5.0	1783	-	-	63	79	78	-	
6	1222	701.97	0.001	1.00	1.00	5.0	1821	-	-	60	80	78	-	
5	1226	703.31	0.005	1.00	1.00	5.0	1839	-	-	61	80	78	-	
4	1230	705.45	0.004	1.00	1.00	5.0	1891	-	-	61	80	79	-	
3	1234	707.47	0.003	1.00	1.00	5.0	1765	-	-	62	81	79	-	
2	1238	709.23	0.005	1.00	1.00	5.0	1841	-	-	63	81	79	-	
1	1242	712.02	0.001	1.00	1.00	5.0	1789	-	-	63	81	79	-	
End	1246	714.686	-	-	-	-	-	-	-	-	-	-	-	

C_p Pitot Tube Cal. Factor 0.807 / Pitot Tube # 9-3-2 / Barometer # 9-2 / Nozzle # -
 V_m Volume Collected - cf 33.280 / P_b Barometric Pressure - "Hg 29.99 / Total Volume of leak checks after start - cf -
 V_w Water Collected - ml 62.4 / D_n Nozzle Diameter - in. 0.7 / V_m = (DGM Cal Factor) 0.984 / x (Net Volume Collected) 33.821
 T_i Time of Test - min. 64 / %CO₂ 12.1 / %CO 0.7 / A_s = Area of Stack - in² 1025 /
 P_s Stack Pressure - "H₂O 0.2 / %O₂ 12.1 / %N₂ 87.9 / {Dry Gas Meter Reading} ft3 - (Tt - min) X Leak Rate - cfm
 QA/QC Check ✓ / Legibility ✓ / Accuracy ✓ / Reasonableness ✓ / Checked By ✓

Impinger Box No. 58-3

Water Weight Gain

Impinger 1 Final Weight 899.1
Initial Weight 853.4
Increase 45.7

Impinger 2 Final Weight 820.6
Initial Weight 813.8
Increase 6.8

Impinger 3 Final Weight 665.8
Initial Weight 663.7
Increase 2.1

Impinger 4 Final Weight 950.3
Initial Weight 952.5
Increase 1.9

Impinger 5 Final Weight _____
Initial Weight _____
Increase _____

Impinger 6 Final Weight _____
Initial Weight _____
Increase _____

Impinger 7 Final Weight _____
Initial Weight _____
Increase _____

SO₂ correction
(if applicable)

V_w = _____
g SO₂ = _____
V_w = _____

Impinger 1 45.7

Impinger 2 6.8

Impinger 3 2.1

Impinger 4 7.8

Impinger 5 _____

Impinger 6 _____

Impinger 7 _____

Total 62.4 = V_w

%CO₂ = 6.5
%O₂ = 12.7
%CO = 0.0
%N₂ = 81.2
A_s = 1025
D_n = _____
T_t = 64

P_b = 29.99
V_m = 33.280
V_w = 62.4
P_m = 1.000
Avg ΔP = 0.003

Avg √ΔP = 0.051
C_p = 0.807
P_s = 1.2
T_m = 78
T_s = 178

"H₂O" 30.00
"R" 53.8
"R" 2277

Moisture Content: %M = 0.23 M_d = 0.9177 MW_d = 29.484 MW = 28.89

$$V_{m_{std}} = 17.65 \times V_m \times \left| \frac{P_m}{P_b + 13.6} \right| = 17.65 \times 33.280 \times \left| \frac{29.99 + 13.6}{78 + 460} \right| = \frac{32.824}{0.513} \text{ sft}^3 \text{ scfm}$$

$$V_{w_{gas}} = 0.0472 \times V_w = 0.0472 \times 62.4 = 2.945 \text{ sft}^3$$

$$\% \text{ Moisture} = \frac{V_{w_{gas}}}{V_{m_{std}} + V_{w_{gas}}} \times 100 = \frac{2.945}{2.945 + 32.824} \times 100 = 0.23 \%$$

$$V_s = 5123.8 \times 0.051 \times \sqrt{\frac{2277}{30.06 \times 28.89}} \times 0.807 = 336 \text{ fpm}$$

$$ACFM = \frac{2390 \times 2457}{11.7 \times 16}$$

$$SCFM = \frac{537 \times 526}{11.7 \times 16}$$

$$\%EA = \frac{34 \times 488.6}{37 \times 144.0}$$

$$\%I = \frac{1039 \times \dots \times \dots}{\dots \times \dots \times \dots \times \dots} = \dots \%$$

$$V_s = 5123.8 \times \text{Avg } \sqrt{\Delta P} \times \sqrt{\frac{T_s(R)}{P_s("Hg) \times MW}} \times C_p = \text{fpm}$$

$$ACFM = (V_s \times A_s) / 144$$

$$SCFM = \frac{0.123 \times V_s \times A_s \times M_d \times P_s}{T_s}$$

$$\%I = \frac{1039 \times V_{m_{std}} \times T_s("R)}{P_s("Hg) \times M_d \times V_s \times T_t \times (D_n)^2}$$

Rotometer # Vost meter 10
 Operator Johnson
 Ambient Temp. 80 °F
 Barometer Number 9-2
 Probe Length 5'
 Sample Point Variable
 Baro. Pressure P_b 30.91 "Hg
 Source Pressure P_s 0.2 "H₂O

METHOD 18 FIELD DATA (Bag Sample)

[illegible]

AVG Rotometer Reading = 0.15 = 0.15 L/m

Volume_{TOTAL} = L/m x T₁ (min) = 0.15 x 64 = 9.6 Liters

Collected Condensate + Rinse = 1 ml

QA/QC Check
Completeness ☒ Legibility ☒ Accuracy ☒ Specifications ☒ Reasonableness ☒

Checked by: _____

Version 1
1 February 2008

Rotometer # VOST sub meter 10
 Operator Johnson
 Ambient Temp. 80 °F
 Barometer Number 9-2
 Probe Length 5'
 Sample Point Vaciable
 Baro. Pressure P_b 30.01 "
 Source Pressure P_s 0.7

METHOD 18 FIELD DATA (Bag Sample)

[illegible]

AVG Rotometer Reading = 0.15 = 0.15 L/m

Volume_{TOTAL} = L/m x T₁ (min) = 0.15 x 964 = 9.6 Liters

Collected Condensate + Rinse = _____ ml

QA/QC Check
Completeness ✓ Legality ✓ Accuracy ✓ Specifications ✓ Reasonableness ✓

Checked by: _____

Version 1
1 February 2008

Rotometer # Vost route 10 Probe Length 5'
Operator Johnson Sample Point Variable
Ambient Temp. ' °F Baro. Pressure P_b 29.99 "
Barometer Number 9-2 Source Pressure P_s 0.2

[illegible]
$$\text{Volume}_{\text{TOTAL}} = L/m \times T_1 (\text{min}) = 0.15 \times 64 = 9.6 \text{ Liters}$$
Version 1
1 February 2008

Rotometer/Orifice # 16.0 cc/min
Operator J. Johnson
Ambient Temp. 85 °F
Barometer Number 9-2
Initial Leak @ 15.0 "Hg = 0.00 Δ "Hg

Probe Length Tap
Sample Point Unit 3
Purged Sample System ✓
Baro. Pressure P_b 29.95 "Hg
Final Leak @ 15.5 "Hg = 0.00 L/min

Initial Leak @ 15.0 "Hg = 6.6 Δ "Hg
Final Leak @ 15.5 "Hg = 6.0 Δ "Hg

CANISTER FIELD DATA

[illegible]

AVG Rotometer Reading = _____ = _____ L/m or Orifice Value = _____ L/m Collected Condensate + Rinse = _____ ml

Volume_{TOTAL} = L/m x T_i (min) = _____ x _____ = _____ Liters

QA/QC Check
Completeness / Legibility / Accuracy / Specifications / Reasonableness / 

Rotometer/Orifice # 10.2 cc/min Probe Length Tap
Operator Johnson Sample Point Unit 3
Ambient Temp. 25 °F Purged Sample System ✓
Barometer Number 9-2 Baro. Pressure P_b 29.95 "Hg
Initial Leak @ 15.0 "Hg = 0.0 Δ "Hg Final Leak @ 13.5 "Hg = 0.0

CANISTER FIELD DATA

[illegible]

AVG Rotometer Reading = _____ = _____ L/m or Orifice Value = _____ L/m Collected Condensate + Rinse = _____ ml

Volume_{TOTAL} = L/m x T_i (min) = _____ x _____ = _____ Liters

QA/QC Check
Completeness _____ Legibility _____ Accuracy _____ Specifications _____ Reasonableness _____

METCO Environmental

Job Number 10-323 / Moisture w/ flows Field Data
 Job Name Comm. Eng. / 19-1
 Run Number 1 @ Cond. 4 / 19-2000-1
 Unit Unit 3 / 2000.0
 Date 9-23-16 / 1999.9
 Operator Ab / Kim / Johnson / 0.1
 Sample Box # 52-3 Meter # 9-1 / ✓ Final ✓
 Purge To (cf): - / -

Ambient Temperature - °F 69.3
 Assumed Moisture - % -
 Probe Length 5.3
 C Factor - to reference
 Initial Leak @ 15.0 "Hg = 0.000 cfm
 Final Leak @ 16.0 "Hg = 0.000 cfm
 Pitot Tips Damaged during Test? Yes No

* must be equal to or less than 0.5 g

Note: Read and record at the start of each test point

Point	Clock Time	Dry Gas Meter (cf)	Pitot "H ₂ O"	Orifice ΔH "H ₂ O" Desired	Orifice ΔH "H ₂ O" Actual	Pump Vacuum "Hg"	Stack Temp. °F	Probe Temp. °F	Oven/Filter Temp. °F	Effluent Temp. °F	T _m		Remarks
											Dry Gas Inlet Temp. °F	Dry Gas Outlet Temp. °F	
B	1440	715.058	0.001	1.00	1.00	5.0	1718	-	-	69	78	78	-
7	1444	717.32	0.001	1.00	1.00	5.0	1731	-	-	66	78	78	-
6	1448	719.24	0.002	1.00	1.00	5.0	1661	-	-	62	78	78	-
5	1452	721.45	0.001	1.00	1.00	5.0	1682	-	-	60	79	78	-
4	1456	723.71	0.002	1.00	1.00	5.0	1639	-	-	60	79	78	-
3	1500	725.31	0.002	1.00	1.00	5.0	1650	-	-	61	79	74	-
2	1504	727.89	0.001	1.00	1.00	5.0	1731	-	-	61	80	79	-
1	1508	730.72	0.002	1.00	1.00	5.0	1718	-	-	62	81	79	-
End	1512	732.025	-	-	-	-	-	-	-	-	-	-	-
A	1514	732.025	0.001	1.00	1.00	5.0	1759	-	-	64	81	79	-
7	1518	734.65	0.001	1.00	1.00	5.0	1677	-	-	62	81	79	-
6	1522	736.53	0.002	1.00	1.00	5.0	1721	-	-	61	81	79	-
5	1526	738.92	0.001	1.00	1.00	5.0	1702	-	-	61	81	79	-
4	1530	740.67	0.002	1.00	1.00	5.0	1616	-	-	61	82	80	-
3	1534	742.51	0.001	1.00	1.00	5.0	1699	-	-	62	82	80	-
2	1538	744.56	0.001	1.00	1.00	5.0	1717	-	-	62	82	80	-
1	1542	746.75	0.002	1.00	1.00	5.0	1623	-	-	62	82	80	-
End	1546	748.945	-	-	-	-	-	-	-	-	-	-	-

C_p Pitot Tube Cal. Factor 0.807 / 9-2 Barometer # 9-2 Nozzle # -
 V_m Volume Collected - cf 33.345 / 9-2 Total Volume of leak checks after start - cf -
 V_w Water Collected - ml 674 / 9-2 V_m = (DGM Cal Factor) 0.904 / 9-2 x (Net Volume Collected) 33.887
 T_i Time of Test - min. 64 / 1025 A_s = Area of Stack - in² 1025
 P_s Stack Pressure - "H₂O" 0.1 / 163.13.8 %N₂ 815.80.1 {Dry Gas Meter Reading - ft3 - (Tt - min. X Leak Rate - cfm)}
 QA/QC Check Completeness ✓ Legibility ✓ Accuracy ✓ Reasonableness ✓ Checked By ✓

Impinger Box No. 52-3

Water Weight Gain

Impinger 1 Final Weight 950.2
Initial Weight 899.1
Increase 51.1

Impinger 2 Final Weight 828.2
Initial Weight 820.6
Increase 7.4

Impinger 3 Final Weight 667.2
Initial Weight 665.8
Increase 1.4

Impinger 4 Final Weight 967.8
Initial Weight 960.3
Increase 7.5

Impinger 5 Final Weight _____
Initial Weight _____
Increase _____

Impinger 6 Final Weight _____
Initial Weight _____
Increase _____

Impinger 7 Final Weight _____
Initial Weight _____
Increase _____

SO₂ correction
(if applicable)

V_w = _____
g SO₂ = _____
V_w = _____

Impinger 1 51.1

Impinger 2 7.4

Impinger 3 1.4

Impinger 4 7.5

Impinger 5 _____

Impinger 6 _____

Impinger 7 _____

Total 67.4 = V_w

%CO₂ = 6.8
%O₂ = 13.8
%CO = 100
%N₂ = 80.1
A_s = 1025
D_n = _____
T_t = 64

P_b = 29.95
V_m = 33.345
V_w = 67.4
P_m = 1.000
Avg ΔP = 0.001
Avg √ΔP = 0.031
C_p = 0.807
P_s = 0.1
T_m = 80
T_s = 1091

"H₂O"
"F"
"F"

29.96 "Hg
540 "R
2151 "R

Moisture Content: %M = 8.86 M_d = 0.9114 MW_d = 29.55

28.58

$$V_{m_{std}} = 17.65 \times V_m \left| \frac{P_m}{P_b + 13.6} \right| = 17.65 \times \frac{33.345}{29.95 + 13.6} \times \frac{1.000}{80 + 460} = \frac{32.722}{0.511} \text{ sft}^3 \text{ scfm}$$

$$V_{w_{gas}} = 0.0472 \times V_w = 0.0472 \times 67.4 = 3.181 \text{ sft}^3$$

$$\% \text{ Moisture} = \frac{V_{w_{gas}}}{V_{m_{std}} + V_{w_{gas}}} \times 100 = \frac{3.181}{3.181 + 32.722} \times 100 = 8.86 \%$$

$$V_s = 5123.8 \times 0.031 \times \sqrt{\frac{2151}{2996 \times 28.58}} \times 0.807 = 928 \text{ fpm}$$

$$ACFM = \frac{6664 \times 1728}{10.26 \times 16} = 1105$$

$$SCFM = \frac{1485 \times 389}{185.8 \times 8 \times 9.2} = 108.9$$

$$\%EA = \frac{66.5 \times 108.9}{10.26 \times 16} = 4.2$$

$$\%I = \frac{1039 \times \dots \times \dots}{\dots \times \dots \times \dots \times \dots} = \dots \%$$

$$V_s = 5123.8 \times \text{Avg } \sqrt{\Delta P} \times \sqrt{\frac{T_s(R)}{P_s("Hg) \times MW}} \times C_p = \text{fpm}$$

$$ACFM = (V_s \times A_s) / 144$$

$$SCFM = \frac{0.123 \times V_s \times A_s \times M_d \times P_s}{T_s}$$

$$\%I = \frac{1039 \times V_{m_{std}} \times T_s(R)}{P_s("Hg) \times M_d \times V_s \times T_t \times (D_n)^2}$$

METCO Environmental

Job Number 16-323 / Moisture of Flows / Field Data
 Job Name Comm. Eng / Balance ID 119-1 / Ambient Temperature - °F 85
 Run Number 20 Cond. 4 / Check Weight ID 119-2000-1 / Assumed Moisture - % —
 Unit Unit 3 / Actual Mass (g) 2000.0 / Probe Length 55
 Date 9-23-16 / Measured Mass (g) 1999.9 / C Factor — to reference
 Operator H. / P. / Schusala / Difference (g)* 0.1 / Initial Leak @ 15.0 "Hg = 0.000 cfm
 Sample Box # 52-3 / Meter # 9-1 / Pitot Leak Check: Initial ✓ Final ✓ / Final Leak @ 15.0 "Hg = 0.000 cfm
 Purge To (cf): — / Pitot Tips Damaged during Test? Yes (N)

* must be equal to or less than 0.5 g

Note: Read and record at the start of each test point

Point	Clock Time	Dry Gas Meter (cf)	Pitot "H ₂ O"	Orifice ΔH "H ₂ O" Desired	Orifice ΔH "H ₂ O" Actual	Pump Vacuum "Hg"	Stack Temp. °F	Probe Temp. °F	Oven/Filter Temp. °F	Effluent Temp. °F	T _m			Remarks
											Dry Gas Inlet Temp. °F	Dry Gas Outlet Temp. °F	Aux Temp. °F	
A 8	1557	749.248	0.001	1.00	1.00	5.0	1744	—	—	68	81	79	—	
7	1601	751.70	0.001	1.00	1.00	5.0	1751	—	—	66	81	79	—	
6	1605	753.45	0.002	1.00	1.00	5.0	1697	—	—	66	81	79	—	
5	1609	754.91	0.002	1.00	1.00	5.0	1665	—	—	64	81	79	—	
4	1613	758.27	0.001	1.00	1.00	5.0	1716	—	—	61	82	79	—	
3	1617	740.05	0.002	1.00	1.00	5.0	1705	—	—	62	82	80	—	
2	1621	742.52	0.002	1.00	1.00	5.0	1651	—	—	63	82	80	—	
1	1625	744.53	0.001	1.00	1.00	5.0	1732	—	—	63	82	80	—	
End	1629	746.519	—	—	—	—	—	—	—	—	—	—	—	
B 8	1631	746.5 (9)	0.001	1.00	1.00	5.0	1631	—	—	66	82	80	—	
7	1635	746.49	0.002	1.00	1.00	5.0	1680	—	—	64	82	80	—	
6	1639	770.52	0.002	1.00	1.00	5.0	1718	—	—	61	82	80	—	
5	1643	742.31	0.001	1.00	1.00	5.0	1756	—	—	60	82	80	—	
4	1647	774.53	0.002	1.00	1.00	5.0	1720	—	—	60	82	80	—	
3	1651	777.32	0.001	1.00	1.00	5.0	1711	—	—	62	82	80	—	
2	1655	779.59	0.002	1.00	1.00	5.0	1618	—	—	63	82	80	—	
1	1659	781.41	0.001	1.00	1.00	5.0	1719	—	—	62	82	80	—	
End	1703	783.545	—	—	—	—	—	—	—	—	—	—	—	

C_p Pitot Tube Cal. Factor 0.807 / Pitot Tube # 9-3-2 / Barometer # 9-2 / Nozzle # —
 V_m Volume Collected - cf 33.748 / P_b Barometric Pressure - "Hg 29.92 / Total Volume of leak checks after start - cf —
 V_w Water Collected - ml 66.5 / D_n Nozzle Diameter - in. — / V_m = (DGM Cal Factor) 0.984 / x (Net Volume Collected) 34.297
 T_i Time of Test - min. 64 / %CO₂ 0.0 / A_s = Area of Stack - in² 1025 /
 P_s Stack Pressure - "H₂O 0.2 / %O₂ 16.8 14.9 / %N₂ 81.5 79.7 / {Dry Gas Meter Reading - ft3 - (Tt - min. X Leak Rate - cfm)}
 QA/QC Check ✓ / Legibility ✓ / Accuracy ✓ / Reasonableness ✓ / Checked By ✓

Impinger Box No. 52-3

Water Weight Gain

Impinger 1 Final Weight 815.9
Initial Weight 767.1
Increase 48.8

Impinger 2 Final Weight 835.6
Initial Weight 828.0
Increase 7.6

Impinger 3 Final Weight 669.5
Initial Weight 667.2
Increase 2.3

Impinger 4 Final Weight 915.4
Initial Weight 967.8
Increase 7.6

Impinger 5 Final Weight _____
Initial Weight _____
Increase _____

Impinger 6 Final Weight _____
Initial Weight _____
Increase _____

Impinger 7 Final Weight _____
Initial Weight _____
Increase _____

SO₂ correction
(if applicable)

V_w = _____
g SO₂ = - _____
V_w = _____

Impinger 1 48.8

Impinger 2 7.6

Impinger 3 2.3

Impinger 4 7.6

Impinger 5 _____

Impinger 6 _____

Impinger 7 _____

Total 100.5 = V_w

%CO₂ = 6.1 5.4'
%O₂ = 16.1 14.9'
%CO = 0.0 10.26.16
%N₂ = 81.5 79.7'
A_s = 1025
D_n = _____
T_t = 104

P_b = 29.92
V_m = 33.748
V_w = 66.5
P_m = 1.000
Avg ΔP = 0.002
Avg √ΔP = 0.038
C_p = 0.007
P_s = 0.2 "H₂O
T_m = 81 °F
T_s = 1701 °F

29.93 "Hg
541 °R
2161 °R

Moisture Content: %M = 8.68 M_d = 0.9132 MW_d = 29.844 460'

10.26.16 47'
MW = 28.54

$$V_{m_{std}} = 17.65 \times V_m \left| \frac{P_m}{P_b + 13.6} \right| = 17.65 \times \frac{33.748}{29.92 + 13.6} \times \left| \frac{1.000}{81 + 460} \right| = \frac{33.023}{0.516} \frac{sft^3}{scfm}$$

$$V_{w_{gas}} = 0.0472 \times V_w = 0.0472 \times 66.5 = 3.139 \text{ sft}^3$$

$$\% \text{ Moisture} = \frac{V_{w_{gas}}}{V_{m_{std}} + V_{w_{gas}}} \times 100 = \frac{3.139}{3.139 + 33.023} \times 100 = 8.68 \%$$

$$V_s = 5123.8 \times 0.038 \sqrt{\frac{2161}{29.93 \times 28.54}} \times 0.007 = 250' \text{ fpm}$$

81' 10.26.16
ACFM = 1771

SCFM = 399

$$\%I = \frac{1039 \times \dots \times \dots}{\dots \times \dots \times \dots \times \dots} = \dots \%$$

%EA = 120.4 239.5'
10.26.16

$$V_s = 5123.8 \times \text{Avg } \sqrt{\Delta P} \times \sqrt{\frac{T_s(R)}{P_s("Hg) \times MW}} \times C_p = \text{fpm}$$

$$\text{ACFM} = (V_s \times A_s) / 144$$

$$\text{SCFM} = \frac{0.123 \times V_s \times A_s \times M_d \times P_s}{T_s}$$

$$\%I = \frac{1039 \times V_{m_{std}} \times T_s('R)}{P_s("Hg) \times M_d \times V_s \times T_t \times (D_n)^2}$$

METCO Environmental

Job Number 16-323 Ambient Temperature - °F 88
 Job Name Comm. Eng. Assumed Moisture - % -
 Run Number 3 @ Cond. 4 Probe Length 55
 Unit Unit 3 C Factor - to reference
 Date 9-23-16 Initial Leak @ 15.0 "Hg = 0.000 cfm
 Operator Hb/Dick/Johnson Final Leak @ 12.0 "Hg = 0.000 cfm
 Sample Box # 52-3 Meter # 9-1 Pitot Tips Damaged during Test? Yes
 Purge To (cf): -

Note: Read and record at the start of each test point

Point	Clock Time	Dry Gas Meter (cf)	Pitot "H ₂ O"	Orifice ΔH "H ₂ O" Desired	Orifice ΔH "H ₂ O" Actual	Pump Vacuum "Hg"	Stack Temp. °F	T _s			T _m			Remarks
								Probe Temp. °F	Oven/Filter Temp. °F	Effluent Temp. °F	Dry Gas Inlet Temp. °F	Dry Gas Outlet Temp. °F	Aux Temp. °F	
B 8	1715	783.985	0.002	1.00	1.00	5.0	1711	-	-	69	81	80	-	
7	1719	785.73	0.002	1.00	1.00	5.0	1682	-	-	64	81	80	-	
6	1723	781.32	0.001	1.00	1.00	5.0	1687	-	-	62	80	79	-	
5	1727	789.71	0.002	1.00	1.00	5.0	1731	-	-	60	80	79	-	
4	1731	792.82	0.002	1.00	1.00	5.0	1788	-	-	60	80	80	-	
3	1735	794.51	0.001	1.00	1.00	5.0	1765	-	-	61	80	80	-	
2	1739	796.18	0.001	1.00	1.00	5.0	1663	-	-	61	80	79	-	
1	1743	798.52	0.001	1.00	1.00	5.0	1702	-	-	61	80	79	-	
End	1747	800.475	-	-	-	-	-	-	-	-	-	-	-	
A 8	1749	800.475	0.001	1.00	1.00	5.0	1723	-	-	69	80	79	-	
7	1753	802.31	0.002	1.00	1.00	5.0	1707	-	-	66	80	79	-	
6	1757	804.79	0.001	1.00	1.00	5.0	1649	-	-	64	80	79	-	
5	1801	806.73	0.002	1.00	1.00	5.0	1731	-	-	63	80	79	-	
4	1805	809.14	0.002	1.00	1.00	5.0	1711	-	-	61	80	79	-	
3	1809	811.56	0.001	1.00	1.00	5.0	1684	-	-	63	80	79	-	
2	1813	812.31	0.001	1.00	1.00	5.0	1721	-	-	64	80	78	-	
1	1817	815.59	0.002	1.00	1.00	5.0	1776	-	-	63	80	78	-	
End	1821	817.542	-	-	-	-	-	-	-	-	-	-	-	

C_p Pitot Tube Cal. Factor 0.807 Barometer # 9-2 Nozzle # -
 V_m Volume Collected - cf 33.118 Total Volume of leak checks after start - cf -
 V_w Water Collected - ml 65.3 V_m = (DGM Cal Factor) 0.984 x (Net Volume Collected) 33.651
 T_i Time of Test - min. 6.1 A_s = Area of Stack - in² 1025
 P_s Stack Pressure - "H₂O" 0.1 {Dry Gas Meter Reading ft3 - (Tt - min. X Leak Rate - cfm)}
 QA/QC Check Completeness / Legibility / Accuracy / Reasonableness / Checked By /
 Version 3 April 2013

Rotometer # VOST water-10
Operator Johanna
Ambient Temp. 89 °F
Barometer Number 9-2

Probe Length 5'
Sample Point various
Baro. Pressure P_b 29.95"
Source Pressure P_s 0.1 ^{14.7} psi 0.1 x 14.7 = 1.47 psi

METHOD 18 FIELD DATA (Bag Sample)

[illegible]

AVG Rotometer Reading = 0.15 = 0.15 L/m

Volume_{TOTAL} = L/m x T₁ (min) = 0.15 x 64 = 9.6 Liters

Collected Condensate + Rinse = — ml

QA/QC Check
 Completeness ☒ Legibility ☒ Accuracy ☒ Specifications ☒ Reasonableness ☒

Checked by: _____

Version 1
1 February 2008

Rotometer # VOST water 10 Probe Length 5'
Operator Johnson Sample Point Variable
Ambient Temp. 89 °F Baro. Pressure P_b 29.92 "Hg
Barometer Number 9-2 Source Pressure P_s 0.2 "H₂O

METHOD 18 FIELD DATA (Bag Sample)

[illegible]

AVG Rotometer Reading = 0.15 = 0.15 L/m

Volume_{TOTAL} = L/m x T₁ (min) = 0.15 x 64 = 9.6 Liters

Collected Condensate + Rinse = 1 ml

QA/QC Check
Completeness ☒ Legibility ☒ Accuracy ☒ Specifications ☒ Reasonableness ☒

Checked by: _____

Version 1
1 February 2008

Rotometer # VOST meter 16
 Operator Johnson
 Ambient Temp. 89 °F
 Barometer Number 9-2
 Probe Length 5'
 Sample Point Variable
 Baro. Pressure P_b 29.92"
 Source Pressure P_s 0.

METHOD 18 FIELD DATA (Bag Sample)

[illegible]

AVG Rotometer Reading = 0.15 = 0.15 L/m

Volume_{TOTAL} = L/m x T₁ (min) = 0.15 x 64 = 9.6 Liters

Collected Condensate + Rinse = — ml

QA/QC Check
Completeness Legibility Accuracy Specifications Reasonableness

Checked by:

Version 1
1 February 2008

Rotometer/Orifice # 16.0 cc/min Probe Length 5' Tap
 Operator Jabson Sample Point Tap Unit 3
 Ambient Temp. 89 °F Purged Sample System ✓
 Barometer Number 9-2 Baro. Pressure P_b 29.92 "
 Initial Leak @ 15.0 "Hg = 0.0 Δ "Hg Final Leak @ 15.0 "Hg = 0.0

CANISTER FIELD DATA

[illegible]

AVG Rotometer Reading = _____ = _____ L/m or Orifice Value = _____ L/m Collected Condensate + Rinse = _____ ml

Volume_{TOTAL} = L/m x T_i (min) = _____ x _____ = _____ Liters

QA/QC Check	Legibility	Accuracy	Specifications	Reasonableness
Completeness	✓	✓	✓	✓

Rotometer/Orifice # 10.2 cc/min
Operator Johnson
Ambient Temp. 89 °F
Barometer Number 9-2
Initial Leak @ 15.0 "Hg = 0.0 Δ "Hg

Probe Length Tap
 Sample Point Unit 3
 Purged Sample System ☒
 Baro. Pressure P_b 29.95 "Hg
 Final Leak @ 14.5 "Hg = 0.0

CANISTER FIELD DATA

[illegible]

AVG Rotometer Reading = _____ = _____ L/m or Orifice Value = _____ L/m Collected Condensate + Rinse = _____ ml

$\text{Volume}_{\text{TOTAL}} = \text{L/m} \times T_i (\text{min}) = \text{_____} \times \text{_____} = \text{_____} \text{ Liters}$

QA/QC Check
Completeness / Legibility / Accuracy / Specifications / Reasonableness /

Preliminary Velocity, Traverse
Data, and Sample Location Data
for Round Sources

Project Name
Job Number
Sampling Location
Date
Time
Stack/Duct Height
Sampling Port Height Above Ground (ft)

COMM Engineering
16-323
Lafayette, LA
9/21/2016
8:50
Unit 3

	Port A	Port B	Port C	Port D	Average
Port and Inside Diameter (in.)	39 1/4	39 1/4			39 1/4
Port and Wall Thickness (in.)	3 1/8	3 1/8			3 1/8
Inside Stack Diameter (in.)	36 1/8	36 1/8			36 1/8
Stack Area (in. ²)	1025				

Downstream Disturbance
Upstream Disturbance

Other
Outlet

Downstream disturbance is the tip of the flame which is 1' above burner

Distance between Sampling Points
and Downstream Disturbance:
Distance between Sampling Points
and Upstream Disturbance :

12	ft	2	in.	4.04	Diameters Downstream from Disturbance
3	ft	3	in.	1.08	Diameters Upstream from Disturbance

Minimum Non-Isokinetic Sampling Points
Minimum Isokinetic Sampling Points
Actual Number of Sampling Points (per port)
Number of Sampling Ports
Total Sampling Points

16
24
8
2
16

Point Number	Percent Diameter	Distance from Reference Point (decimal in.)	Distance from Reference Point (fractional in.)	Port A			Port B			Port C			Port D		
				ΔP	T _s	α	ΔP	T _s	α	ΔP	T _s	α	ΔP	T _s	α
1	3.2	1.156	1 2/16			0			0						
2	10.5	3.793	3 13/16			0			0						
3	19.4	7.008	7			0			0						
4	32.3	11.668	11 11/16			0			0						
5	67.7	24.457	24 7/16			0			0						
6	80.6	29.117	29 1/8			0			0						
7	89.5	32.332	32 5/16			0			0						
8	96.8	34.969	35			0			0						
9															
10															
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															
21															
22															
23															
24															

Pitot Tube Number
Pitot Cal. - C_p
Barometric Pressure - "Hg
Stack Pressure - "H₂O

Avg ΔP
Avg VΔP
Avg. Stack Temperature - °F
Average Abs. Angle of Flow (α) - °

0.00

APPENDIX E

Analytical Data

METCO Environmental

3226 Commander Drive
Carrollton, TX 75006

Comm Engineering
Lafayette, LA
Unit 3
Client # 16-323

Analytical Report (0816-140BR)

EPA Method 3C

Hydrogen, Oxygen, Nitrogen, Carbon monoxide, Methane, Carbon dioxide

EPA Method 18-Type

Methane, Ethane, Propane, Butane, Pentane, Hexane, Benzene, Propylene
Others as Cx Compounds
Total Volatile Organic Compounds reported as Propylene

ASTM D1946-90

Hydrogen, Oxygen, Nitrogen, Carbon monoxide, Methane, Carbon dioxide

Btu and Mixed Molecular Weight Determinations



Enthalpy Analytical, Inc.

Phone: (919) 850 - 4392 / Fax: (919) 850 - 9012 / www.enthalpy.com
800-1 Capitola Drive Durham, NC 27713-4385

I certify that to the best of my knowledge all analytical data presented in this report:

- Have been checked for completeness
- Are accurate, error-free, and legible
- Have been conducted in accordance with approved protocol, and that all deviations and analytical problems are summarized in the appropriate narrative(s)

This analytical report was prepared in Portable Document Format (.PDF) and contains 494 pages.

Kristen H. Bounds

QA Reviewed by – Kristen H. Bounds

Report Issued: 11/04/2016



Summary of Results

Enthalpy Analytical

Company: METCO Environmental

Job No.: 0816-140 Mixed Molecular Weight Calculations

Client No.: 16-323

Units	Sample ID / Mixed Molecular Weight		
g/mole	Unit 3-R1C1 bag 29.4	Unit 3-R1C3 bag 29.4	Unit 3-R1C4 bag 29.5
g/mole	Unit 3-R2C1 bag 29.4	Unit 3-R2C2 bag 29.3	Unit 3-R2C3 bag 29.1
g/mole	Unit 3-R2C4 bag 29.5	Unit 3-R3C1 bag 29.3	Unit 3-R3C3 bag 28.9
g/mole	Unit 3-R3C4 bag 29.5	Unit 3-R4C2 bag 29.2	Unit 3-R5C2 bag 29.3
Mixed Molecular Weight results are all normalized to exactly 100% total gasses from the measured totals.			

Enthalpy Analytical

Company: METCO Environmental

Job No.: 0816-140 EPA Method 3C Tedlar Bag Analysis

Client No.: 16-323

Summary Table

Compound Sample Name	Hydrogen Sample Conc (%)	Oxygen Sample Conc (%)	Nitrogen Sample Conc (%)	Carbon monoxide Sample Conc (%)	Methane Sample Conc (%)	Carbon Dioxide Sample Conc (%)
Unit 3-R1C1 bag	0.0360 ND	15.5	73.5	0.0380 ND	0.0310 ND	4.14
Unit 3-R1C3 bag	0.0360 ND	15.1	72.6	0.0380 ND	0.0310 ND	4.20
Unit 3-R1C4 bag	0.0360 ND	12.6	73.2	0.0380 ND	0.0310 ND	5.54
Unit 3-R2C1 bag	0.0360 ND	15.5	73.5	0.0380 ND	0.0310 ND	4.08
Unit 3-R2C2 bag	0.0360 ND	16.9	71.7	0.0380 ND	0.0310 ND	2.86
Unit 3-R2C3 bag	0.0360 ND	16.8	72.4	0.0380 ND	0.0310 ND	2.07
Unit 3-R2C4 bag	0.0360 ND	13.7	73.2	0.0380 ND	0.0310 ND	4.95
Unit 3-R3C1 bag	0.0360 ND	16.4	71.5	0.0380 ND	0.0310 ND	3.11
Unit 3-R3C3 bag	0.0360 ND	20.8	70.8	0.0380 ND	0.0310 ND	0.0544 ND
Unit 3-R3C4 bag	0.0360 ND	13.1	72.6	0.0380 ND	0.0310 ND	5.12
Unit 3-R4C2 bag	0.0360 ND	17.7	72.0	0.0380 ND	0.0310 ND	2.39
Unit 3-R5C2 bag	0.0360 ND	16.1	72.2	0.0380 ND	0.0310 ND	3.41

Company	METCO Environmental
Analyst	NBT
Parameters	Btu & Mixed Molecular Wt.

Client #	16-323
Job #	0816-140
# Samples	4 Canisters

Units	Sample ID / Net Heating Value / Mixed Molecular Weight			
	U3-C1-Primary Can1368	U3-C2-Primary Can1321	U3-C3-Primary Can1655	U3-C4-Primary Can1109
Btu/SCF	2,078	2,048	1,995	1,924
g/mole	41.7	41.7	41.7	41.8
Mixed Molecular Weight results are all normalized to exactly 100% total gasses from the measured totals.				

Enthalpy Analytical

Company: METCO Environmental

Job No.: 0816-140 EPA Method 18-Type Canister Analysis

Client No.: 16-323

Summary Table

Sample Name Compound	U3-C1-Primary Can1368 Sample Conc (ppm)	U3-C2-Primary Can1321 Sample Conc (ppm)	U3-C3-Primary Can1655 Sample Conc (ppm)	U3-C4-Primary Can1109 Sample Conc (ppm)
Methane	4.27 ND	4.32 ND	5.63 ND	4.04 ND
Ethane	116	51.3	28.8 J	30.3 J
C2 as Ethane	4.27 ND	4.32 ND	5.63 ND	4.04 ND
Propane	4.27 ND	4.32 ND	5.63 ND	4.04 ND
C3 as Propane	4.27 ND	4.32 ND	5.63 ND	4.04 ND
Butane	318	939	1,334	1,442
C4 as Butane	50.3	74.6	70.0	103
Pentane	4.39 ND	4.45 ND	5.80 ND	4.16 ND
C5 as Pentane	4.39 ND	4.45 ND	5.80 ND	4.16 ND
Hexane	4.31 ND	4.36 ND	5.69 ND	4.08 ND
C6 as Hexane	4.31 ND	4.36 ND	5.69 ND	4.08 ND
Benzene	1.69 ND	1.71 ND	2.23 ND	1.60 ND
Propylene	965,998	951,168	925,932	892,930
TVOC as Propylene	967,952	954,686	929,647	896,568

Enthalpy Analytical

Company: METCO Environmental

Job No.: 0816-140 ASTM D1946-90 Canister Analysis

Client No.: 16-323

Summary Table

Sample Name Compound	U3-C1-Primary Can1368 Sample Conc (%)	U3-C2-Primary Can1321 Sample Conc (%)	U3-C3-Primary Can1655 Sample Conc (%)	U3-C4-Primary Can1109 Sample Conc (%)
Hydrogen	0.728 ND	0.737 ND	0.961 ND	0.689 ND
Oxygen	0.573 J	0.634 J	0.683 J	0.517 J
Nitrogen	2.01 J	2.23 J	2.14 J	1.93 J
Carbon monoxide	0.324 ND	0.328 ND	0.428 ND	0.307 ND
Carbon Dioxide	0.463 ND	0.469 ND	0.611 ND	0.438 ND

Results

Enthalpy Analytical

Company: METCO Environmental

Job No.: 0816-140 Mixed Molecular Weight Calculations

Client No.: 16-323

Sample ID	Analyte	MW	Mol. %
Unit 3-R1C1 bag	Hydrogen	2.02	0.00
	Oxygen	32.0	15.5
	Nitrogen	28.0	73.5
	Carbon monoxide	28.0	0.00
	Methane	16.0	0.00
	Carbon dioxide	44.0	4.14
	Total Mixed MW	29.4	
	% Total Gasses	93.2	

Sample ID	Analyte	MW	Mol. %
Unit 3-R1C3 bag	Hydrogen	2.02	0.00
	Oxygen	32.0	15.1
	Nitrogen	28.0	72.6
	Carbon monoxide	28.0	0.00
	Methane	16.0	0.00
	Carbon dioxide	44.0	4.20
	Total Mixed MW	29.4	
	% Total Gasses	91.9	

Sample ID	Analyte	MW	Mol. %
Unit 3-R1C4 bag	Hydrogen	2.02	0.00
	Oxygen	32.0	12.6
	Nitrogen	28.0	73.2
	Carbon monoxide	28.0	0.00
	Methane	16.0	0.00
	Carbon dioxide	44.0	5.54
	Total Mixed MW	29.5	
	% Total Gasses	91.3	

Sample ID	Analyte	MW	Mol. %
Unit 3-R2C1 bag	Hydrogen	2.02	0.00
	Oxygen	32.0	15.5
	Nitrogen	28.0	73.5
	Carbon monoxide	28.0	0.00
	Methane	16.0	0.00
	Carbon dioxide	44.0	4.08
	Total Mixed MW	29.4	
	% Total Gasses	93.0	

Sample ID	Analyte	MW	Mol. %
Unit 3-R2C2 bag	Hydrogen	2.02	0.00
	Oxygen	32.0	16.9
	Nitrogen	28.0	71.7
	Carbon monoxide	28.0	0.00
	Methane	16.0	0.00
	Carbon dioxide	44.0	2.86
	Total Mixed MW	29.3	
	% Total Gasses	91.5	

Sample ID	Analyte	MW	Mol. %
Unit 3-R2C3 bag	Hydrogen	2.02	0.00
	Oxygen	32.0	16.8
	Nitrogen	28.0	72.4
	Carbon monoxide	28.0	0.00
	Methane	16.0	0.00
	Carbon dioxide	44.0	2.07
	Total Mixed MW	29.1	
	% Total Gasses	91.3	

Enthalpy Analytical

Company: METCO Environmental

Job No.: 0816-140 Mixed Molecular Weight Calculations

Client No.: 16-323

Sample ID	Analyte	MW	Mol. %
Unit 3-R2C4 bag	Hydrogen	2.02	0.00
	Oxygen	32.0	13.7
	Nitrogen	28.0	73.2
	Carbon monoxide	28.0	0.00
	Methane	16.0	0.00
	Carbon dioxide	44.0	4.95
	Total Mixed MW	29.5	
	% Total Gasses	91.8	

Sample ID	Analyte	MW	Mol. %
Unit 3-R3C1 bag	Hydrogen	2.02	0.00
	Oxygen	32.0	16.4
	Nitrogen	28.0	71.5
	Carbon monoxide	28.0	0.00
	Methane	16.0	0.00
	Carbon dioxide	44.0	3.11
	Total Mixed MW	29.3	
	% Total Gasses	91.1	

Sample ID	Analyte	MW	Mol. %
Unit 3-R3C3 bag	Hydrogen	2.02	0.00
	Oxygen	32.0	20.8
	Nitrogen	28.0	70.8
	Carbon monoxide	28.0	0.00
	Methane	16.0	0.00
	Carbon dioxide	44.0	0.00
	Total Mixed MW	28.9	
	% Total Gasses	91.6	

Sample ID	Analyte	MW	Mol. %
Unit 3-R3C4 bag	Hydrogen	2.02	0.00
	Oxygen	32.0	13.1
	Nitrogen	28.0	72.6
	Carbon monoxide	28.0	0.00
	Methane	16.0	0.00
	Carbon dioxide	44.0	5.12
	Total Mixed MW	29.5	
	% Total Gasses	90.8	

Sample ID	Analyte	MW	Mol. %
Unit 3-R4C2 bag	Hydrogen	2.02	0.00
	Oxygen	32.0	17.7
	Nitrogen	28.0	72.0
	Carbon monoxide	28.0	0.00
	Methane	16.0	0.00
	Carbon dioxide	44.0	2.39
	Total Mixed MW	29.2	
	% Total Gasses	92.2	

Sample ID	Analyte	MW	Mol. %
Unit 3-R5C2 bag	Hydrogen	2.02	0.00
	Oxygen	32.0	16.1
	Nitrogen	28.0	72.2
	Carbon monoxide	28.0	0.00
	Methane	16.0	0.00
	Carbon dioxide	44.0	3.41
	Total Mixed MW	29.3	
	% Total Gasses	91.7	

Enthalpy Analytical

Company: METCO Environmental

Job No.: 0816-140 EPA Method 3C Tedlar Bag Analysis

Client No.: 16-323

Client's Sample Name	Filename #1	Filename #2	Filename #3	Analysis Method	Curve Min	Curve Max	MDL	Ret Time (min)	Ret Time (min)	Ret Time (min)	%diff RT	Conc #1 (%)	Conc #2 (%)	Conc #3 (%)	%diff conc	DF	Avg Conc (%)	Flag
Hydrogen																		
Unit 3-R1C1 bag	003F0501.D	003F0502.D	003F0503.D	BETTP348_FGA_CRYO.M	0.310	28.5	0.0360	NA	NA	NA	NA	0.0360	0.0360	0.0360	0.0	1	0.0360	ND
Unit 3-R1C3 bag	010F1101.D	010F1102.D	010F1103.D	BETTP348_FGA_CRYO.M	0.310	28.5	0.0360	NA	NA	NA	NA	0.0360	0.0360	0.0360	0.0	1	0.0360	ND
Unit 3-R1C4 bag	003F0801.D	003F0802.D	003F0803.D	BETTP348_FGA_CRYO.M	0.310	28.5	0.0360	NA	NA	NA	NA	0.0360	0.0360	0.0360	0.0	1	0.0360	ND
Unit 3-R2C1 bag	004F0601.D	004F0602.D	004F0603.D	BETTP348_FGA_CRYO.M	0.310	28.5	0.0360	NA	NA	NA	NA	0.0360	0.0360	0.0360	0.0	1	0.0360	ND
Unit 3-R2C2 bag	003F0102.D	003F0103.D	003F0104.D	BETTP348_FGA_CRYO.M	0.310	28.5	0.0360	NA	NA	NA	NA	0.0360	0.0360	0.0360	0.0	1	0.0360	ND
Unit 3-R2C3 bag	007F0101.D	007F0102.D	007F0103.D	BETTP348_FGA_CRYO.M	0.310	28.5	0.0360	NA	NA	NA	NA	0.0360	0.0360	0.0360	0.0	1	0.0360	ND
Unit 3-R2C4 bag	003F0202.D	003F0203.D	003F0301.D	BETTP348_FGA_CRYO.M	0.310	28.5	0.0360	NA	NA	NA	NA	0.0360	0.0360	0.0360	0.0	1	0.0360	ND
Unit 3-R3C1 bag	005F0501.D	005F0502.D	005F0503.D	BETTP348_FGA_CRYO.M	0.310	28.5	0.0360	NA	NA	NA	NA	0.0360	0.0360	0.0360	0.0	1	0.0360	ND
Unit 3-R3C3 bag	007F0201.D	007F0202.D	007F0203.D	BETTP348_FGA_CRYO.M	0.310	28.5	0.0360	NA	NA	NA	NA	0.0360	0.0360	0.0360	0.0	1	0.0360	ND
Unit 3-R3C4 bag	008F1001.D	008F1002.D	008F1003.D	BETTP348_FGA_CRYO.M	0.310	28.5	0.0360	NA	NA	NA	NA	0.0360	0.0360	0.0360	0.0	1	0.0360	ND
Unit 3-R4C2 bag	004F0202.D	004F0203.D	004F0204.D	BETTP348_FGA_CRYO.M	0.310	28.5	0.0360	NA	NA	NA	NA	0.0360	0.0360	0.0360	0.0	1	0.0360	ND
Unit 3-R5C2 bag	008F1001.D	008F1002.D	008F1003.D	BETTP348_FGA_CRYO.M	0.310	28.5	0.0360	NA	NA	NA	NA	0.0360	0.0360	0.0360	0.0	1	0.0360	ND

Enthalpy Analytical

Company: METCO Environmental

Job No.: 0816-140 EPA Method 3C Tedlar Bag Analysis

Client No.: 16-323

Client's Sample Name	Filename #1	Filename #2	Filename #3	Analysis Method	Curve Min	Curve Max	MDL	Ret Time (min)	Ret Time (min)	%diff RT	Conc #1 (%)	Conc #2 (%)	Conc #3 (%)	%dif conc	DF	Avg Conc (%)	Flag
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Oxygen

Unit 3-R1C1 bag	003F0501.D	003F0502.D	003F0503.D	BETTP348_FGA_CRYO.M	0.544	100	0.0544	8.76	8.76	0.0	15.5	15.5	15.6	0.2	1	15.5	
Unit 3-R1C3 bag	010F1101.D	010F1102.D	010F1103.D	BETTP348_FGA_CRYO.M	0.544	100	0.0544	8.76	8.76	0.0	15.0	15.2	15.1	0.7	1	15.1	
Unit 3-R1C4 bag	003F0801.D	003F0802.D	003F0803.D	BETTP348_FGA_CRYO.M	0.544	100	0.0544	8.80	8.79	8.80	12.5	12.6	12.6	0.3	1	12.6	
Unit 3-R2C1 bag	004F0601.D	004F0602.D	004F0603.D	BETTP348_FGA_CRYO.M	0.544	100	0.0544	8.76	8.76	0.0	15.5	15.5	15.5	0.1	1	15.5	
Unit 3-R2C2 bag	003F0102.D	003F0103.D	003F0104.D	BETTP348_FGA_CRYO.M	0.544	100	0.0544	8.77	8.77	0.0	16.9	16.9	16.9	0.3	1	16.9	
Unit 3-R2C3 bag	007F0101.D	007F0102.D	007F0103.D	BETTP348_FGA_CRYO.M	0.544	100	0.0544	8.77	8.77	0.0	16.8	16.7	16.8	0.5	1	16.8	
Unit 3-R2C4 bag	003F0202.D	003F0203.D	003F0301.D	BETTP348_FGA_CRYO.M	0.544	100	0.0544	8.80	8.80	0.0	13.6	13.7	13.7	0.2	1	13.7	
Unit 3-R3C1 bag	005F0501.D	005F0502.D	005F0503.D	BETTP348_FGA_CRYO.M	0.544	100	0.0544	8.76	8.76	0.0	16.4	16.4	16.4	0.3	1	16.4	
Unit 3-R3C3 bag	007F0201.D	007F0202.D	007F0203.D	BETTP348_FGA_CRYO.M	0.544	100	0.0544	8.74	8.74	0.0	20.9	20.8	20.9	0.4	1	20.8	
Unit 3-R3C4 bag	008F1001.D	008F1002.D	008F1003.D	BETTP348_FGA_CRYO.M	0.544	100	0.0544	8.79	8.78	8.79	13.1	13.1	13.1	0.2	1	13.1	
Unit 3-R4C2 bag	004F0202.D	004F0203.D	004F0204.D	BETTP348_FGA_CRYO.M	0.544	100	0.0544	8.76	8.76	0.0	17.8	17.7	17.7	0.1	1	17.7	
Unit 3-R5C2 bag	008F1001.D	008F1002.D	008F1003.D	BETTP348_FGA_CRYO.M	0.544	100	0.0544	8.75	8.75	0.0	16.0	16.1	16.2	0.4	1	16.1	

Enthalpy Analytical

Company: METCO Environmental

Job No.: 0816-140 EPA Method 3C Tedlar Bag Analysis

Client No.: 16-323

Client's Sample Name	Filename #1	Filename #2	Filename #3	Analysis Method	Curve Min	Curve Max	MDL	Ret Time (min)	Ret Time (min)	Ret Time (min)	%diff RT	Conc #1 (%)	Conc #2 (%)	Conc #3 (%)	%diff conc	DF	Avg Conc (%)	Flag
Nitrogen																		
Unit 3-R1C1 bag	003F0501.D	003F0502.D	003F0503.D	BETTP348_FGA_CRYO.M	0.380	99.9	0.0380	9.57	9.57	9.58	0.0	73.7	73.3	73.5	0.3	1	73.5	
Unit 3-R1C3 bag	010F1101.D	010F1102.D	010F1103.D	BETTP348_FGA_CRYO.M	0.380	99.9	0.0380	9.58	9.57	9.57	0.0	72.1	73.0	72.8	0.7	1	72.6	
Unit 3-R1C4 bag	003F0801.D	003F0802.D	003F0803.D	BETTP348_FGA_CRYO.M	0.380	99.9	0.0380	9.58	9.58	9.58	0.0	73.4	73.2	73.0	0.3	1	73.2	
Unit 3-R2C1 bag	004F0601.D	004F0602.D	004F0603.D	BETTP348_FGA_CRYO.M	0.380	99.9	0.0380	9.58	9.58	9.57	0.0	73.5	73.6	73.3	0.2	1	73.5	
Unit 3-R2C2 bag	003F0102.D	003F0103.D	003F0104.D	BETTP348_FGA_CRYO.M	0.380	99.9	0.0380	9.61	9.61	9.61	0.0	71.7	71.4	72.0	0.4	1	71.7	
Unit 3-R2C3 bag	007F0101.D	007F0102.D	007F0103.D	BETTP348_FGA_CRYO.M	0.380	99.9	0.0380	9.61	9.61	9.61	0.0	72.6	72.0	72.6	0.5	1	72.4	
Unit 3-R2C4 bag	003F0202.D	003F0203.D	003F0301.D	BETTP348_FGA_CRYO.M	0.380	99.9	0.0380	9.60	9.60	9.60	0.0	73.2	73.2	73.3	0.1	1	73.2	
Unit 3-R3C1 bag	005F0501.D	005F0502.D	005F0503.D	BETTP348_FGA_CRYO.M	0.380	99.9	0.0380	9.59	9.59	9.59	0.0	71.8	71.6	71.3	0.4	1	71.5	
Unit 3-R3C3 bag	007F0201.D	007F0202.D	007F0203.D	BETTP348_FGA_CRYO.M	0.380	99.9	0.0380	9.62	9.62	9.62	0.0	71.0	70.6	70.7	0.3	1	70.8	
Unit 3-R3C4 bag	008F1001.D	008F1002.D	008F1003.D	BETTP348_FGA_CRYO.M	0.380	99.9	0.0380	9.58	9.57	9.58	0.0	72.9	72.5	72.3	0.4	1	72.6	
Unit 3-R4C2 bag	004F0202.D	004F0203.D	004F0204.D	BETTP348_FGA_CRYO.M	0.380	99.9	0.0380	9.60	9.60	9.60	0.0	72.2	72.0	71.9	0.2	1	72.0	
Unit 3-R5C2 bag	008F1001.D	008F1002.D	008F1003.D	BETTP348_FGA_CRYO.M	0.380	99.9	0.0380	9.58	9.58	9.57	0.0	71.9	72.2	72.3	0.3	1	72.2	

Enthalpy Analytical

Company: METCO Environmental

Job No.: 0816-140 EPA Method 3C Tedlar Bag Analysis

Client No.: 16-323

Client's Sample Name	Filename #1	Filename #2	Filename #3	Analysis Method	Curve Min	Curve Max	MDL	Ret Time (min)	Ret Time (min)	%diff RT	Conc #1 (%)	Conc #2 (%)	Conc #3 (%)	%diff conc	DF	Avg Conc (%)	Flag
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Carbon monoxide

Unit 3-R1C1 bag	003F0501.D	003F0502.D	003F0503.D	BETTP348_FGA_CRYO.M	0.380	10.0	0.0380	NA	NA	NA	0.0380	0.0380	0.0380	0.0	1	0.0380	ND
Unit 3-R1C3 bag	010F1101.D	010F1102.D	010F1103.D	BETTP348_FGA_CRYO.M	0.380	10.0	0.0380	NA	NA	NA	0.0380	0.0380	0.0380	0.0	1	0.0380	ND
Unit 3-R1C4 bag	003F0801.D	003F0802.D	003F0803.D	BETTP348_FGA_CRYO.M	0.380	10.0	0.0380	NA	NA	NA	0.0380	0.0380	0.0380	0.0	1	0.0380	ND
Unit 3-R2C1 bag	004F0601.D	004F0602.D	004F0603.D	BETTP348_FGA_CRYO.M	0.380	10.0	0.0380	NA	NA	NA	0.0380	0.0380	0.0380	0.0	1	0.0380	ND
Unit 3-R2C2 bag	003F0102.D	003F0103.D	003F0104.D	BETTP348_FGA_CRYO.M	0.380	10.0	0.0380	NA	NA	NA	0.0380	0.0380	0.0380	0.0	1	0.0380	ND
Unit 3-R2C3 bag	007F0101.D	007F0102.D	007F0103.D	BETTP348_FGA_CRYO.M	0.380	10.0	0.0380	NA	NA	NA	0.0380	0.0380	0.0380	0.0	1	0.0380	ND
Unit 3-R2C4 bag	003F0202.D	003F0203.D	003F0301.D	BETTP348_FGA_CRYO.M	0.380	10.0	0.0380	NA	NA	NA	0.0380	0.0380	0.0380	0.0	1	0.0380	ND
Unit 3-R3C1 bag	005F0501.D	005F0502.D	005F0503.D	BETTP348_FGA_CRYO.M	0.380	10.0	0.0380	NA	NA	NA	0.0380	0.0380	0.0380	0.0	1	0.0380	ND
Unit 3-R3C3 bag	007F0201.D	007F0202.D	007F0203.D	BETTP348_FGA_CRYO.M	0.380	10.0	0.0380	NA	NA	NA	0.0380	0.0380	0.0380	0.0	1	0.0380	ND
Unit 3-R3C4 bag	008F1001.D	008F1002.D	008F1003.D	BETTP348_FGA_CRYO.M	0.380	10.0	0.0380	NA	NA	NA	0.0380	0.0380	0.0380	0.0	1	0.0380	ND
Unit 3-R4C2 bag	004F0202.D	004F0203.D	004F0204.D	BETTP348_FGA_CRYO.M	0.380	10.0	0.0380	NA	NA	NA	0.0380	0.0380	0.0380	0.0	1	0.0380	ND
Unit 3-R5C2 bag	008F1001.D	008F1002.D	008F1003.D	BETTP348_FGA_CRYO.M	0.380	10.0	0.0380	NA	NA	NA	0.0380	0.0380	0.0380	0.0	1	0.0380	ND

Enthalpy Analytical

Company: METCO Environmental

Job No.: 0816-140 EPA Method 3C Tedlar Bag Analysis

Client No.: 16-323

Client's Sample Name	Filename #1	Filename #2	Filename #3	Analysis Method	Curve Min	Curve Max	MDL	Ret Time (min)	Ret Time (min)	Ret Time (min)	%dif RT	Conc #1 (%)	Conc #2 (%)	Conc #3 (%)	%dif conc	DF	Avg Conc (%)	Flag
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Methane

Unit 3-R1C1 bag	003F0501.D	003F0502.D	003F0503.D	BETTP348_FGA_CRYO.M	0.310	8.00	0.0310	NA	NA	NA	NA	0.0310	0.0310	0.0310	0.0	1	0.0310	ND
Unit 3-R1C3 bag	010F1101.D	010F1102.D	010F1103.D	BETTP348_FGA_CRYO.M	0.310	8.00	0.0310	NA	NA	NA	NA	0.0310	0.0310	0.0310	0.0	1	0.0310	ND
Unit 3-R1C4 bag	003F0801.D	003F0802.D	003F0803.D	BETTP348_FGA_CRYO.M	0.310	8.00	0.0310	NA	NA	NA	NA	0.0310	0.0310	0.0310	0.0	1	0.0310	ND
Unit 3-R2C1 bag	004F0601.D	004F0602.D	004F0603.D	BETTP348_FGA_CRYO.M	0.310	8.00	0.0310	NA	NA	NA	NA	0.0310	0.0310	0.0310	0.0	1	0.0310	ND
Unit 3-R2C2 bag	003F0102.D	003F0103.D	003F0104.D	BETTP348_FGA_CRYO.M	0.310	8.00	0.0310	NA	NA	NA	NA	0.0310	0.0310	0.0310	0.0	1	0.0310	ND
Unit 3-R2C3 bag	007F0101.D	007F0102.D	007F0103.D	BETTP348_FGA_CRYO.M	0.310	8.00	0.0310	NA	NA	NA	NA	0.0310	0.0310	0.0310	0.0	1	0.0310	ND
Unit 3-R2C4 bag	003F0202.D	003F0203.D	003F0301.D	BETTP348_FGA_CRYO.M	0.310	8.00	0.0310	NA	NA	NA	NA	0.0310	0.0310	0.0310	0.0	1	0.0310	ND
Unit 3-R3C1 bag	005F0501.D	005F0502.D	005F0503.D	BETTP348_FGA_CRYO.M	0.310	8.00	0.0310	NA	NA	NA	NA	0.0310	0.0310	0.0310	0.0	1	0.0310	ND
Unit 3-R3C3 bag	007F0201.D	007F0202.D	007F0203.D	BETTP348_FGA_CRYO.M	0.310	8.00	0.0310	NA	NA	NA	NA	0.0310	0.0310	0.0310	0.0	1	0.0310	ND
Unit 3-R3C4 bag	008F1001.D	008F1002.D	008F1003.D	BETTP348_FGA_CRYO.M	0.310	8.00	0.0310	NA	NA	NA	NA	0.0310	0.0310	0.0310	0.0	1	0.0310	ND
Unit 3-R4C2 bag	004F0202.D	004F0203.D	004F0204.D	BETTP348_FGA_CRYO.M	0.310	8.00	0.0310	NA	NA	NA	NA	0.0310	0.0310	0.0310	0.0	1	0.0310	ND
Unit 3-R5C2 bag	008F1001.D	008F1002.D	008F1003.D	BETTP348_FGA_CRYO.M	0.310	8.00	0.0310	NA	NA	NA	NA	0.0310	0.0310	0.0310	0.0	1	0.0310	ND

Enthalpy Analytical

Company: METCO Environmental

Job No.: 0816-140 EPA Method 3C Tedlar Bag Analysis

Client No.: 16-323

Client's Sample Name	Filename #1	Filename #2	Filename #3	Analysis Method	Curve Min	Curve Max	MDL	Ret Time (min)	Ret Time (min)	Ret Time (min)	%dif RT	Conc #1 (%)	Conc #2 (%)	Conc #3 (%)	%dif conc	DF	Avg Conc (%)	Flag
Carbon Dioxide																		
Unit 3-R1C1 bag	003F0501.D	003F0502.D	003F0503.D	BETTP348_FGA_CRYO.M	0.544	10.0	0.0544	19.48	19.48	19.49	0.0	4.19	4.11	4.13	1.1	1	4.14	
Unit 3-R1C3 bag	010F1101.D	010F1102.D	010F1103.D	BETTP348_FGA_CRYO.M	0.544	10.0	0.0544	19.48	19.48	19.48	0.0	4.20	4.20	4.20	0.1	1	4.20	
Unit 3-R1C4 bag	003F0801.D	003F0802.D	003F0803.D	BETTP348_FGA_CRYO.M	0.544	10.0	0.0544	19.46	19.46	19.46	0.0	5.54	5.50	5.57	0.7	1	5.54	
Unit 3-R2C1 bag	004F0601.D	004F0602.D	004F0603.D	BETTP348_FGA_CRYO.M	0.544	10.0	0.0544	19.49	19.49	19.49	0.0	4.05	4.14	4.04	1.6	1	4.08	
Unit 3-R2C2 bag	003F0102.D	003F0103.D	003F0104.D	BETTP348_FGA_CRYO.M	0.544	10.0	0.0544	19.51	19.51	19.51	0.0	2.87	2.85	2.86	0.3	1	2.86	
Unit 3-R2C3 bag	007F0101.D	007F0102.D	007F0103.D	BETTP348_FGA_CRYO.M	0.544	10.0	0.0544	19.53	19.54	19.53	0.0	2.08	2.06	2.07	0.5	1	2.07	
Unit 3-R2C4 bag	003F0202.D	003F0203.D	003F0301.D	BETTP348_FGA_CRYO.M	0.544	10.0	0.0544	19.48	19.48	19.48	0.0	4.93	4.93	4.97	0.5	1	4.95	
Unit 3-R3C1 bag	005F0501.D	005F0502.D	005F0503.D	BETTP348_FGA_CRYO.M	0.544	10.0	0.0544	19.51	19.50	19.50	0.0	3.13	3.12	3.09	0.8	1	3.11	
Unit 3-R3C3 bag	007F0201.D	007F0202.D	007F0203.D	BETTP348_FGA_CRYO.M	0.544	10.0	0.0544	NA	NA	NA	NA	0.0544	0.0544	0.0544	0.0	1	0.0544	ND
Unit 3-R3C4 bag	008F1001.D	008F1002.D	008F1003.D	BETTP348_FGA_CRYO.M	0.544	10.0	0.0544	19.46	19.46	19.47	0.0	5.11	5.14	5.12	0.4	1	5.12	
Unit 3-R4C2 bag	004F0202.D	004F0203.D	004F0204.D	BETTP348_FGA_CRYO.M	0.544	10.0	0.0544	19.52	19.52	19.52	0.0	2.40	2.39	2.40	0.2	1	2.39	
Unit 3-R5C2 bag	008F1001.D	008F1002.D	008F1003.D	BETTP348_FGA_CRYO.M	0.544	10.0	0.0544	19.50	19.50	19.49	0.0	3.42	3.40	3.42	0.4	1	3.41	

Company	METCO Environmental
Analyst	NBT
Parameters	Btu & Mixed Molecular Wt.

Client #	16-323
Job #	0816-140
# Samples	4 Canisters

Sample ID	Analyte	MW	Mol. %	Btu/lb	Btu/SCF
U3-C1-Primary Can1368	Hydrogen	2.02	0.00	51,571	0.00
	Oxygen	32.0	0.573	0.00	0.00
	Nitrogen	28.0	2.01	0.00	0.00
	Carbon monoxide	28.0	0.00	4,344	0.00
	Carbon dioxide	44.0	0.00	0.00	0.00
	Methane	16.0	0.00	21,502	0.00
	Ethane	30.1	0.0116	20,416	0.185
	C2	30.1	0.00	20,416	0.00
	Propane	44.1	0.00	19,929	0.00
	C3	44.1	0.00	19,929	0.00
	Butane	58.1	0.0318	19,665	0.942
	C4	58.1	0.00503	19,665	0.149
	Pentane	72.1	0.00	19,499	0.00
	C5	72.1	0.00	19,499	0.00
	Hexane	86.2	0.00	19,391	0.00
	C6	86.2	0.00	19,391	0.00
	Propylene	42.1	96.6	19,683	2,077
	Total Mixed MW	41.7		Total	2,078
	% Total Gasses	99.2			

Sample ID	Analyte	MW	Mol. %	Btu/lb	Btu/SCF
U3-C2-Primary Can1321	Hydrogen	2.02	0.00	51,571	0.00
	Oxygen	32.0	0.634	0.00	0.00
	Nitrogen	28.0	2.23	0.00	0.00
	Carbon monoxide	28.0	0.00	4,344	0.00
	Carbon dioxide	44.0	0.00	0.00	0.00
	Methane	16.0	0.00	21,502	0.00
	Ethane	30.1	0.00513	20,416	0.0818
	C2	30.1	0.00	20,416	0.00
	Propane	44.1	0.00	19,929	0.00
	C3	44.1	0.00	19,929	0.00
	Butane	58.1	0.0939	19,665	2.79
	C4	58.1	0.00746	19,665	0.221
	Pentane	72.1	0.00	19,499	0.00
	C5	72.1	0.00	19,499	0.00
	Hexane	86.2	0.00	19,391	0.00
	C6	86.2	0.00	19,391	0.00
	Propylene	42.1	95.1	19,683	2,045
	Total Mixed MW	41.7		Total	2,048
	% Total Gasses	98.1			

Sample ID	Analyte	MW	Mol. %	Btu/lb	Btu/SCF
U3-C3-Primary Can1655	Hydrogen	2.02	0.00	51,571	0.00
	Oxygen	32.0	0.683	0.00	0.00
	Nitrogen	28.0	2.14	0.00	0.00
	Carbon monoxide	28.0	0.00	4,344	0.00
	Carbon dioxide	44.0	0.00	0.00	0.00
	Methane	16.0	0.00	21,502	0.00
	Ethane	30.1	0.00288	20,416	0.0460
	C2	30.1	0.00	20,416	0.00
	Propane	44.1	0.00	19,929	0.00
	C3	44.1	0.00	19,929	0.00
	Butane	58.1	0.133	19,665	3.96
	C4	58.1	0.00700	19,665	0.208
	Pentane	72.1	0.00	19,499	0.00
	C5	72.1	0.00	19,499	0.00
	Hexane	86.2	0.00	19,391	0.00
	C6	86.2	0.00	19,391	0.00
	Propylene	42.1	92.6	19,683	1,990
	Total Mixed MW	41.7		Total	1,995
	% Total Gasses	95.6			

Sample ID	Analyte	MW	Mol. %	Btu/lb	Btu/SCF
U3-C4-Primary Can1109	Hydrogen	2.02	0.00	51,571	0.00
	Oxygen	32.0	0.517	0.00	0.00
	Nitrogen	28.0	1.93	0.00	0.00
	Carbon monoxide	28.0	0.00	4,344	0.00
	Carbon dioxide	44.0	0.00	0.00	0.00
	Methane	16.0	0.00	21,502	0.00
	Ethane	30.1	0.00303	20,416	0.0482
	C2	30.1	0.00	20,416	0.00
	Propane	44.1	0.00	19,929	0.00
	C3	44.1	0.00	19,929	0.00
	Butane	58.1	0.144	19,665	4.28
	C4	58.1	0.0103	19,665	0.305
	Pentane	72.1	0.00	19,499	0.00
	C5	72.1	0.00	19,499	0.00
	Hexane	86.2	0.00	19,391	0.00
	C6	86.2	0.00	19,391	0.00
	Propylene	42.1	89.3	19,683	1,919
	Total Mixed MW	41.8		Total	1,924
	% Total Gasses	91.9			

Enthalpy Analytical

Company: METCO Environmental

Job No.: 0816-140 EPA Method 18-Type Canister Analysis

Client No.: 16-323

Methane

Sample ID	Filename #1	Filename #2	Filename #3	Analysis Method	Curve Min	Curve Max	MDL	Ret Time (min)	Ret Time (min)	Ret Time (min)	%diff RT	DF	Conc #1 (ppm)	Conc #2 (ppm)	Conc #3 (ppm)	%diff conc	Avg Conc (ppm)	Final Conc (ppm)	Flag
U3-C1-Primary Can1368.Can	003F2101.D	003F2102.D	003F2103.D	EDITHP730F_C1-C6_BENZENE.M	5.00	50.060	0.500	NA	NA	NA	NA	8.533	0.500	0.500	0.500	0.0	0.500	4.27	ND
U3-C2-Primary Can1321.Can	006F2201.D	006F2202.D	006F2203.D	EDITHP730F_C1-C6_BENZENE.M	5.00	50.060	0.500	NA	NA	NA	NA	8.643	0.500	0.500	0.500	0.0	0.500	4.32	ND
U3-C3-Primary Can1655.Can	007F2301.D	007F2302.D	007F2303.D	EDITHP730F_C1-C6_BENZENE.M	5.00	50.060	0.500	NA	NA	NA	NA	11.261	0.500	0.500	0.500	0.0	0.500	5.63	ND
U3-C4-Primary Can1109.Can	008F2401.D	008F2402.D	008F2403.D	EDITHP730F_C1-C6_BENZENE.M	5.00	50.060	0.500	NA	NA	NA	NA	8.073	0.500	0.500	0.500	0.0	0.500	4.04	ND

Enthalpy Analytical

Company: METCO Environmental

Job No.: 0816-140 EPA Method 18-Type Canister Analysis

Client No.: 16-323

Ethane

Sample ID	Filename #1	Filename #2	Filename #3	Analysis Method	Curve Min	Curve Max	MDL	Ret Time (min)	Ret Time (min)	Ret Time (min)	%dif RT	DF	Conc #1 (ppm)	Conc #2 (ppm)	Conc #3 (ppm)	%dif conc	Avg Conc (ppm)	Final Conc (ppm)	Flag
U3-C1-Primary Can1368.Can	003F2101.D	003F2102.D	003F2103.D	EDITHP730F_C1-C6_BENZENE.M	5.00	50.030	0.500	1.66	1.66	1.66	0.0	8.533	13.6	13.6	13.6	0.2	13.6	116	
U3-C2-Primary Can1321.Can	006F2201.D	006F2202.D	006F2203.D	EDITHP730F_C1-C6_BENZENE.M	5.00	50.030	0.500	1.66	1.66	1.66	0.0	8.643	5.74	6.03	6.04	3.3	5.94	51.3	
U3-C3-Primary Can1655.Can	007F2301.D	007F2302.D	007F2303.D	EDITHP730F_C1-C6_BENZENE.M	5.00	50.030	0.500	1.66	1.66	1.66	0.0	11.261	2.64	2.51	2.53	3.1	2.56	28.8	J
U3-C4-Primary Can1109.Can	008F2401.D	008F2402.D	008F2403.D	EDITHP730F_C1-C6_BENZENE.M	5.00	50.030	0.500	1.66	1.66	1.66	0.0	8.073	3.75	3.77	3.73	0.5	3.75	30.3	J

Enthalpy Analytical

Company: METCO Environmental

Job No.: 0816-140 EPA Method 18-Type Canister Analysis

Client No.: 16-323

C2 as Ethane

Sample ID	Filename #1	Filename #2	Filename #3	Analysis Method	Curve Min	Curve Max	MDL	DF	Conc #1 (ppm)	Conc #2 (ppm)	Conc #3 (ppm)	%dif conc	Avg Conc (ppm)	Final Conc (ppm)	Flag
U3-C1-Primary Can1368.Can	003F2101.D	003F2102.D	003F2103.D	EDITHP730F_C1-C6_BENZENE.M	5.00	50.030	0.500	8.533	0.500	0.500	0.500	0.0	0.500	4.27	ND

U3-C2-Primary Can1321.Can	006F2201.D	006F2202.D	006F2203.D	EDITHP730F_C1-C6_BENZENE.M	5.00	50.030	0.500	8.643	0.500	0.500	0.500	0.0	0.500	4.32	ND
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U3-C3-Primary Can1655.Can	007F2301.D	007F2302.D	007F2303.D	EDITHP730F_C1-C6_BENZENE.M	5.00	50.030	0.500	11.261	0.500	0.500	0.500	0.0	0.500	5.63	ND
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U3-C4-Primary Can1109.Can	008F2401.D	008F2402.D	008F2403.D	EDITHP730F_C1-C6_BENZENE.M	5.00	50.030	0.500	8.073	0.500	0.500	0.500	0.0	0.500	4.04	ND
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Enthalpy Analytical

Company: METCO Environmental

Job No.: 0816-140 EPA Method 18-Type Canister Analysis

Client No.: 16-323

Propane

Sample ID	Filename #1	Filename #2	Filename #3	Analysis Method	Curve Min	Curve Max	MDL	Ret Time (min)	Ret Time (min)	Ret Time (min)	%dif RT	DF	Conc #1 (ppm)	Conc #2 (ppm)	Conc #3 (ppm)	%dif conc	Avg Conc (ppm)	Final Conc (ppm)	Flag
U3-C1-Primary Can1368.Can	003F2101.D	003F2102.D	003F2103.D	EDITHP730F_C1-C6_BENZENE.M	5.00	50.030	0.500	NA	NA	NA	NA	8.533	0.500	0.500	0.500	0.0	0.500	4.27	ND
U3-C2-Primary Can1321.Can	006F2201.D	006F2202.D	006F2203.D	EDITHP730F_C1-C6_BENZENE.M	5.00	50.030	0.500	NA	NA	NA	NA	8.643	0.500	0.500	0.500	0.0	0.500	4.32	ND
U3-C3-Primary Can1655.Can	007F2301.D	007F2302.D	007F2303.D	EDITHP730F_C1-C6_BENZENE.M	5.00	50.030	0.500	NA	NA	NA	NA	11.261	0.500	0.500	0.500	0.0	0.500	5.63	ND
U3-C4-Primary Can1109.Can	008F2401.D	008F2402.D	008F2403.D	EDITHP730F_C1-C6_BENZENE.M	5.00	50.030	0.500	NA	NA	NA	NA	8.073	0.500	0.500	0.500	0.0	0.500	4.04	ND

Enthalpy Analytical

Company: METCO Environmental

Job No.: 0816-140 EPA Method 18-Type Canister Analysis

Client No.: 16-323

C3 as Propane

Sample ID	Filename #1	Filename #2	Filename #3	Analysis Method	Curve Min	Curve Max	MDL	DF	Conc #1 (ppm)	Conc #2 (ppm)	Conc #3 (ppm)	%dif conc	Avg Conc (ppm)	Final Conc (ppm)	Flag
U3-C1-Primary Can1368.Can	003F2101.D	003F2102.D	003F2103.D	EDITHP730F_C1-C6_BENZENE.M	5.00	50,030	0.500	8.533	0.500	0.500	0.500	0.0	0.500	4.27	ND

U3-C2-Primary Can1321.Can	006F2201.D	006F2202.D	006F2203.D	EDITHP730F_C1-C6_BENZENE.M	5.00	50,030	0.500	8.643	0.500	0.500	0.500	0.0	0.500	4.32	ND
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U3-C3-Primary Can1655.Can	007F2301.D	007F2302.D	007F2303.D	EDITHP730F_C1-C6_BENZENE.M	5.00	50,030	0.500	11.261	0.500	0.500	0.500	0.0	0.500	5.63	ND
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U3-C4-Primary Can1109.Can	008F2401.D	008F2402.D	008F2403.D	EDITHP730F_C1-C6_BENZENE.M	5.00	50,030	0.500	8.073	0.500	0.500	0.500	0.0	0.500	4.04	ND
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Enthalpy Analytical

Company: METCO Environmental

Job No.: 0816-140 EPA Method 18-Type Canister Analysis

Client No.: 16-323

Butane

Sample ID	Filename #1	Filename #2	Filename #3	Analysis Method	Curve Min	Curve Max	MDL	Ret Time (min)	Ret Time (min)	Ret Time (min)	%dif RT	DF	Conc #1 (ppm)	Conc #2 (ppm)	Conc #3 (ppm)	%dif conc	Avg Conc (ppm)	Final Conc (ppm)	Flag
U3-C1-Primary Can1368.Can	003F2101.D	003F2102.D	003F2103.D	EDITHP730F_C1-C6_BENZENE.M	5.00	10,000	0.500	2.91	2.91	2.91	0.0	8.533	37.2	37.3	37.2	0.2	37.2	318	
U3-C2-Primary Can1321.Can	006F2201.D	006F2202.D	006F2203.D	EDITHP730F_C1-C6_BENZENE.M	5.00	10,000	0.500	2.91	2.91	2.91	0.0	8.643	109	108	109	0.2	109	939	
U3-C3-Primary Can1655.Can	007F2301.D	007F2302.D	007F2303.D	EDITHP730F_C1-C6_BENZENE.M	5.00	10,000	0.500	2.91	2.91	2.91	0.0	11.261	118	118	118	0.0	118	1,334	
U3-C4-Primary Can1109.Can	008F2401.D	008F2402.D	008F2403.D	EDITHP730F_C1-C6_BENZENE.M	5.00	10,000	0.500	2.91	2.91	2.91	0.0	8.073	179	178	179	0.5	179	1,442	

Enthalpy Analytical

Company: METCO Environmental

Job No.: 0816-140 EPA Method 18-Type Canister Analysis

Client No.: 16-323

C4 as Butane

Sample ID	Filename #1	Filename #2	Filename #3	Analysis Method	Curve Min	Curve Max	MDL	DF	Conc #1 (ppm)	Conc #2 (ppm)	Conc #3 (ppm)	%diff conc	Avg Conc (ppm)	Final Conc (ppm)	Flag
U3-C1-Primary Can1368.Can	003F2101.D	003F2102.D	003F2103.D	EDITHP730F_C1-C6_BENZENE.M	5.00	10,000	0.500	8.533	5.88	5.76	6.05	2.6	5.90	50.3	

U3-C2-Primary Can1321.Can	006F2201.D	006F2202.D	006F2203.D	EDITHP730F_C1-C6_BENZENE.M	5.00	10,000	0.500	8.643	8.62	8.59	8.70	0.7	8.63	74.6	
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U3-C3-Primary Can1655.Can	007F2301.D	007F2302.D	007F2303.D	EDITHP730F_C1-C6_BENZENE.M	5.00	10,000	0.500	11.261	6.02	6.14	6.50	4.6	6.22	70.0	
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U3-C4-Primary Can1109.Can	008F2401.D	008F2402.D	008F2403.D	EDITHP730F_C1-C6_BENZENE.M	5.00	10,000	0.500	8.073	12.9	12.4	12.9	2.6	12.7	103	
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Enthalpy Analytical

Company: METCO Environmental
 Job No.: 0816-140 EPA Method 18-Type Canister Analysis
 Client No.: 16-323

Pentane

Sample ID	Filename #1	Filename #2	Filename #3	Analysis Method	Curve Min	Curve Max	MDL	Ret Time (min)	Ret Time (min)	Ret Time (min)	%diff RT	DF	Conc #1 (ppm)	Conc #2 (ppm)	Conc #3 (ppm)	%diff conc	Avg Conc (ppm)	Final Conc (ppm)	Flag
U3-C1-Primary Can1368.Can	003F2101.D	003F2102.D	003F2103.D	EDITHP730F_C1-C6_BENZENE.M	5.15	5.003	0.515	NA	NA	NA	NA	8.533	0.515	0.515	0.515	0.0	0.515	4.39	ND
U3-C2-Primary Can1321.Can	006F2201.D	006F2202.D	006F2203.D	EDITHP730F_C1-C6_BENZENE.M	5.15	5.003	0.515	NA	NA	NA	NA	8.643	0.515	0.515	0.515	0.0	0.515	4.45	ND
U3-C3-Primary Can1655.Can	007F2301.D	007F2302.D	007F2303.D	EDITHP730F_C1-C6_BENZENE.M	5.15	5.003	0.515	NA	NA	NA	NA	11.261	0.515	0.515	0.515	0.0	0.515	5.80	ND
U3-C4-Primary Can1109.Can	008F2401.D	008F2402.D	008F2403.D	EDITHP730F_C1-C6_BENZENE.M	5.15	5.003	0.515	NA	NA	NA	NA	8.073	0.515	0.515	0.515	0.0	0.515	4.16	ND

Enthalpy Analytical

Company: METCO Environmental

Job No.: 0816-140 EPA Method 18-Type Canister Analysis

Client No.: 16-323

C5 as Pentane

Sample ID	Filename #1	Filename #2	Filename #3	Analysis Method	Curve Min	Curve Max	MDL	DF	Conc #1 (ppm)	Conc #2 (ppm)	Conc #3 (ppm)	%diff conc	Avg Conc (ppm)	Final Conc (ppm)	Flag
U3-C1-Primary Can1368.Can	003F2101.D	003F2102.D	003F2103.D	EDITHP730F_C1-C6_BENZENE.M	5.15	5.003	0.515	8.533	0.515	0.515	0.515	0.0	0.515	4.39	ND

U3-C2-Primary Can1321.Can	006F2201.D	006F2202.D	006F2203.D	EDITHP730F_C1-C6_BENZENE.M	5.15	5.003	0.515	8.643	0.515	0.515	0.515	0.0	0.515	4.45	ND
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U3-C3-Primary Can1655.Can	007F2301.D	007F2302.D	007F2303.D	EDITHP730F_C1-C6_BENZENE.M	5.15	5.003	0.515	11.261	0.515	0.515	0.515	0.0	0.515	5.80	ND
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U3-C4-Primary Can1109.Can	008F2401.D	008F2402.D	008F2403.D	EDITHP730F_C1-C6_BENZENE.M	5.15	5.003	0.515	8.073	0.515	0.515	0.515	0.0	0.515	4.16	ND
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Enthalpy Analytical

Company: METCO Environmental

Job No.: 0816-140 EPA Method 18-Type Canister Analysis

Client No.: 16-323

Hexane

Sample ID	Filename #1	Filename #2	Filename #3	Analysis Method	Curve Min	Curve Max	MDL	Ret Time (min)	Ret Time (min)	Ret Time (min)	%dif RT	DF	Conc #1 (ppm)	Conc #2 (ppm)	Conc #3 (ppm)	%dif conc	Avg Conc (ppm)	Final Conc (ppm)	Flag
U3-C1-Primary Can1368.Can	003F2101.D	003F2102.D	003F2103.D	EDITHP730F_C1-C6_BENZENE.M	5.05	4.006	0.505	NA	NA	NA	NA	8.533	0.505	0.505	0.505	0.0	0.505	4.31	ND
U3-C2-Primary Can1321.Can	006F2201.D	006F2202.D	006F2203.D	EDITHP730F_C1-C6_BENZENE.M	5.05	4.006	0.505	NA	NA	NA	NA	8.643	0.505	0.505	0.505	0.0	0.505	4.36	ND
U3-C3-Primary Can1655.Can	007F2301.D	007F2302.D	007F2303.D	EDITHP730F_C1-C6_BENZENE.M	5.05	4.006	0.505	NA	NA	NA	NA	11.261	0.505	0.505	0.505	0.0	0.505	5.69	ND
U3-C4-Primary Can1109.Can	008F2401.D	008F2402.D	008F2403.D	EDITHP730F_C1-C6_BENZENE.M	5.05	4.006	0.505	NA	NA	NA	NA	8.073	0.505	0.505	0.505	0.0	0.505	4.08	ND

Enthalpy Analytical

Company: METCO Environmental

Job No.: 0816-140 EPA Method 18-Type Canister Analysis

Client No.: 16-323

C6 as Hexane

Sample ID	Filename #1	Filename #2	Filename #3	Analysis Method	Curve Min	Curve Max	MDL	DF	Conc #1 (ppm)	Conc #2 (ppm)	Conc #3 (ppm)	%dif conc	Avg Conc (ppm)	Final Conc (ppm)	Flag
U3-C1-Primary Can1368.Can	003F2101.D	003F2102.D	003F2103.D	EDITHP730F_C1-C6_BENZENE.M	5.05	4,006	0.505	8.533	0.505	0.505	0.505	0.0	0.505	4.31	ND

U3-C2-Primary Can1321.Can	006F2201.D	006F2202.D	006F2203.D	EDITHP730F_C1-C6_BENZENE.M	5.05	4,006	0.505	8.643	0.505	0.505	0.505	0.0	0.505	4.36	ND
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U3-C3-Primary Can1655.Can	007F2301.D	007F2302.D	007F2303.D	EDITHP730F_C1-C6_BENZENE.M	5.05	4,006	0.505	11.261	0.505	0.505	0.505	0.0	0.505	5.69	ND
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U3-C4-Primary Can1109.Can	008F2401.D	008F2402.D	008F2403.D	EDITHP730F_C1-C6_BENZENE.M	5.05	4,006	0.505	8.073	0.505	0.505	0.505	0.0	0.505	4.08	ND
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Enthalpy Analytical

Company: METCO Environmental

Job No.: 0816-140 EPA Method 18-Type Canister Analysis

Client No.: 16-323

Benzene

Sample ID	Filename #1	Filename #2	Filename #3	Analysis Method	Curve Min	Curve Max	MDL	Ret Time (min)	Ret Time (min)	Ret Time (min)	%diff RT	DF	Conc #1 (ppm)	Conc #2 (ppm)	Conc #3 (ppm)	%diff conc	Avg Conc (ppm)	Final Conc (ppm)	Flag
U3-C1-Primary Can1368.Can	003F2101.D	003F2102.D	003F2103.D	EDITHP730F_C1-C6_BENZENE.M	1.98	103	0.198	NA	NA	NA	NA	8.533	0.198	0.198	0.198	0.0	0.198	1.69	ND
U3-C2-Primary Can1321.Can	006F2201.D	006F2202.D	006F2203.D	EDITHP730F_C1-C6_BENZENE.M	1.98	103	0.198	NA	NA	NA	NA	8.643	0.198	0.198	0.198	0.0	0.198	1.71	ND
U3-C3-Primary Can1655.Can	007F2301.D	007F2302.D	007F2303.D	EDITHP730F_C1-C6_BENZENE.M	1.98	103	0.198	NA	NA	NA	NA	11.261	0.198	0.198	0.198	0.0	0.198	2.23	ND
U3-C4-Primary Can1109.Can	008F2401.D	008F2402.D	008F2403.D	EDITHP730F_C1-C6_BENZENE.M	1.98	103	0.198	NA	NA	NA	NA	8.073	0.198	0.198	0.198	0.0	0.198	1.60	ND

Enthalpy Analytical

Company: METCO Environmental

Job No.: 0816-140 EPA Method 18-Type Canister Analysis

Client No.: 16-323

Propylene

Sample ID	Filename #1	Filename #2	Filename #3	Analysis Method	Curve Min	Curve Max	MDL	Ret Time (min)	Ret Time (min)	Ret Time (min)	%dif RT	DF	Conc #1 (ppm)	Conc #2 (ppm)	Conc #3 (ppm)	%dif conc	Avg Conc (ppm)	Final Conc (ppm)	Flag
U3-C1-Primary Can1368 Can	021B1601.D	021B1602.D	021B1603.D	EDITHP636R_HRVOC_ACETYLENE.M	0.788	10,000	0.0788	4.87	4.85	4.85	0.2	264.522	3,672	3,653	3,630	0.6	3,652	965,998	
U3-C2-Primary Can1321 Can	022B1801.D	022B1802.D	022B1803.D	EDITHP636R_HRVOC_ACETYLENE.M	0.788	10,000	0.0788	4.84	4.84	4.84	0.0	267.935	3,553	3,551	3,546	0.1	3,550	951,168	
U3-C3-Primary Can1655 Can	023B1901.D	023B1902.D	023B1903.D	EDITHP636R_HRVOC_ACETYLENE.M	0.788	10,000	0.0788	4.85	4.85	4.85	0.0	349.080	2,655	2,651	2,652	0.1	2,652	925,932	
U3-C4-Primary Can1109 Can	024B2001.D	024B2002.D	024B2003.D	EDITHP636R_HRVOC_ACETYLENE.M	0.788	10,000	0.0788	4.84	4.84	4.84	0.0	250.249	3,571	3,570	3,564	0.1	3,568	892,930	

Enthalpy Analytical

Company: METCO Environmental

Job No.: 0816-140 EPA Method 18-Type Canister Analysis

Client No.: 16-323

TVOC As Propylene

Client's Sample Name	Filename #1	Filename #2	Filename #3	Analysis Method	MDL	Average RF	Area Sum #1	Area Sum #2	Area Sum #3	%dif area	Units	Dil Factor	Total As Propane	Flag
U3-C1-Primary Can1368.Can	021B1601.D	021B1602.D	021B1603.D	EDITHP636R_HRVOC_ACETYLENE.M	0.0788	0.618	5,955	5,923	5,886	0.6	ppm	264.522	967,952	
U3-C2-Primary Can1321.Can	022B1801.D	022B1802.D	022B1803.D	EDITHP636R_HRVOC_ACETYLENE.M	0.0788	0.618	5,775	5,765	5,757	0.2	ppm	267.935	954,686	
U3-C3-Primary Can1655.Can	023B1901.D	023B1902.D	023B1903.D	EDITHP636R_HRVOC_ACETYLENE.M	0.0788	0.618	4,313	4,306	4,308	0.1	ppm	349.080	929,647	
U3-C4-Primary Can1109.Can	024B2001.D	024B2002.D	024B2003.D	EDITHP636R_HRVOC_ACETYLENE.M	0.0788	0.618	5,802	5,800	5,790	0.1	ppm	250.249	896,568	

Enthalpy Analytical

Company: METCO Environmental

Job No.: 0816-140 ASTM D1946-90 Canister Analysis

Client No.: 16-323

Hydrogen

Sample ID	Filename #1	Filename #2	Analysis Method	Curve Min	Curve Max	MDL	Ret Time (min)	Ret Time (min)	%dif RT	DF	Conc #1 (%)	Conc #2 (%)	%dif conc	Avg Conc (%)	Final Conc (%)	Flag
U3-C1-Primary Can1368.Can	004F0101.D	004F0102.D	BETTP338_FGA.M	0.310	28.5	0.0853	NA	NA	NA	8.533	0.0853	0.0853	0.0	0.0853	0.728	ND
U3-C2-Primary Can1321.Can	005F0201.D	005F0202.D	BETTP338_FGA.M	0.310	28.5	0.0853	NA	NA	NA	8.643	0.0853	0.0853	0.0	0.0853	0.737	ND
U3-C3-Primary Can1655.Can	006F0301.D	006F0302.D	BETTP338_FGA.M	0.310	28.5	0.0853	NA	NA	NA	11.261	0.0853	0.0853	0.0	0.0853	0.961	ND
U3-C4-Primary Can1109.Can	007F0401.D	007F0402.D	BETTP338_FGA.M	0.310	28.5	0.0853	NA	NA	NA	8.073	0.0853	0.0853	0.0	0.0853	0.689	ND

Enthalpy Analytical

Company: METCO Environmental

Job No.: 0816-140 ASTM D1946-90 Canister Analysis

Client No.: 16-323

Oxygen

Sample ID	Filename #1	Filename #2	Analysis Method	Curve Min	Curve Max	MDL	Ret Time (min)	Ret Time (min)	%dif RT	DF	Conc #1 (%)	Conc #2 (%)	%dif conc	Avg Conc (%)	Final Conc (%)	Flag
U3-C1-Primary Can1368.Can	004F0101.D	004F0102.D	BETTP338_FGA.M	0.543	100	0.0543	4.61	4.61	0.0	8.533	0.0692	0.0650	3.1	0.0671	0.573	J
U3-C2-Primary Can1321.Can	005F0201.D	005F0202.D	BETTP338_FGA.M	0.543	100	0.0543	4.60	4.60	0.0	8.643	0.0684	0.0782	6.6	0.0733	0.634	J
U3-C3-Primary Can1655.Can	006F0301.D	006F0302.D	BETTP338_FGA.M	0.543	100	0.0543	4.61	4.60	0.1	11.261	0.0543	0.0670	15.0	0.0606	0.683	J
U3-C4-Primary Can1109.Can	007F0401.D	007F0402.D	BETTP338_FGA.M	0.543	100	0.0543	4.60	4.59	0.1	8.073	0.0616	0.0665	3.8	0.0640	0.517	J

Enthalpy Analytical

Company: METCO Environmental
Job No.: 0816-140 ASTM D1946-90 Canister Analysis
Client No.: 16-323

Nitrogen

Sample ID	Filename #1	Filename #2	Analysis Method	Curve Min	Curve Max	MDL	Ret Time (min)	Ret Time (min)	%dif RT	DF	Conc #1 (%)	Conc #2 (%)	%dif conc	Avg Conc (%)	Final Conc (%)	Flag
U3-C1-Primary Can1368.Can	004F0101.D	004F0102.D	BETTP338_FGA.M	0.380	99.9	0.0380	4.96	4.95	0.0	8.533	0.236	0.234	0.5	0.235	2.01	J
U3-C2-Primary Can1321.Can	005F0201.D	005F0202.D	BETTP338_FGA.M	0.380	99.9	0.0380	4.95	4.96	0.0	8.643	0.256	0.259	0.6	0.258	2.23	J
U3-C3-Primary Can1655.Can	006F0301.D	006F0302.D	BETTP338_FGA.M	0.380	99.9	0.0380	4.94	4.95	0.1	11.261	0.184	0.196	3.0	0.190	2.14	J
U3-C4-Primary Can1109.Can	007F0401.D	007F0402.D	BETTP338_FGA.M	0.380	99.9	0.0380	4.96	4.94	0.2	8.073	0.242	0.236	1.3	0.239	1.93	J

Enthalpy Analytical

Company: METCO Environmental

Job No.: 0816-140 ASTM D1946-90 Canister Analysis

Client No.: 16-323

Carbon monoxide

Sample ID	Filename #1	Filename #2	Analysis Method	Curve Min	Curve Max	MDL	Ret Time (min)	Ret Time (min)	%dif RT	DF	Conc #1 (%)	Conc #2 (%)	%dif conc	Avg Conc (%)	Final Conc (%)	Flag
U3-C1-Primary Can1368.Can	004F0101.D	004F0102.D	BETTP338_FGA.M	0.380	99.5	0.0380	NA	NA	NA	8.533	0.0380	0.0380	0.0	0.0380	0.324	ND
U3-C2-Primary Can1321.Can	005F0201.D	005F0202.D	BETTP338_FGA.M	0.380	99.5	0.0380	NA	NA	NA	8.643	0.0380	0.0380	0.0	0.0380	0.328	ND
U3-C3-Primary Can1655.Can	006F0301.D	006F0302.D	BETTP338_FGA.M	0.380	99.5	0.0380	NA	NA	NA	11.261	0.0380	0.0380	0.0	0.0380	0.428	ND
U3-C4-Primary Can1109.Can	007F0401.D	007F0402.D	BETTP338_FGA.M	0.380	99.5	0.0380	NA	NA	NA	8.073	0.0380	0.0380	0.0	0.0380	0.307	ND

Enthalpy Analytical

Company: METCO Environmental

Job No.: 0816-140 ASTM D1946-90 Canister Analysis

Client No.: 16-323

Carbon Dioxide

Sample ID	Filename #1	Filename #2	Analysis Method	Curve Min	Curve Max	MDL	Ret Time (min)	Ret Time (min)	%dif RT	DF	Conc #1 (%)	Conc #2 (%)	%dif conc	Avg Conc (%)	Final Conc (%)	Flag
U3-C1-Primary Can1368.Can	004F0101.D	004F0102.D	BETTP338_FGA.M	0.543	100	0.0543	NA	NA	NA	8.533	0.0543	0.0543	0.0	0.0543	0.463	ND
U3-C2-Primary Can1321.Can	005F0201.D	005F0202.D	BETTP338_FGA.M	0.543	100	0.0543	NA	NA	NA	8.643	0.0543	0.0543	0.0	0.0543	0.469	ND
U3-C3-Primary Can1655.Can	006F0301.D	006F0302.D	BETTP338_FGA.M	0.543	100	0.0543	NA	NA	NA	11.261	0.0543	0.0543	0.0	0.0543	0.611	ND
U3-C4-Primary Can1109.Can	007F0401.D	007F0402.D	BETTP338_FGA.M	0.543	100	0.0543	NA	NA	NA	8.073	0.0543	0.0543	0.0	0.0543	0.438	ND

Enthalpy Analytical -- Canister Pressurization

Job No. 0816-140
 Company METCO Environmental
 Site Comm Engineering: Lafayette, LA

Can Number	1368	1321	1655	1109
Job	0816-140	0816-140	0816-140	0816-140
Sample ID	U3-C1-Primary Can1368	U3-C2-Primary Can1321	U3-C3-Primary Can1655	U3-C4-Primary Can1109
CleanDate	09/12/2016	09/12/2016	09/12/2016	09/12/2016
LeakCheckDate	09/12/2016	09/12/2016	09/12/2016	09/12/2016
LeakCheckAnalyst	PRM	PRM	PRM	PRM
BlankCheckRef	EdithP723	EdithP723	EdithP723	EdithP723
Can Size (L)	6	6	6	6
Evac Temp (F)	70.0	70.0	70.0	70.0
Evac Pbar (mmHg)	757	757	757	757
Evac Gauge (mmHg)	-754	-754	-754	-753
Evac Analyst	PRM	PRM	PRM	PRM
Evac Time	09/12/16 16:21	09/12/16 16:20	09/12/16 16:21	09/12/16 16:46
Evac Vol (L)	0.021	0.021	0.021	0.027
Recd. Temp (F)	70.5	70.5	70.5	70.5
Recd. Pbar (mmHg)	757	757	757	757
Recd. Gauge (mmHg)	-516	-519	-569	-501
Recd Vol (L)	1.889	1.868	1.474	2.008
P1 Temp (F)	70.5	70.5	70.5	70.5
P1 Pbar (mmHg)	757	757	757	757
P1 Gauge (mmHg)	1,272	1,275	1,325	1,278
P1 Analyst	NBT	NBT	NBT	NBT
P1 Time	10/13/16 12:32	10/13/16 12:36	10/13/16 12:40	10/13/16 12:44
P1 Vol (L)	15.937	15.966	16.360	15.991
P1 Dilution Factor	8.533	8.643	11.261	8.073

Narrative Summary

Enthalpy Analytical Narrative Summary

Company	METCO Environmental
Analyst	NBT
Parameters	EPA Method 3C

Client #	16-323
Job #	0816-140
# Samples	12 Bags

Custody

Shannon Hammaker received the samples on 9/27/16 and 9/30/16 after being relinquished by METCO Environmental. Back-up bags for samples **Unit 3-R2C3** and **Unit 3-R3C3** were received by Shannon Hammaker on 10/28/16 under Enthalpy Analytical job #1016-147. The samples were received at ambient temperature and in good condition. Prior to, during, and after analysis, the samples were kept under lock with access only to authorized personnel by Enthalpy Analytical, Inc.

Analysis

The samples were analyzed for hydrogen, oxygen, nitrogen, carbon monoxide, methane, and carbon dioxide using the analytical procedures in EPA Method 3C.

All samples and standards were introduced directly to the column using an automated multi-port Valco gas sampling valve equipped with a stainless steel loop. All target analytes were referenced to certified gas phase standards.

The Agilent Technologies Model 6890N, Gas Chromatograph "Betty" (S/N US10430048) was equipped with a Thermal Conductivity Detector for these analyses.

Calibration

The calibration curve is included in the Raw Data section of this report. The data analysis method is referenced in the Analysis Method column on the Detailed Results page.

The first page of the curve contains all method specific parameters (i.e., curve type, origin, weight, etc.) used to quantify the samples. The calibration curve section also includes a table with the Retention Time (RetTime), Level (Lvl), Amount (corresponding units), Area, Response Factor (Amt/Area) and the analyte Name. The calibration table is used to identify (by retention time) and quantify each target compound.

Chromatographic Conditions

The acquisition method, BETTYP017_CAL.M, is included in the Raw Data section of this report.

QC Notes

The analysis of the laboratory helium blank contained no target compounds at concentrations greater than the detection limit.



Enthalpy Analytical Narrative Summary

(continued)

Reporting Notes

This revised report shows the results for the replacement bags for samples *Unit 3-R2C3* and *Unit 3-R3C3*.

These analyses met the requirements of the TNI Standard. Any deviations from the requirements of the reference method or TNI Standard have been stated above.

The results presented in this report are representative of the samples as provided to the laboratory.

Enthalpy Analytical Narrative Summary

Company	METCO Environmental
Analyst	NBT
Parameters	EPA Method 18-Type

Client #	16-323
Job #	0816-140R
# Samples	4 Canisters

Custody

Shannon Hammaker received the samples on 9/26/16 and 9/27/16 after being relinquished by METCO Environmental. The samples were received at ambient temperature and in good condition. Prior to, during, and after analysis, the samples were kept under lock with access only to authorized personnel by Enthalpy Analytical, Inc.

Analysis

The samples were analyzed for methane, ethane, propane, butane, pentane, hexane, benzene, propylene, total volatile organic compounds as propylene and others as C_x compounds using the general analytical procedures in EPA Method 18, Measurement of Gaseous Organic Compound Emissions by Gas Chromatography (40 CFR Part 60, Appendix A).

All samples and standards were introduced directly to the column using an automated multi-port Valco gas sampling valve equipped with a stainless steel loop. The C₁-C₆ n-alkanes, benzene, and propylene were referenced to certified gas phase standards.

The n-alkane retention times are used to generate retention time windows for other hydrocarbons, which are reported 'as' the nearest n-alkane. For example, the areas for all peaks between 3.714 and 5.209 minutes (except the n-pentane peak) are referenced to the calibrated n-pentane response. The sum of the results is labeled 'C5 as pentane'.

Total VOC as propylene results were determined by summing the peak areas for all peaks in each injection and calculating the average area, then multiplying that average area by the calibrated propylene response factor from the initial calibration.

Upon receipt, the canister pressures were measured and recorded. The canisters were then pressurized and a dilution ratio was calculated for each canister (see the Canister Pressurization page in the Results section of this report).

The Agilent Technologies Model 7890A, Gas Chromatograph "Edith" (S/N CN10722006) was equipped with a Flame Ionization Detector for these analyses.

Enthalpy Analytical Narrative Summary (continued)

Chromatographic Conditions	The acquisition methods, AQ_EDITHP274_HRVOC_SHORT.M, AQ_EDITHP274_HRVOC.M, AQ_EDITHP503_HRVOC.M and AQ_EDITHP274_HRVOC_XLONG.M are included in the Raw Data section of this report.
Calibration	The calibration curves are included in the Raw Data section of this report. The data analysis method is referenced in the Analysis Method column on the Detailed Results page. The first page of the curve contains all method specific parameters (i.e., curve type, origin, weight, etc.) used to quantify the samples. The calibration curve section also includes a table with the Retention Time (RetTime), Level (Lvl), Amount (corresponding units), Area, Response Factor (Amt/Area) and the analyte Name. The calibration table is used to identify (by retention time) and quantify each target compound.
QC Notes	The analysis of the laboratory zero air blank contained no target compounds at concentrations greater than the detection limit.
Reporting Notes	These analytical results are reported on a wet basis. The user of this report should determine the percent moisture in the sample and correct the reported value to ppmvd as appropriate. The results presented in this report are representative of the samples as provided to the laboratory.

Enthalpy Analytical Narrative Summary

Company	METCO Environmental
Analyst	NBT
Parameters	ASTM D1946-90

Client #	16-323
Job #	0816-140
# Samples	4 Canisters

Custody

Shannon Hammaker received the samples on 9/26/16 and 9/27/16 after being relinquished by METCO Environmental. The samples were received at ambient temperature and in good condition. Prior to, during, and after analysis, the samples were kept under lock with access only to authorized personnel by Enthalpy Analytical, Inc.

Analysis

The samples were analyzed for hydrogen, oxygen, nitrogen, carbon monoxide, methane, and carbon dioxide using the analytical procedures in ASTM D1946 – 90 (Reapproved 2000), Standard Practice for Analysis of Reformed Gas by Gas Chromatography.

All samples and standards were introduced directly to the column using an automated multi-port Valco gas sampling valve equipped with a stainless steel loop. All target analytes were referenced to certified gas phase standards.

Upon receipt, the canister pressures were measured and recorded. The canisters were then pressurized and a dilution ratio was calculated for each canister (see the Canister Pressurization page in the Results section of this report).

The Agilent Technologies Model 6890N, Gas Chromatograph "Betty" (S/N US10430048) was equipped with a Thermal Conductivity Detector for these analyses.

Calibration

The calibration curve is included in the Raw Data section of this report. The data analysis method is referenced in the Analysis Method column on the Detailed Results page.

The first page of the curve contains all method specific parameters (i.e., curve type, origin, weight, etc.) used to quantify the samples. The calibration curve section also includes a table with the Retention Time (RetTime), Level (Lvl), Amount (corresponding units), Area, Response Factor (Amt/Area) and the analyte Name. The calibration table is used to identify (by retention time) and quantify each target compound.



Enthalpy Analytical Narrative Summary (continued)

Chromatographic Conditions	The acquisition method, GC142P133_CAL.M, is included in the Raw Data section of this report.
QC Notes	The analysis of the laboratory helium blank contained nitrogen at a concentration between the detection limit and LOQ. No other target compounds were present at concentrations greater than the detection limit.
Reporting Notes	Methane was not present in any sample at concentrations greater than the detection limit and thus, methane results were reported from the EPA Method 18-Type analyses. The EPA Method 18-Type results were also used for the Btu and Mixed Molecular Weight calculations. These analyses met the requirements of the TNI Standard. Any deviations from the requirements of the reference method or TNI Standard have been stated above. The results presented in this report are representative of the samples as provided to the laboratory.



General Reporting Notes

The following are general reporting notes that are applicable to all Enthalpy Analytical, Inc. data reports, unless specifically noted otherwise.

- Any analysis which refers to the method as “**Type**” represents a planned deviation from the reference method. For instance a Hydrogen Sulfide assay from a Tedlar bag would be labeled as “EPA Method 16-Type” because Tedlar bags are not mentioned as one of the collection options in EPA Method 16.
- The acronym **MDL** represents the Minimum Detection Limit. Below this value the laboratory cannot determine the presence of the analyte of interest reliably.
- The acronym **LOQ** represents the Limit of Quantification. Below this value the laboratory cannot quantitate the analyte of interest within the criteria of the method.
- The acronym **ND** following a value indicates a non-detect or analytical result below the MDL.
- The letter **J** in the Qualifier or Flag column in the results indicates that the value is between the MDL and the LOQ. The laboratory can positively identify the analyte of interest as present, but the value should be considered an estimate.
- The letter **E** in the Qualifier or Flag column indicates an analytical result exceeding 100% of the highest calibration point. The associated value should be considered as an estimate.
- The acronym **DF** represents Dilution Factor. This number represents dilution of the sample during the preparation and/or analysis process. The analytical result taken from a laboratory instrument is multiplied by the DF to determine the final undiluted sample results.
- The addition of **MS** to the Sample ID represents a Matrix Spike. An aliquot of an actual sample is spiked with a known amount of analyte so that a percent recovery value can be determined. The MS analysis indicates what effect the sample matrix may have on the target analyte, i.e. whether or not anything in the sample matrix interferes with the analysis of the analyte(s).
- The addition of **MSD** to the Sample ID represents a Matrix Spike Duplicate. Prepared in the same manner as a MS, the use of duplicate matrix spikes allows for further confirmation of laboratory quality by showing the consistency of results gained by performing the same steps multiple times.
- The addition of **LD** to the Sample ID represents a Laboratory Duplicate. The analyst prepares an additional aliquot of sample for testing and the results of the duplicate analysis are compared to the initial result. The result should have a difference value of within 10% of the initial result (if the results of the original analysis are greater than the LOQ).



General Reporting Notes

(continued)

- The addition of **AD** to the Sample ID represents an Alternate Dilution. The analyst prepares an additional aliquot at a different dilution factor (usually double the initial factor). This analysis helps confirm that no additional compound is present and coeluting or sharing absorbance with the analyte of interest, as they would have a different response/absorbance than the analyte of interest.
- The Sample ID **LCS** represents a Laboratory Control Sample. Clean matrix, similar to the client sample matrix, prepared and analyzed by the laboratory using the same reagents, spiking standards and procedures used for the client samples. The LCS is used to assess the control of the laboratory's analytical system. Whenever spikes are prepared for our client projects, two spikes are retained as LCSs. The LCSs are labeled with the associated project number and kept in-house at the appropriate temperature conditions. When the project samples are received for analysis, the LCSs are analyzed to confirm that the analyte could be recovered from the media, separate from the samples which were used on the project and which may have been affected by source matrix, sample collection and/or sample transport.
- **Significant Figures:** Where the reported value is much greater than unity (1.00) in the units expressed, the number is rounded to a whole number of units, rather than to 3 significant figures. For example, a value of 10,456.45 ug cat ch is rounded to 10,456 ug. There are five significant digits displayed, but no confidence should be placed on more than two significant digits.
- **Manual Integration:** The data system's used for processing will flag manually integrated peaks with an "M". There are several reasons a peak may be manually integrated. These reasons will be identified by the following two letter designations on sample chromatograms, if provided in the report. The peak was *not integrated* by the software "NI", the peak was *integrated incorrectly* by the software "II" or the *wrong peak* was integrated by the software "WP". These codes will accompany the analyst's manual integration stamp placed next to the compound name on the chromatogram.

Sample Custody



METCO
Environmental

CHAIN OF CUSTODY RECORD

Page of

Job No.: 16-323
Job Name: Common Eng.
Location: Lafayette La
Unit: 3

Project Manager: M. Hultinger
Project Supervisor: J. Johnson

Method: 3C

SAMPLE ID.	DATE	TIME	# OF CONT.	Absorb. Solution	Initial Vol.	SAMPLE ANALYSIS REQUIRED						Recovered by	REMARKS (Specific Compounds/Methods)
						PART	HCL	CL2	SOD2	SOD3	25.7 355		
R1 Cond 4 Bag	9/23/16	1545	1									<u>JEK</u>	
R2 Cond 4 Bag	120	1703	1										
R3 Cond 4 Bag		1825	1										
R1 Cond 4 Split Bag	9/23/16	1545	1										Archive
R2 Cond 4 Split Bag		1703	1										
R3 Cond 4 Split Bag		1825	1										

Samples Received for Transport/Shipments by: JEK

Samples Received for Transport/Shipments by:

Samples Received for Transport/Shipments by:

Samples Shipped Via: FED EXP

Samples Received at Laboratory by: [Signature]

Samples Analyzed by:

Samples Analyzed by:

Data Checked by:

Date:

Date:

Date:

Date:

Date:

Date:

Date:

9/23/16

9/24/16

09/27/16

Time:

Time:

Time:

Time:

Time:

Time:

Time:

1930

1730

830 AM

ambient T₂
good condition
SNH
09.27.16



METCO
Environmental

CHAIN OF CUSTODY RECORD

Page 18 of 18

Job No.: <u>16-323</u>		Project Manager: <u>M. Hultgren</u>		Method: <u>18</u>	
Job Name: <u>Comm Eng.</u>		Project Supervisor: <u>J. Johnson</u>			
Location: <u>Lafayette CA</u>					
Unit: <u>3</u>					

CAN#	SAMPLE I.D.	DATE	TIME	# OF CONT.	Absorb. Solution	Initial Vol.	SAMPLE ANALYSIS REQUIRED						Recovered by	REMARKS (Specific Compounds/Methods)
							PART	HCL	CLL	CSO2	SSO3			
1109	Unit 3 Canal 4 Primary Canister	9/23/16	1822	1										
1094	Unit 3 Canal 4 Secondary Canister	1	1822	1										Archive
1048	Unit 2 Canal 1 Primary Canister	9/26/16	1600	1										
1332	Unit 2 Canal 1 Secondary Canister	1	1600	1										Archive

Samples Received for Transport/Shipments by: <u>JE RJE</u>	Date: <u>9/26/16</u>	Time: <u>1730</u>
Samples Received for Transport/Shipments by: _____	Date: _____	Time: _____
Samples Received for Transport/Shipments by: _____	Date: _____	Time: _____
Samples Shipped Via: <u>FED Ex</u>	Date: <u>9/26/16</u>	Time: <u>1730</u>
Samples Received at Laboratory by: <u>[Signature]</u>	Date: <u>09/27/16</u>	Time: <u>0830 AM</u>
Samples Analyzed by: _____	Date: _____	Time: _____
Samples Analyzed by: _____	Date: _____	Time: _____
Data Checked by: _____	Date: _____	Time: _____

ambient T
good condition
SNH
09-27-16



METCO
Environmental

CHAIN OF CUSTODY RECORD

Page of

Job No.: 16-323		Project Manager: M. Hulteson		Method: 3C																			
Job Name: Comm Eng.		Project Supervisor: J. Johnson																					
Location: Lafayette LA																							
Unit: Unit 3																							
SAMPLE I.D.	DATE	TIME	# OF CONT.	Absorb. Solution	Initial Vol.	SAMPLE ANALYSIS REQUIRED						Recovered by	REMARKS (Specific Compounds/Methods)										
						P	A	R	T	H	C	L	2	S	O	2	S	O	3	75:7	335		
RUC2 - Bag	9/22/16	950	1																			7/21/16	
R4C2		1642	1																				
RUC2 Bag		1815	1																				
RUC2 Bag																							
RUC2 - Split Bag	9/22/16	950	1																				IN BA
R4C2		1642	1																				Archive
RUC2 - Split Bag		1815	1																				/
RUC2 - Split Bag																							

Samples Received for Transport/Shipments by:	Date:	Time:
J. LaCroix	9/23/16	1000

Samples Received for Transport/Shipments by:	Date:	Time:

Samples Received for Transport/Shipments by:	Date:	Time:

Samples Shipped Via:	Date:	Time:
Fed-Ex	9/23/16	1800

Samples Received at Laboratory by:	Date:	Time:
	9/24/16	12:00

Samples Analyzed by:	Date:	Time:

Samples Analyzed by:	Date:	Time:

Data Checked by:	Date:	Time:

Ambient TCO
Samples = good
Cautin



METCO
Environmental

CHAIN OF CUSTODY RECORD

Page of

Job No.: 16-323		Project Manager: M. Hutchinson		Method: 3C										
Job Name: Comm Engineering		Project Supervisor: J. Johnson												
Location: the Lafayette LA														
Unit: Units														
SAMPLE I.D.	DATE	TIME	# OF CONT.	Absorb. Solution	Initial Vol.	SAMPLE ANALYSIS REQUIRED						Recovered by	REMARKS (Specific Compounds/Methods)	
						PART	HCL	CL	CL	CL	CL			CL
R1 C1 Bag	9/21/10	1020	1											
R2 C1 Bag		1149	1											
R3 C1 Bag		1314	1											
R1 C1 split Bag	9/21/10	1030	1											In BA
R2 C1 split Bag		1152	1											Archive
R3 C1 split Bag		1310	1											

Samples Received for Transport/Shipment by: J. LeClerc	Date: 9/23/10	Time: 1000
Samples Received for Transport/Shipment by:	Date:	Time:
Samples Received for Transport/Shipment by:	Date:	Time:
Samples Shipped Via: FedEx	Date: 9/23/10	Time: 1800
Samples Received at Laboratory by: [Signature]	Date: 9/24/10	Time: 10:00
Samples Analyzed by:	Date:	Time:
Samples Analyzed by:	Date:	Time:
Data Checked by:	Date:	Time:

Ambient Temp
good condition



METCO
Environmental

CHAIN OF CUSTODY RECORD

Page of

Job No.: 116-323		Project Manager: M. Hutchinson		Method: 3C										
Job Name: Comm Eng.		Project Supervisor: J. Johnson												
Location: Lafayette La														
Unit: 3														
SAMPLE I.D.	DATE	TIME	# OF CONT.	Absorb. Solution	Initial Vol.	SAMPLE ANALYSIS REQUIRED						Recovered by	REMARKS (Specific Compounds/Methods)	
						PART	HCL	CL2	CSO2	SSO3	WSO3			WSO3
R1C3 - Bag	9/23/16	1002	1											
R2C3 Bag		1130	1											
R3C3 Bag		1245	1											
R1C3 Split Bag	9/23/16	1002	1											FW BR Archive
R2C3 Split Bag		1130	1											
R3C3 Split Bag		1245	1											

Samples Received for Transport/Shipement by:	Date:	Time:
Samples Received for Transport/Shipement by:	9/23/16	1450
Samples Received for Transport/Shipement by:		
Samples Shipped Via: Fed-Ex		
Samples Received at Laboratory by: J. L.	9/23/16	1800
Samples Analyzed by:	9/24/16	10:20
Samples Analyzed by:		
Data Checked by:		

Am. h. 2m + 7(C) 20
Sample 65 = 9.0.20
End. 20



Page of

Job No.: <u>16-323</u>		Project Manager: <u>M. Hutcherson</u>		Method: <u>18</u>		Page <u> </u> of <u> </u>	
Job Name: <u>Comm Eng.</u>		Project Supervisor: <u>J. Johnson</u>					
Location: <u>Lafayette La</u>							
Unit: <u>3</u>							

SAMPLE I.D.	DATE	TIME	# OF CONT	Absorb. Solution	Initial Vol.	SAMPLE ANALYSIS REQUIRED						Recovered by	REMARKS (Specific Compounds/Methods)
						PART	HCL	CLL	SOL	SOL	SOL		
Cond 3 - Primary Can Cond 3 - Secondary Can	9/23/16	12:45	1										

Samples Received for Transport/Shipement by: J. LeCroix Date: 9/23/16 Time: 1450

Samples Received for Transport/Shipement by: _____ Date: _____ Time: _____

Samples Received for Transport/Shipement by: _____ Date: _____ Time: _____

Samples Shipped Via: Fed-Ex Date: 9/23/16 Time: 1800

Samples Received at Laboratory by: [Signature] Date: 09/26/16 Time: 8:30 AM

Samples Analyzed by: _____ Date: _____ Time: _____

Samples Analyzed by: _____ Date: _____ Time: _____

Data Checked by: _____ Date: _____ Time: _____



Page of

[illegible]

VERSION 2
10 MARCH 2003

E-56

Sample condition = good
ambient SNH 092416

16-323A



Page of

Sample condition = good
ambient
SNH 09.26.14

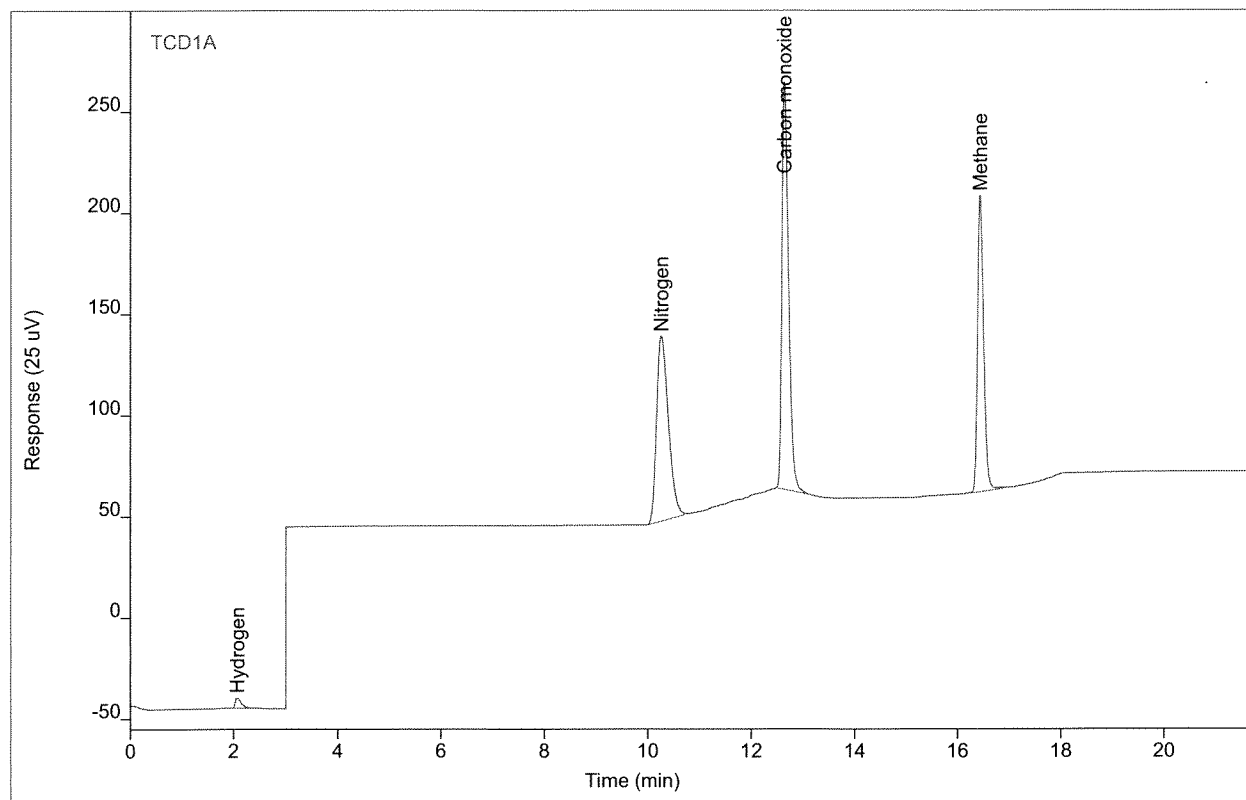
Raw Data

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG7 ENV(1=530,3=319.09)
Sequence Name BETTYP450 1 ver.4
Data File 009F0103.D
File Location GC/2016/Betty/Quarter 3
Injection Date 9/26/2016 5:12 PM
File Modified 10/18/2016 12:21 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 3 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 9/28/2016 8:13 AM
Printed 10/18/2016 5:09 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	BB	2.07	44.2113	5.42525	2.46699	1	2.46699	%
Nitrogen	BB	10.27	1449.44	91.6425	3.32908	1	3.32908	%
Carbon monoxide	MM	12.65	1789.83	201.414	3.38029	1	3.38029	%
Methane	MM	16.44	1220.18	146.570	2.69860	1	2.69860	%

Analyst Peak Integration Comments

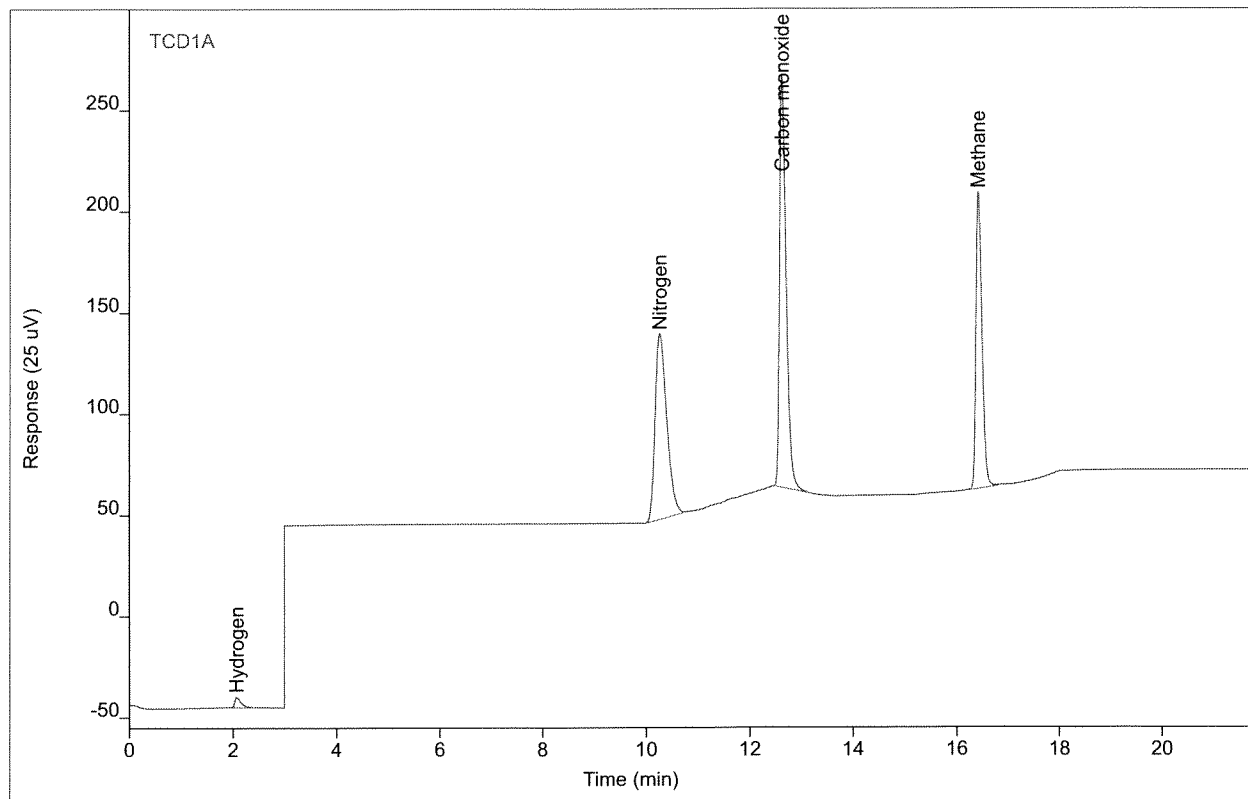
08:03:53 09/27/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG7 ENV(1=530,3=319.09)
Sequence Name BETTYP450 1 ver.4
Data File 009F0201.D
File Location GC/2016/Betty/Quarter 3
Injection Date 9/26/2016 5:43 PM
File Modified 10/18/2016 12:21 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type
Vial Number Vial 9
Injection Volume 250
Injection 1 of 2
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 9/28/2016 8:13 AM
Printed 10/18/2016 5:09 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	BB	2.07	46.2765	5.48657	2.58200	1	2.58200	%
Nitrogen	BB	10.27	1450.56	91.6876	3.33172	1	3.33172	%
Carbon monoxide	MM	12.65	1797.05	203.529	3.39403	1	3.39403	%
Methane	MM	16.44	1212.52	146.193	2.68141	1	2.68141	%

Analyst Peak Integration Comments

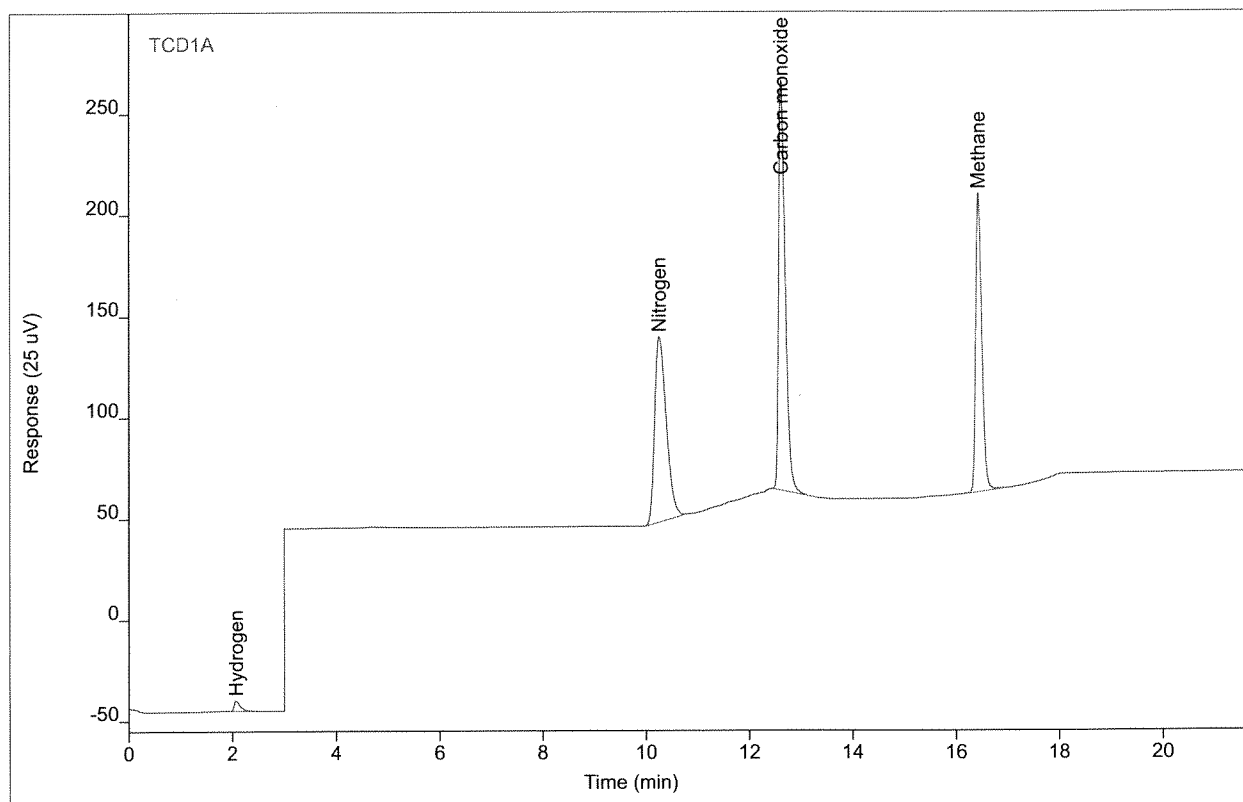
08:05:03 09/27/16 Nicholas Traversa II-BL
08:05:10 09/27/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG7 ENV(1=530,3=319.09)
Sequence Name BETTYP450 1 ver.4
Data File 009F0202.D
File Location GC/2016/Betty/Quarter 3
Injection Date 9/26/2016 6:14 PM
File Modified 10/18/2016 12:21 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type
Vial Number
Injection Volume
Injection
Acquisition Method
Analysis Method
Method Modified
Printed
Calibration
Vial 9
250
2 of 2
BETTYP017_CAL.M
BETTYP348_FGA_CRYO.M
9/28/2016 8:13 AM
10/18/2016 5:09 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	BB	2.07	45.8006	5.53998	2.55550	1	2.55550	%
Nitrogen	BB	10.27	1453.50	91.8402	3.33859	1	3.33859	%
Carbon monoxide	MM	12.65	1795.57	202.867	3.39121	1	3.39121	%
Methane	MM	16.44	1218.25	147.501	2.69427	1	2.69427	%

Analyst Peak Integration Comments

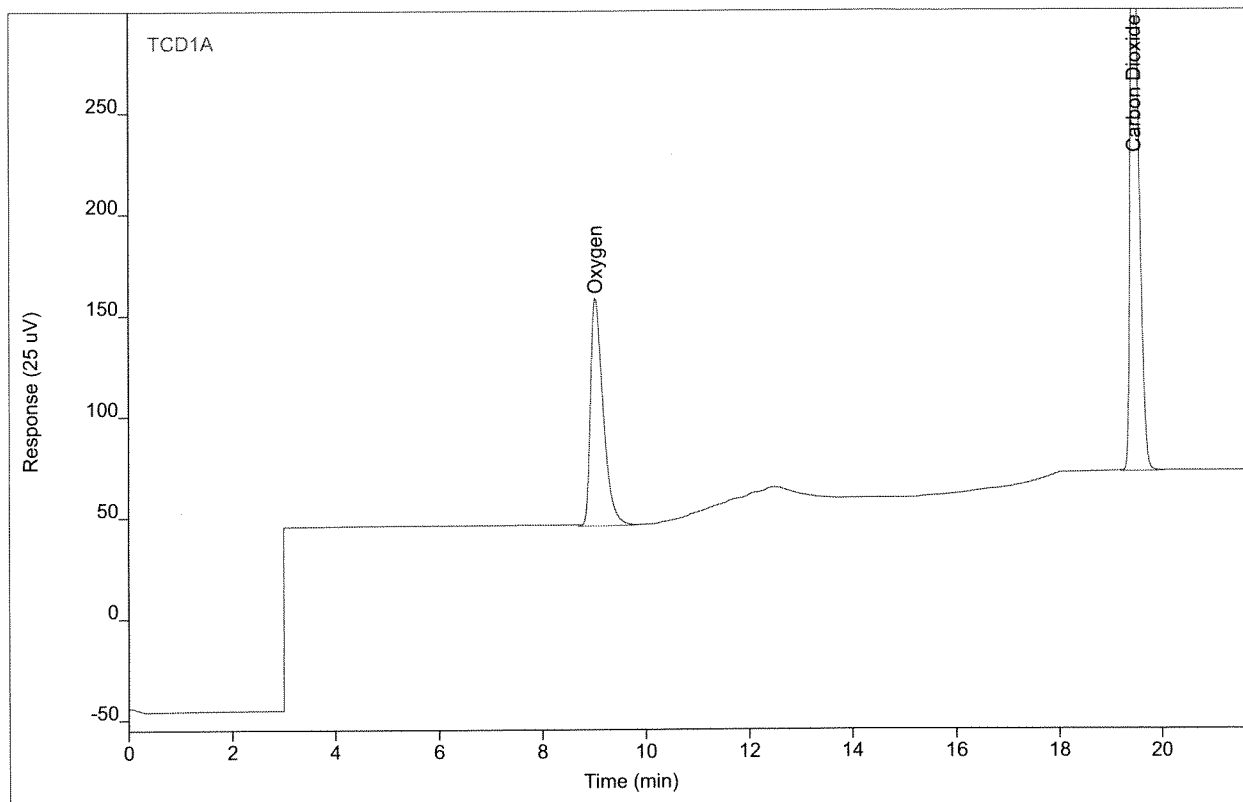
08:05:25 09/27/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG3 ENV(1=374.56,2=391.07)
Sequence Name BETTYP450 1 ver.4
Data File 009F0303.D
File Location GC/2016/Betty/Quarter 3
Injection Date 9/26/2016 7:47 PM
File Modified 10/18/2016 12:21 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 3 of 5
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 9/28/2016 8:13 AM
Printed 10/18/2016 5:09 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Oxygen	MM	9.03	1900.35	112.630	4.94843	1	4.94843	%
Carbon Dioxide	MM	19.48	3346.96	298.797	4.63842	1	4.63842	%

Analyst Peak Integration Comments

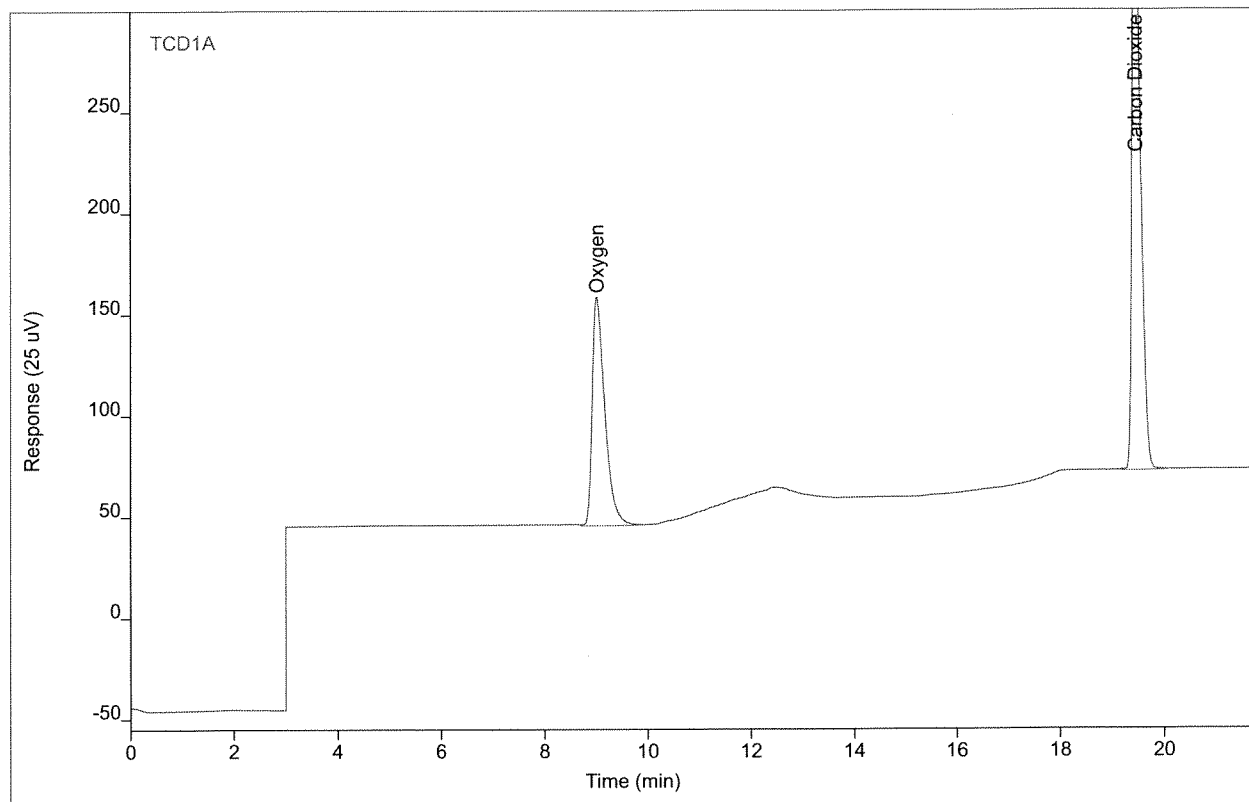
08:06:36 09/27/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG3 ENV(1=374.56,2=391.07)
Sequence Name BETTYP450 1 ver.4
Data File 009F0304.D
File Location GC/2016/Betty/Quarter 3
Injection Date 9/26/2016 8:18 PM
File Modified 10/18/2016 12:21 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 4 of 5
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 9/28/2016 8:13 AM
Printed 10/18/2016 5:09 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Oxygen	MM	9.03	1901.27	113.016	4.95085	1	4.95085	%
Carbon Dioxide	MM	19.48	3346.49	299.896	4.63776	1	4.63776	%

Analyst Peak Integration Comments

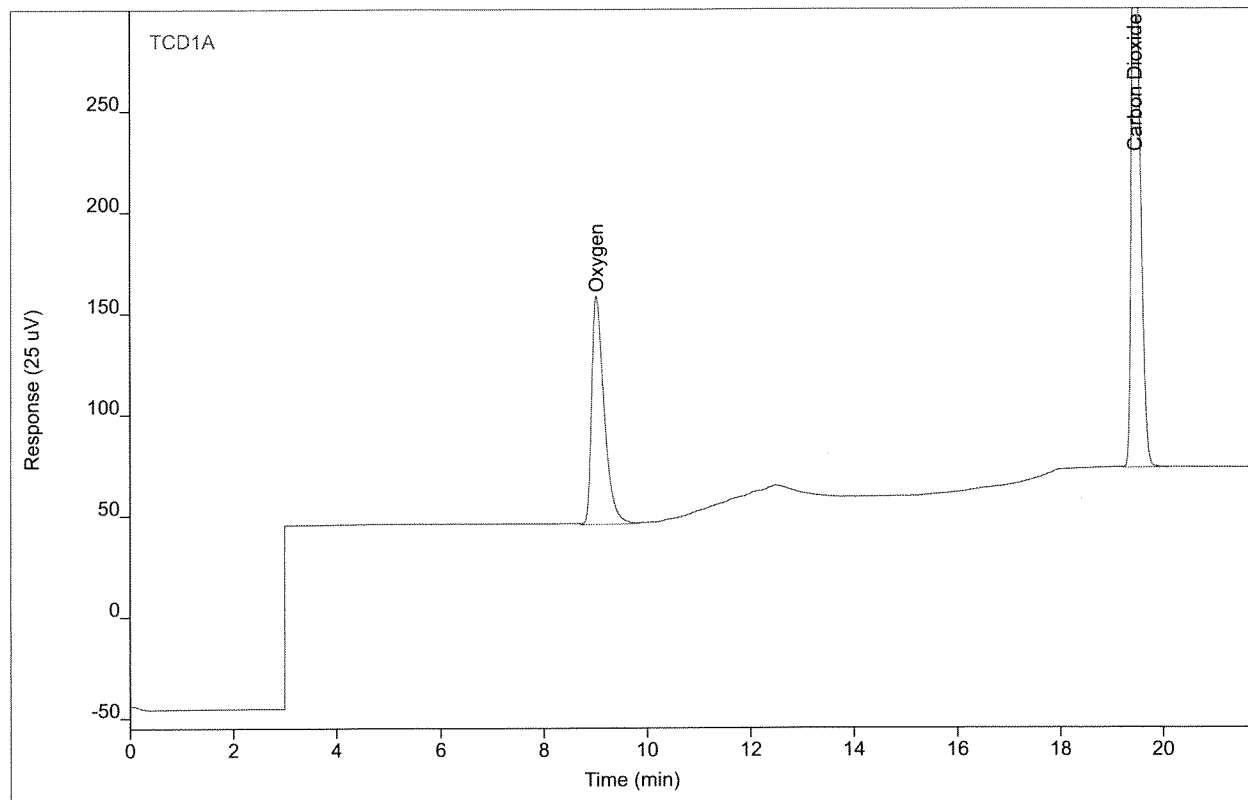
08:06:54 09/27/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG3 ENV(1=374.56,2=391.07)
Sequence Name BETTYP450 1 ver.4
Data File 009F0305.D
File Location GC/2016/Betty/Quarter 3
Injection Date 9/26/2016 8:49 PM
File Modified 10/18/2016 12:22 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 5 of 5
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 9/28/2016 8:13 AM
Printed 10/18/2016 5:09 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Oxygen	MM	9.03	1898.28	112.757	4.94300	1	4.94300	%
Carbon Dioxide	MM	19.48	3349.41	299.682	4.64187	1	4.64187	%

Analyst Peak Integration Comments

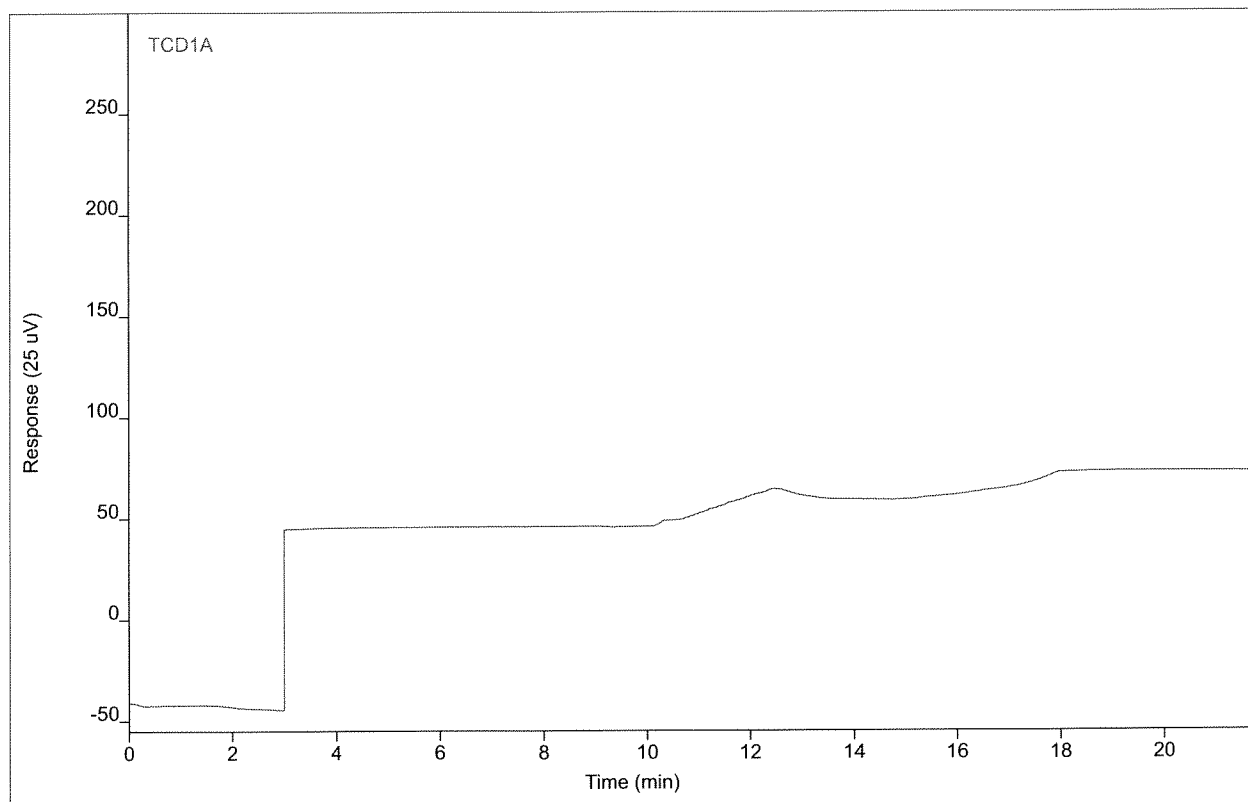
08:07:17 09/27/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP374 Method Blank-1
Sequence Name BETTYP450 1 ver.4
Data File 001F0401.D
File Location GC/2016/Betty/Quarter 3
Injection Date 9/26/2016 9:18 PM
File Modified 10/18/2016 12:22 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 1
Injection Volume 250
Injection 1 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 9/28/2016 8:13 AM
Printed 10/18/2016 5:09 PM



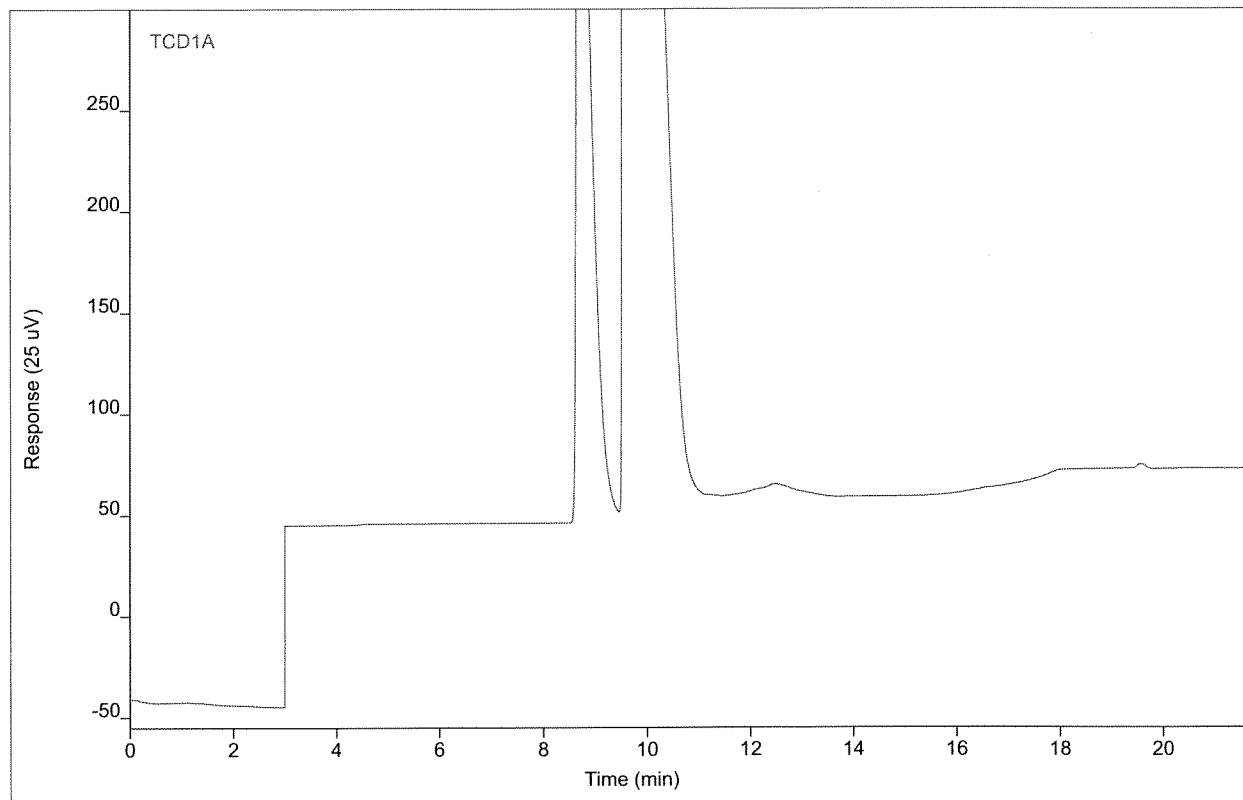
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(2.05)				1		
Oxygen		(9.04)				1		
Nitrogen		(10.29)				1		
Carbon monoxide		(12.59)				1		
Methane		(16.39)				1		
Carbon Dioxide		(19.57)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP374 Method Blank-1
Sequence Name BETTYP450 1 ver.4
Data File 001F0402.D
File Location GC/2016/Betty/Quarter 3
Injection Date 9/26/2016 9:47 PM
File Modified 10/18/2016 12:22 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 1
Injection Volume 250
Injection 2 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 9/28/2016 8:13 AM
Printed 10/18/2016 5:09 PM



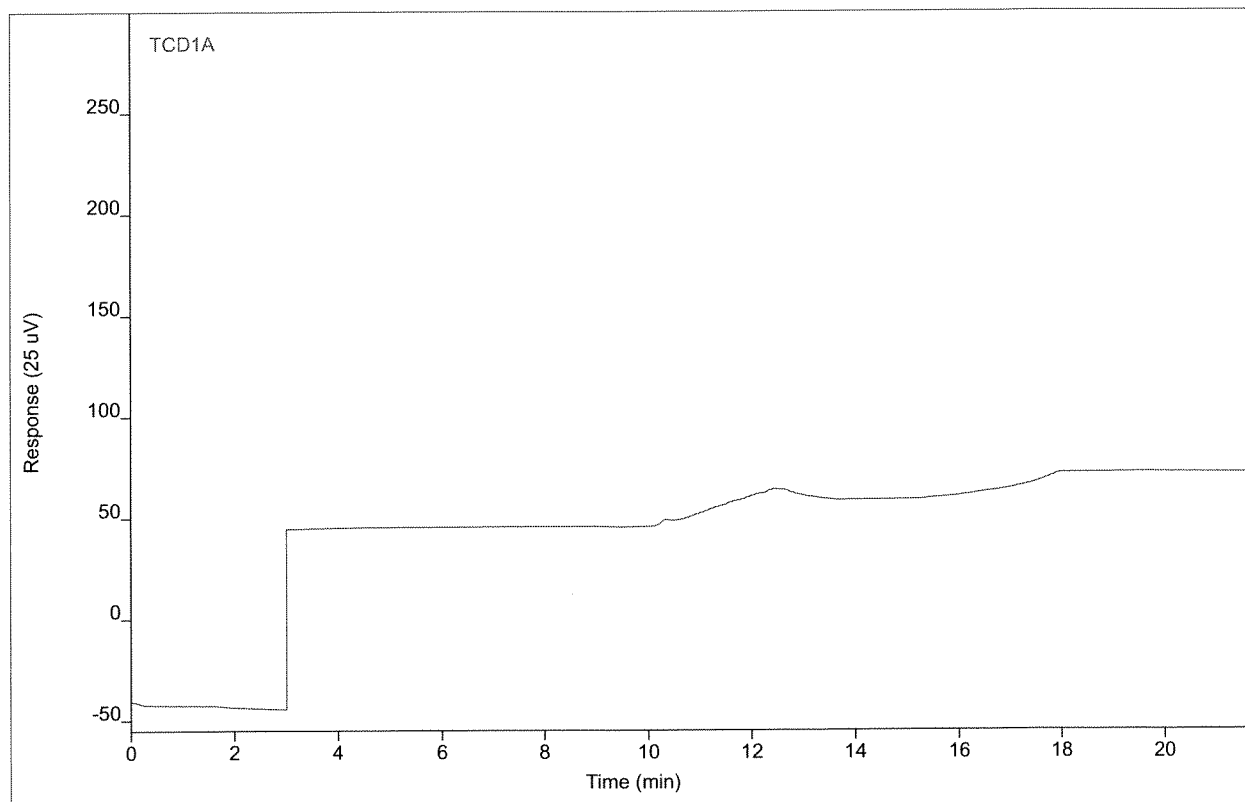
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(2.05)				1		
Oxygen		(9.04)				1		
Nitrogen		(10.29)				1		
Carbon monoxide		(12.59)				1		
Methane		(16.39)				1		
Carbon Dioxide		(19.57)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP374 Method Blank-1
Sequence Name BETTYP450 1 ver.4
Data File 001F0403.D
File Location GC/2016/Betty/Quarter 3
Injection Date 9/26/2016 10:16 PM
File Modified 10/18/2016 12:22 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 1
Injection Volume 250
Injection 3 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 9/28/2016 8:13 AM
Printed 10/18/2016 5:09 PM



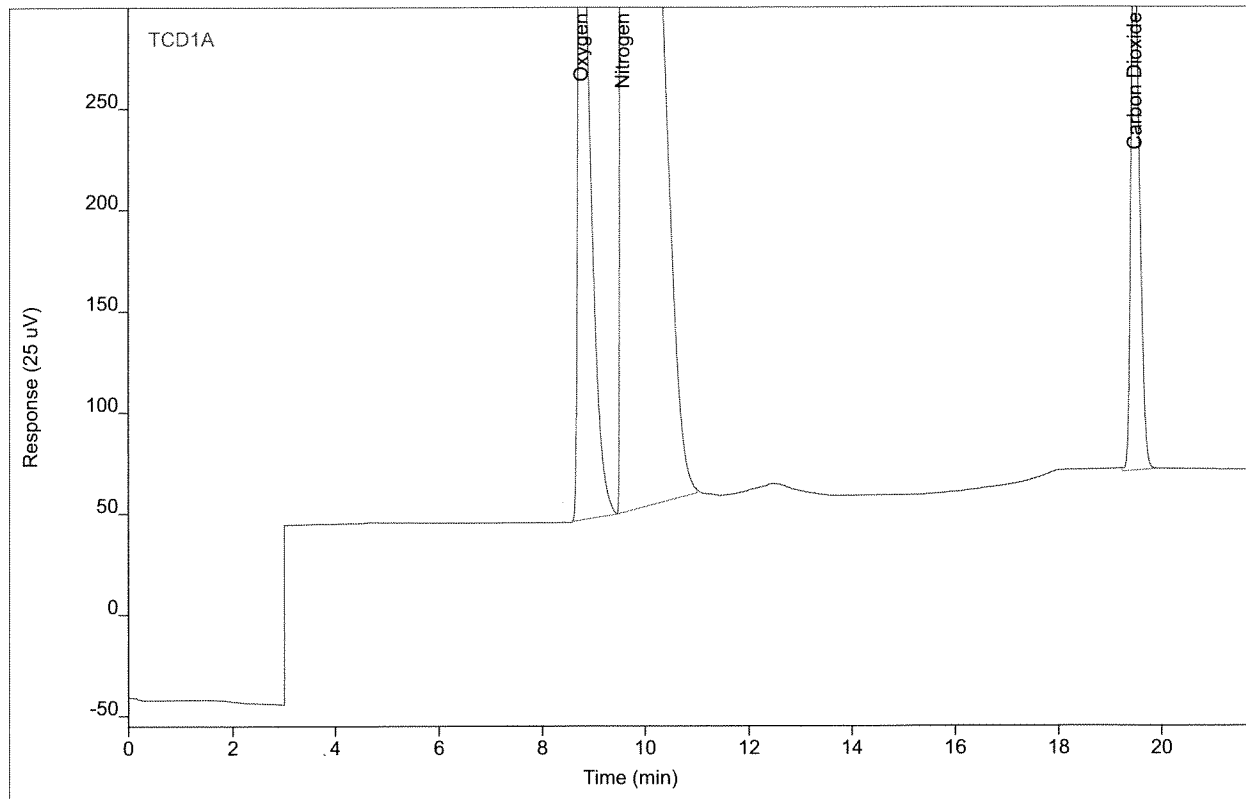
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(2.05)				1		
Oxygen		(9.04)				1		
Nitrogen		(10.29)				1		
Carbon monoxide		(12.59)				1		
Methane		(16.39)				1		
Carbon Dioxide		(19.57)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.Condition 1 Run 1.Bag
Sequence Name BETTYP450 1 ver.4
Data File 003F0501.D
File Location GC/2016/Betty/Quarter 3
Injection Date 9/26/2016 10:44 PM
File Modified 10/18/2016 12:32 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 3
Injection Volume 250
Injection 1 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 9/28/2016 8:13 AM
Printed 10/18/2016 5:09 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(2.05)				1		
Oxygen	BB	8.76	5945.06	359.202	15.5394	1	15.5394	%
Nitrogen	BB	9.57	31536.5	857.263	73.6977	1	73.6977	%
Carbon monoxide		(12.59)				1		
Methane		(16.39)				1		
Carbon Dioxide	MM	19.48	3028.55	271.930	4.19160	1	4.19160	%

Analyst Peak Integration Comments

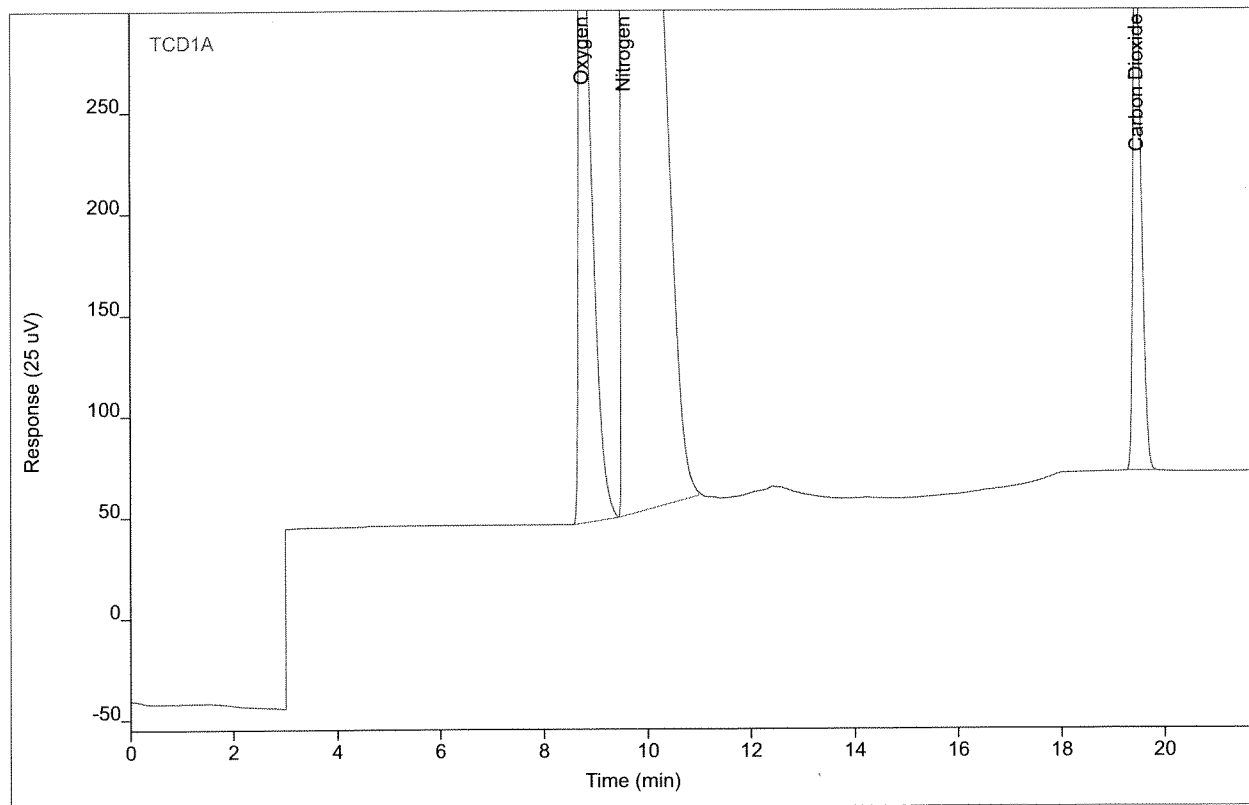
08:08:55 09/27/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.Condition 1 Run 1.Bag
Sequence Name BETTYP450 1 ver.4
Data File 003F0502.D
File Location GC/2016/Betty/Quarter 3
Injection Date 9/26/2016 11:13 PM
File Modified 10/18/2016 12:32 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 3
Injection Volume 250
Injection 2 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 9/28/2016 8:13 AM
Printed 10/18/2016 5:09 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(2.05)				1		
Oxygen	BV	8.76	5928.88	359.167	15.4970	1	15.4970	%
Nitrogen	VB	9.57	31377.2	855.628	73.3250	1	73.3250	%
Carbon monoxide		(12.59)				1		
Methane		(16.39)				1		
Carbon Dioxide	MM	19.48	2972.37	270.137	4.11277	1	4.11277	%

Analyst Peak Integration Comments

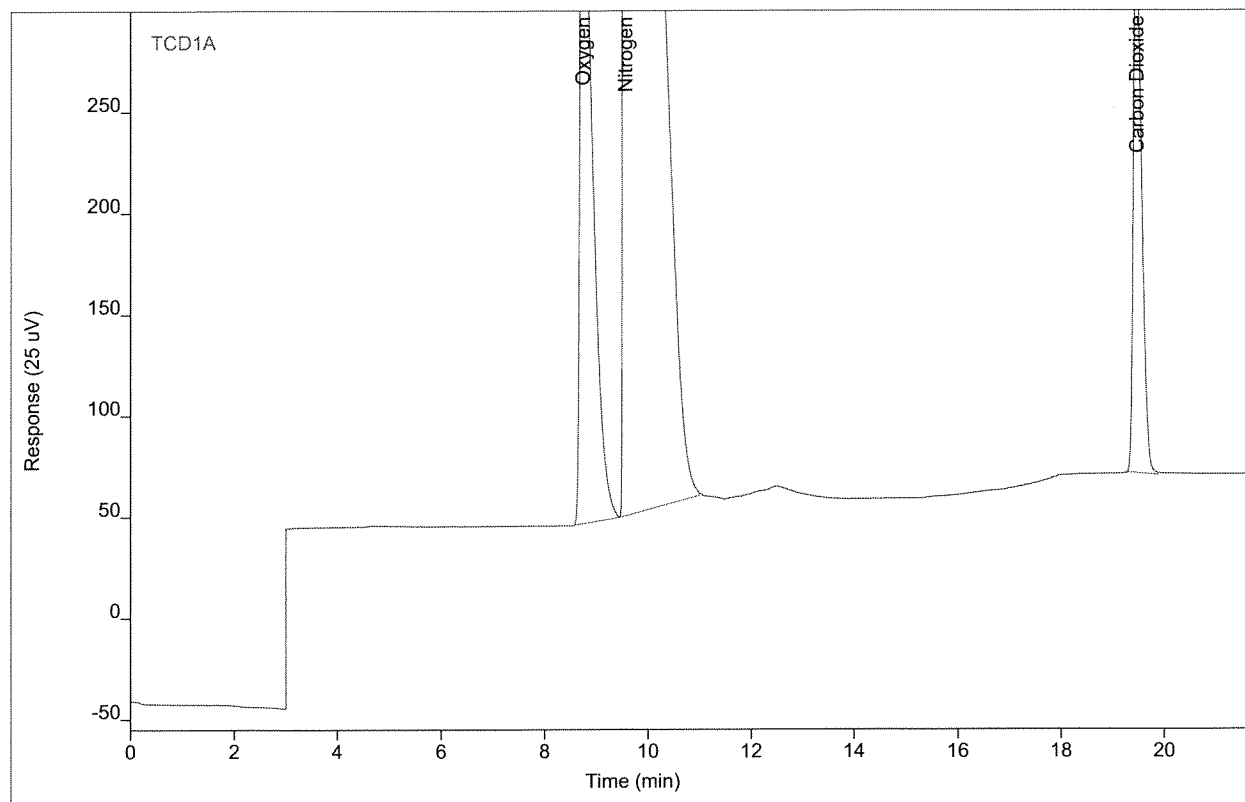
08:09:05 09/27/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.Condition 1 Run 1.Bag
Sequence Name BETTYP450 1 ver.4
Data File 003F0503.D
File Location GC/2016/Betty/Quarter 3
Injection Date 9/26/2016 11:41 PM
File Modified 10/18/2016 12:32 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 3
Injection Volume 250
Injection 3 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 9/28/2016 8:13 AM
Printed 10/18/2016 5:09 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(2.05)				1		
Oxygen	BB	8.76	5950.23	359.601	15.5529	1	15.5529	%
Nitrogen	BB	9.58	31467.4	855.983	73.5360	1	73.5360	%
Carbon monoxide		(12.59)				1		
Methane		(16.39)				1		
Carbon Dioxide	MM	19.49	2984.29	269.075	4.12949	1	4.12949	%

Analyst Peak Integration Comments

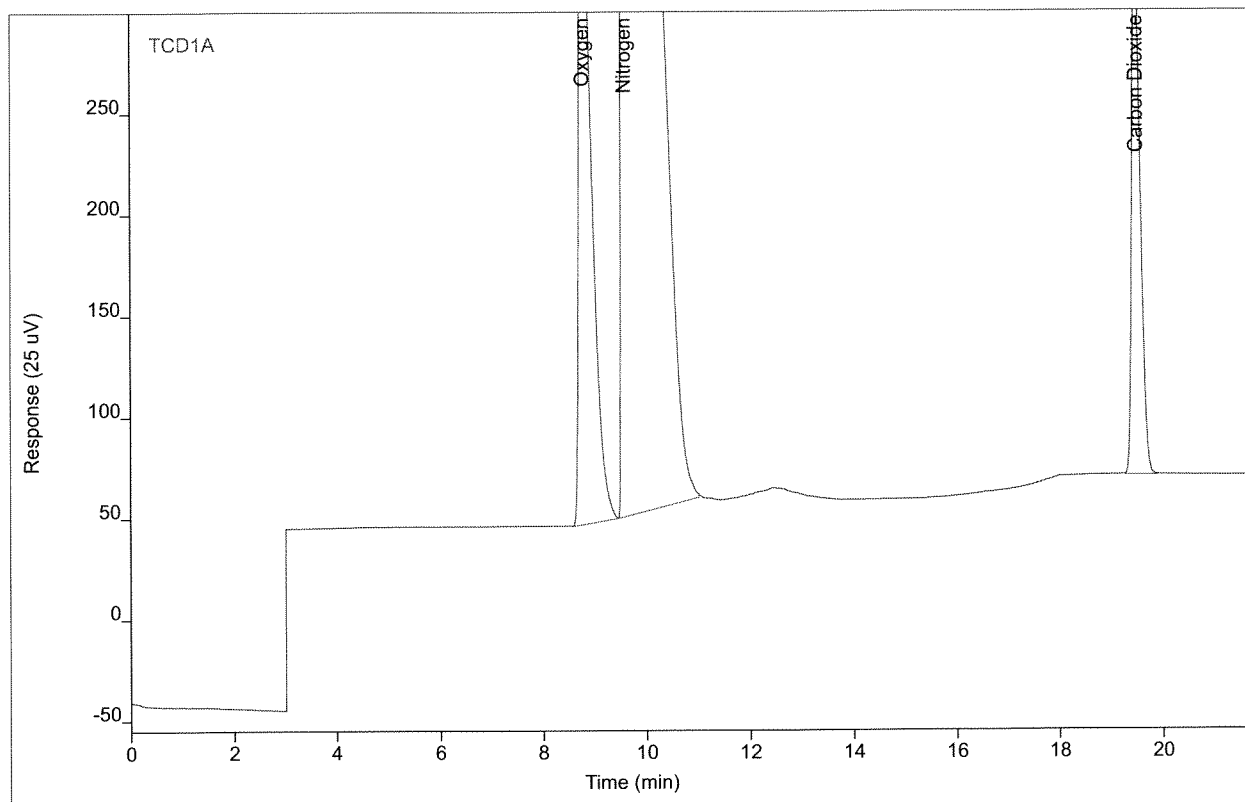
08:09:16 09/27/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.Condition 1 Run 2.Bag
Sequence Name BETTYP450 1 ver.4
Data File 004F0601.D
File Location GC/2016/Betty/Quarter 3
Injection Date 9/27/2016 12:10 AM
File Modified 10/18/2016 12:32 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 4
Injection Volume 250
Injection 1 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 9/28/2016 8:13 AM
Printed 10/18/2016 5:09 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(2.05)				1		
Oxygen	BB	8.76	5932.18	359.056	15.5056	1	15.5056	%
Nitrogen	BB	9.58	31459.2	856.994	73.5167	1	73.5167	%
Carbon monoxide		(12.59)				1		
Methane		(16.39)				1		
Carbon Dioxide	MM	19.49	2930.21	265.591	4.05360	1	4.05360	%

Analyst Peak Integration Comments

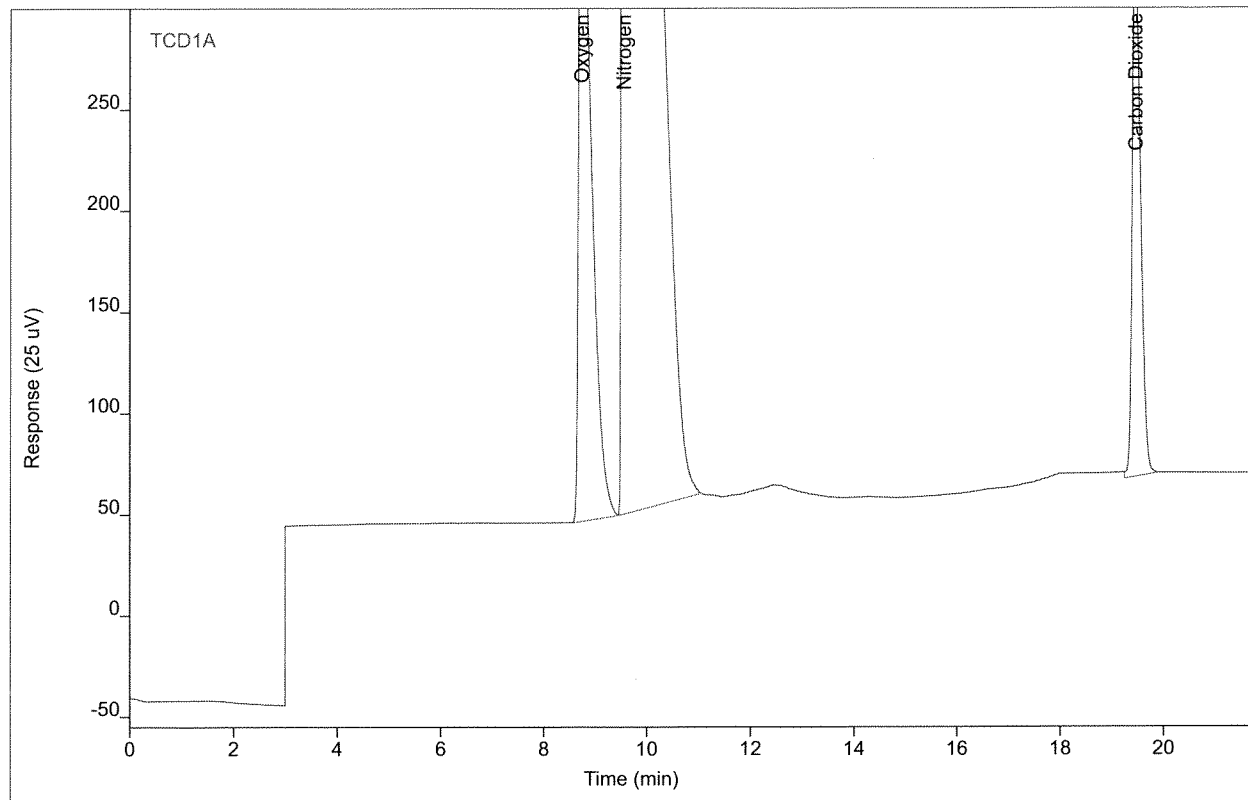
08:09:26 09/27/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.Condition 1 Run 2.Bag
Sequence Name BETTYP450 1 ver.4
Data File 004F0602.D
File Location GC/2016/Betty/Quarter 3
Injection Date 9/27/2016 12:39 AM
File Modified 10/18/2016 12:32 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 4
Injection Volume 250
Injection 2 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 9/28/2016 8:13 AM
Printed 10/18/2016 5:09 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(2.05)				1		
Oxygen	BB	8.76	5934.90	358.624	15.5128	1	15.5128	%
Nitrogen	BB	9.58	31489.5	851.728	73.5877	1	73.5877	%
Carbon monoxide		(12.59)				1		
Methane		(16.39)				1		
Carbon Dioxide	MM	19.49	2991.78	267.667	4.14000	1	4.14000	%

Analyst Peak Integration Comments

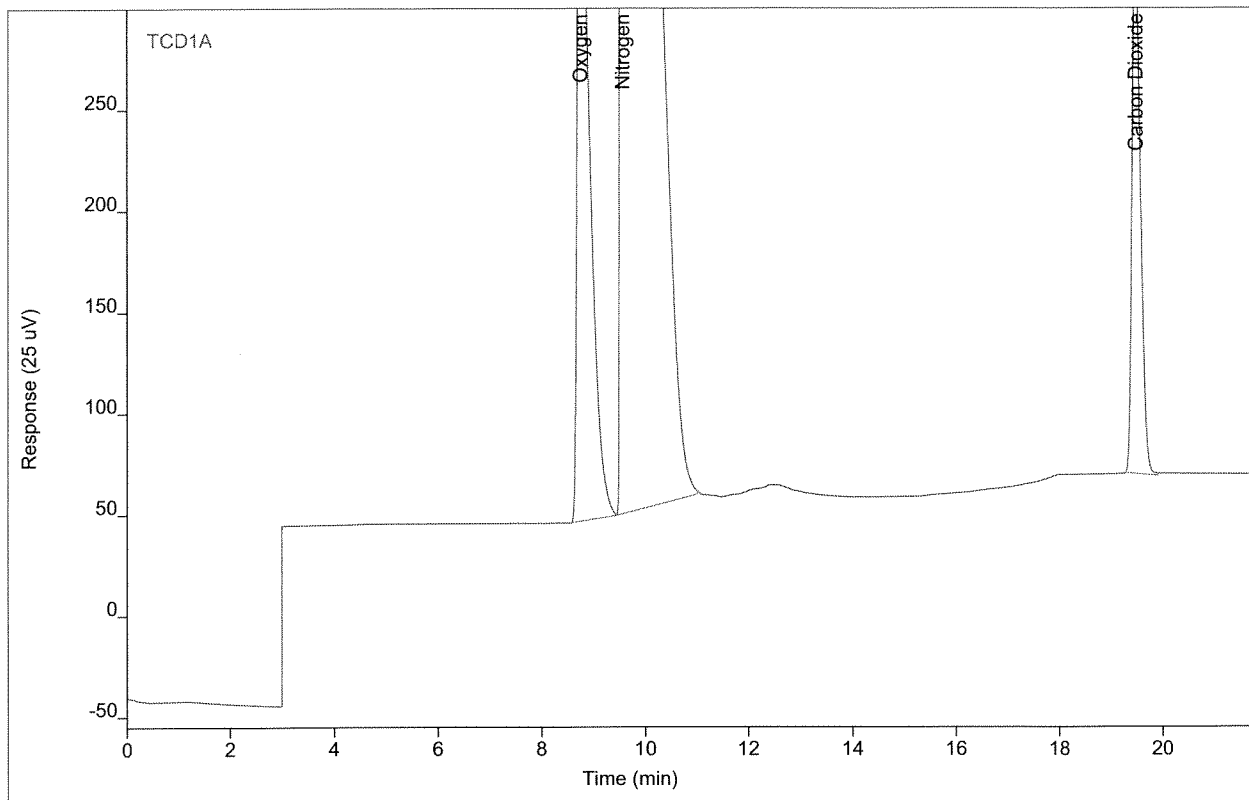
08:09:39 09/27/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.Condition 1 Run 2.Bag
Sequence Name BETTYP450 1 ver.4
Data File 004F0603.D
File Location GC/2016/Betty/Quarter 3
Injection Date 9/27/2016 1:08 AM
File Modified 10/18/2016 12:32 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 4
Injection Volume 250
Injection 3 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 9/28/2016 8:13 AM
Printed 10/18/2016 5:09 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(2.05)				1		
Oxygen	BB	8.76	5925.89	357.270	15.4892	1	15.4892	%
Nitrogen	BB	9.57	31367.2	853.824	73.3017	1	73.3017	%
Carbon monoxide		(12.59)				1		
Methane		(16.39)				1		
Carbon Dioxide	MM	19.49	2918.21	264.475	4.03677	1	4.03677	%

Analyst Peak Integration Comments

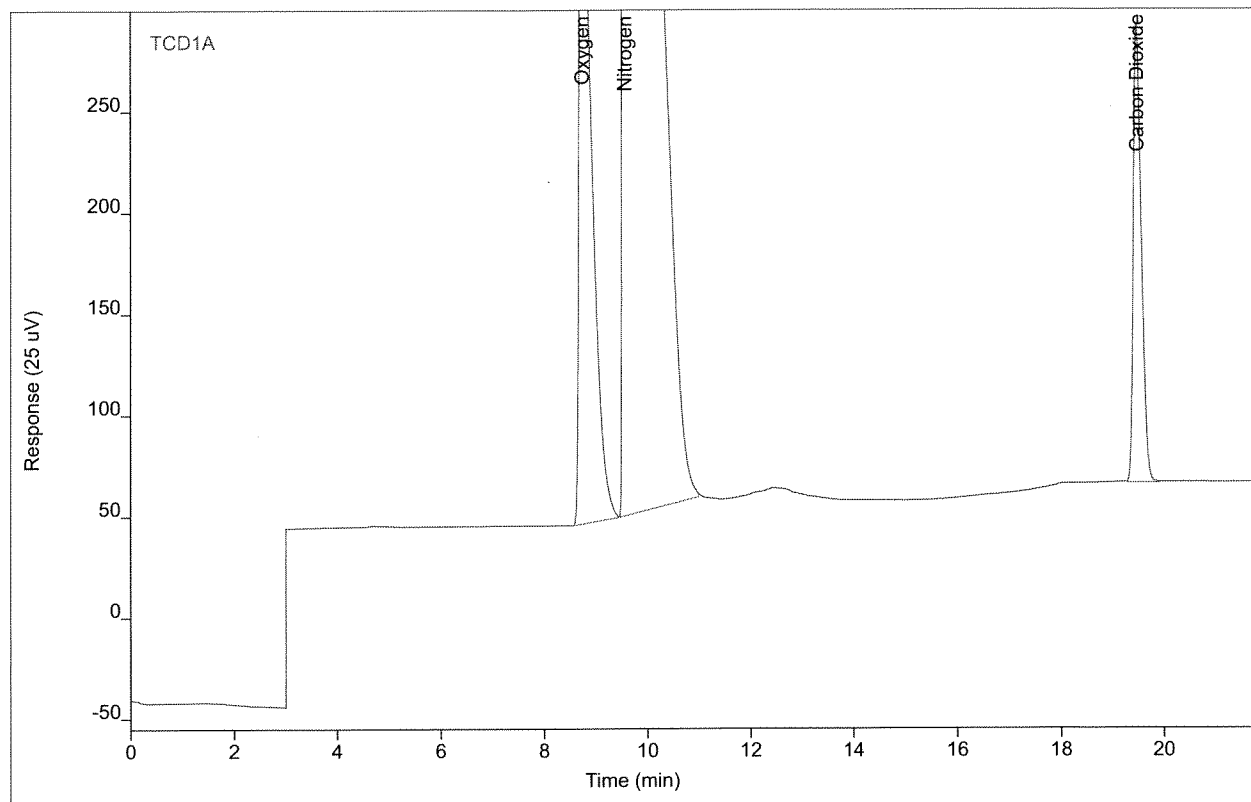
08:09:49 09/27/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.Condition 2 Run 5.Bag
Sequence Name BETTYP450 1 ver.4
Data File 008F1001.D
File Location GC/2016/Betty/Quarter 3
Injection Date 9/27/2016 5:57 AM
File Modified 10/18/2016 12:32 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 8
Injection Volume 250
Injection 1 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 9/28/2016 8:13 AM
Printed 10/18/2016 5:09 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(2.05)				1		
Oxygen	BB	8.75	6137.37	366.855	16.0429	1	16.0429	%
Nitrogen	BB	9.58	30789.0	842.416	71.9492	1	71.9492	%
Carbon monoxide		(12.59)				1		
Methane		(16.39)				1		
Carbon Dioxide	MM	19.50	2477.51	226.372	3.41834	1	3.41834	%

Analyst Peak Integration Comments

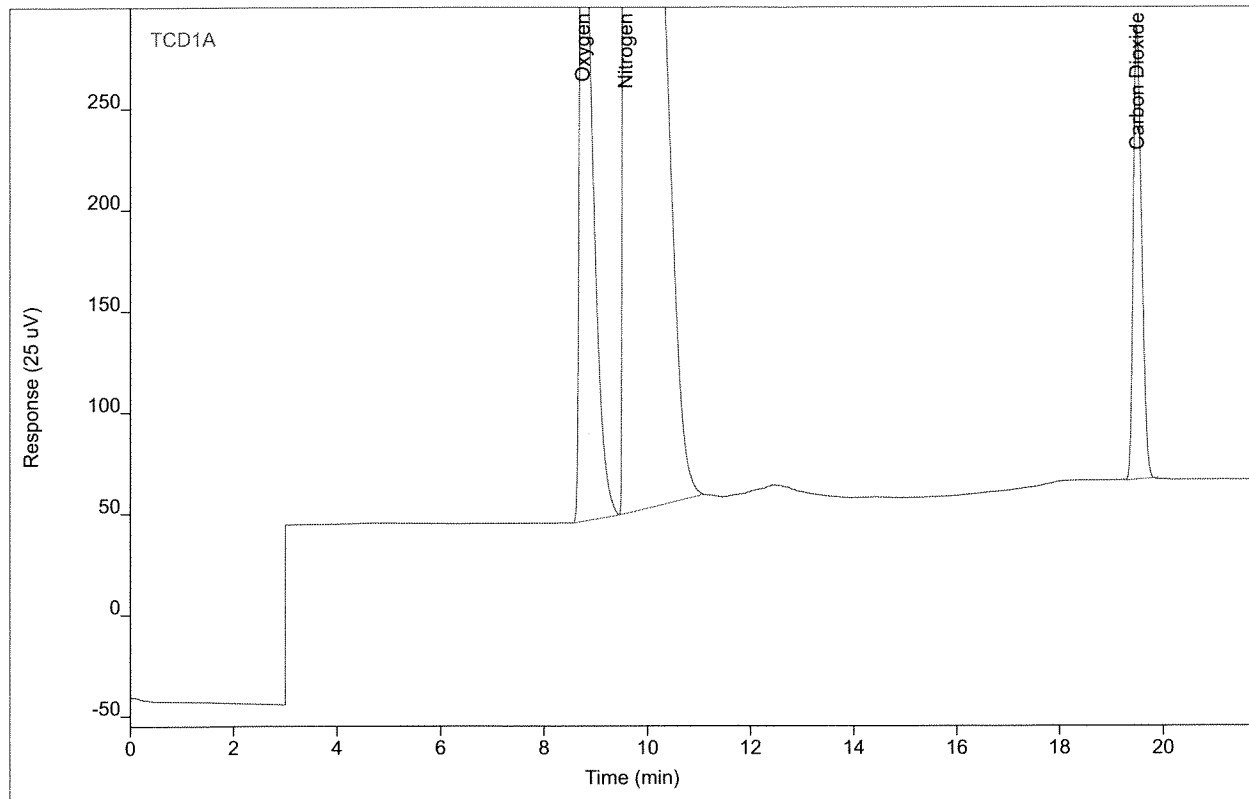
08:12:20 09/27/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.Condition 2 Run 5.Bag
Sequence Name BETTYP450 1 ver.4
Data File 008F1002.D
File Location GC/2016/Betty/Quarter 3
Injection Date 9/27/2016 6:26 AM
File Modified 10/18/2016 12:32 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 8
Injection Volume 250
Injection 2 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 9/28/2016 8:13 AM
Printed 10/18/2016 5:09 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(2.05)				1		
Oxygen	BV	8.75	6153.03	366.363	16.0839	1	16.0839	%
Nitrogen	VB	9.58	30886.4	838.885	72.1771	1	72.1771	%
Carbon monoxide		(12.59)				1		
Methane		(16.39)				1		
Carbon Dioxide	MM	19.50	2462.88	224.479	3.39781	1	3.39781	%

Analyst Peak Integration Comments

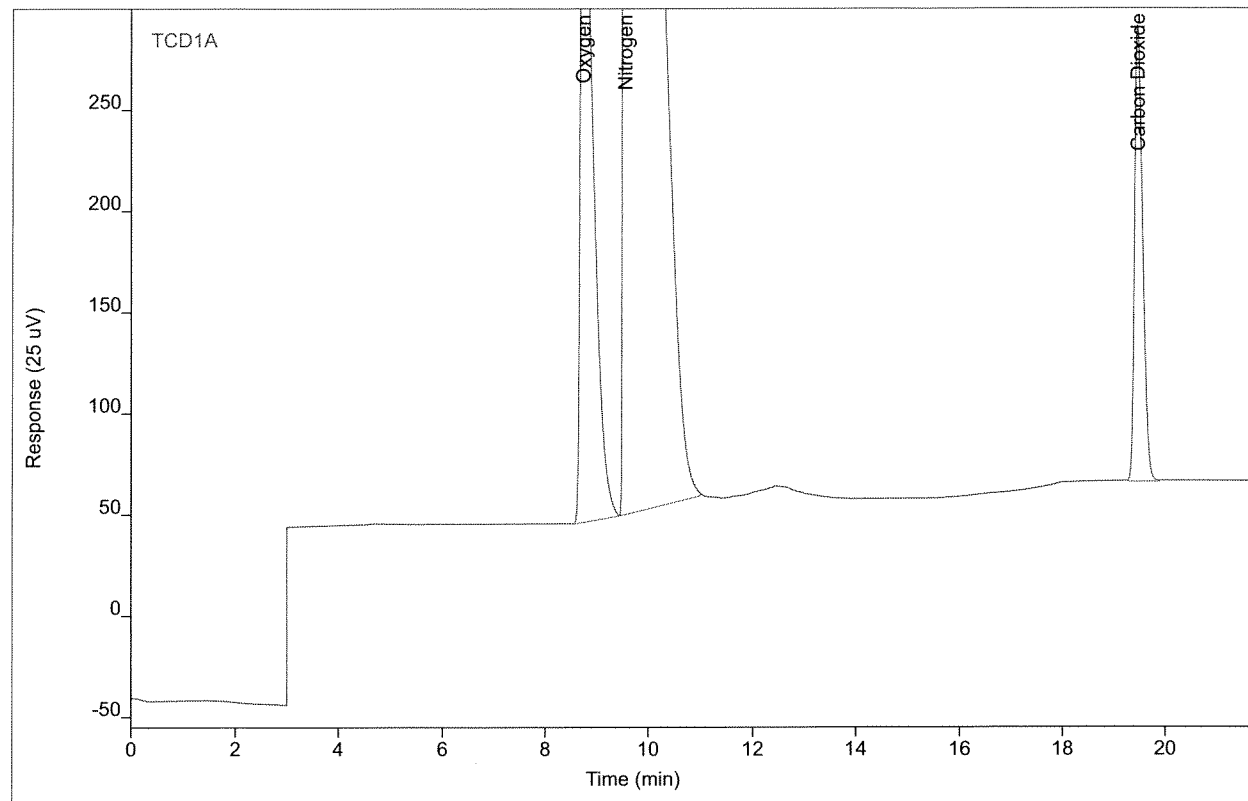
08:13:00 09/27/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.Condition 2 Run 5.Bag
Sequence Name BETTYP450 1 ver.4
Data File 008F1003.D
File Location GC/2016/Betty/Quarter 3
Injection Date 9/27/2016 6:55 AM
File Modified 10/18/2016 12:32 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 8
Injection Volume 250
Injection 3 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 9/28/2016 8:13 AM
Printed 10/18/2016 5:09 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(2.05)				1		
Oxygen	BV	8.75	6180.07	369.629	16.1547	1	16.1547	%
Nitrogen	VB	9.57	30952.4	843.688	72.3315	1	72.3315	%
Carbon monoxide		(12.59)				1		
Methane		(16.39)				1		
Carbon Dioxide	MM	19.49	2478.08	225.432	3.41914	1	3.41914	%

Analyst Peak Integration Comments

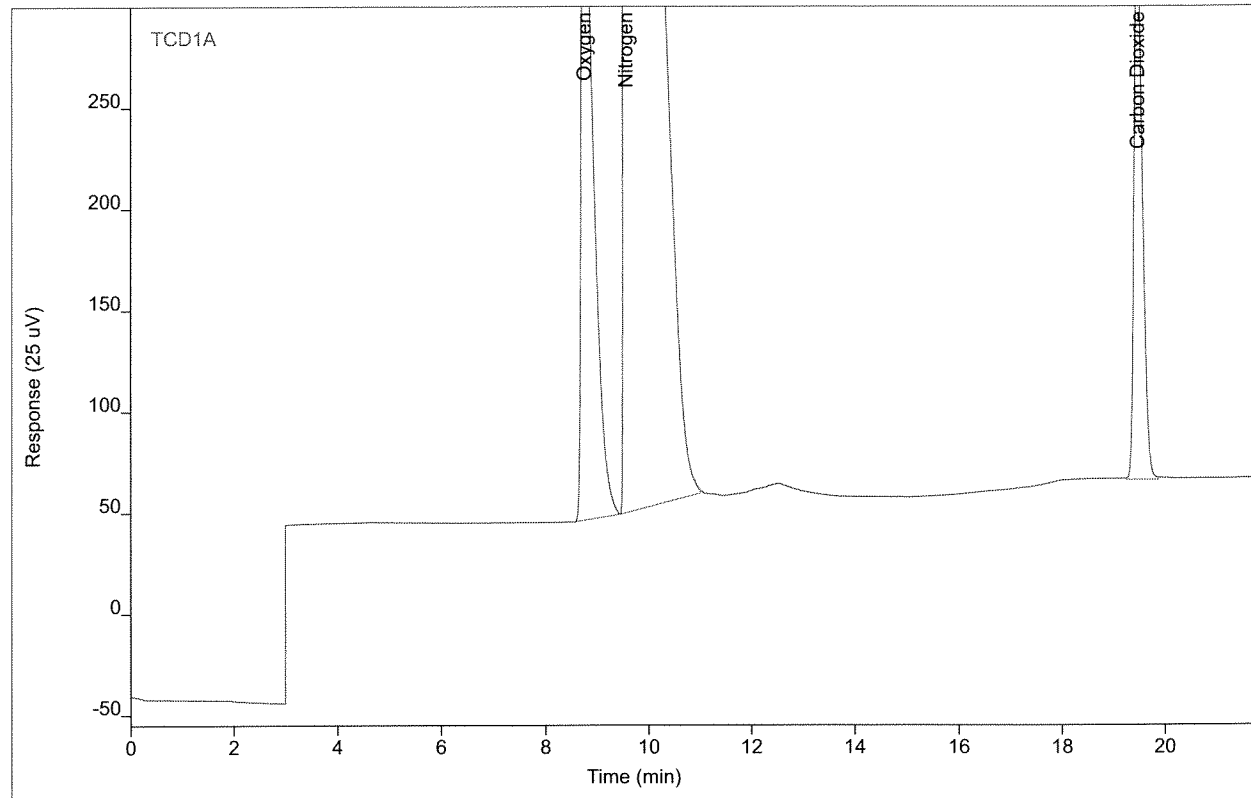
08:13:12 09/27/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.Condition 3 Run 1.Bag
Sequence Name BETTYP450 1 ver.4
Data File 010F1101.D
File Location GC/2016/Betty/Quarter 3
Injection Date 9/27/2016 7:24 AM
File Modified 10/18/2016 12:33 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 10
Injection Volume 250
Injection 1 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 9/28/2016 8:13 AM
Printed 10/18/2016 5:09 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(2.05)				1		
Oxygen	BB	8.76	5737.07	347.579	14.9948	1	14.9948	%
Nitrogen	BB	9.58	30855.6	843.812	72.1051	1	72.1051	%
Carbon monoxide		(12.59)				1		
Methane		(16.39)				1		
Carbon Dioxide	MM	19.48	3035.09	271.985	4.20078	1	4.20078	%

Analyst Peak Integration Comments

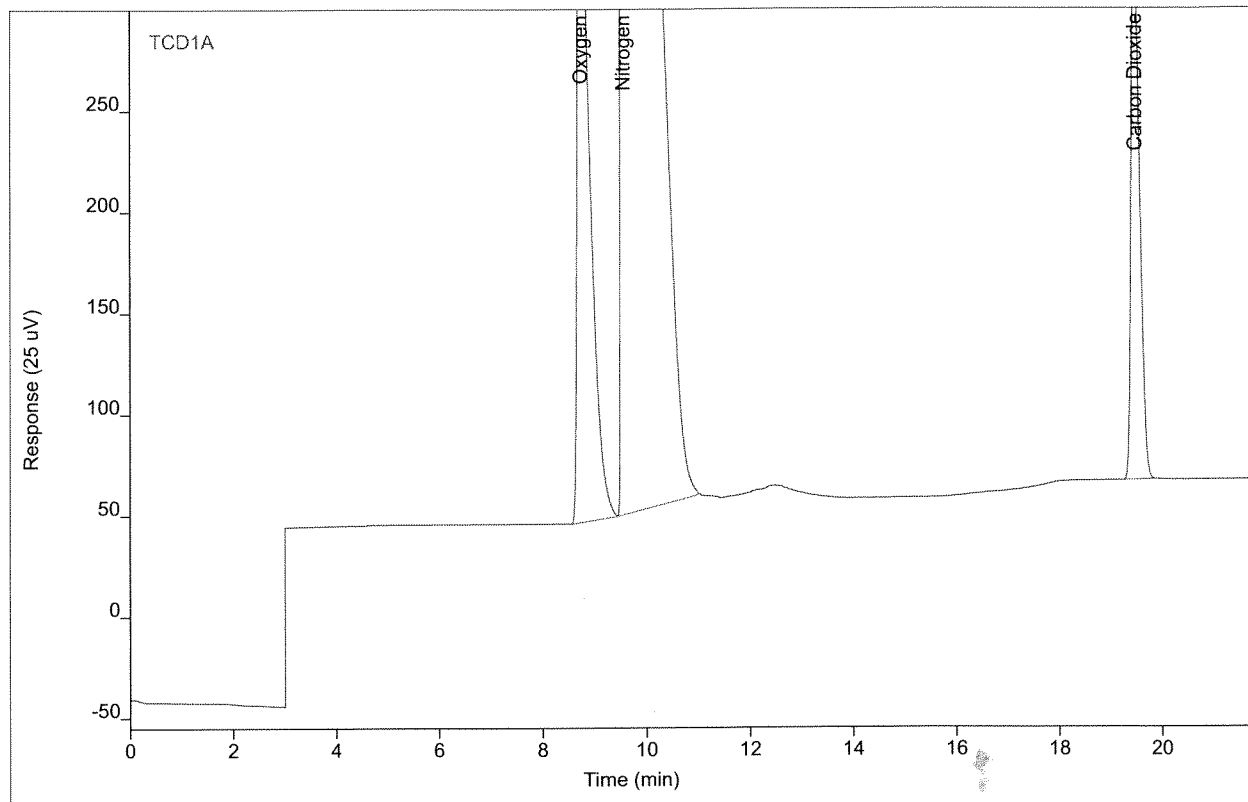
08:13:21 09/27/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.Condition 3 Run 1.Bag
Sequence Name BETTYP450 1 ver.4
Data File 010F1102.D
File Location GC/2016/Betty/Quarter 3
Injection Date 9/27/2016 7:53 AM
File Modified 10/18/2016 12:33 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 10
Injection Volume 250
Injection 2 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 9/28/2016 8:13 AM
Printed 10/18/2016 5:09 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(2.05)				1		
Oxygen	BV	8.76	5808.75	353.086	15.1824	1	15.1824	%
Nitrogen	VB	9.57	31224.7	853.711	72.9683	1	72.9683	%
Carbon monoxide		(12.59)				1		
Methane		(16.39)				1		
Carbon Dioxide	MM	19.48	3033.52	274.586	4.19858	1	4.19858	%

Analyst Peak Integration Comments

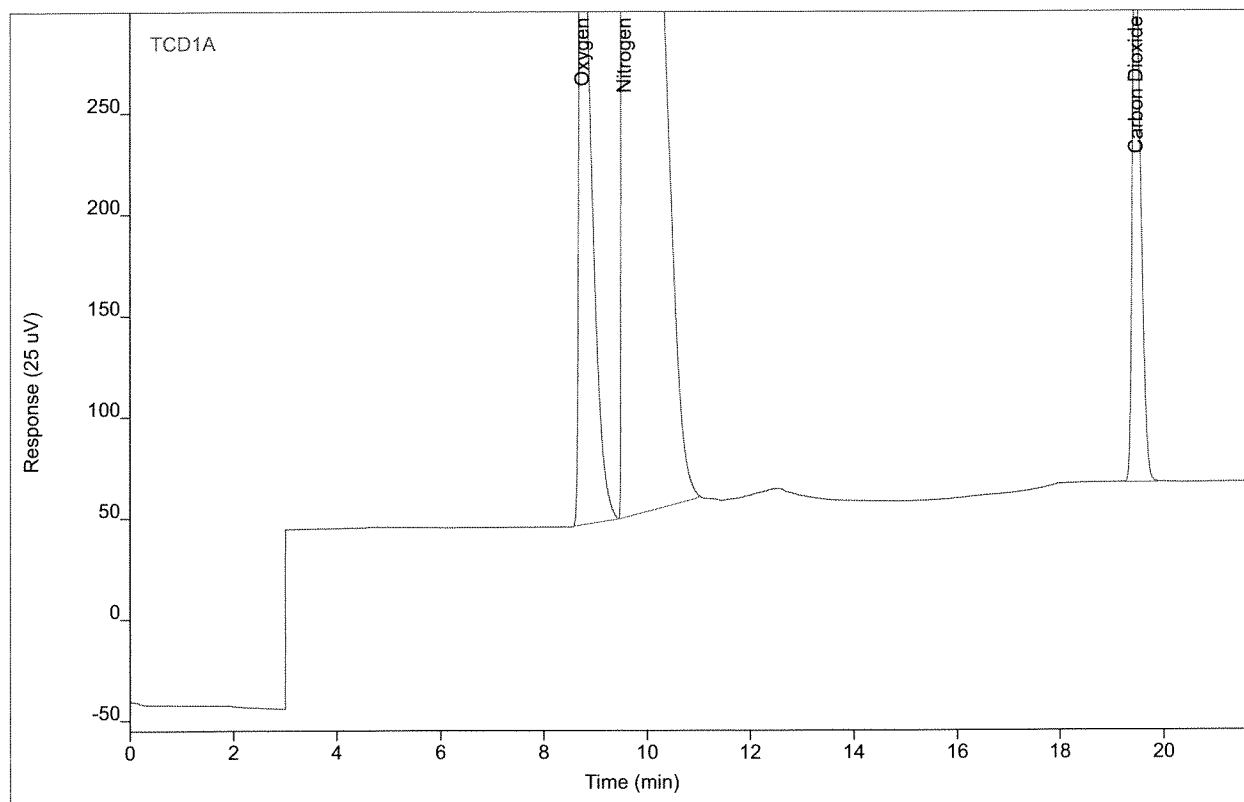
08:35:22 09/27/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.Condition 3 Run 1.Bag
Sequence Name BETTYP450 1 ver.4
Data File 010F1103.D
File Location GC/2016/Betty/Quarter 3
Injection Date 9/27/2016 8:21 AM
File Modified 10/18/2016 12:33 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 10
Injection Volume 250
Injection 3 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 9/28/2016 8:13 AM
Printed 10/18/2016 5:09 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(2.05)				1		
Oxygen	BB	8.76	5790.60	352.725	15.1349	1	15.1349	%
Nitrogen	BB	9.57	31138.0	848.533	72.7657	1	72.7657	%
Carbon monoxide		(12.59)				1		
Methane		(16.39)				1		
Carbon Dioxide	MM	19.48	3031.03	273.629	4.19509	1	4.19509	%

Analyst Peak Integration Comments

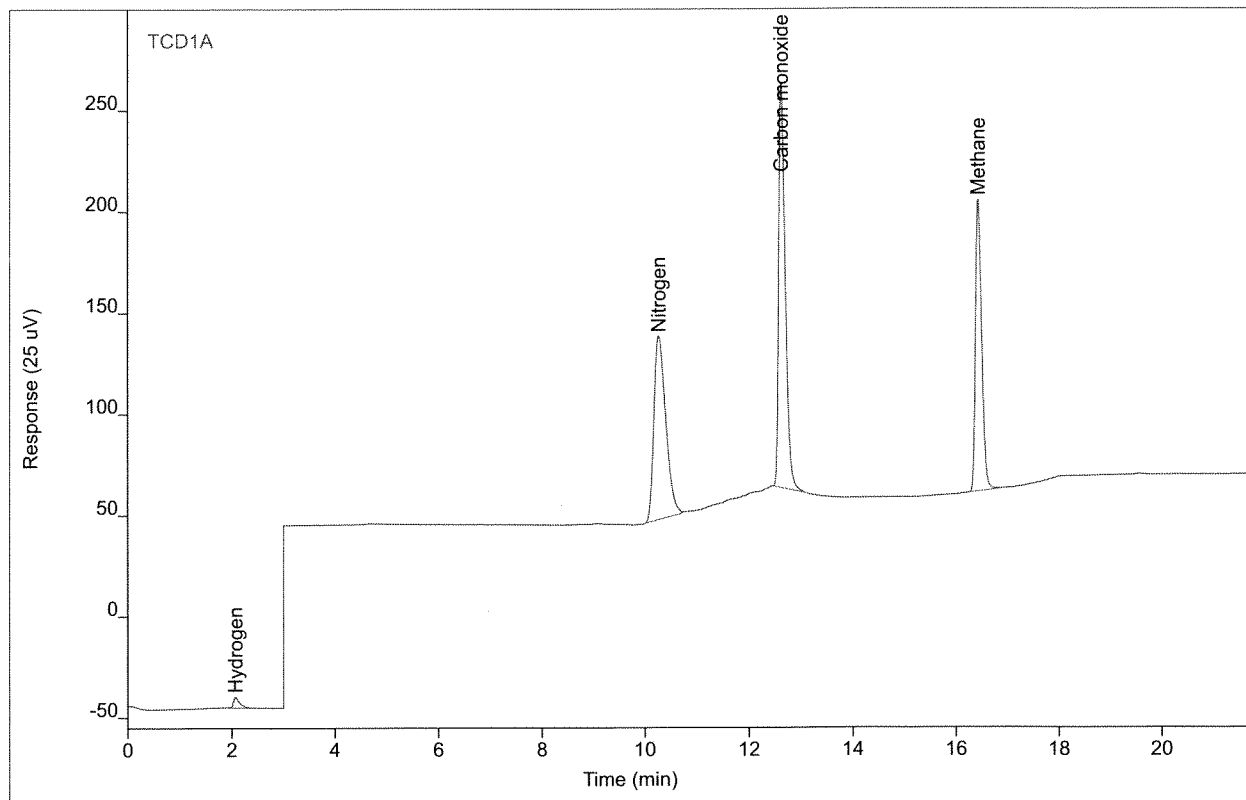
11:13:56 09/27/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG7 ENV(1=530,3=319.09)
Sequence Name BETTYP452 ver.7
Data File 009F0301.D
File Location GC/2016/Betty/Quarter 3
Injection Date 9/27/2016 1:18 PM
File Modified 10/18/2016 12:41 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type
Vial Number
Injection Volume
Injection
Acquisition Method
Analysis Method
Method Modified
Printed
Calibration
Vial 9
250
1 of 3
BETTYP017_CAL.M
BETTYP348_FGA_CRYO.M
10/18/2016 12:42 PM
10/18/2016 5:10 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	BB	2.07	45.9434	5.41631	2.56344	1	2.56344	%
Nitrogen	BB	10.28	1432.51	90.6329	3.28950	1	3.28950	%
Carbon monoxide	MM	12.64	1758.10	200.087	3.31988	1	3.31988	%
Methane	MM	16.44	1193.81	143.958	2.63944	1	2.63944	%

Analyst Peak Integration Comments

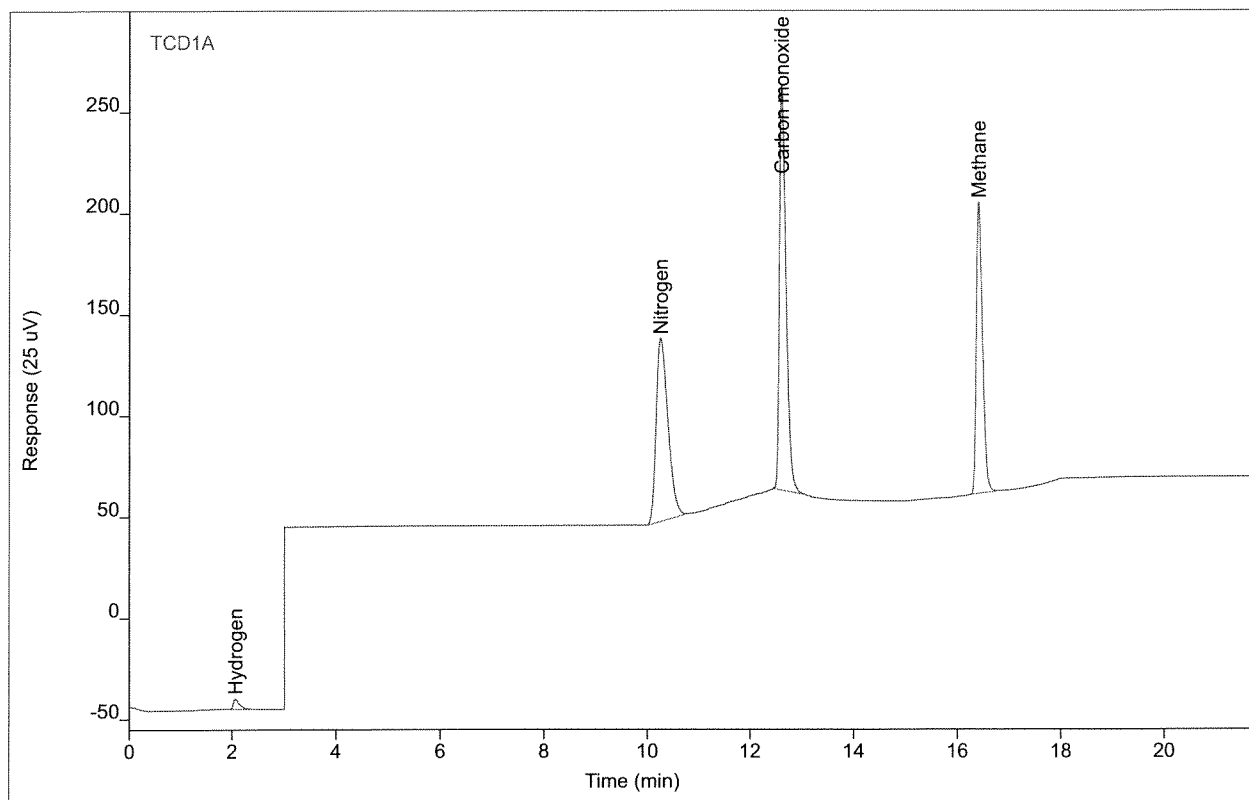
14:06:57 09/27/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG7 ENV(1=530,3=319.09)
Sequence Name BETTYP452 ver.7
Data File 009F0302.D
File Location GC/2016/Betty/Quarter 3
Injection Date 9/27/2016 1:50 PM
File Modified 10/18/2016 12:41 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 2 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 10/18/2016 12:42 PM
Printed 10/18/2016 5:10 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	BB	2.07	44.1963	5.35690	2.46615	1	2.46615	%
Nitrogen	BB	10.28	1427.87	90.5192	3.27864	1	3.27864	%
Carbon monoxide	MM	12.65	1746.67	200.027	3.29812	1	3.29812	%
Methane	MM	16.45	1180.78	143.691	2.61019	1	2.61019	%

Analyst Peak Integration Comments

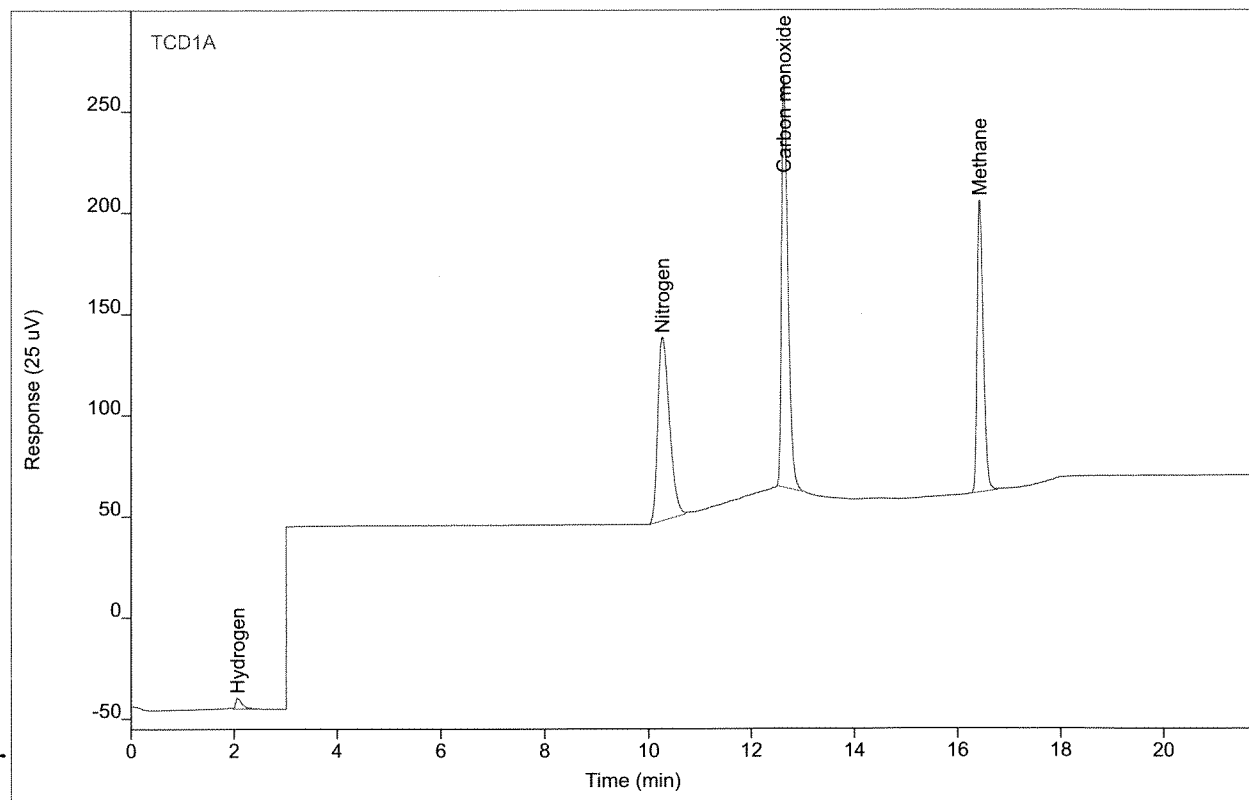
14:15:00 09/27/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG7 ENV(1=530,3=319.09)
Sequence Name BETTYP452 ver.7
Data File 009F0303.D
File Location GC/2016/Betty/Quarter 3
Injection Date 9/27/2016 2:21 PM
File Modified 10/18/2016 12:41 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type
Vial Number
Injection Volume
Injection
Acquisition Method
Analysis Method
Method Modified
Printed
Calibration
Vial 9
250
3 of 3
BETTYP017_CAL.M
BETTYP348_FGA_CRYO.M
10/18/2016 12:42 PM
10/18/2016 5:10 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	MM	2.07	48.2981	5.50888	2.69457	1	2.69457	%
Nitrogen	BB	10.28	1437.45	90.6628	3.30105	1	3.30105	%
Carbon monoxide	MM	12.65	1743.79	202.802	3.29264	1	3.29264	%
Methane	MM	16.45	1191.89	144.201	2.63512	1	2.63512	%

Analyst Peak Integration Comments

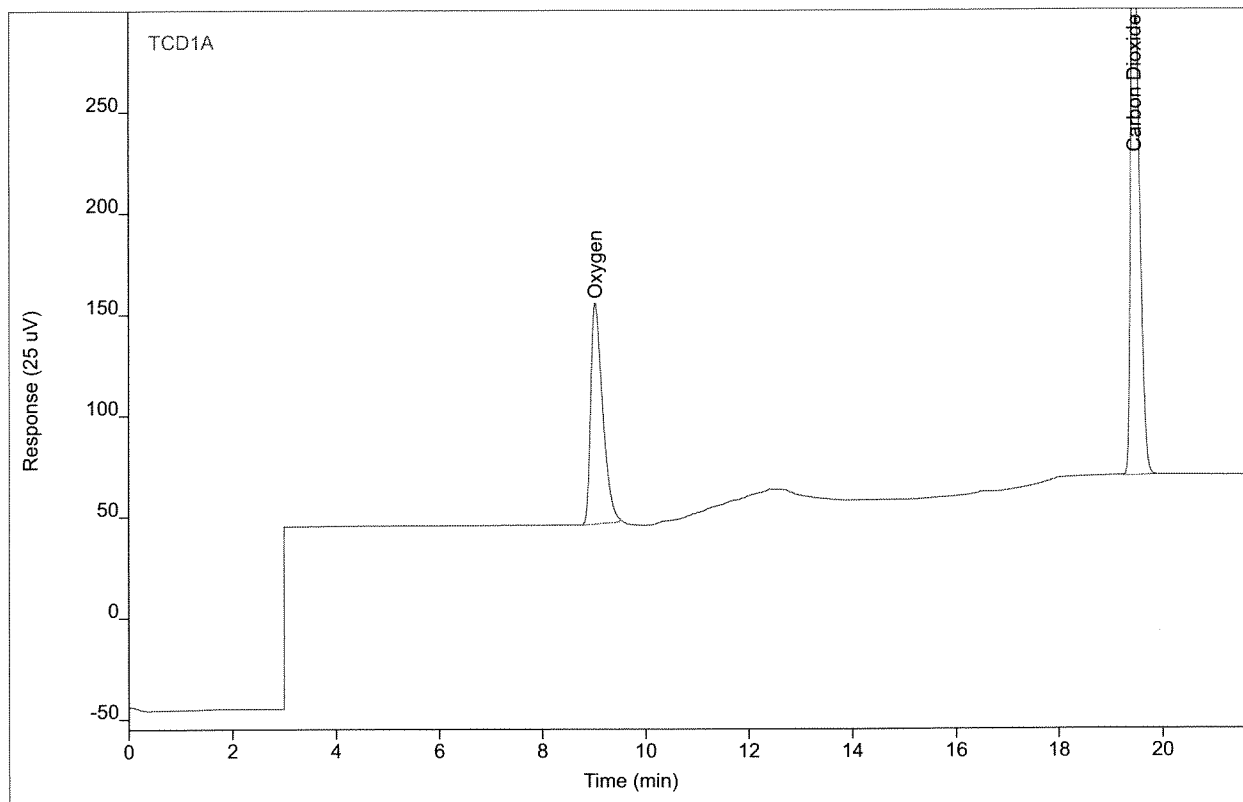
14:46:33 09/27/16 Nicholas Traversa II-BL
14:47:00 09/27/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG3 ENV(1=374.56,2=391.07)
Sequence Name BETTYP452 ver.7
Data File 009F0401.D
File Location GC/2016/Betty/Quarter 3
Injection Date 9/27/2016 2:53 PM
File Modified 10/18/2016 12:42 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type
Vial Number
Injection Volume
Injection
Acquisition Method
Analysis Method
Method Modified
Printed
Calibration
Vial 9
250
1 of 3
BETTYP017_CAL.M
BETTYP348_FGA_CRYO.M
10/18/2016 12:42 PM
10/18/2016 5:10 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Oxygen	BB	9.03	1772.05	109.357	4.61249	1	4.61249	%
Carbon Dioxide	MM	19.48	3244.19	292.230	4.49421	1	4.49421	%

Analyst Peak Integration Comments

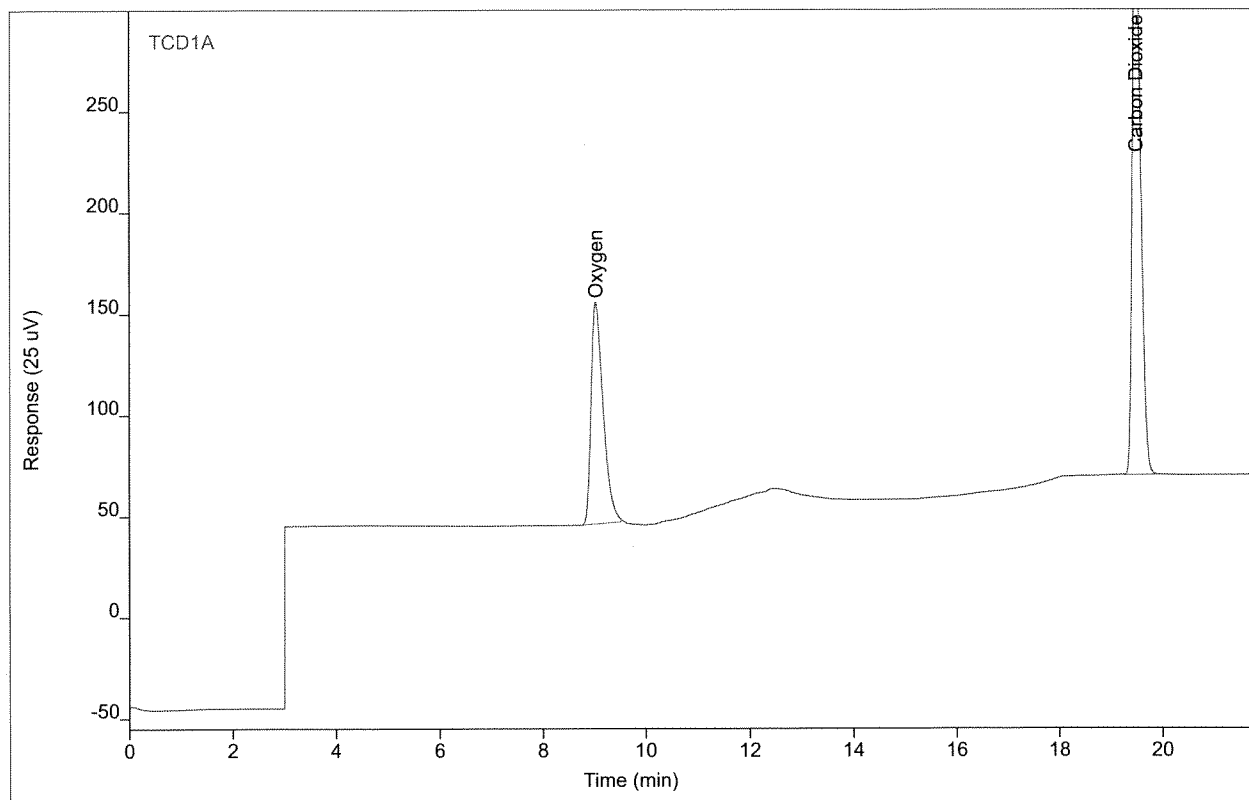
15:57:42 09/27/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG3 ENV(1=374.56,2=391.07)
Sequence Name BETTYP452 ver.7
Data File 009F0402.D
File Location GC/2016/Betty/Quarter 3
Injection Date 9/27/2016 3:24 PM
File Modified 10/18/2016 12:42 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 2 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 10/18/2016 12:42 PM
Printed 10/18/2016 5:10 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Oxygen	BB	9.03	1782.29	109.571	4.63929	1	4.63929	%
Carbon Dioxide	MM	19.48	3236.72	291.211	4.48372	1	4.48372	%

Analyst Peak Integration Comments

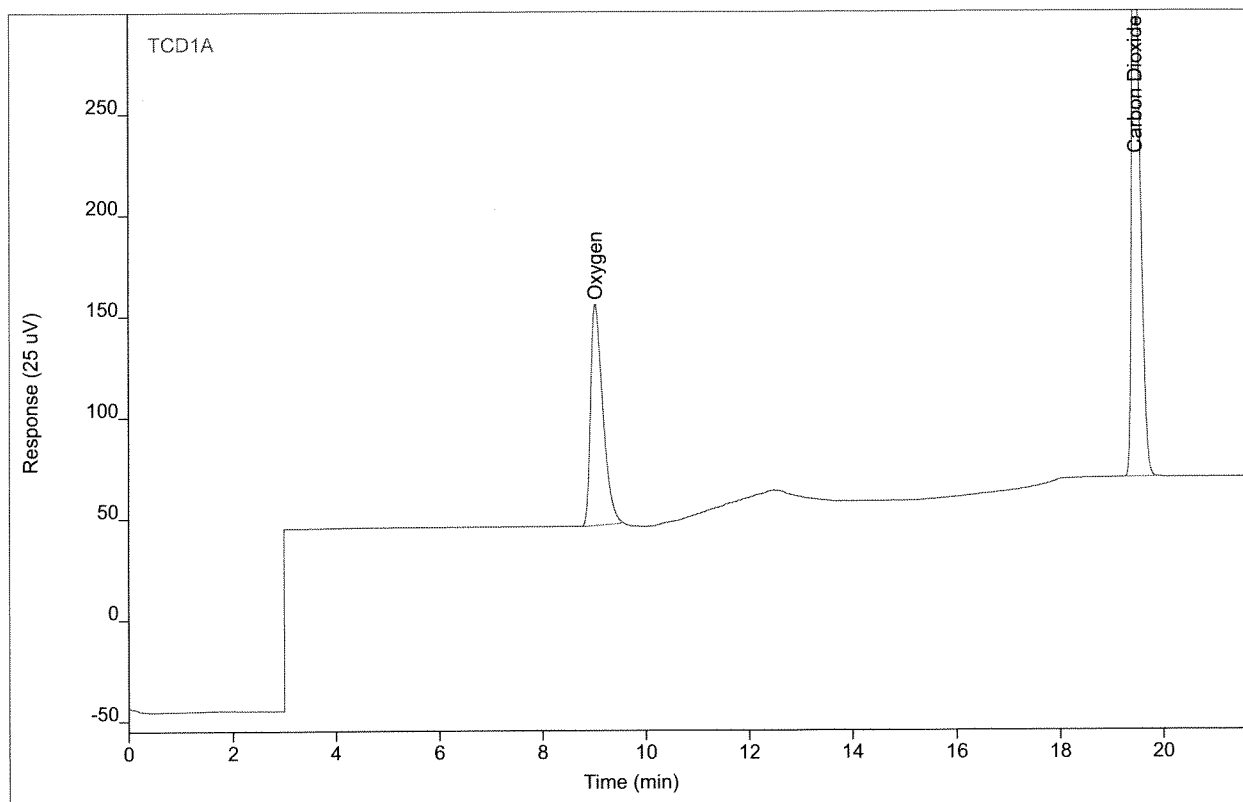
15:57:49 09/27/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG3 ENV(1=374.56,2=391.07)
Sequence Name BETTYP452 ver.7
Data File 009F0403.D
File Location GC/2016/Betty/Quarter 3
Injection Date 9/27/2016 3:56 PM
File Modified 10/18/2016 12:42 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 3 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 10/18/2016 12:42 PM
Printed 10/18/2016 5:10 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Oxygen	BB	9.04	1789.78	109.461	4.65891	1	4.65891	%
Carbon Dioxide	MM	19.48	3216.02	288.273	4.45467	1	4.45467	%

Analyst Peak Integration Comments

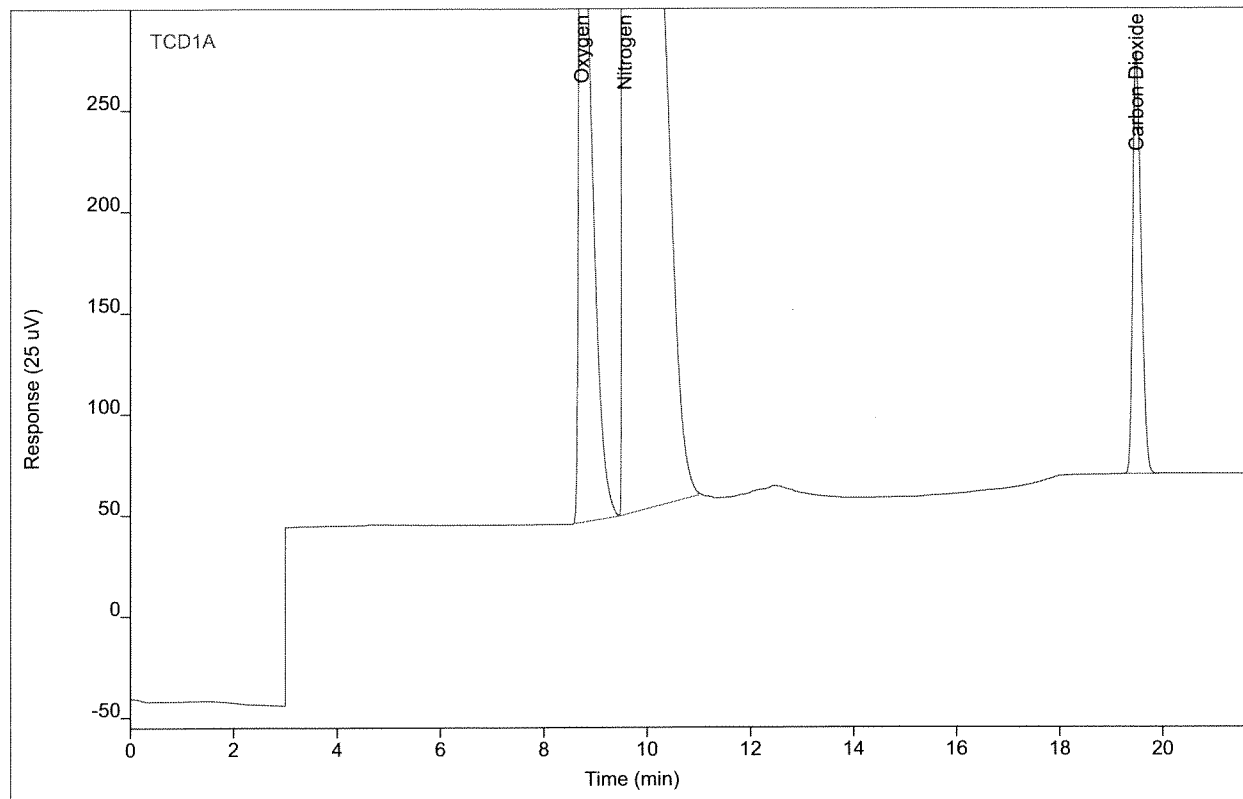
08:07:13 09/28/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.Condition 1 Run 3.Bag
Sequence Name BETTYP452 ver.7
Data File 005F0501.D
File Location GC/2016/Betty/Quarter 3
Injection Date 9/27/2016 4:24 PM
File Modified 10/18/2016 1:55 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 5
Injection Volume 250
Injection 1 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 10/18/2016 12:42 PM
Printed 10/18/2016 5:10 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(2.05)				1		
Oxygen	BB	8.76	6289.59	371.956	16.4415	1	16.4415	%
Nitrogen	BB	9.59	30713.9	846.816	71.7736	1	71.7736	%
Carbon monoxide		(12.59)				1		
Methane		(16.39)				1		
Carbon Dioxide	MM	19.51	2273.51	208.565	3.13207	1	3.13207	%

Analyst Peak Integration Comments

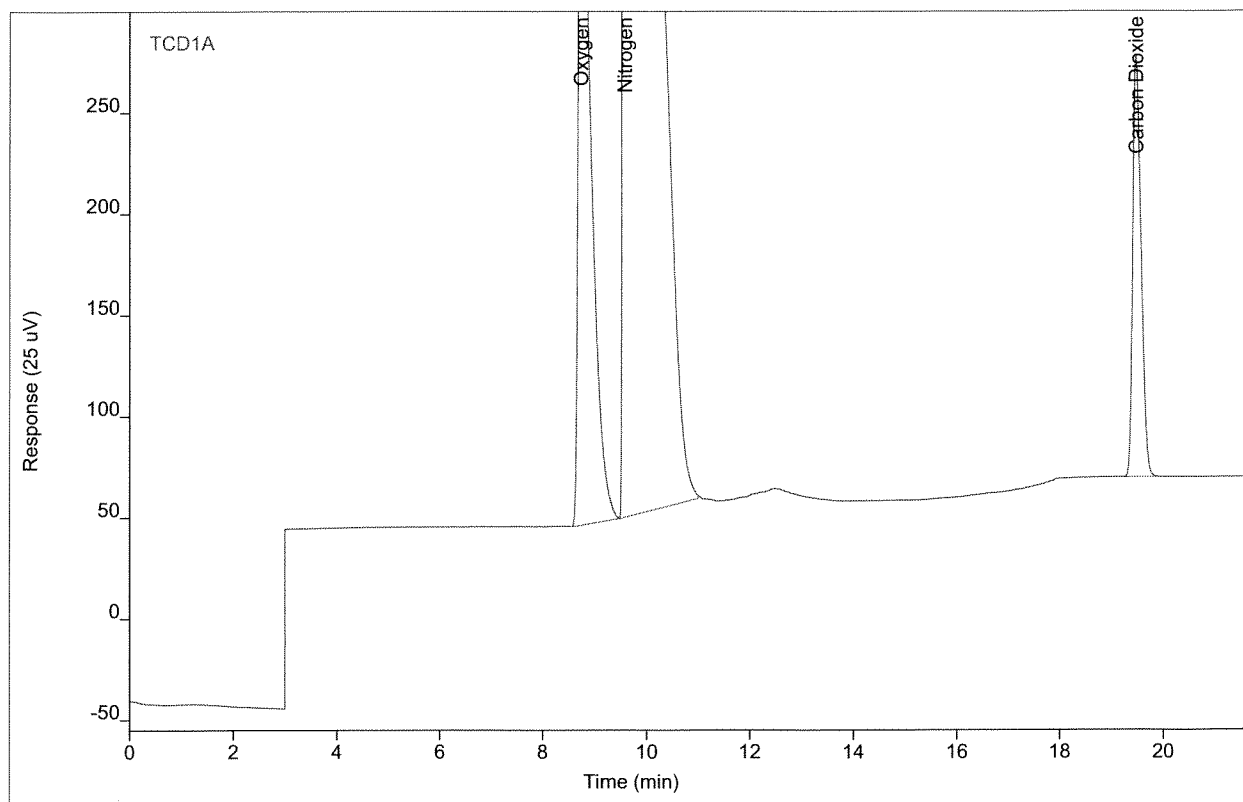
08:07:33 09/28/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.Condition 1 Run 3.Bag
Sequence Name BETTYP452 ver.7
Data File 005F0502.D
File Location GC/2016/Betty/Quarter 3
Injection Date 9/27/2016 4:53 PM
File Modified 10/18/2016 1:55 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 5
Injection Volume 250
Injection 2 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 10/18/2016 12:42 PM
Printed 10/18/2016 5:10 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(2.05)				1		
Oxygen	BV	8.76	6291.79	371.248	16.4473	1	16.4473	%
Nitrogen	VB	9.59	30633.7	839.653	71.5861	1	71.5861	%
Carbon monoxide		(12.59)				1		
Methane		(16.39)				1		
Carbon Dioxide	MM	19.50	2267.17	207.550	3.12317	1	3.12317	%

Analyst Peak Integration Comments

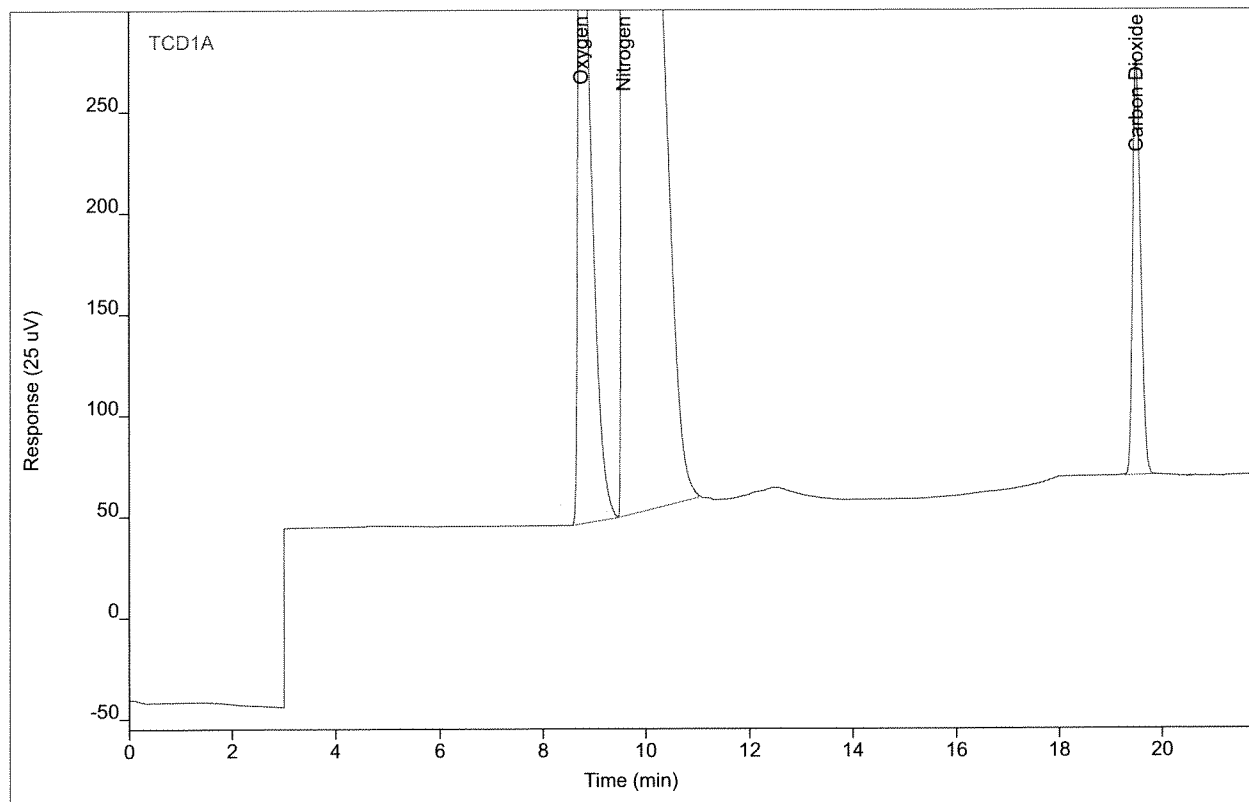
08:08:15 09/28/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.Condition 1 Run 3.Bag
Sequence Name BETTYP452 ver.7
Data File 005F0503.D
File Location GC/2016/Betty/Quarter 3
Injection Date 9/27/2016 5:22 PM
File Modified 10/18/2016 1:55 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 5
Injection Volume 250
Injection 3 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 10/18/2016 12:42 PM
Printed 10/18/2016 5:10 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(2.05)				1		
Oxygen	BV	8.75	6265.14	371.042	16.3775	1	16.3775	%
Nitrogen	VB	9.59	30506.8	836.690	71.2893	1	71.2893	%
Carbon monoxide		(12.59)				1		
Methane		(16.39)				1		
Carbon Dioxide	MM	19.50	2242.30	205.548	3.08827	1	3.08827	%

Analyst Peak Integration Comments

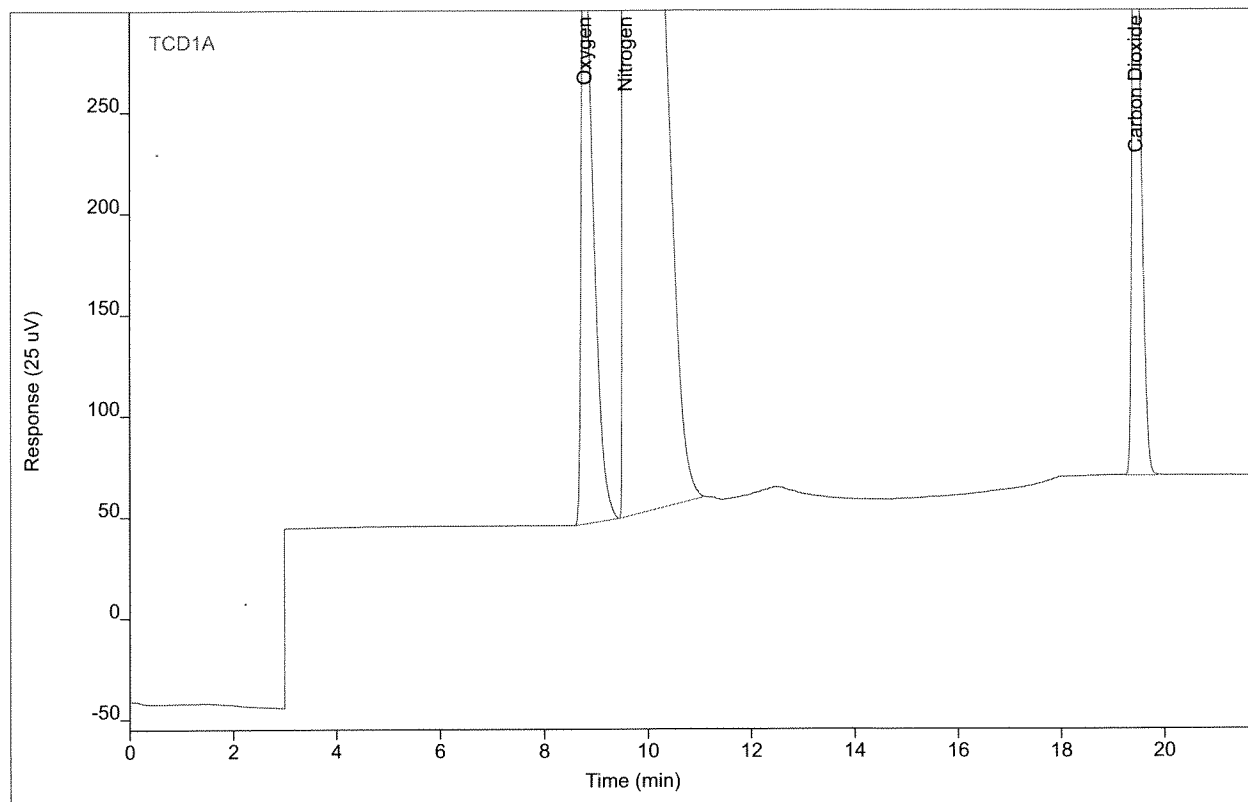
08:08:24 09/28/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.Unit 3 C4 Run 1.Bag
Sequence Name BETTYP452 ver.7
Data File 003F0801.D
File Location GC/2016/Betty/Quarter 3
Injection Date 9/27/2016 8:44 PM
File Modified 10/18/2016 1:56 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 3
Injection Volume 250
Injection 1 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 10/18/2016 12:42 PM
Printed 10/18/2016 5:10 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(2.05)				1		
Oxygen	BB	8.80	4791.94	303.502	12.5200	1	12.5200	%
Nitrogen	BB	9.58	31393.3	852.934	73.3626	1	73.3626	%
Carbon monoxide		(12.59)				1		
Methane		(16.39)				1		
Carbon Dioxide	MM	19.46	3992.62	351.538	5.54446	1	5.54446	%

Analyst Peak Integration Comments

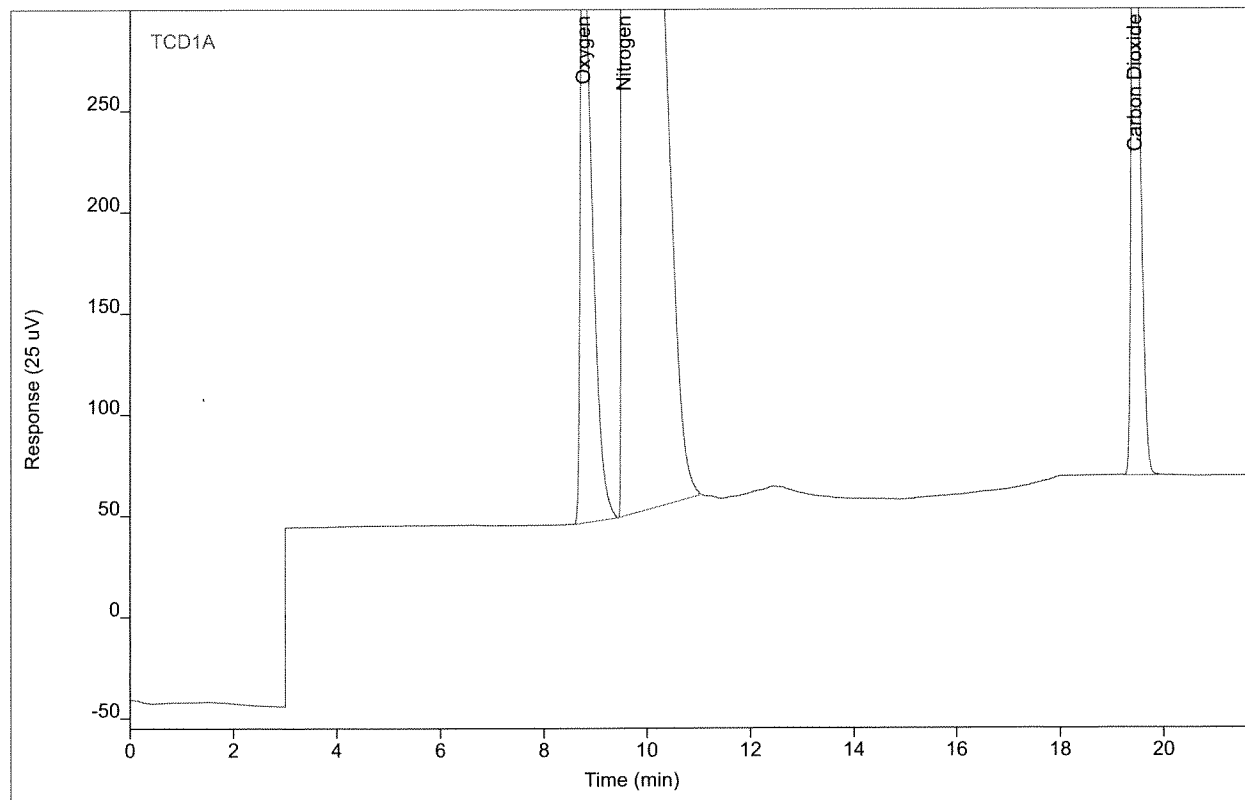
08:09:57 09/28/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.Unit 3 C4 Run 1.Bag
Sequence Name BETTYP452 ver.7
Data File 003F0802.D
File Location GC/2016/Betty/Quarter 3
Injection Date 9/27/2016 9:13 PM
File Modified 10/18/2016 1:56 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 3
Injection Volume 250
Injection 2 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 10/18/2016 12:42 PM
Printed 10/18/2016 5:10 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(2.05)				1		
Oxygen	BB	8.79	4814.22	307.143	12.5783	1	12.5783	%
Nitrogen	BB	9.58	31317.3	856.942	73.1850	1	73.1850	%
Carbon monoxide		(12.59)				1		
Methane		(16.39)				1		
Carbon Dioxide	MM	19.46	3958.12	350.653	5.49606	1	5.49606	%

Analyst Peak Integration Comments

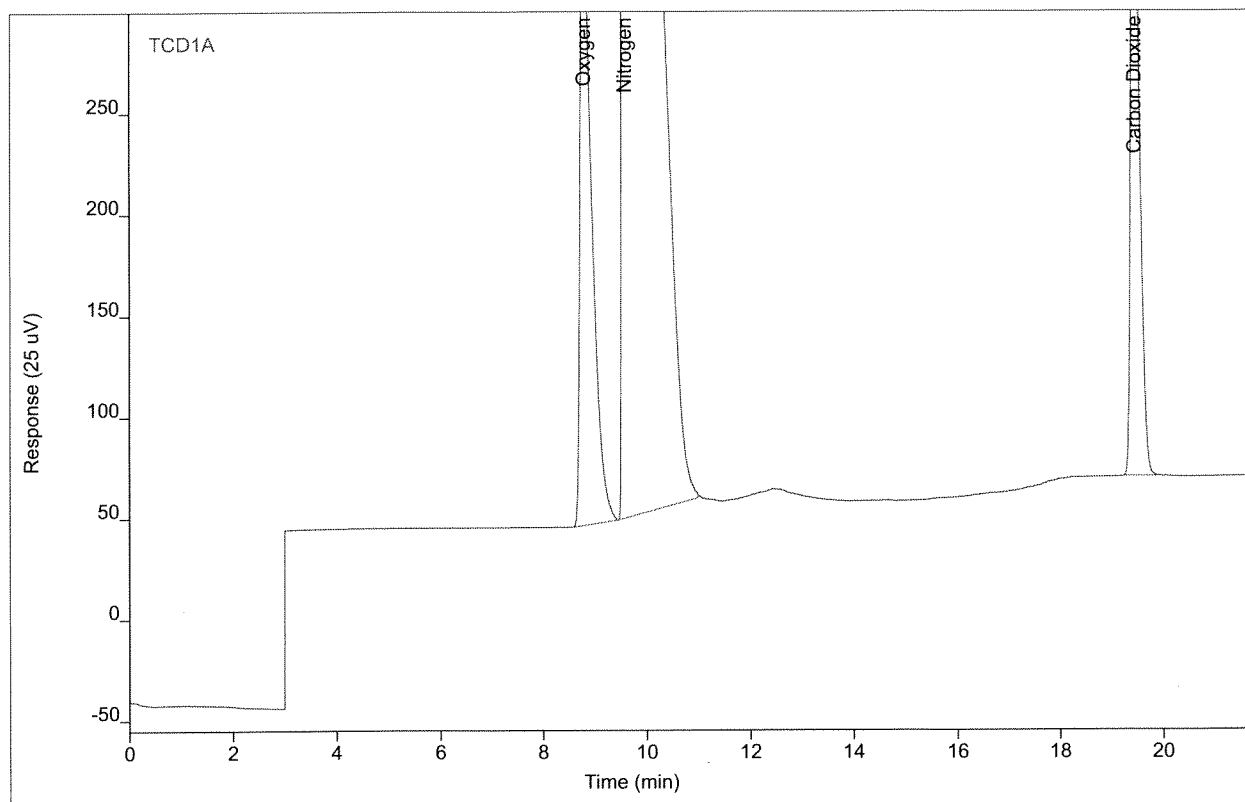
08:10:06 09/28/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.Unit 3 C4 Run 1.Bag
Sequence Name BETTYP452 ver.7
Data File 003F0803.D
File Location GC/2016/Betty/Quarter 3
Injection Date 9/27/2016 9:42 PM
File Modified 10/18/2016 1:56 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 3
Injection Volume 250
Injection 3 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 10/18/2016 12:42 PM
Printed 10/18/2016 5:10 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(2.05)				1		
Oxygen	BB	8.80	4811.41	305.832	12.5709	1	12.5709	%
Nitrogen	BB	9.58	31223.9	849.779	72.9666	1	72.9666	%
Carbon monoxide		(12.59)				1		
Methane		(16.39)				1		
Carbon Dioxide	MM	19.46	4009.09	354.468	5.56758	1	5.56758	%

Analyst Peak Integration Comments

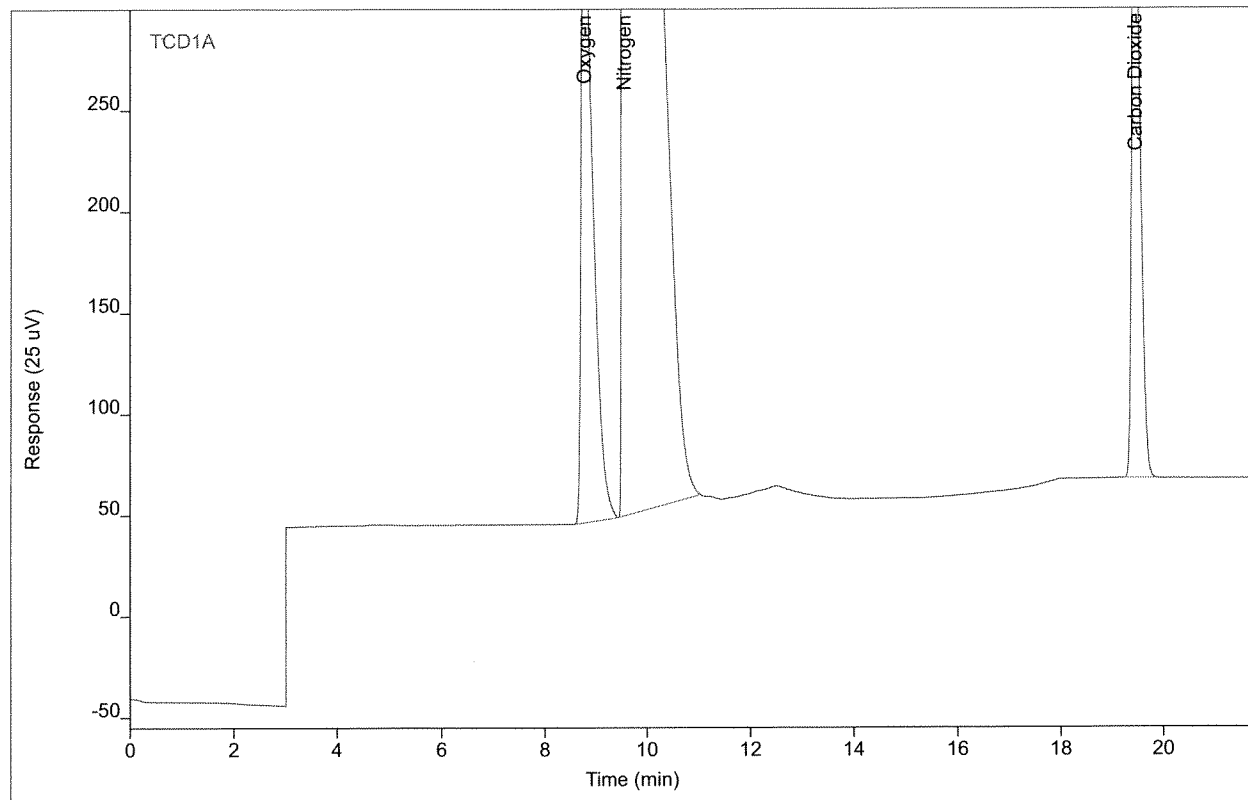
08:10:24 09/28/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.Unit 3 C4 Run 3.Bag
Sequence Name BETTYP452 ver.7
Data File 008F1001.D
File Location GC/2016/Betty/Quarter 3
Injection Date 9/27/2016 11:38 PM
File Modified 10/18/2016 1:56 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 8
Injection Volume 250
Injection 1 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 10/18/2016 12:42 PM
Printed 10/18/2016 5:10 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(2.05)				1		
Oxygen	BB	8.79	5009.95	314.049	13.0908	1	13.0908	%
Nitrogen	BB	9.58	31179.3	852.082	72.8622	1	72.8622	%
Carbon monoxide		(12.59)				1		
Methane		(16.39)				1		
Carbon Dioxide	MM	19.46	3680.56	324.856	5.10655	1	5.10655	%

Analyst Peak Integration Comments

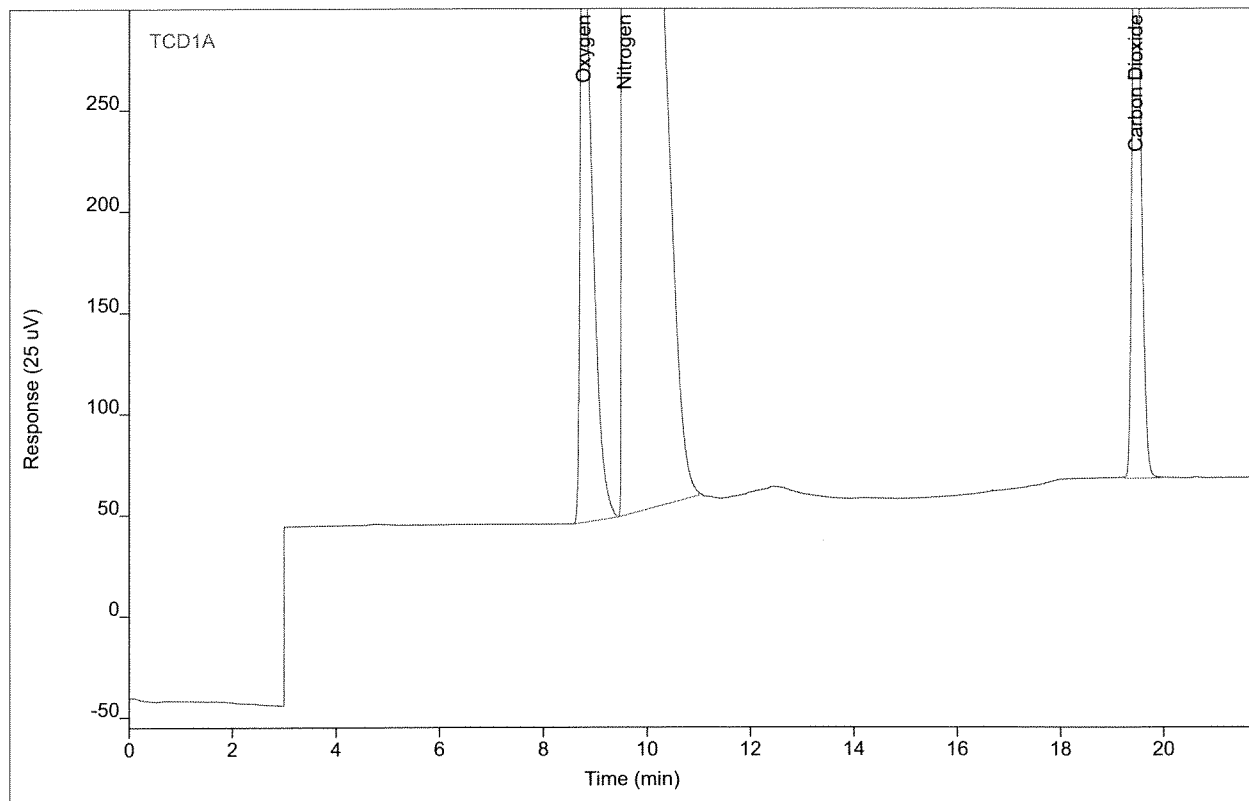
08:11:38 09/28/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.Unit 3 C4 Run 3.Bag
Sequence Name BETTYP452 ver.7
Data File 008F1002.D
File Location GC/2016/Betty/Quarter 3
Injection Date 9/28/2016 12:07 AM
File Modified 10/18/2016 1:56 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 8
Injection Volume 250
Injection 2 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 10/18/2016 12:42 PM
Printed 10/18/2016 5:10 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(2.05)				1		
Oxygen	BB	8.78	4996.19	313.738	13.0548	1	13.0548	%
Nitrogen	BB	9.57	31041.6	852.045	72.5401	1	72.5401	%
Carbon monoxide		(12.59)				1		
Methane		(16.39)				1		
Carbon Dioxide	MM	19.46	3704.69	329.029	5.14042	1	5.14042	%

Analyst Peak Integration Comments

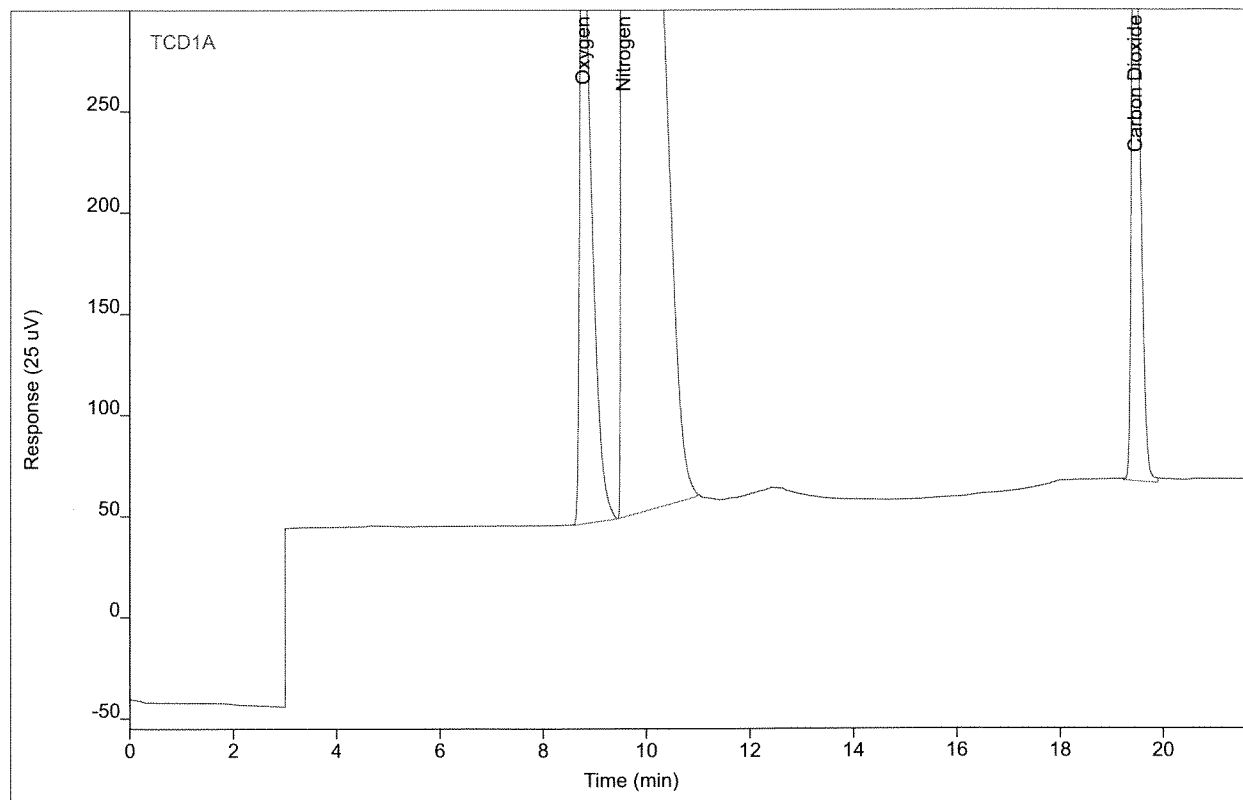
08:11:47 09/28/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.Unit 3 C4 Run 3.Bag
Sequence Name BETTYP452 ver.7
Data File 008F1003.D
File Location GC/2016/Betty/Quarter 3
Injection Date 9/28/2016 12:35 AM
File Modified 10/18/2016 1:56 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 8
Injection Volume 250
Injection 3 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 10/18/2016 12:42 PM
Printed 10/18/2016 5:10 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(2.05)				1		
Oxygen	BB	8.79	4996.41	314.722	13.0554	1	13.0554	%
Nitrogen	BB	9.58	30937.6	845.812	72.2970	1	72.2970	%
Carbon monoxide		(12.59)				1		
Methane		(16.39)				1		
Carbon Dioxide	MM	19.47	3687.88	323.821	5.11684	1	5.11684	%

Analyst Peak Integration Comments

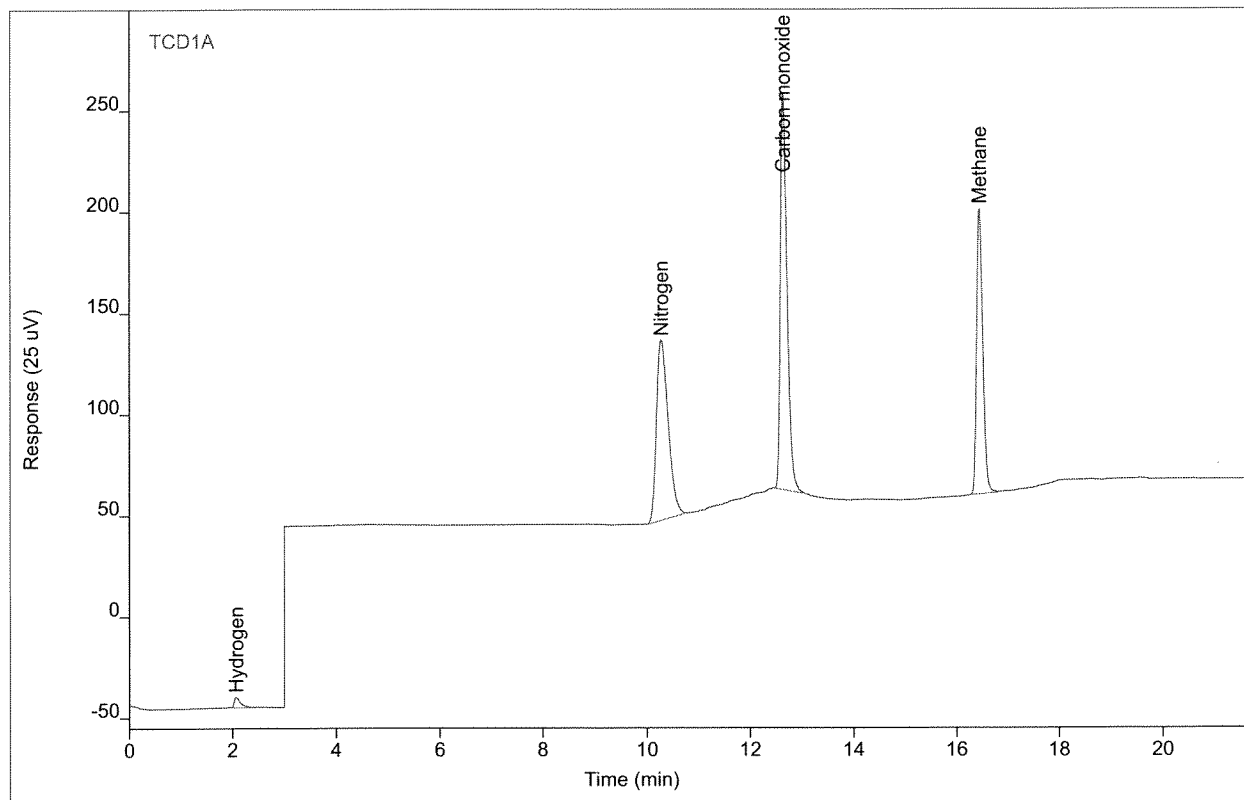
08:11:58 09/28/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG7 ENV(1=530,3=319.09)
Sequence Name BETTYP452 ver.7
Data File 009F1101.D
File Location GC/2016/Betty/Quarter 3
Injection Date 9/28/2016 1:07 AM
File Modified 10/18/2016 12:42 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 1 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 10/18/2016 12:42 PM
Printed 10/18/2016 5:10 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	MM	2.07	46.3255	5.42654	2.58473	1	2.58473	%
Nitrogen	BB	10.29	1412.13	89.1381	3.24183	1	3.24183	%
Carbon monoxide	MM	12.65	1721.54	195.332	3.25028	1	3.25028	%
Methane	MM	16.45	1165.86	141.192	2.57671	1	2.57671	%

Analyst Peak Integration Comments

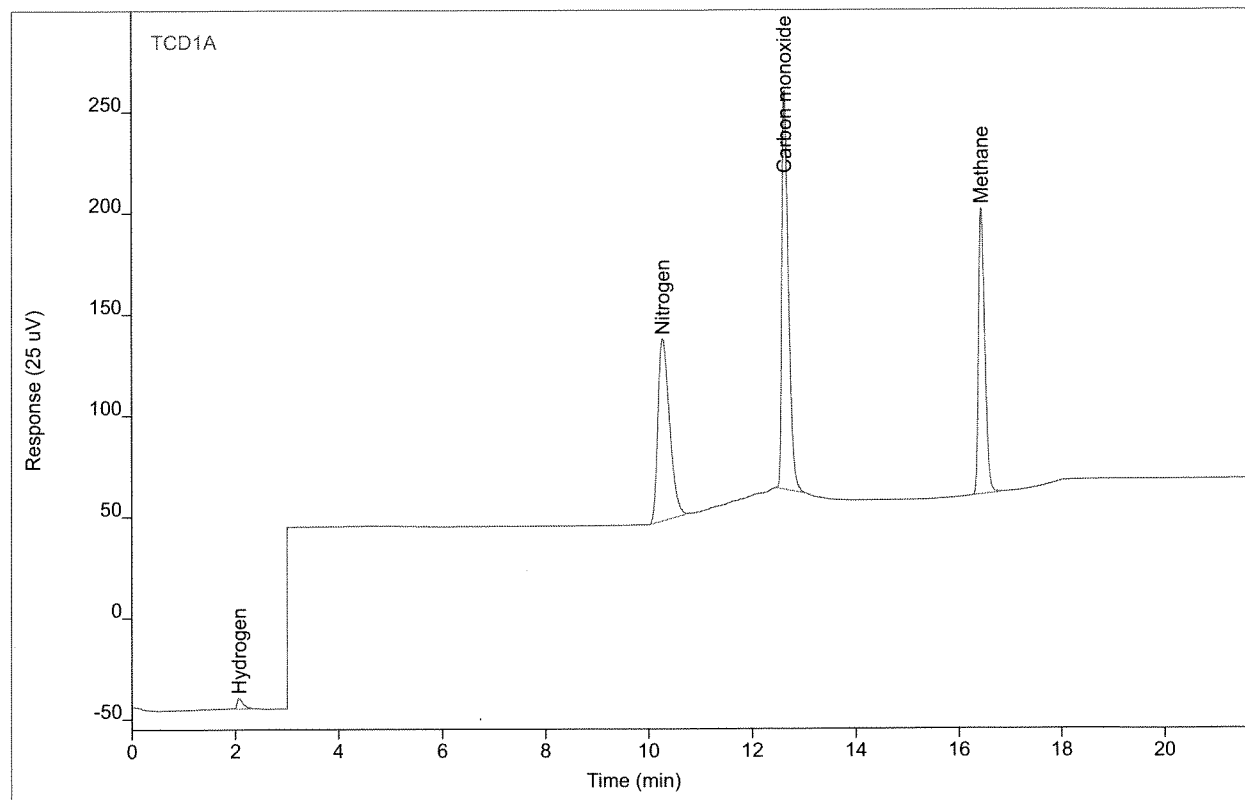
08:12:51 09/28/16 Nicholas Traversa II-BL
08:15:43 09/28/16 Nicholas Traversa II-BL
14:01:36 09/28/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG7 ENV(1=530,3=319.09)
Sequence Name BETTYP452 ver.7
Data File 009F1102.D
File Location GC/2016/Betty/Quarter 3
Injection Date 9/28/2016 1:38 AM
File Modified 10/18/2016 12:42 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type
Vial Number
Injection Volume
Injection
Acquisition Method
Analysis Method
Method Modified
Printed
Calibration
Vial 9
250
2 of 3
BETTYP017_CAL.M
BETTYP348_FGA_CRYO.M
10/18/2016 12:42 PM
10/18/2016 5:10 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	BB	2.07	44.3282	5.35449	2.47350	1	2.47350	%
Nitrogen	BB	10.29	1414.94	90.0182	3.24840	1	3.24840	%
Carbon monoxide	MM	12.65	1724.31	197.378	3.25556	1	3.25556	%
Methane	MM	16.45	1170.81	141.147	2.58782	1	2.58782	%

Analyst Peak Integration Comments

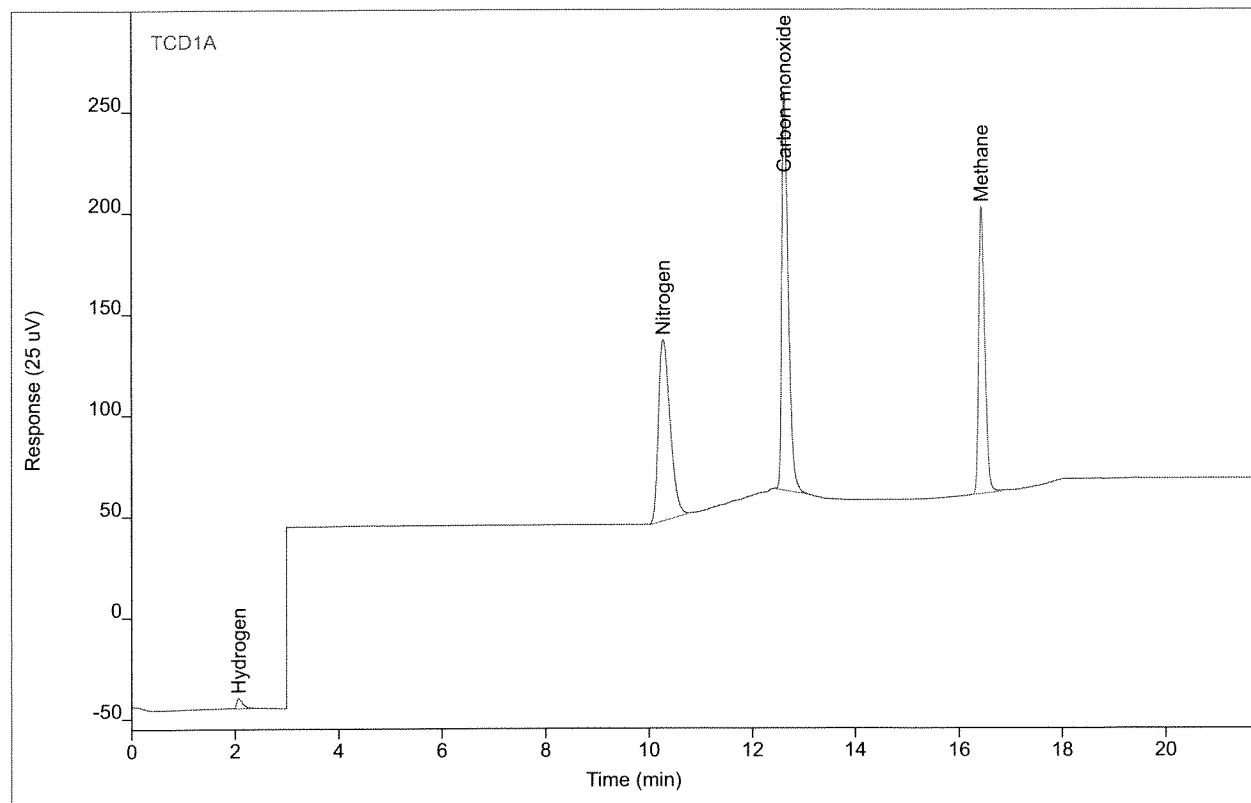
08:13:06 09/28/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG7 ENV(1=530,3=319.09)
 Sequence Name BETTYP452 ver.7
 Data File 009F1103.D
 File Location GC/2016/Betty/Quarter 3
 Injection Date 9/28/2016 2:09 AM
 File Modified 10/18/2016 12:42 PM
 Instrument Betty
 Operator Nicholas Traversa

Sample Type
 Vial Number Vial 9
 Injection Volume 250
 Injection 3 of 3
 Acquisition Method BETTYP017_CAL.M
 Analysis Method BETTYP348_FGA_CRYO.M
 Method Modified 10/18/2016 12:42 PM
 Printed 10/18/2016 5:10 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	BB	2.07	43.2849	5.34850	2.41540	1	2.41540	%
Nitrogen	BB	10.29	1420.78	89.6838	3.26206	1	3.26206	%
Carbon monoxide	MM	12.65	1743.90	196.776	3.29285	1	3.29285	%
Methane	MM	16.45	1180.89	141.863	2.61045	1	2.61045	%

Analyst Peak Integration Comments

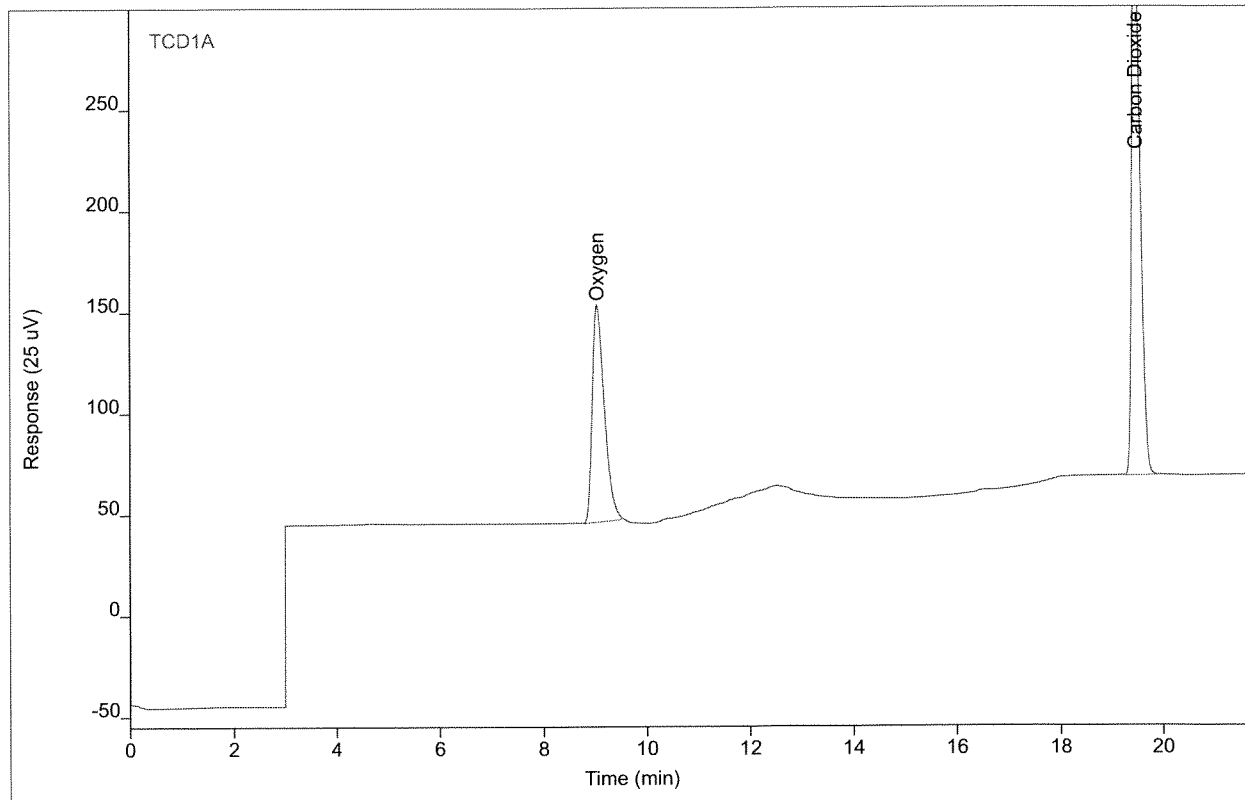
08:13:18 09/28/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG3 ENV(1=374.56,2=391.07)
Sequence Name BETTYP452 ver.7
Data File 009F1201.D
File Location GC/2016/Betty/Quarter 3
Injection Date 9/28/2016 2:40 AM
File Modified 10/18/2016 12:42 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 1 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 10/18/2016 12:42 PM
Printed 10/18/2016 5:10 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Oxygen	BB	9.04	1746.69	107.407	4.54607	1	4.54607	%
Carbon Dioxide	MM	19.48	3184.05	285.293	4.40982	1	4.40982	%

Analyst Peak Integration Comments

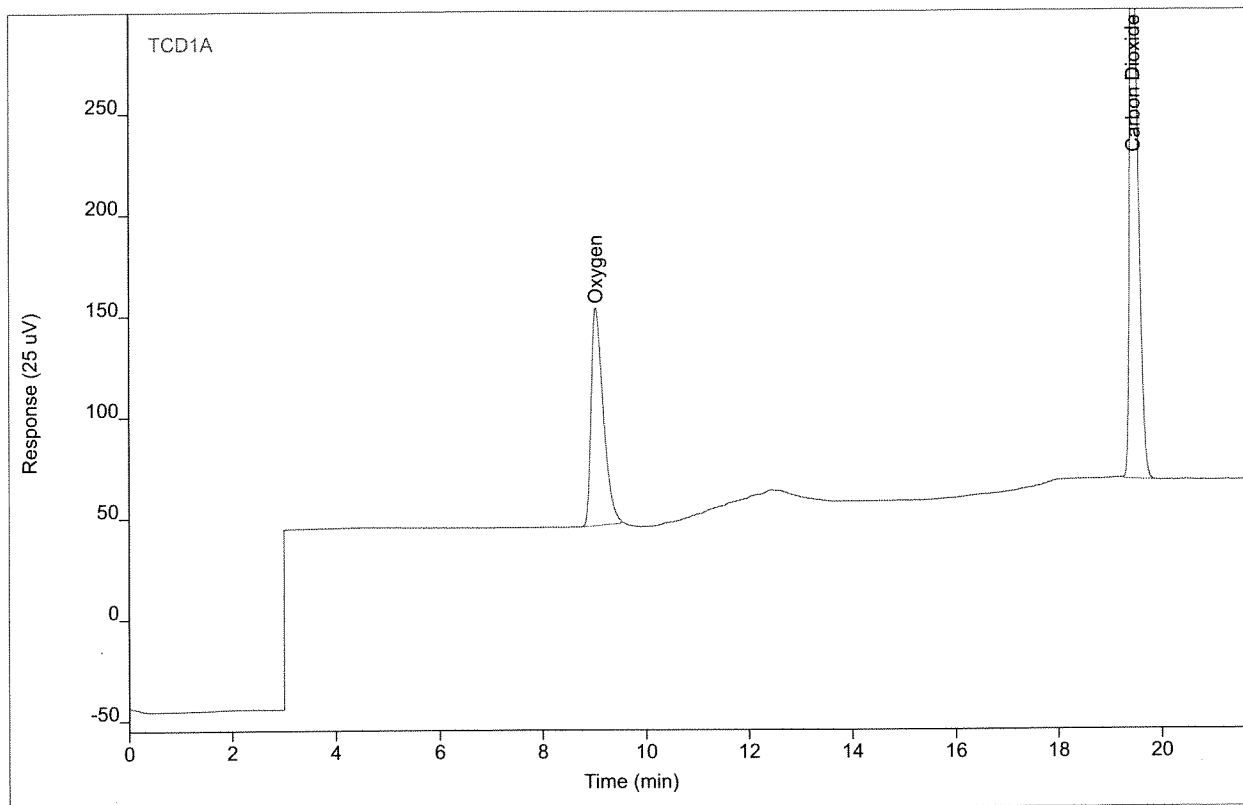
08:13:34 09/28/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG3 ENV(1=374.56,2=391.07)
Sequence Name BETTYP452 ver.7
Data File 009F1202.D
File Location GC/2016/Betty/Quarter 3
Injection Date 9/28/2016 3:12 AM
File Modified 10/18/2016 12:42 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 2 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 10/18/2016 12:42 PM
Printed 10/18/2016 5:10 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Oxygen	BB	9.04	1760.22	107.719	4.58151	1	4.58151	%
Carbon Dioxide	MM	19.48	3211.54	290.467	4.44839	1	4.44839	%

Analyst Peak Integration Comments

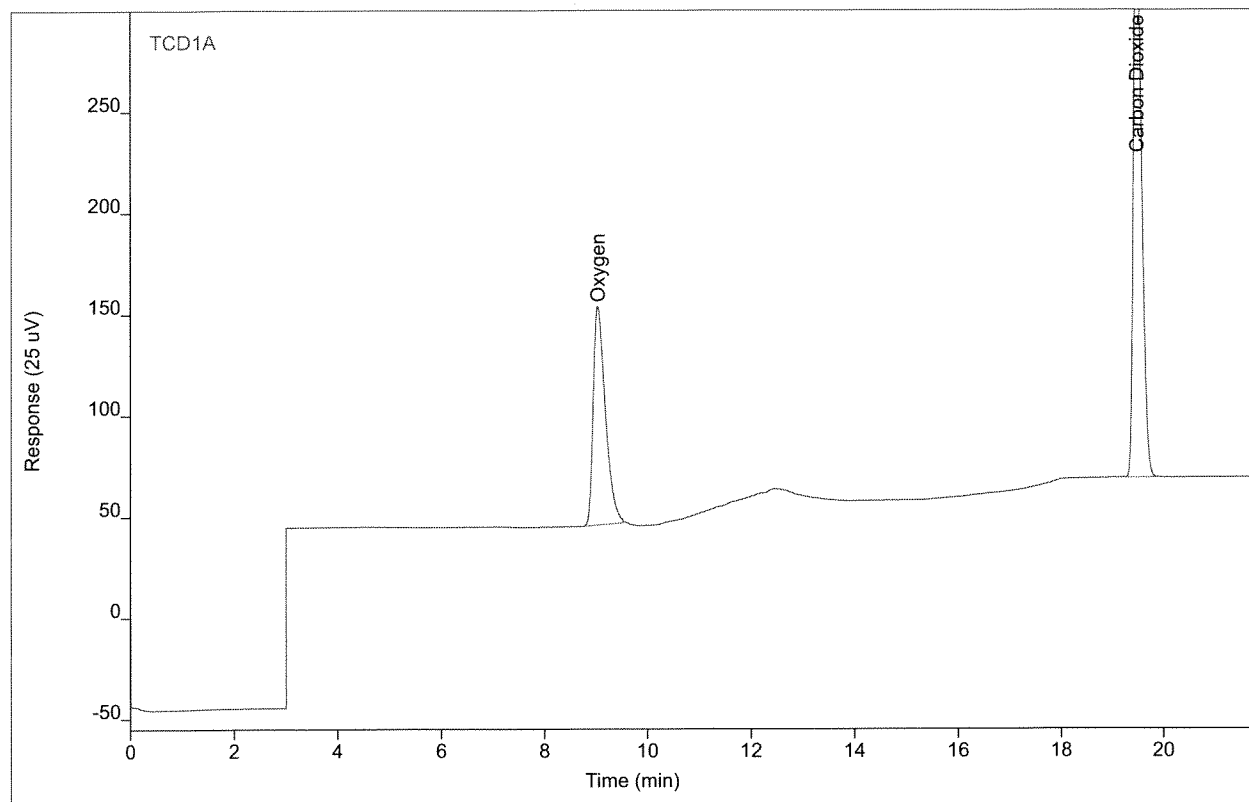
08:14:03 09/28/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG3 ENV(1=374.56,2=391.07)
Sequence Name BETTYP452 ver.7
Data File 009F1203.D
File Location GC/2016/Betty/Quarter 3
Injection Date 9/28/2016 3:43 AM
File Modified 10/18/2016 12:42 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 3 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 10/18/2016 12:42 PM
Printed 10/18/2016 5:10 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Oxygen	BB	9.04	1766.43	108.131	4.59777	1	4.59777	%
Carbon Dioxide	MM	19.48	3185.26	285.659	4.41151	1	4.41151	%

Analyst Peak Integration Comments

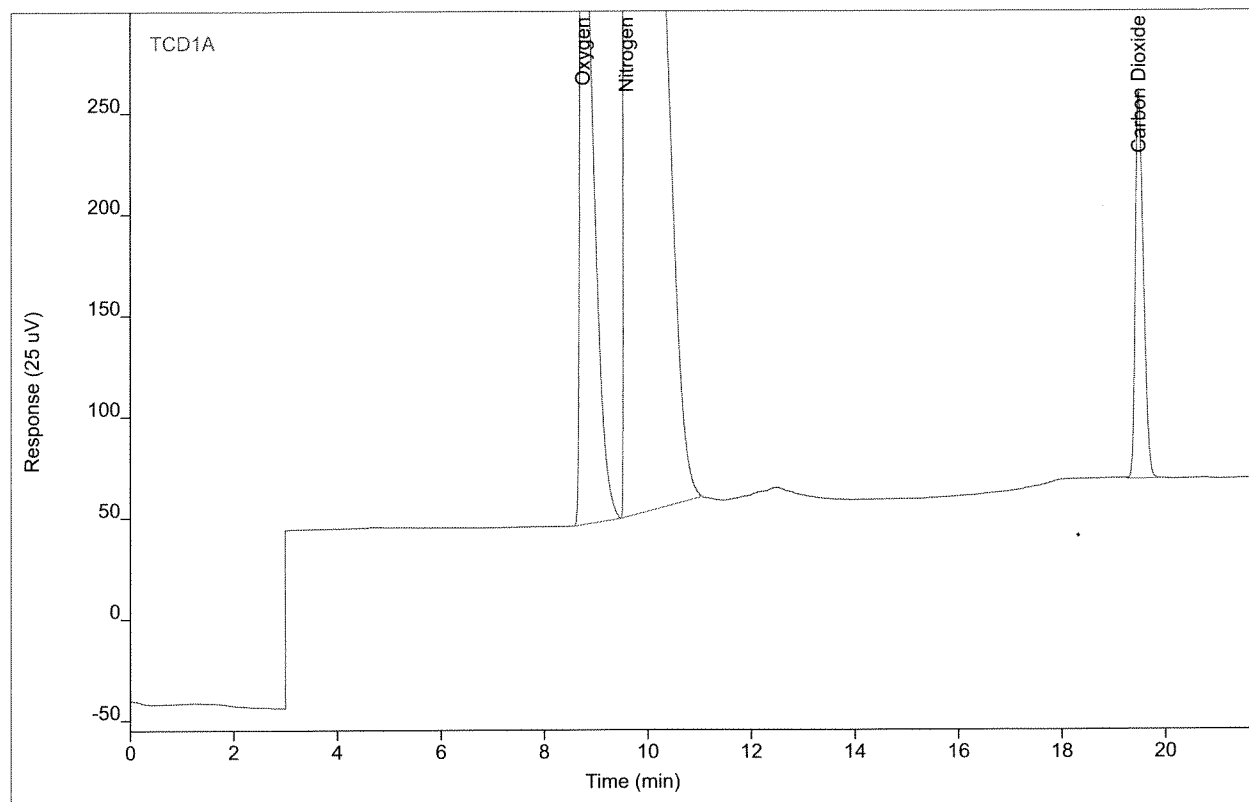
08:14:18 09/28/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.Condition 2 Run 2.Bag
Sequence Name BETTYP454 ver.4
Data File 003F0102.D
File Location GC/2016/Betty/Quarter 4
Injection Date 9/28/2016 4:16 PM
File Modified 10/18/2016 12:50 PM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 3
Injection Volume 250
Injection 2 of 4
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 10/18/2016 12:50 PM
Printed 10/18/2016 5:10 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(2.05)				1		
Oxygen	BB	8.77	6475.06	381.101	16.9272	1	16.9272	%
Nitrogen	BB	9.61	30702.7	835.087	71.7475	1	71.7475	%
Carbon monoxide		(12.59)				1		
Methane		(16.39)				1		
Carbon Dioxide	MM	19.51	2083.61	190.901	2.86558	1	2.86558	%

Analyst Peak Integration Comments

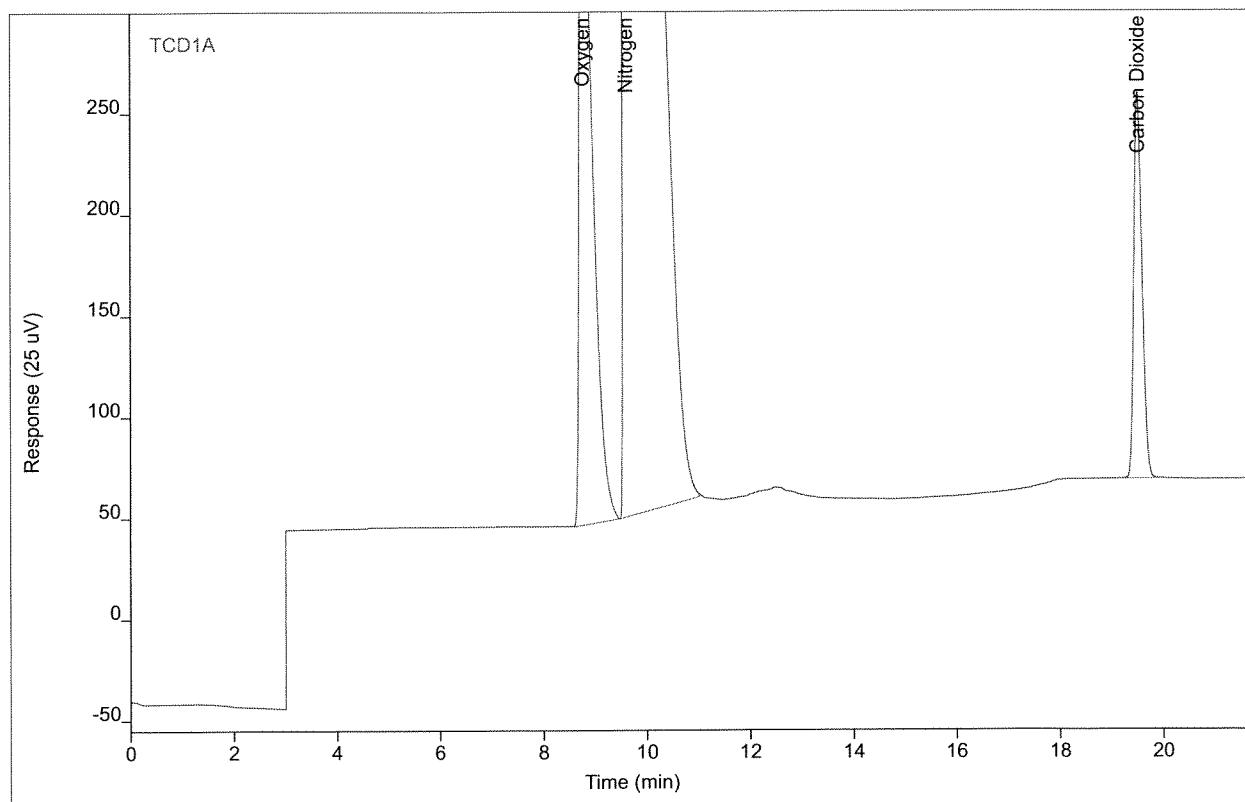
09:16:47 09/29/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.Condition 2 Run 2.Bag
Sequence Name BETTYP454 ver.4
Data File 003F0103.D
File Location GC/2016/Betty/Quarter 4
Injection Date 9/28/2016 4:44 PM
File Modified 10/18/2016 12:50 PM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 3
Injection Volume 250
Injection 3 of 4
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 10/18/2016 12:50 PM
Printed 10/18/2016 5:10 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(2.05)				1		
Oxygen	BV	8.77	6447.07	379.366	16.8539	1	16.8539	%
Nitrogen	VB	9.61	30574.4	835.735	71.4475	1	71.4475	%
Carbon monoxide		(12.59)				1		
Methane		(16.39)				1		
Carbon Dioxide	MM	19.51	2073.34	190.508	2.85117	1	2.85117	%

Analyst Peak Integration Comments

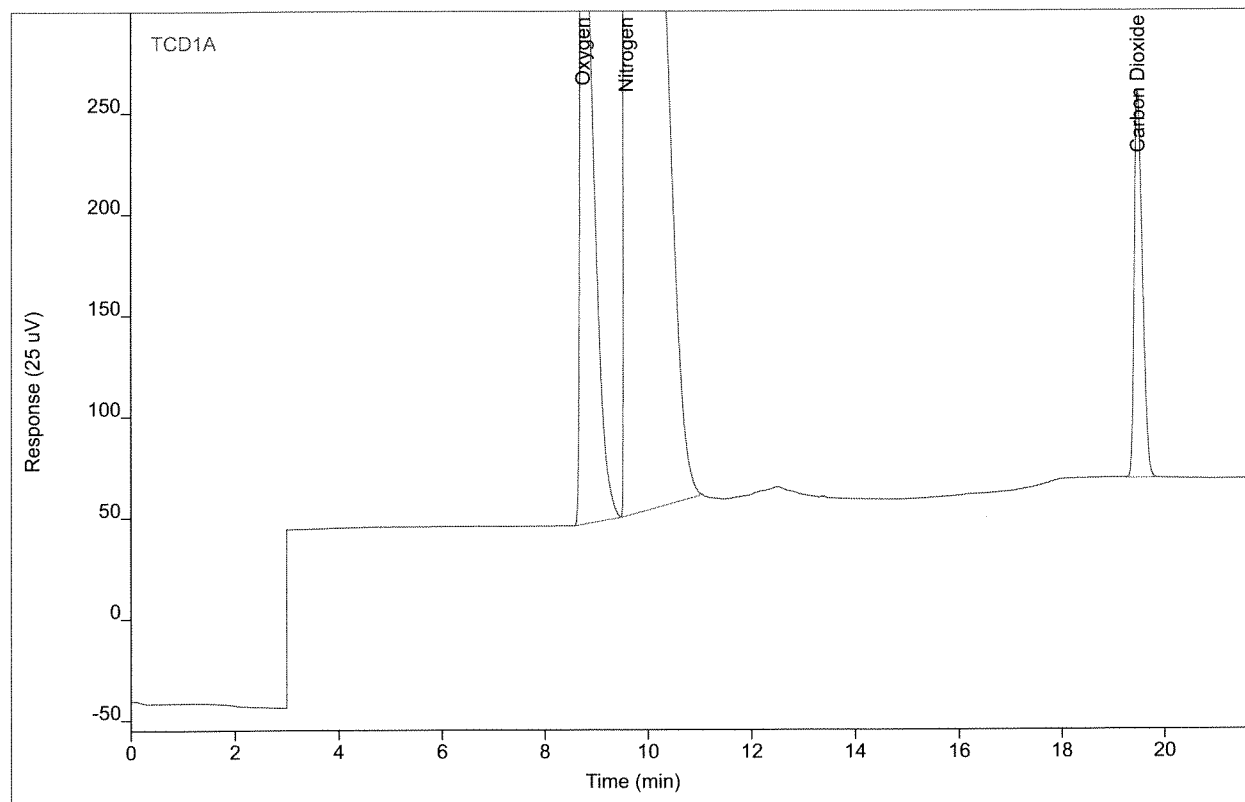
09:17:14 09/29/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.Condition 2 Run 2.Bag
Sequence Name BETTYP454 ver.4
Data File 003F0104.D
File Location GC/2016/Betty/Quarter 4
Injection Date 9/28/2016 5:12 PM
File Modified 10/18/2016 12:51 PM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 3
Injection Volume 250
Injection 4 of 4
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 10/18/2016 12:50 PM
Printed 10/18/2016 5:10 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(2.05)				1		
Oxygen	BV	8.77	6482.21	380.173	16.9459	1	16.9459	%
Nitrogen	VB	9.61	30813.2	844.248	72.0060	1	72.0060	%
Carbon monoxide		(12.59)				1		
Methane		(16.39)				1		
Carbon Dioxide	MM	19.51	2080.96	191.420	2.86186	1	2.86186	%

Analyst Peak Integration Comments

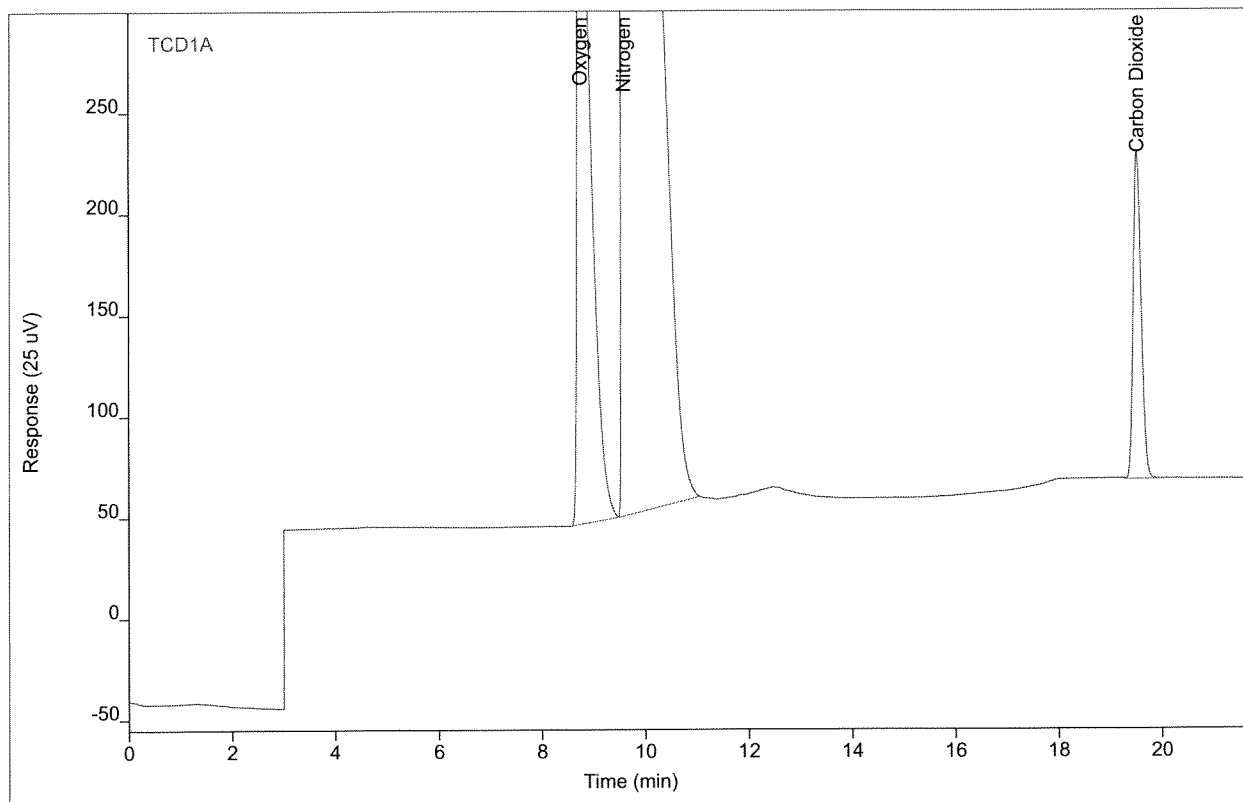
09:17:27 09/29/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.Condition 2 Run 4.Bag
Sequence Name BETTYP454 ver.4
Data File 004F0202.D
File Location GC/2016/Betty/Quarter 4
Injection Date 9/28/2016 6:08 PM
File Modified 10/18/2016 12:51 PM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 4
Injection Volume 250
Injection 2 of 4
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 10/18/2016 12:50 PM
Printed 10/18/2016 5:10 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(2.05)				1		
Oxygen	BV	8.76	6791.87	395.569	17.7567	1	17.7567	%
Nitrogen	VB	9.60	30890.7	839.296	72.1873	1	72.1873	%
Carbon monoxide		(12.59)				1		
Methane		(16.39)				1		
Carbon Dioxide	MM	19.52	1750.44	161.983	2.39805	1	2.39805	%

Analyst Peak Integration Comments

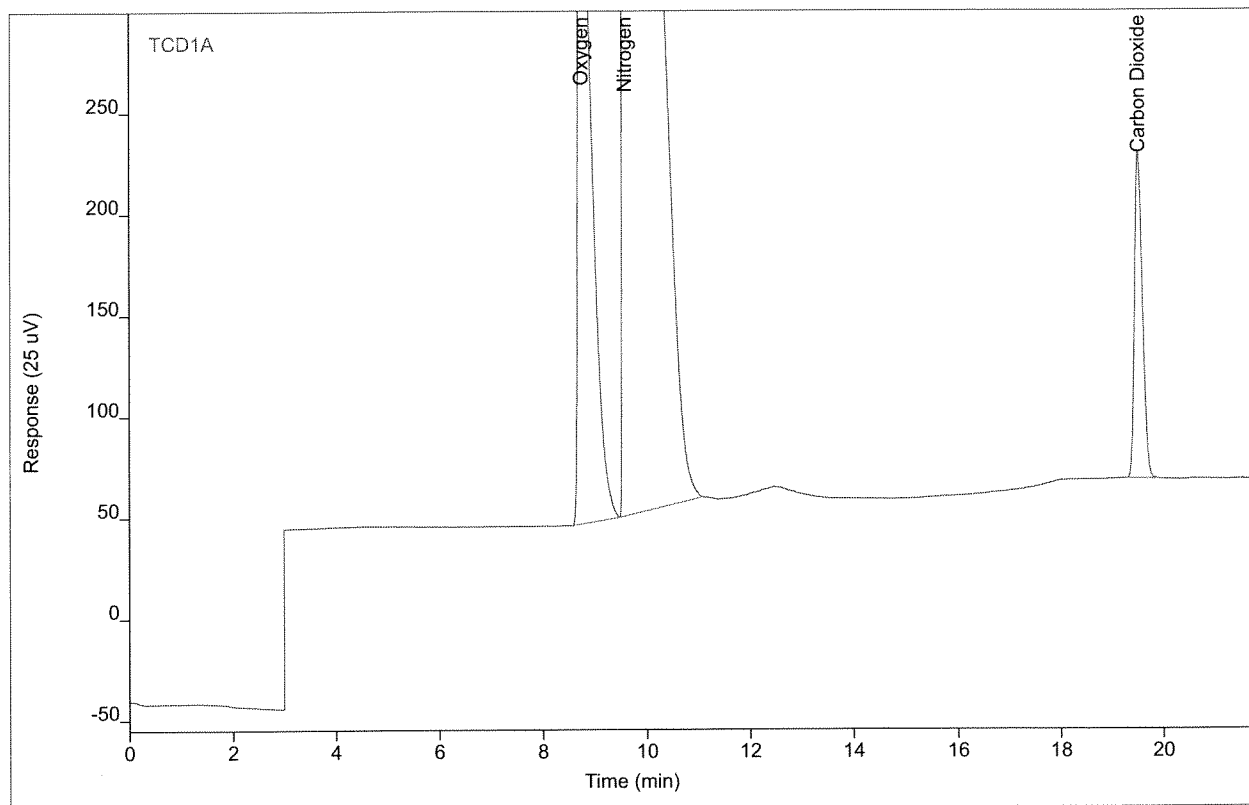
09:20:01 09/29/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.Condition 2 Run 4.Bag
Sequence Name BETTYP454 ver.4
Data File 004F0203.D
File Location GC/2016/Betty/Quarter 4
Injection Date 9/28/2016 6:37 PM
File Modified 10/18/2016 12:51 PM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 4
Injection Volume 250
Injection 3 of 4
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 10/18/2016 12:50 PM
Printed 10/18/2016 5:10 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(2.05)				1		
Oxygen	BV	8.76	6782.40	393.440	17.7319	1	17.7319	%
Nitrogen	VB	9.60	30810.0	837.855	71.9985	1	71.9985	%
Carbon monoxide		(12.59)				1		
Methane		(16.39)				1		
Carbon Dioxide	MM	19.52	1744.66	161.280	2.38995	1	2.38995	%

Analyst Peak Integration Comments

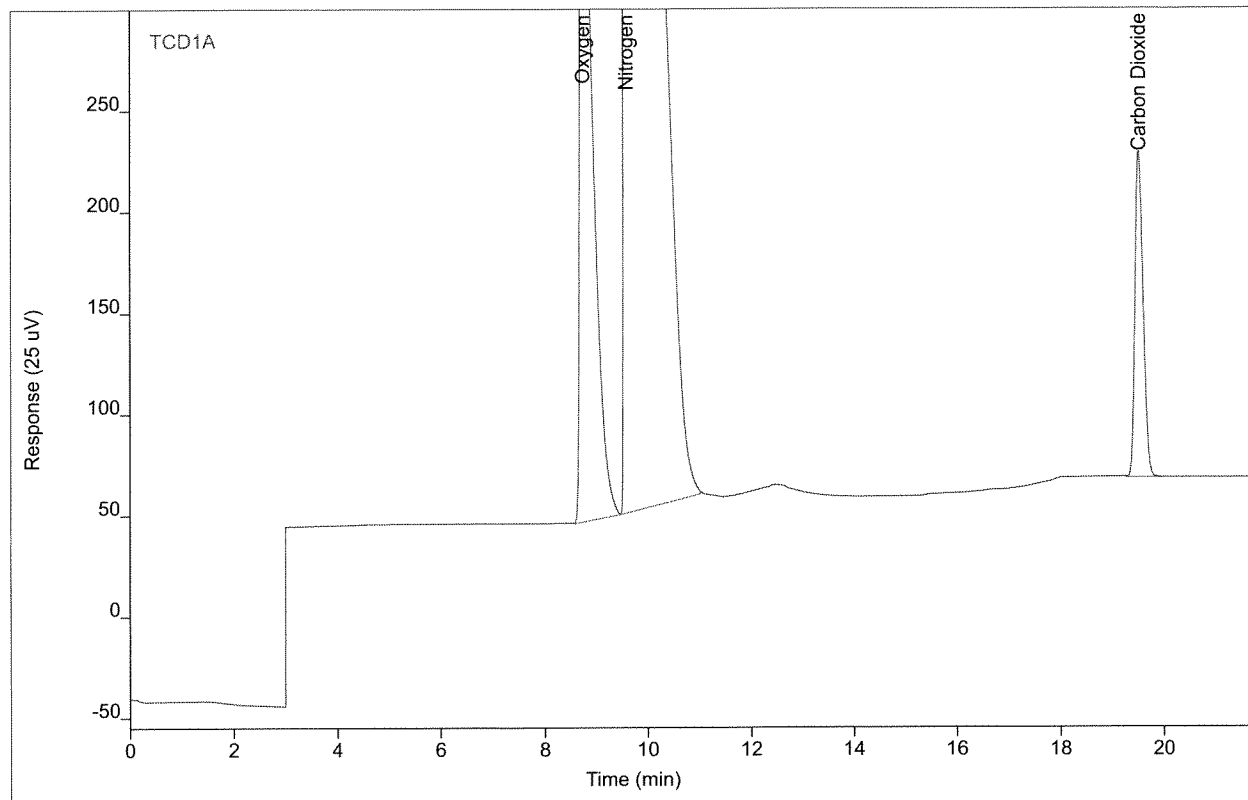
09:20:11 09/29/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.Condition 2 Run 4.Bag
Sequence Name BETTYP454 ver.4
Data File 004F0204.D
File Location GC/2016/Betty/Quarter 4
Injection Date 9/28/2016 7:05 PM
File Modified 10/18/2016 12:51 PM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 4
Injection Volume 250
Injection 4 of 4
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 10/18/2016 12:50 PM
Printed 10/18/2016 5:10 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(2.05)				1		
Oxygen	BV	8.76	6772.74	395.076	17.7066	1	17.7066	%
Nitrogen	VB	9.60	30763.5	839.669	71.8897	1	71.8897	%
Carbon monoxide		(12.59)				1		
Methane		(16.39)				1		
Carbon Dioxide	MM	19.52	1748.61	161.072	2.39548	1	2.39548	%

Analyst Peak Integration Comments

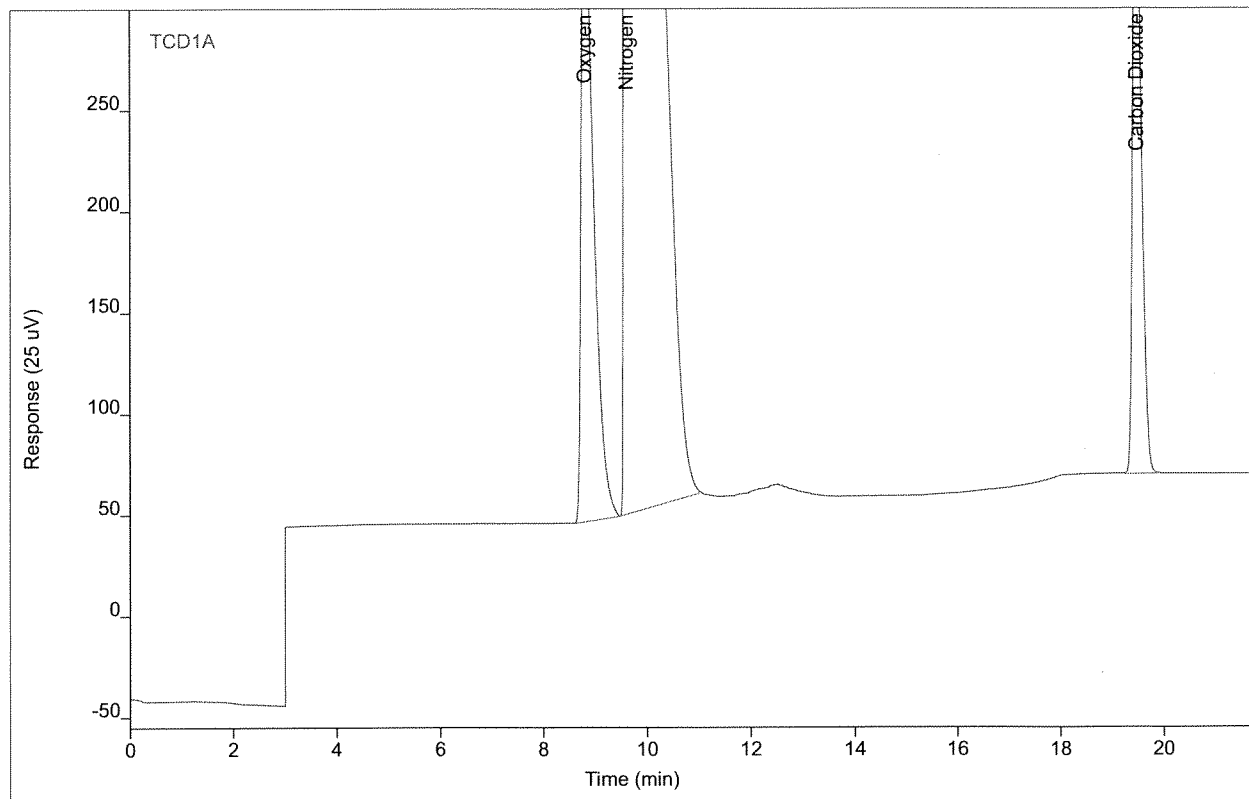
09:20:21 09/29/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.Unit 3 C4 Run 2.Bag
Sequence Name BETTYP455 ver.2
Data File 003F0202.D
File Location GC/2016/Betty/Quarter 4
Injection Date 9/29/2016 11:35 AM
File Modified 10/18/2016 1:16 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 3
Injection Volume 250
Injection 2 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 10/18/2016 1:06 PM
Printed 10/18/2016 5:10 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(2.05)				1		
Oxygen	BB	8.80	5221.89	325.449	13.6458	1	13.6458	%
Nitrogen	BB	9.60	31306.8	852.965	73.1603	1	73.1603	%
Carbon monoxide		(12.59)				1		
Methane		(16.39)				1		
Carbon Dioxide	MM	19.48	3556.82	317.581	4.93291	1	4.93291	%

Analyst Peak Integration Comments

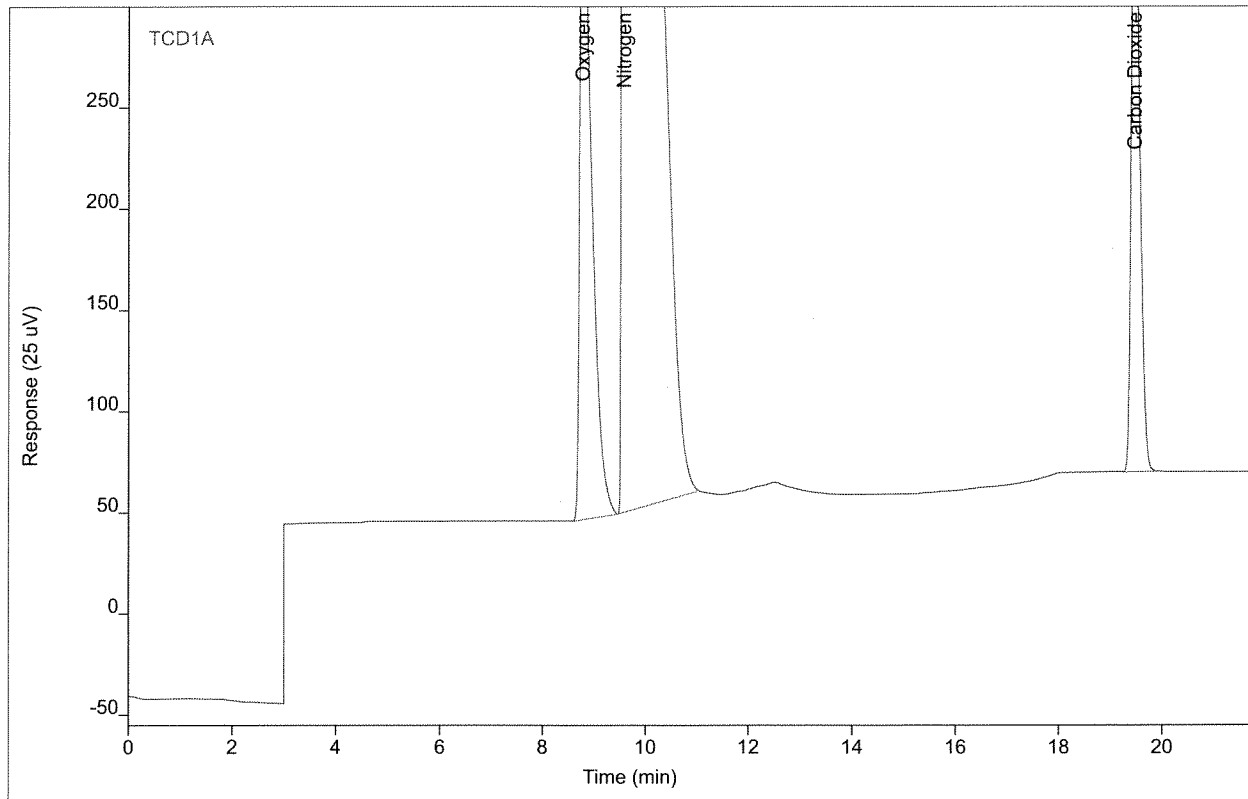
12:34:10 09/29/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.Unit 3 C4 Run 2.Bag
Sequence Name BETTYP455 ver.2
Data File 003F0203.D
File Location GC/2016/Betty/Quarter 4
Injection Date 9/29/2016 12:03 PM
File Modified 10/18/2016 1:16 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 3
Injection Volume 250
Injection 3 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 10/18/2016 1:06 PM
Printed 10/18/2016 5:10 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(2.05)				1		
Oxygen	BB	8.80	5234.98	325.990	13.6801	1	13.6801	%
Nitrogen	BB	9.60	31341.2	850.379	73.2407	1	73.2407	%
Carbon monoxide		(12.59)				1		
Methane		(16.39)				1		
Carbon Dioxide	MM	19.48	3556.22	316.228	4.93208	1	4.93208	%

Analyst Peak Integration Comments

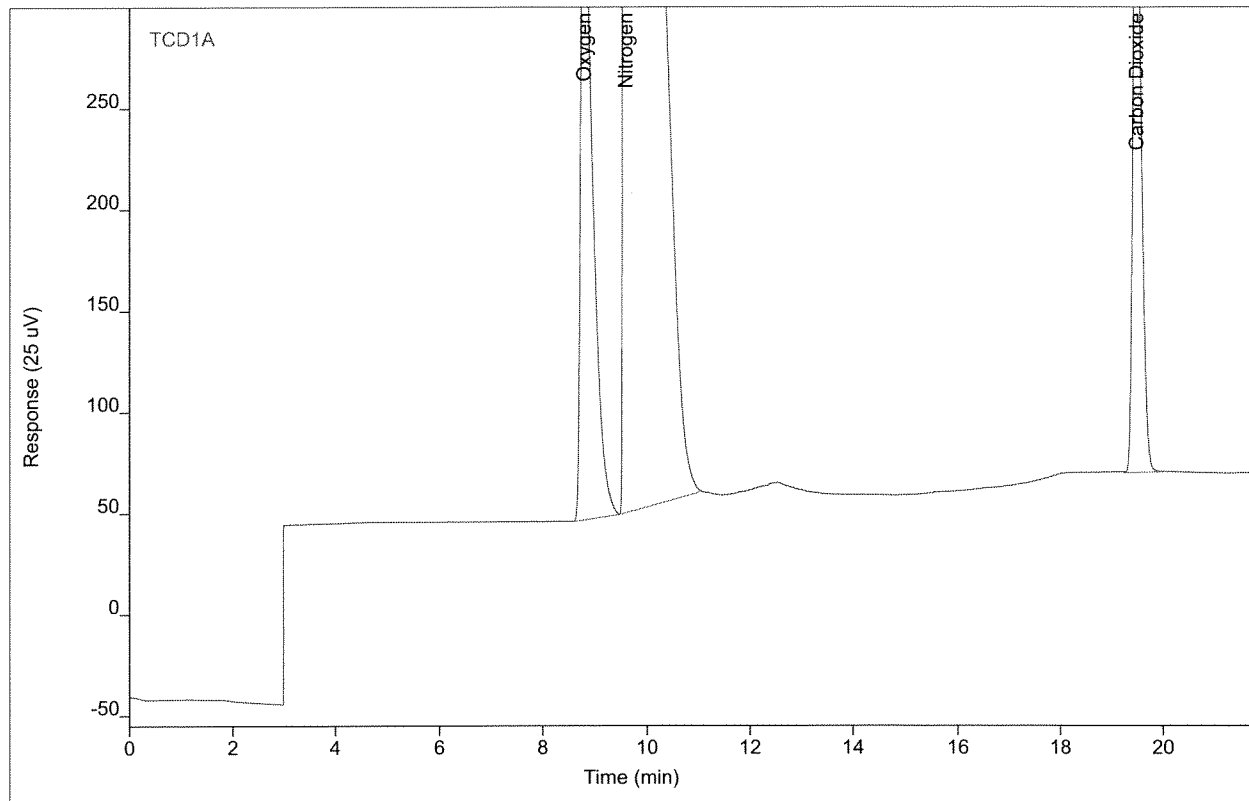
12:34:33 09/29/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.Unit 3 C4 Run 2.Bag
Sequence Name BETTYP455 ver.2
Data File 003F0301.D
File Location GC/2016/Betty/Quarter 4
Injection Date 9/29/2016 12:31 PM
File Modified 10/18/2016 1:16 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 3
Injection Volume 250
Injection 1 of 1
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 10/18/2016 1:06 PM
Printed 10/18/2016 5:10 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(2.05)				1		
Oxygen	BB	8.80	5239.15	327.055	13.6910	1	13.6910	%
Nitrogen	BB	9.60	31354.2	852.372	73.2712	1	73.2712	%
Carbon monoxide		(12.59)				1		
Methane		(16.39)				1		
Carbon Dioxide	MM	19.48	3585.37	320.531	4.97298	1	4.97298	%

Analyst Peak Integration Comments

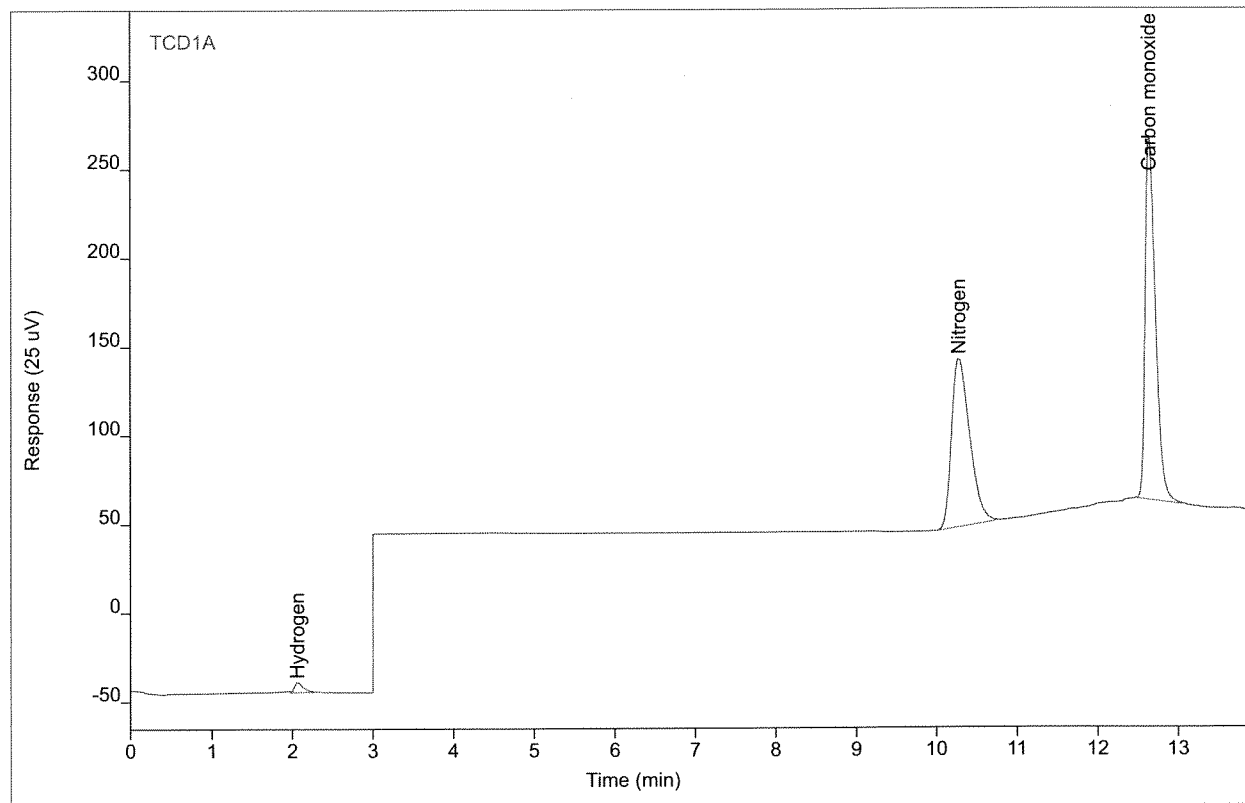
14:24:49 09/29/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG7 ENV(1=530,6=319.09)
Sequence Name BETTYP477B ver.5
Inj Data File 009F0201.D
File Location GC/2016/Betty/Quarter 4
Injection Date 10/28/2016 10:34 AM
File Modified 11/1/2016 9:30 AM
Instrument Betty
Operator Justin Guenzler

Sample Type
Vial Number
Injection Volume
Injection
Acquisition Method
Analysis Method
Method Modified
Printed
Calibration
Vial 9
250
1 of 3
BETTYP017_CAL.M
BETTYP348_FGA_CRYO.M
10/29/2016 11:39 AM
11/4/2016 10:11 AM



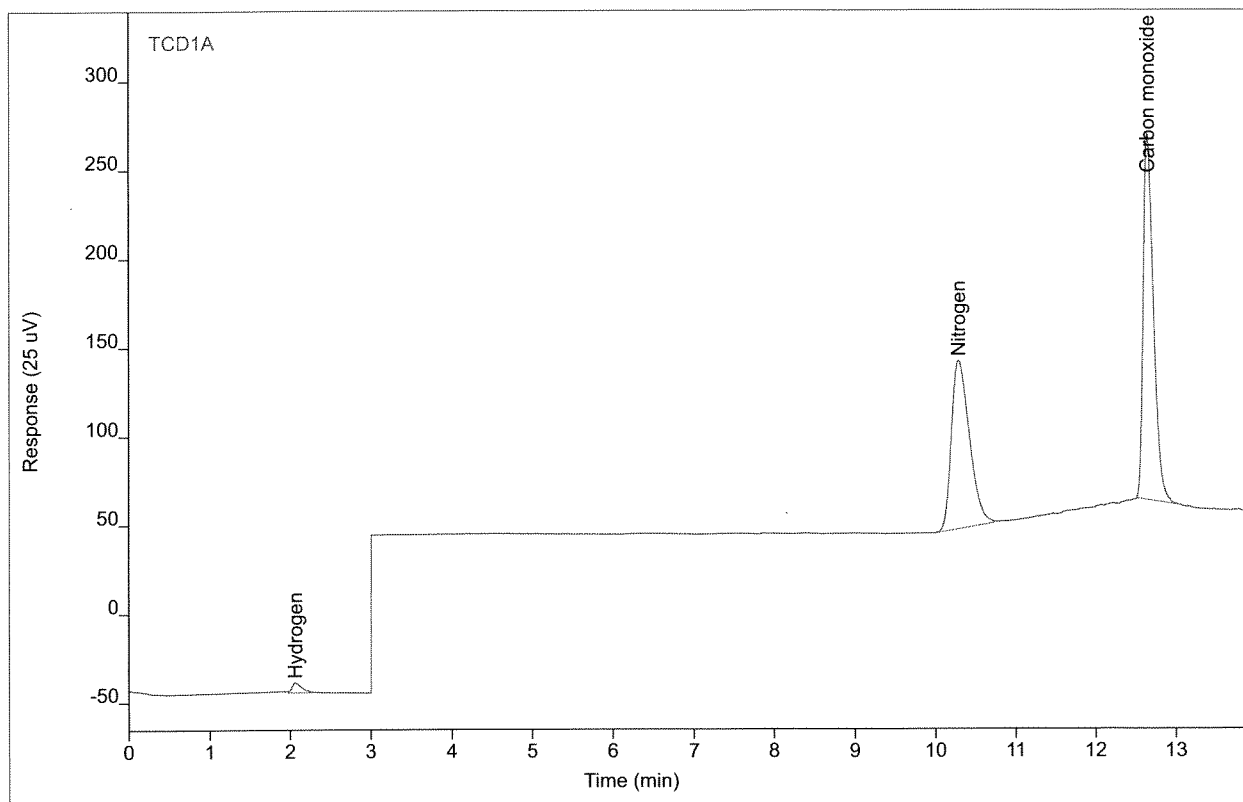
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	MM	2.06	45.9743	5.60361	2.56517	1	2.56517	%
Nitrogen	BB	10.29	1493.24	94.9082	3.43154	1	3.43154	%
Carbon monoxide	MM	12.65	1821.50	205.136	3.44058	1	3.44058	%
Methane	MM	16.45	1215.84	147.673	2.68887	1	2.68887	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG7 ENV(1=530,6=319.09)
Sequence Name BETTYP477B ver.5
Inj Data File 009F0202.D
File Location GC/2016/Betty/Quarter 4
Injection Date 10/28/2016 11:05 AM
File Modified 11/1/2016 9:30 AM
Instrument Betty
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 2 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 10/29/2016 11:39 AM
Printed 11/4/2016 10:11 AM



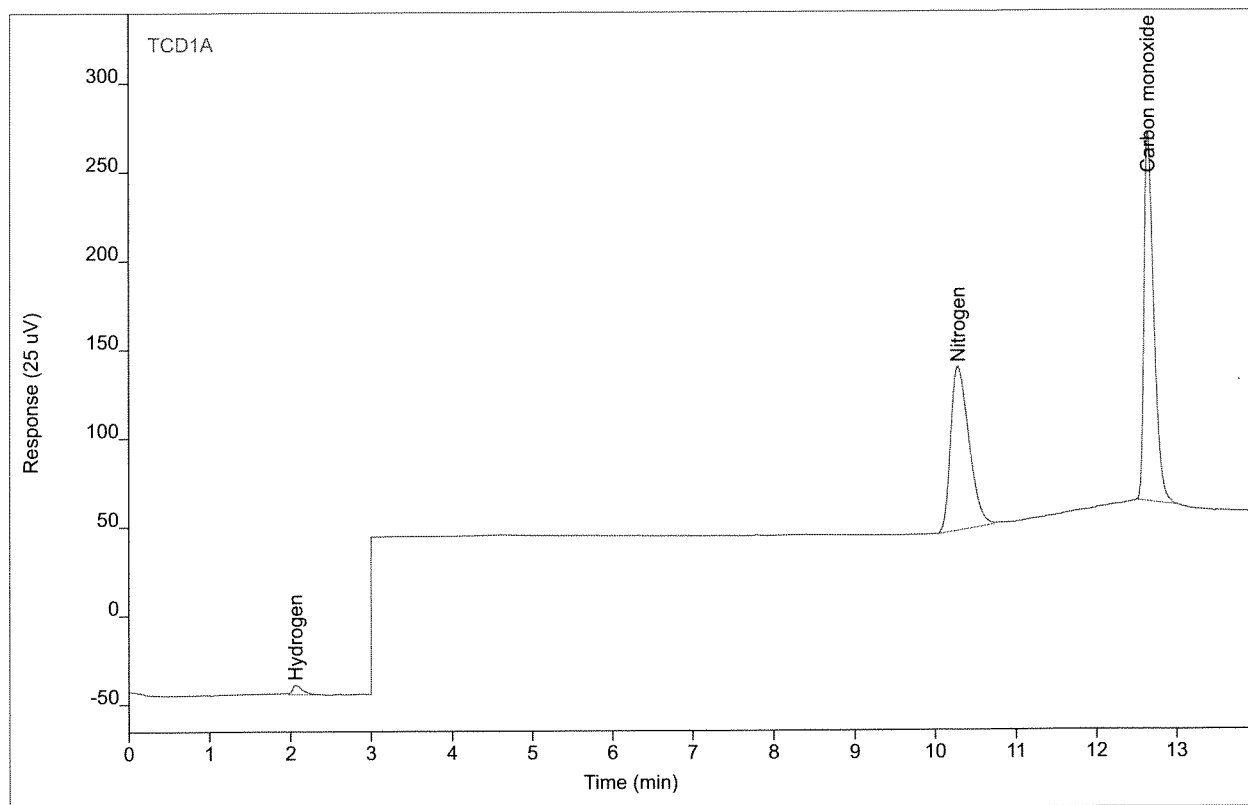
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	MM	2.06	46.2899	5.73617	2.58274	1	2.58274	%
Nitrogen	BB	10.29	1493.97	95.0495	3.43324	1	3.43324	%
Carbon monoxide	MM	12.65	1791.36	206.452	3.38319	1	3.38319	%
Methane	MM	16.45	1220.68	148.409	2.69972	1	2.69972	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG7 ENV(1=530,6=319.09)
Sequence Name BETTYP477B ver.5
Inj Data File 009F0203.D
File Location GC/2016/Betty/Quarter 4
Injection Date 10/28/2016 11:36 AM
File Modified 11/1/2016 9:30 AM
Instrument Betty
Operator Justin Guenzler

Sample Type
Vial Number
Injection Volume
Injection
Acquisition Method
Analysis Method
Method Modified
Printed
Calibration
Vial 9
250
3 of 3
BETTYP017_CAL.M
BETTYP348_FGA_CRYO.M
10/29/2016 11:39 AM
11/4/2016 10:11 AM



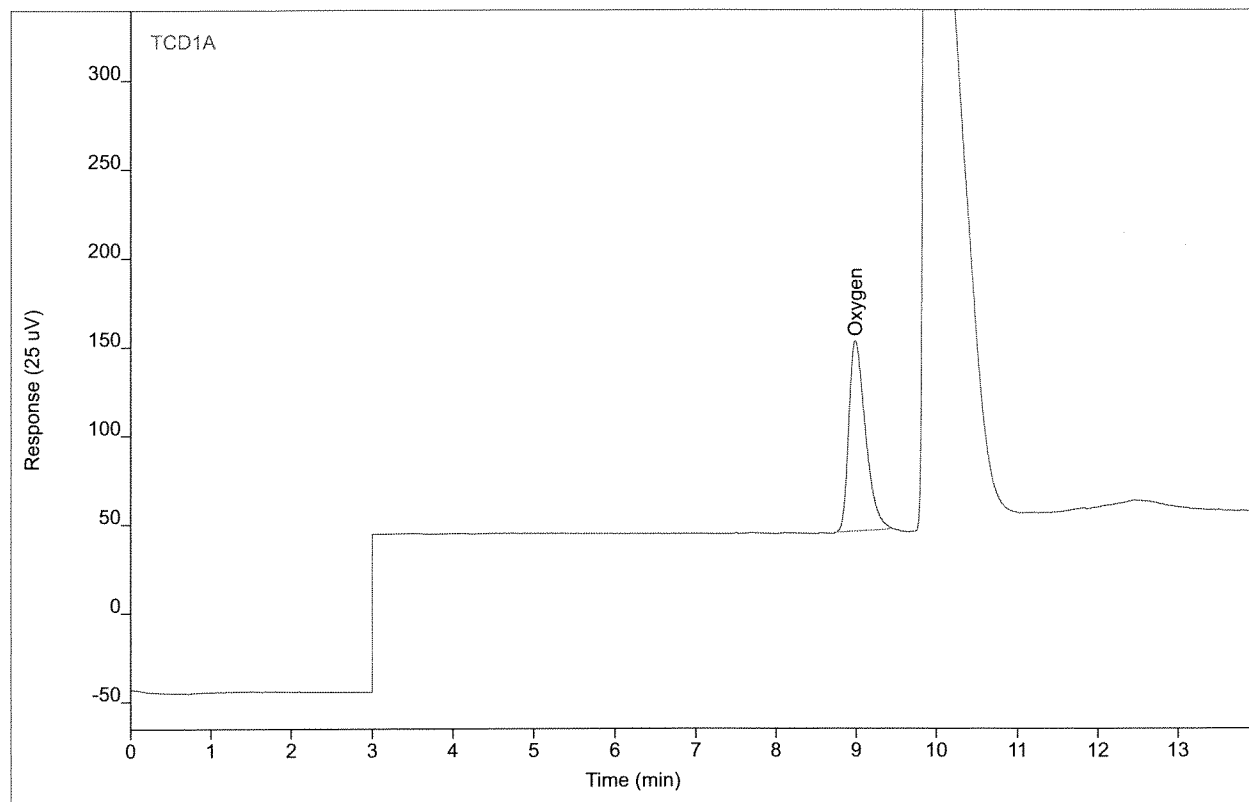
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	MM	2.06	45.8028	5.62682	2.55561	1	2.55561	%
Nitrogen	BB	10.30	1449.12	92.4608	3.32833	1	3.32833	%
Carbon monoxide	MM	12.65	1765.10	207.237	3.33321	1	3.33321	%
Methane	MM	16.45	1198.08	145.908	2.64901	1	2.64901	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP472 #FG3 ENV(1=374.56,2=391.07)
Sequence Name BETTYP477B ver.5
Inj Data File 009F0301.D
File Location GC/2016/Betty/Quarter 4
Injection Date 10/28/2016 12:07 PM
File Modified 11/1/2016 9:30 AM
Instrument Betty
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 1 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 10/29/2016 11:39 AM
Printed 11/4/2016 10:11 AM



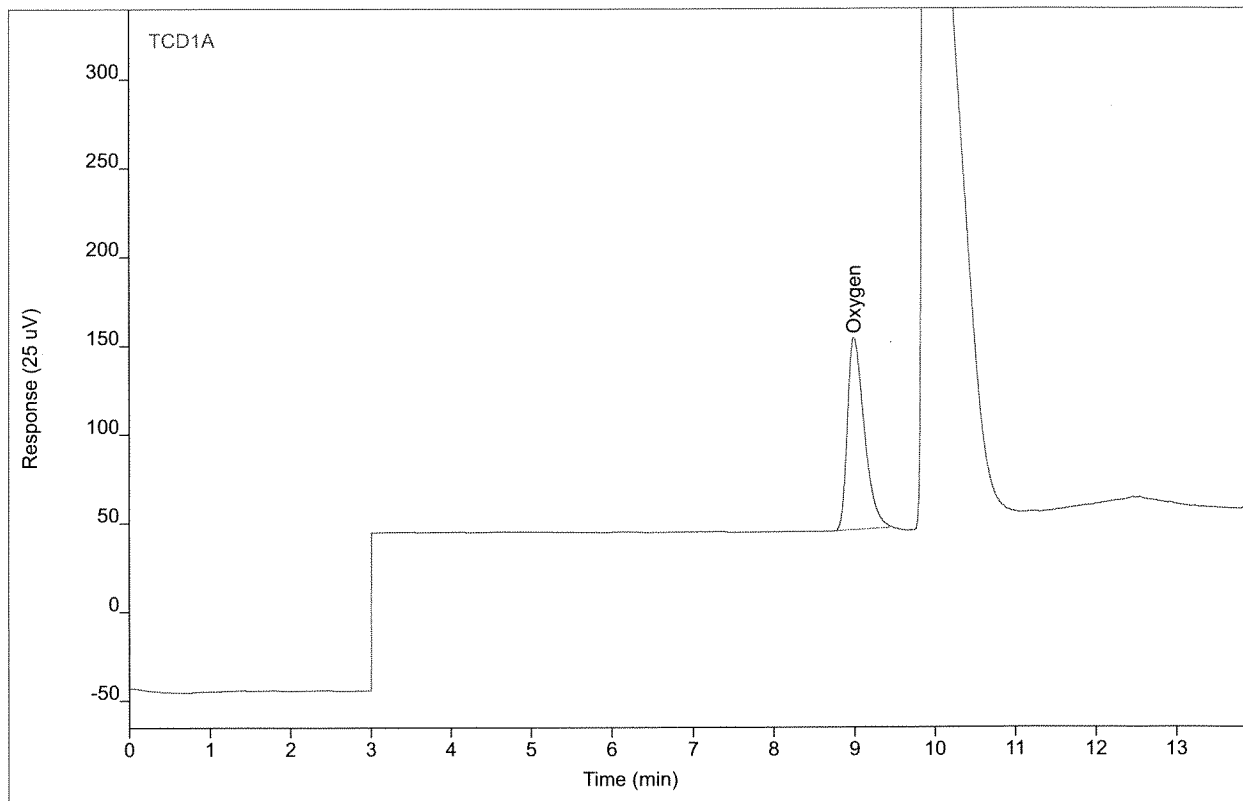
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Oxygen	BB	9.00	1561.91	107.440	4.06223	1	4.06223	%
Carbon Dioxide	MM	19.49	2846.88	259.933	3.93667	1	3.93667	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP472 #FG3 ENV(1=374.56,2=391.07)
Sequence Name BETTYP477B ver.5
Inj Data File 009F0302.D
File Location GC/2016/Betty/Quarter 4
Injection Date 10/28/2016 12:38 PM
File Modified 11/1/2016 9:30 AM
Instrument Betty
Operator Justin Guenzler

Sample Type
Vial Number Vial 9
Injection Volume 250
Injection 2 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 10/29/2016 11:39 AM
Printed 11/4/2016 10:11 AM



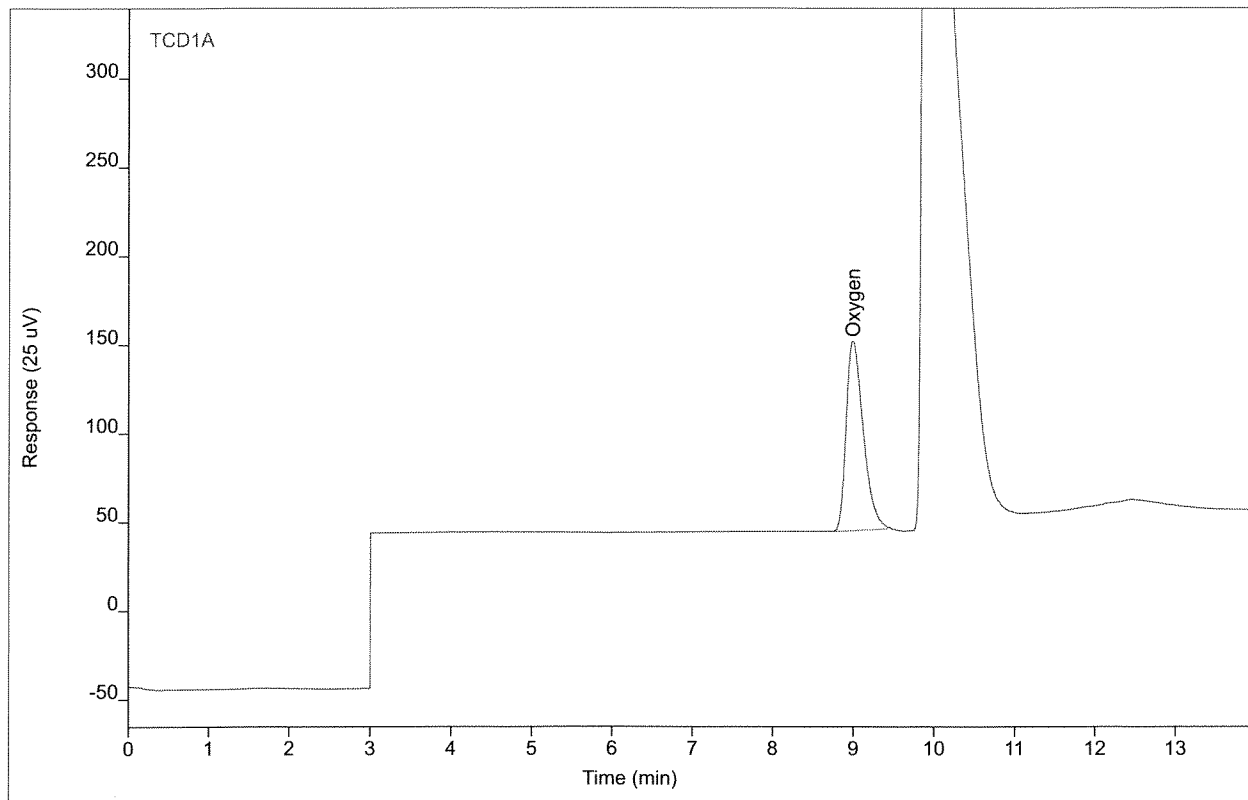
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Oxygen	BB	9.00	1573.98	108.256	4.09385	1	4.09385	%
Carbon Dioxide	MM	19.49	2811.22	253.011	3.88662	1	3.88662	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP472 #FG3 ENV(1=374.56,2=391.07)
Sequence Name BETTYP477B ver.5
Inj Data File 009F0303.D
File Location GC/2016/Betty/Quarter 4
Injection Date 10/28/2016 1:09 PM
File Modified 11/1/2016 9:30 AM
Instrument Betty
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 3 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 10/29/2016 11:39 AM
Printed 11/4/2016 10:11 AM



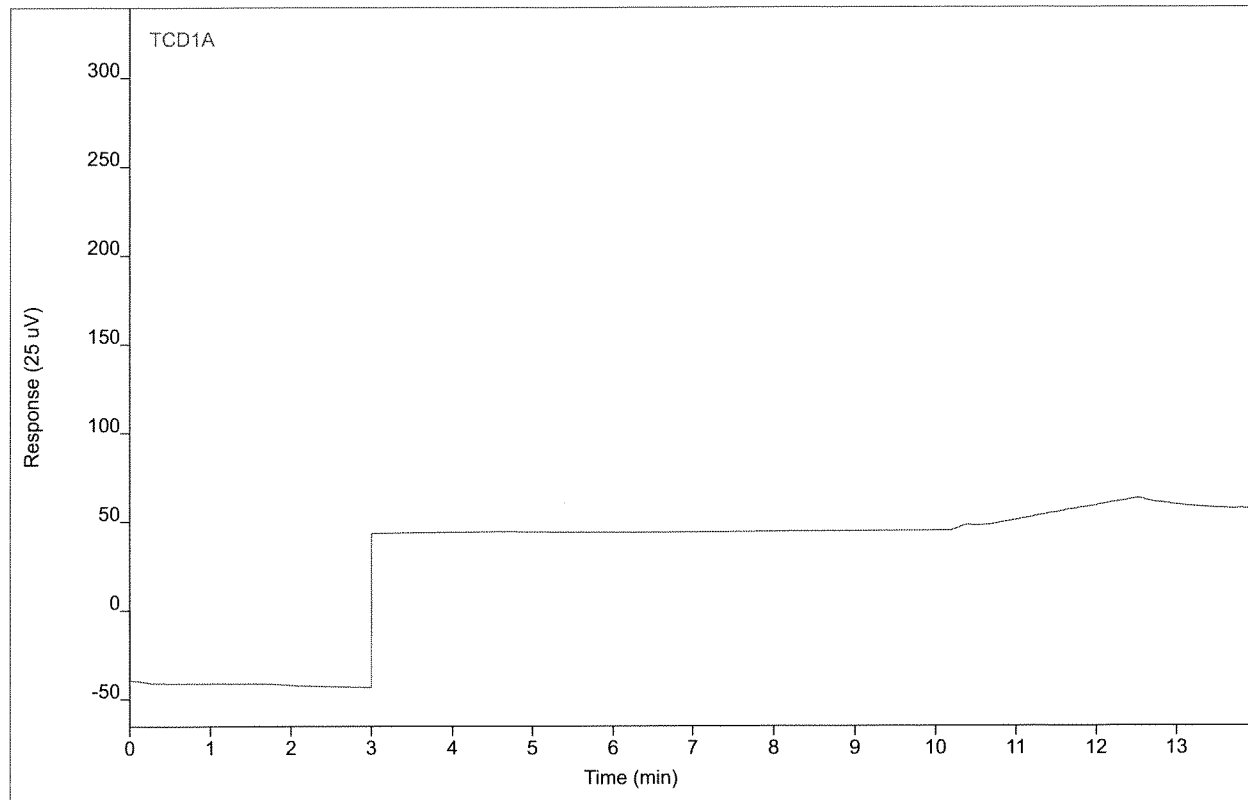
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Oxygen	BB	9.00	1567.24	106.879	4.07620	1	4.07620	%
Carbon Dioxide	MM	19.49	2817.53	255.601	3.89548	1	3.89548	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP374 Method Blank-1
Sequence Name BETTYP477B ver.5
Inj Data File 001F0901.D
File Location GC/2016/Betty/Quarter 4
Injection Date 10/28/2016 8:49 PM
File Modified 11/1/2016 9:31 AM
Instrument Betty
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 1
Injection Volume 250
Injection 1 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 10/29/2016 11:39 AM
Printed 11/4/2016 10:11 AM



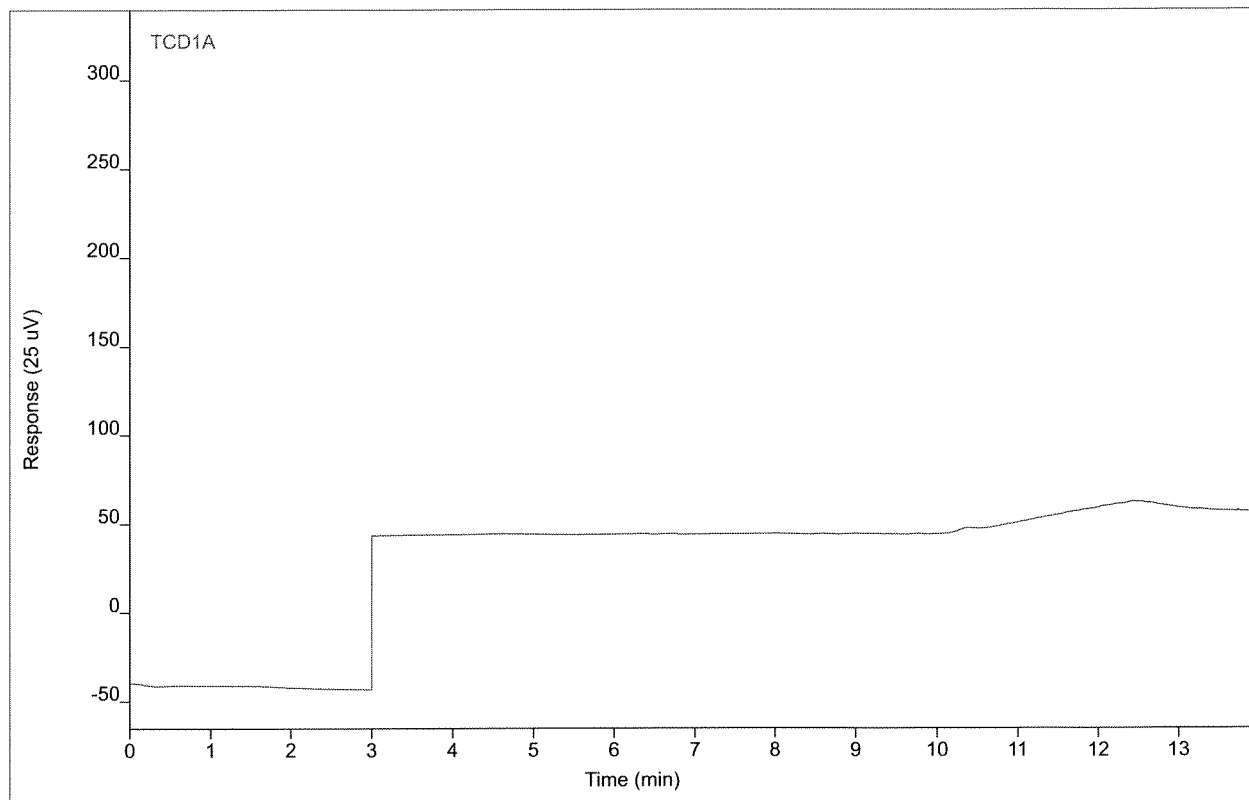
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(2.05)				1		
Oxygen		(8.99)				1		
Nitrogen		(10.30)				1		
Carbon monoxide		(12.59)				1		
Methane		(16.39)				1		
Carbon Dioxide		(19.57)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP374 Method Blank-1
Sequence Name BETTYP477B ver.5
Inj Data File 001F0902.D
File Location GC/2016/Betty/Quarter 4
Injection Date 10/28/2016 9:18 PM
File Modified 11/1/2016 9:31 AM
Instrument Betty
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 1
Injection Volume 250
Injection 2 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 10/29/2016 11:39 AM
Printed 11/4/2016 10:11 AM



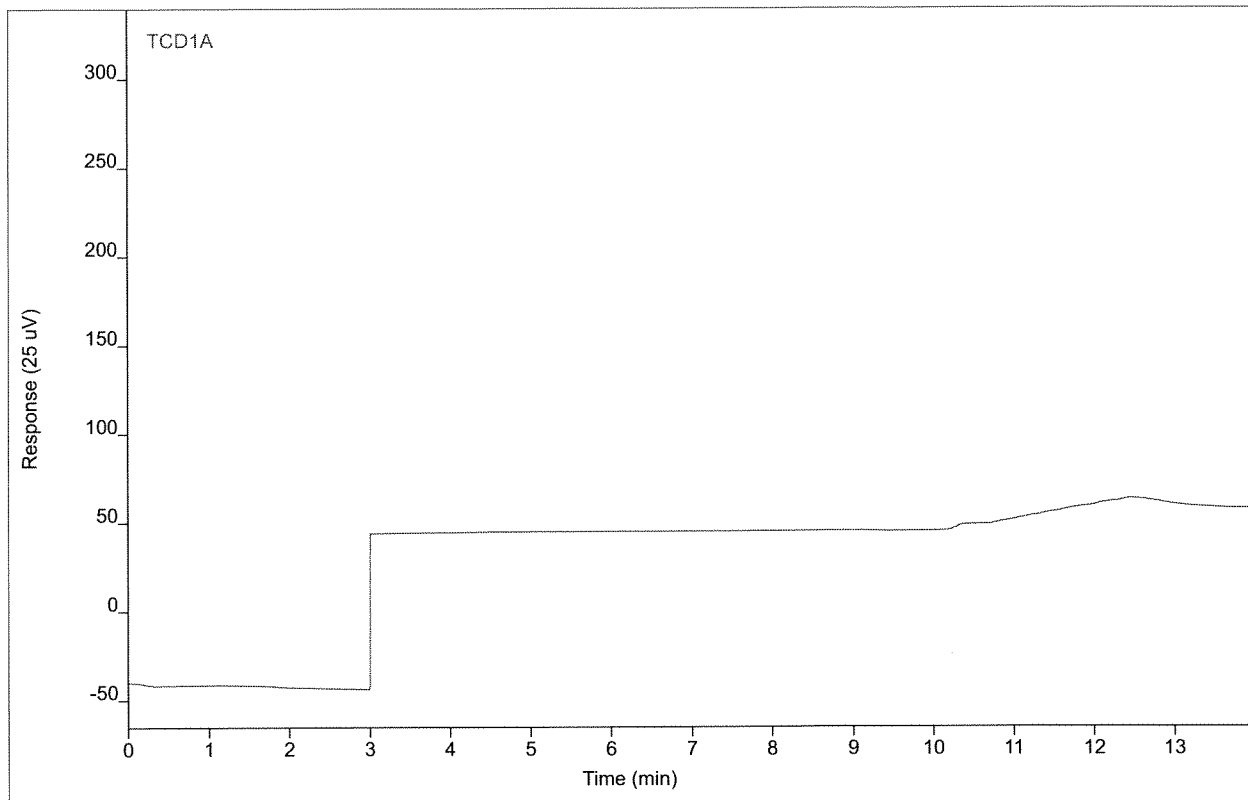
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(2.05)				1		
Oxygen		(8.99)				1		
Nitrogen		(10.30)				1		
Carbon monoxide		(12.59)				1		
Methane		(16.39)				1		
Carbon Dioxide		(19.57)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP374 Method Blank-1
Sequence Name BETTYP477B ver.5
Inj Data File 001F0903.D
File Location GC/2016/Betty/Quarter 4
Injection Date 10/28/2016 9:46 PM
File Modified 11/1/2016 9:31 AM
Instrument Betty
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 1
Injection Volume 250
Injection 3 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 10/29/2016 11:39 AM
Printed 11/4/2016 10:11 AM



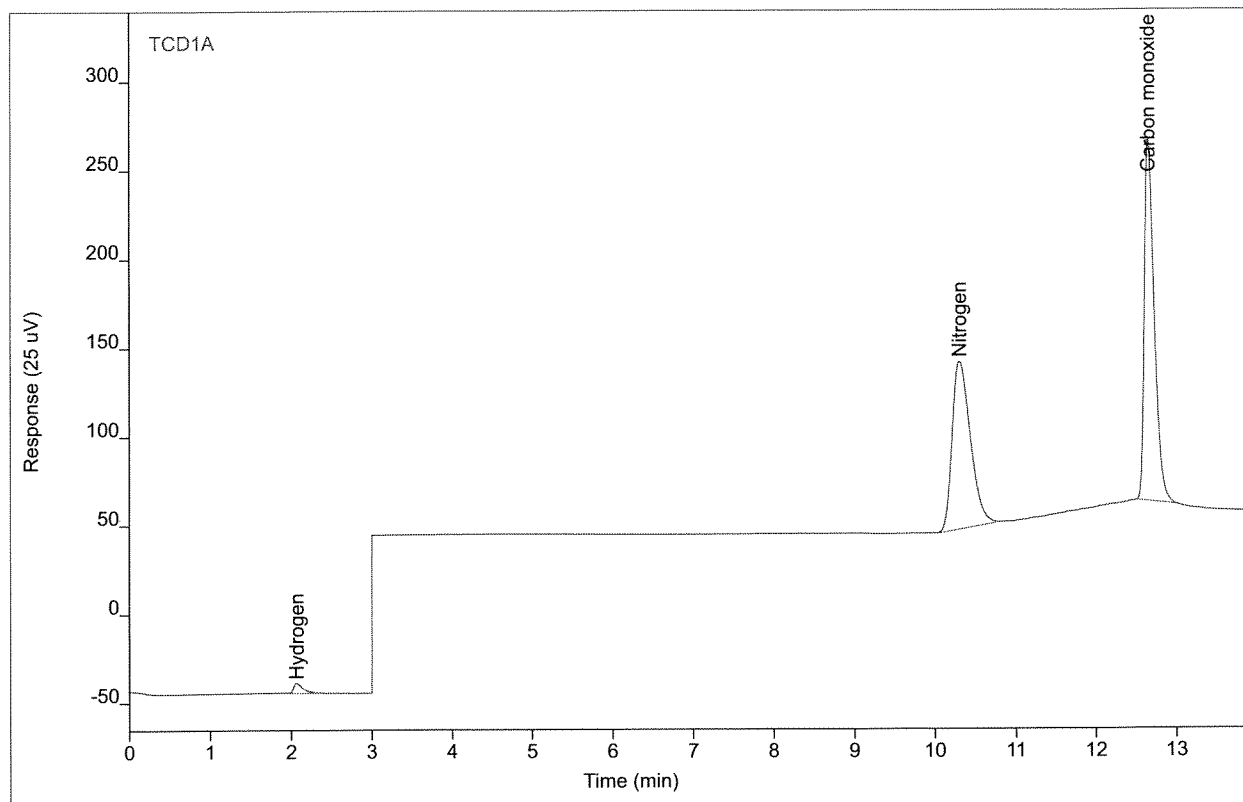
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(2.05)				1		
Oxygen		(8.99)				1		
Nitrogen		(10.30)				1		
Carbon monoxide		(12.59)				1		
Methane		(16.39)				1		
Carbon Dioxide		(19.57)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG7 ENV(1=530,6=319.09)
Sequence Name BETTYP477B ver.5
Inj Data File 009F1001.D
File Location GC/2016/Betty/Quarter 4
Injection Date 10/28/2016 10:17 PM
File Modified 11/1/2016 9:31 AM
Instrument Betty
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 1 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 10/29/2016 11:39 AM
Printed 11/4/2016 10:11 AM



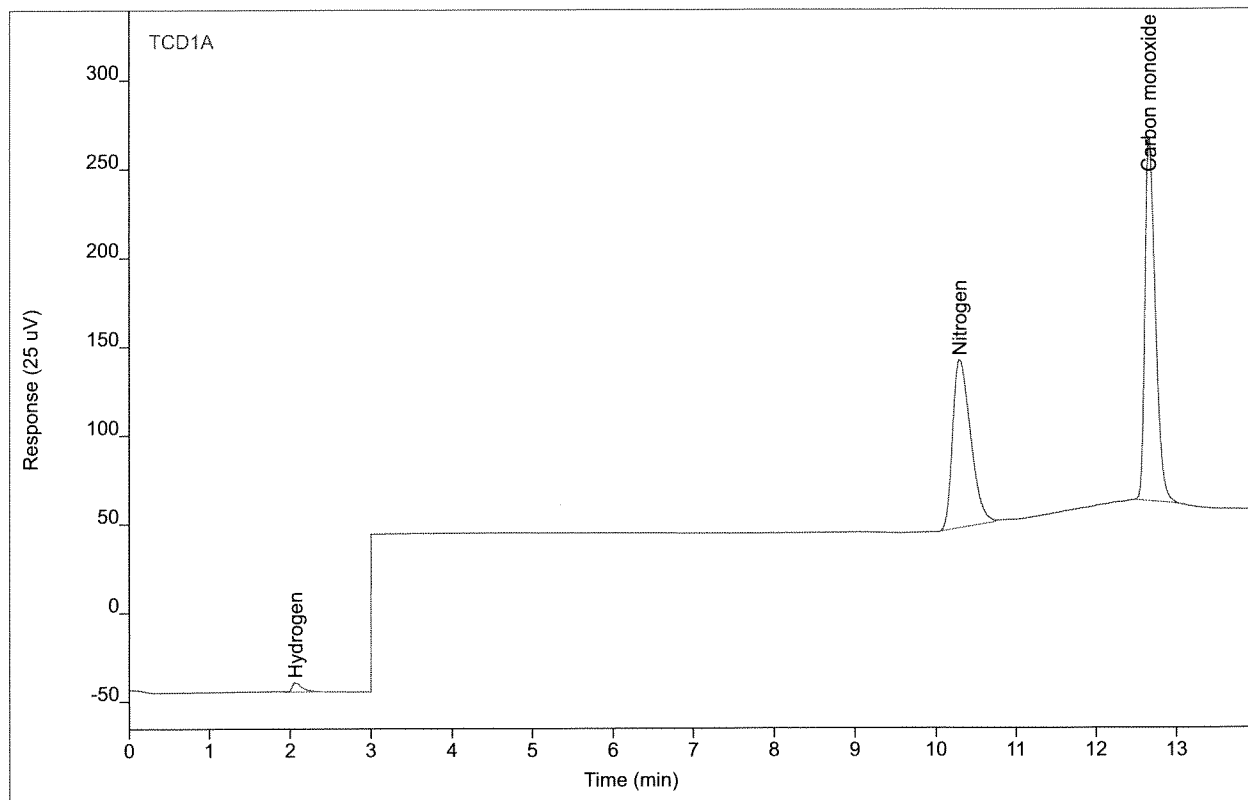
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	BB	2.07	45.6695	5.52945	2.54820	1	2.54820	%
Nitrogen	BB	10.31	1485.16	94.6409	3.41264	1	3.41264	%
Carbon monoxide	MM	12.66	1751.91	204.193	3.30810	1	3.30810	%
Methane	MM	16.46	1189.08	145.562	2.62881	1	2.62881	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG7 ENV(1=530,6=319.09)
Sequence Name BETTYP477B ver.5
Inj Data File 009F1002.D
File Location GC/2016/Betty/Quarter 4
Injection Date 10/28/2016 10:49 PM
File Modified 11/1/2016 9:31 AM
Instrument Betty
Operator Nicholas Traversa

Sample Type
Vial Number
Injection Volume
Injection
Acquisition Method
Analysis Method
Method Modified
Printed
Calibration
Vial 9
250
2 of 3
BETTYP017_CAL.M
BETTYP348_FGA_CRYO.M
10/29/2016 11:39 AM
11/4/2016 10:11 AM



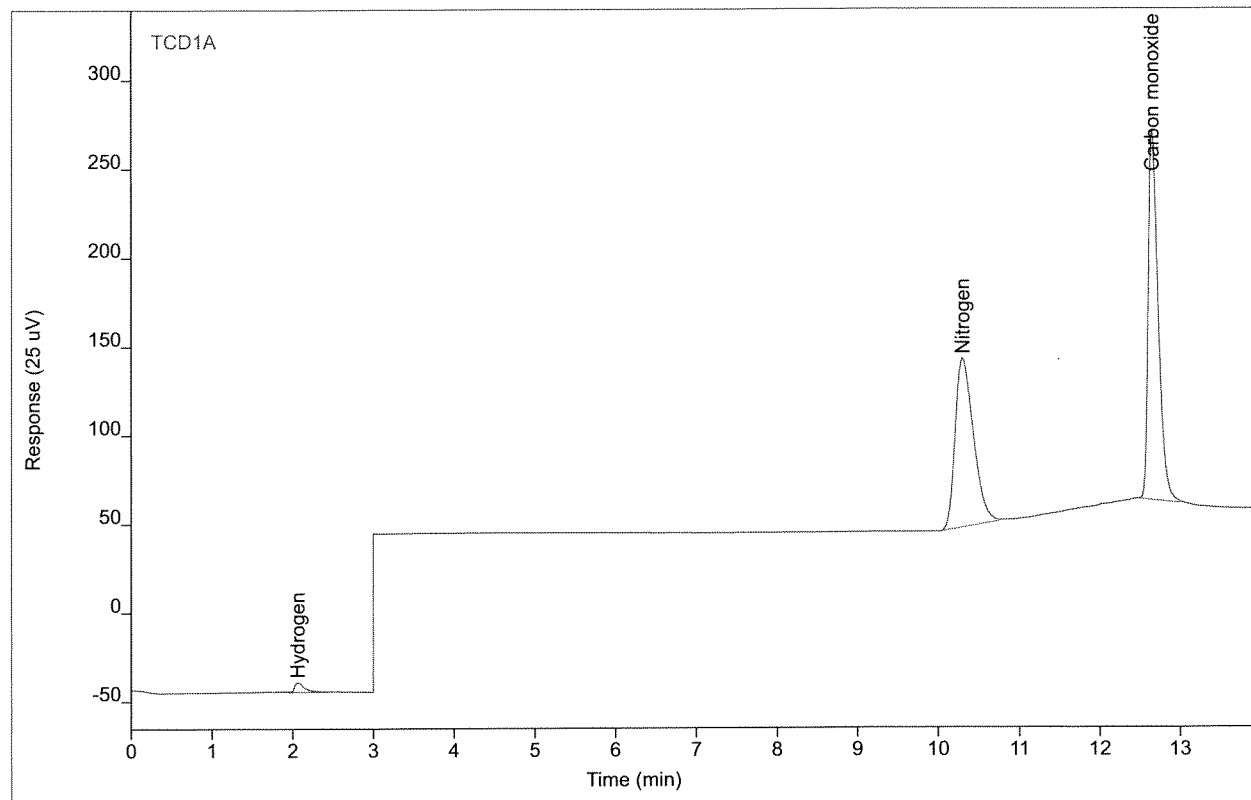
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	BB	2.07	47.0358	5.59729	2.62428	1	2.62428	%
Nitrogen	BB	10.31	1484.12	94.8616	3.41020	1	3.41020	%
Carbon monoxide	MM	12.66	1783.52	204.898	3.36827	1	3.36827	%
Methane	MM	16.46	1211.83	147.061	2.67987	1	2.67987	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG7 ENV(1=530,6=319.09)
Sequence Name BETTYP477B ver.5
Inj Data File 009F1003.D
File Location GC/2016/Betty/Quarter 4
Injection Date 10/28/2016 11:20 PM
File Modified 11/1/2016 9:31 AM
Instrument Betty
Operator Nicholas Traversa

Sample Type
Vial Number
Injection Volume 250
Injection 3 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 10/29/2016 11:39 AM
Printed 11/4/2016 10:11 AM



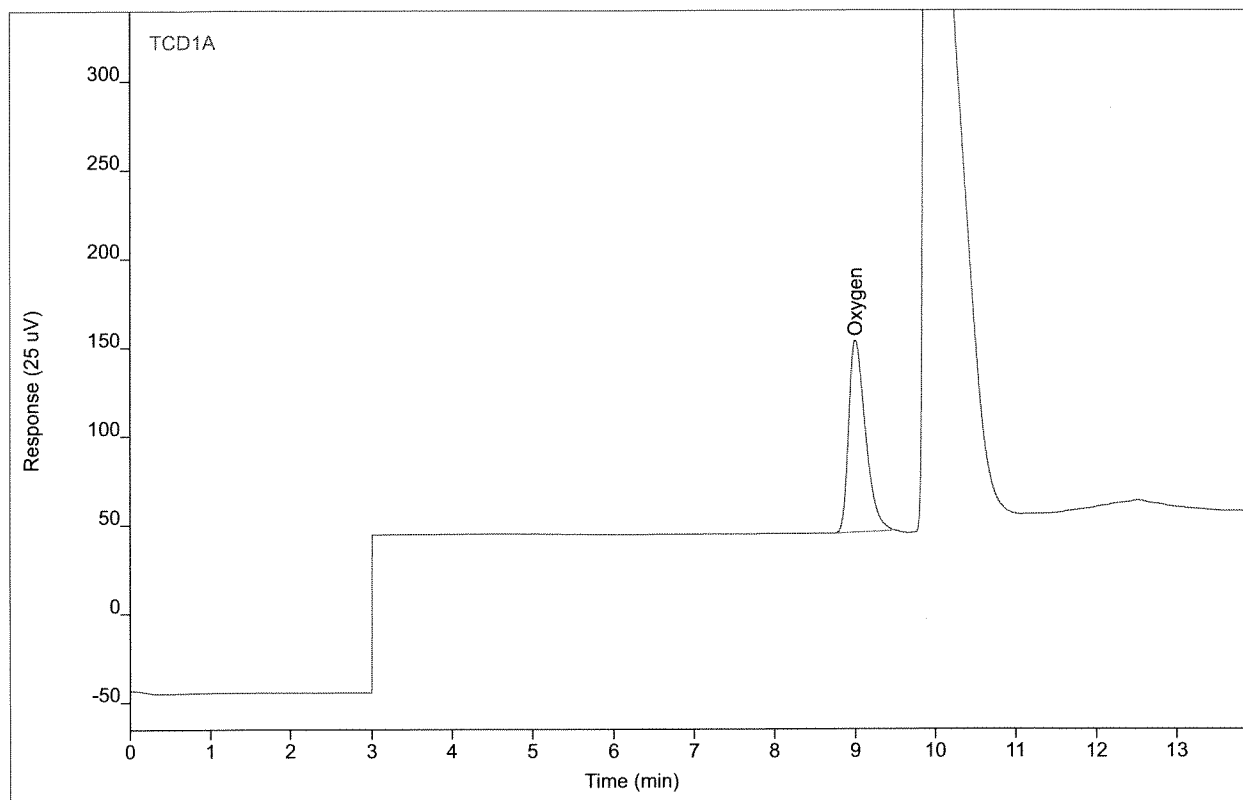
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	BB	2.07	48.4368	5.67326	2.70230	1	2.70230	%
Nitrogen	BB	10.31	1480.74	95.2147	3.40229	1	3.40229	%
Carbon monoxide	MM	12.66	1793.83	207.920	3.38789	1	3.38789	%
Methane	MM	16.46	1215.96	145.560	2.68913	1	2.68913	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP472 #FG3 ENV(1=374.56,2=391.07)
 Sequence Name BETTYP477B ver.5
 Inj Data File 009F1101.D
 File Location GC/2016/Betty/Quarter 4
 Injection Date 10/28/2016 11:51 PM
 File Modified 11/1/2016 9:31 AM
 Instrument Betty
 Operator Nicholas Traversa

Sample Type Calibration
 Vial Number Vial 9
 Injection Volume 250
 Injection 1 of 3
 Acquisition Method BETTYP017_CAL.M
 Analysis Method BETTYP348_FGA_CRYO.M
 Method Modified 10/29/2016 11:39 AM
 Printed 11/4/2016 10:11 AM



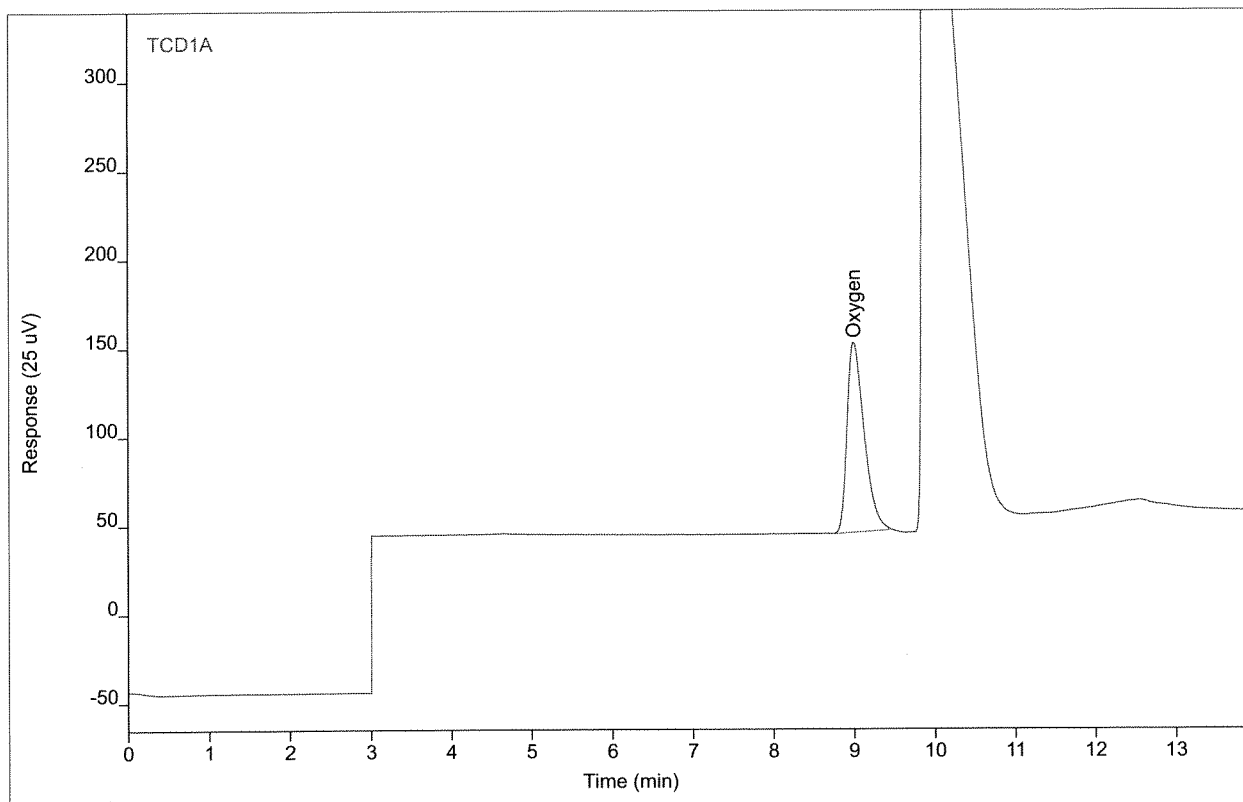
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Oxygen	BB	9.01	1575.77	108.221	4.09853	1	4.09853	%
Carbon Dioxide	MM	19.49	2835.24	255.440	3.92034	1	3.92034	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP472 #FG3 ENV(1=374.56,2=391.07)
Sequence Name BETTYP477B ver.5
Inj Data File 009F1102.D
File Location GC/2016/Betty/Quarter 4
Injection Date 10/29/2016 12:22 AM
File Modified 11/1/2016 9:31 AM
Instrument Betty
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 2 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 10/29/2016 11:39 AM
Printed 11/4/2016 10:11 AM



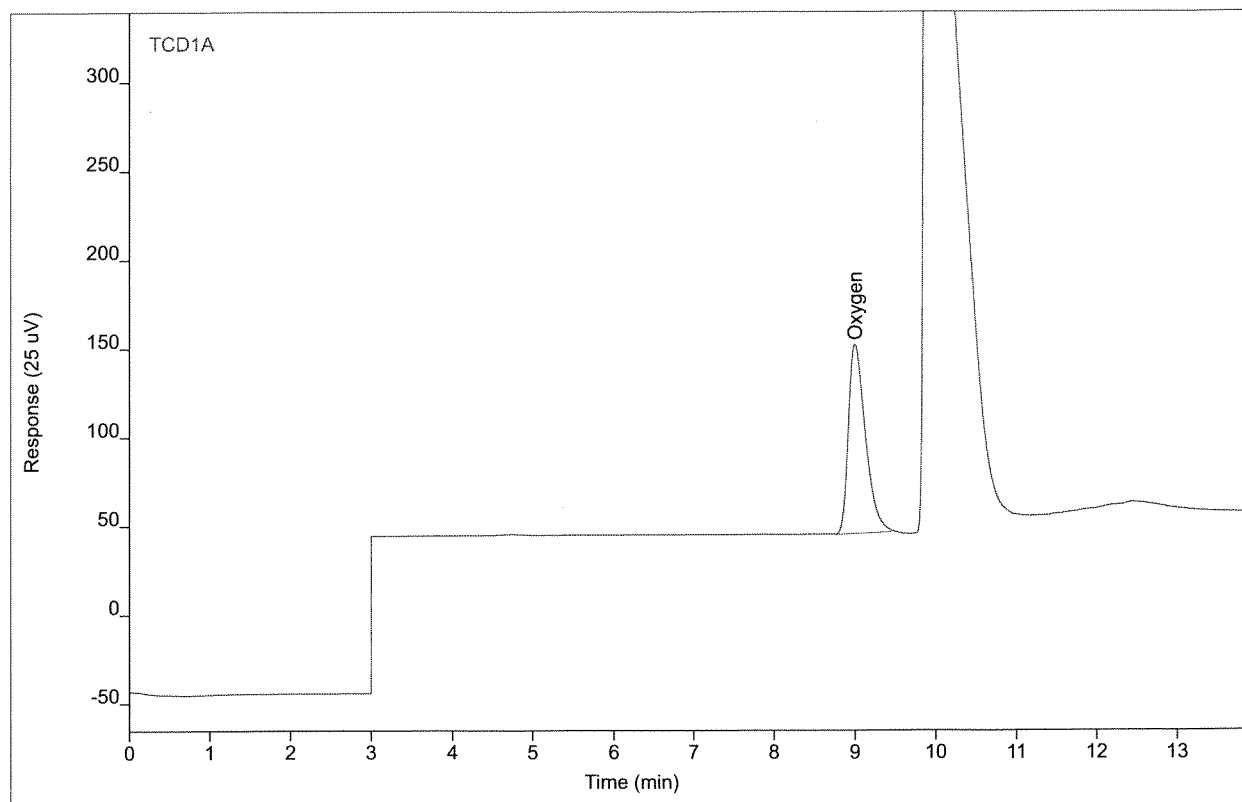
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Oxygen	BB	9.01	1558.54	107.239	4.05341	1	4.05341	%
Carbon Dioxide	MM	19.49	2828.88	255.552	3.91140	1	3.91140	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP472 #FG3 ENV(1=374.56,2=391.07)
 Sequence Name BETTYP477B ver.5
 Inj Data File 009F1103.D
 File Location GC/2016/Betty/Quarter 4
 Injection Date 10/29/2016 12:53 AM
 File Modified 11/1/2016 9:31 AM
 Instrument Betty
 Operator Nicholas Traversa

Sample Type Calibration
 Vial Number Vial 9
 Injection Volume 250
 Injection 3 of 3
 Acquisition Method BETTYP017_CAL.M
 Analysis Method BETTYP348_FGA_CRYO.M
 Method Modified 10/29/2016 11:39 AM
 Printed 11/4/2016 10:11 AM



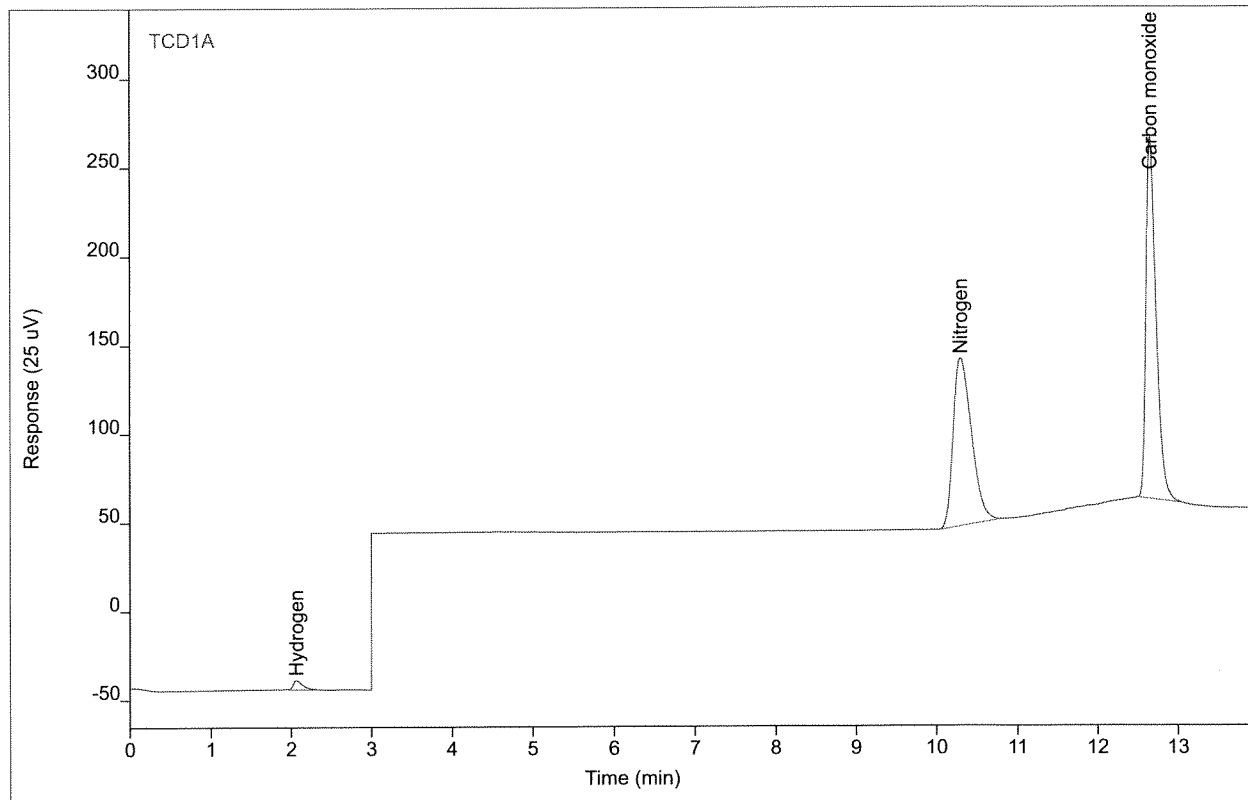
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Oxygen	BB	9.01	1563.76	106.763	4.06708	1	4.06708	%
Carbon Dioxide	MM	19.49	2811.25	255.520	3.88667	1	3.88667	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG7 ENV(1=530,6=319.09)
Sequence Name BETTYP477B ver.5
Inj Data File 009F1901.D
File Location GC/2016/Betty/Quarter 4
Injection Date 10/29/2016 2:37 PM
File Modified 11/1/2016 9:32 AM
Instrument Betty
Operator Justin Guenzler

Sample Type
Vial Number
Injection Volume
Injection
Acquisition Method
Analysis Method
Method Modified
Printed
Calibration
Vial 9
250
1 of 3
BETTYP017_CAL.M
BETTYP348_FGA_CRYO.M
10/29/2016 11:39 AM
11/4/2016 10:11 AM



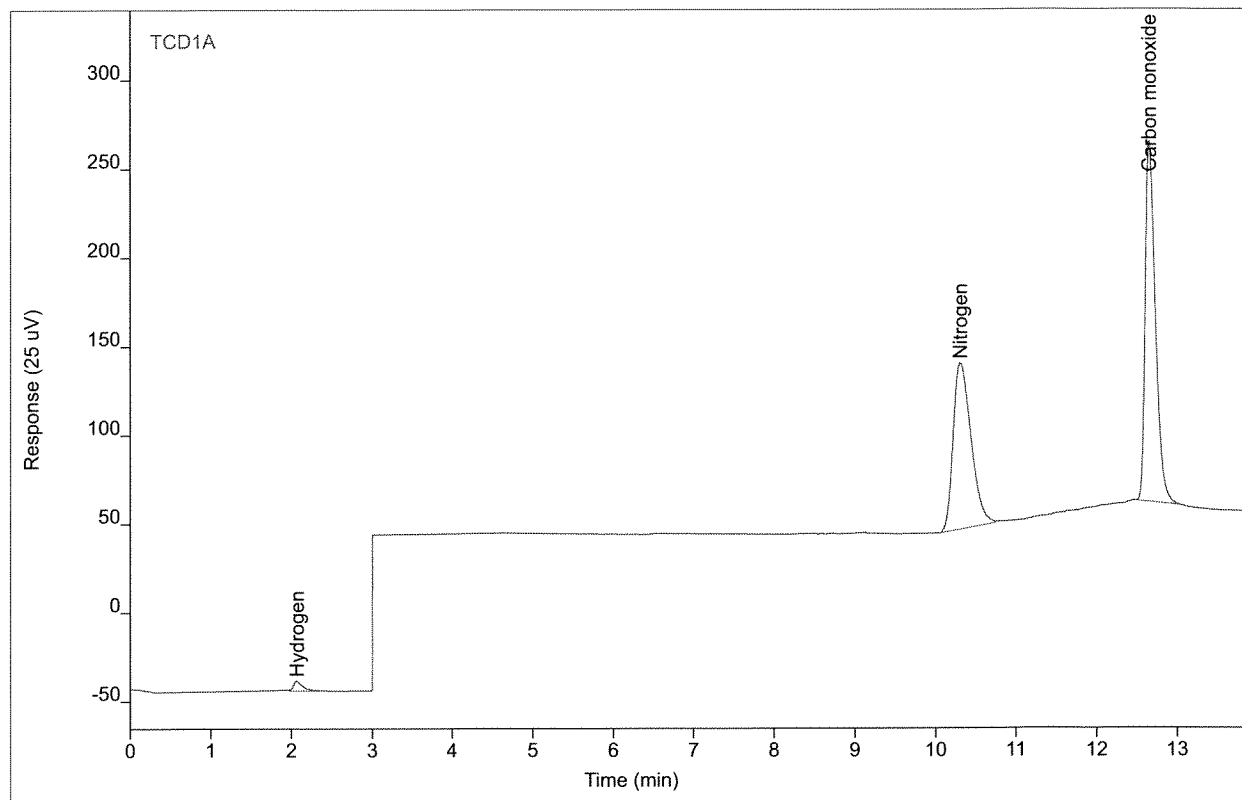
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	MM	2.06	45.1005	5.57717	2.51651	1	2.51651	%
Nitrogen	BB	10.31	1479.86	94.5560	3.40024	1	3.40024	%
Carbon monoxide	MM	12.66	1758.65	203.552	3.32092	1	3.32092	%
Methane	MM	16.46	1207.50	146.969	2.67014	1	2.67014	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG7 ENV(1=530,6=319.09)
Sequence Name BETTYP477B ver.5
Inj Data File 009F1902.D
File Location GC/2016/Betty/Quarter 4
Injection Date 10/29/2016 3:09 PM
File Modified 11/1/2016 9:32 AM
Instrument Betty
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 2 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 10/29/2016 11:39 AM
Printed 11/4/2016 10:11 AM



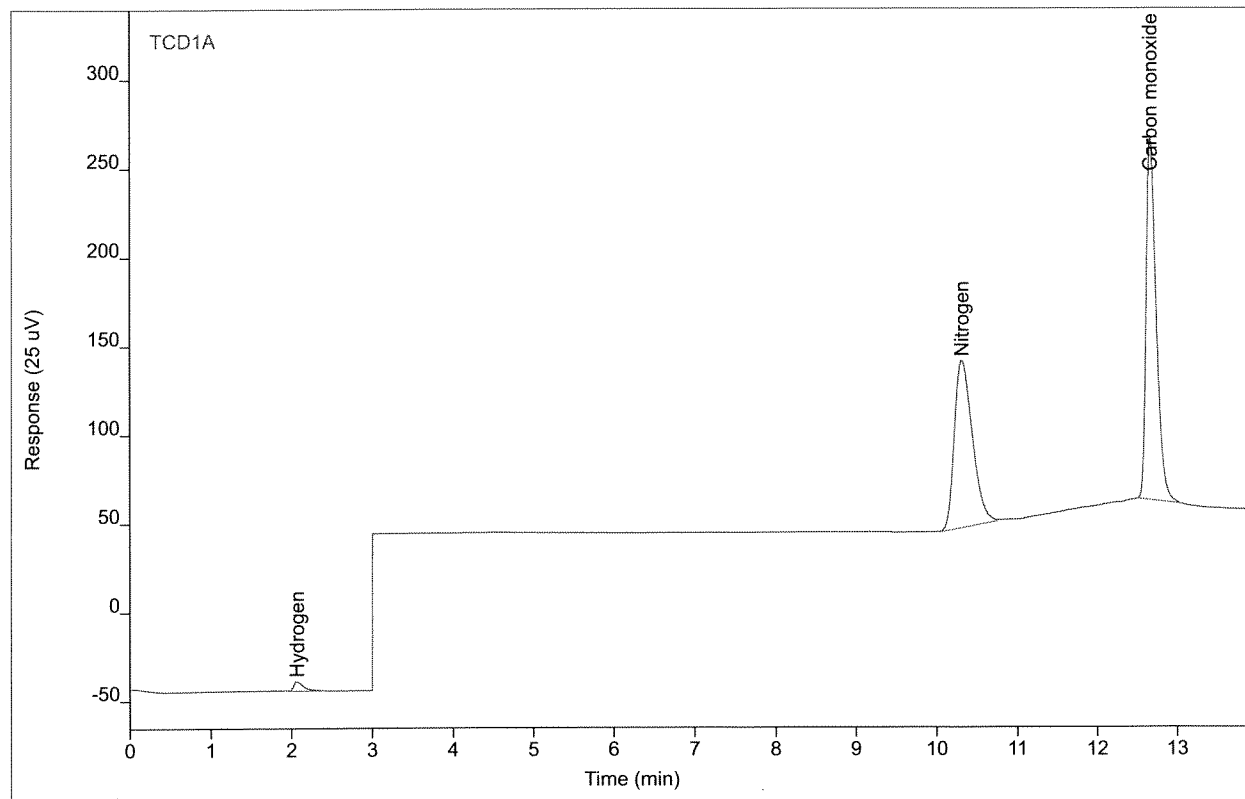
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	MM	2.07	44.9223	5.59005	2.50658	1	2.50658	%
Nitrogen	BB	10.31	1472.13	93.7493	3.38216	1	3.38216	%
Carbon monoxide	MM	12.66	1764.68	203.336	3.33241	1	3.33241	%
Methane	MM	16.46	1196.04	144.432	2.64444	1	2.64444	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG7 ENV(1=530,6=319.09)
 Sequence Name BETTYP477B ver.5
 Inj Data File 009F1903.D
 File Location GC/2016/Betty/Quarter 4
 Injection Date 10/29/2016 3:40 PM
 File Modified 11/1/2016 9:32 AM
 Instrument Betty
 Operator Justin Guenzler

Sample Type
 Vial Number
 Injection Volume
 Injection
 Acquisition Method
 Analysis Method
 Method Modified
 Printed
 Calibration
 Vial 9
 250
 3 of 3
 BETTYP017_CAL.M
 BETTYP348_FGA_CRYO.M
 10/29/2016 11:39 AM
 11/4/2016 10:11 AM



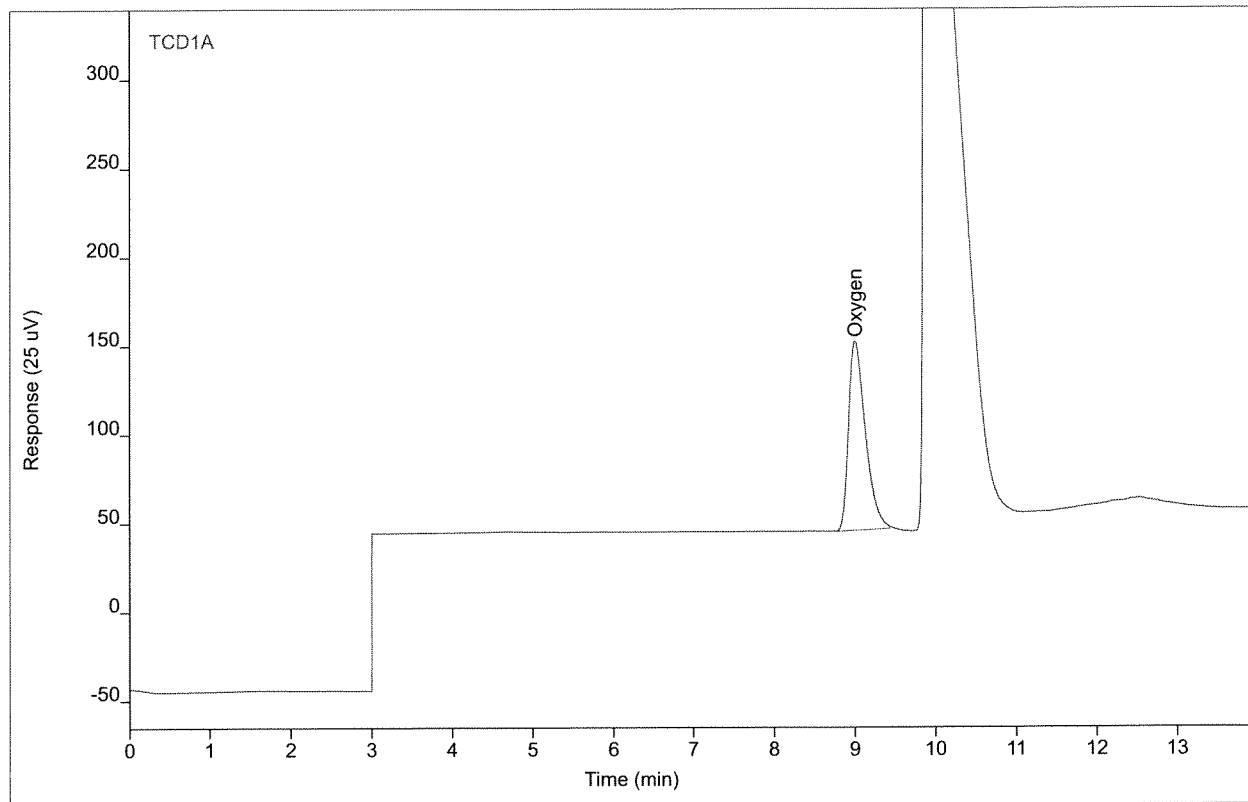
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	MM	2.07	45.9765	5.52965	2.56529	1	2.56529	%
Nitrogen	BB	10.31	1468.81	94.2915	3.37439	1	3.37439	%
Carbon monoxide	MM	12.67	1772.70	204.767	3.34767	1	3.34767	%
Methane	MM	16.46	1202.48	145.676	2.65888	1	2.65888	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP472 #FG3 ENV(1=374.56,2=391.07)
Sequence Name BETTYP477B ver.5
Inj Data File 009F2001.D
File Location GC/2016/Betty/Quarter 4
Injection Date 10/29/2016 4:11 PM
File Modified 11/1/2016 9:32 AM
Instrument Betty
Operator Justin Guenzler

Sample Type
Vial Number
Injection Volume
Injection
Acquisition Method
Analysis Method
Method Modified
Printed
Calibration
Vial 9
250
1 of 3
BETTYP017_CAL.M
BETTYP348_FGA_CRYO.M
10/29/2016 11:39 AM
11/4/2016 10:11 AM



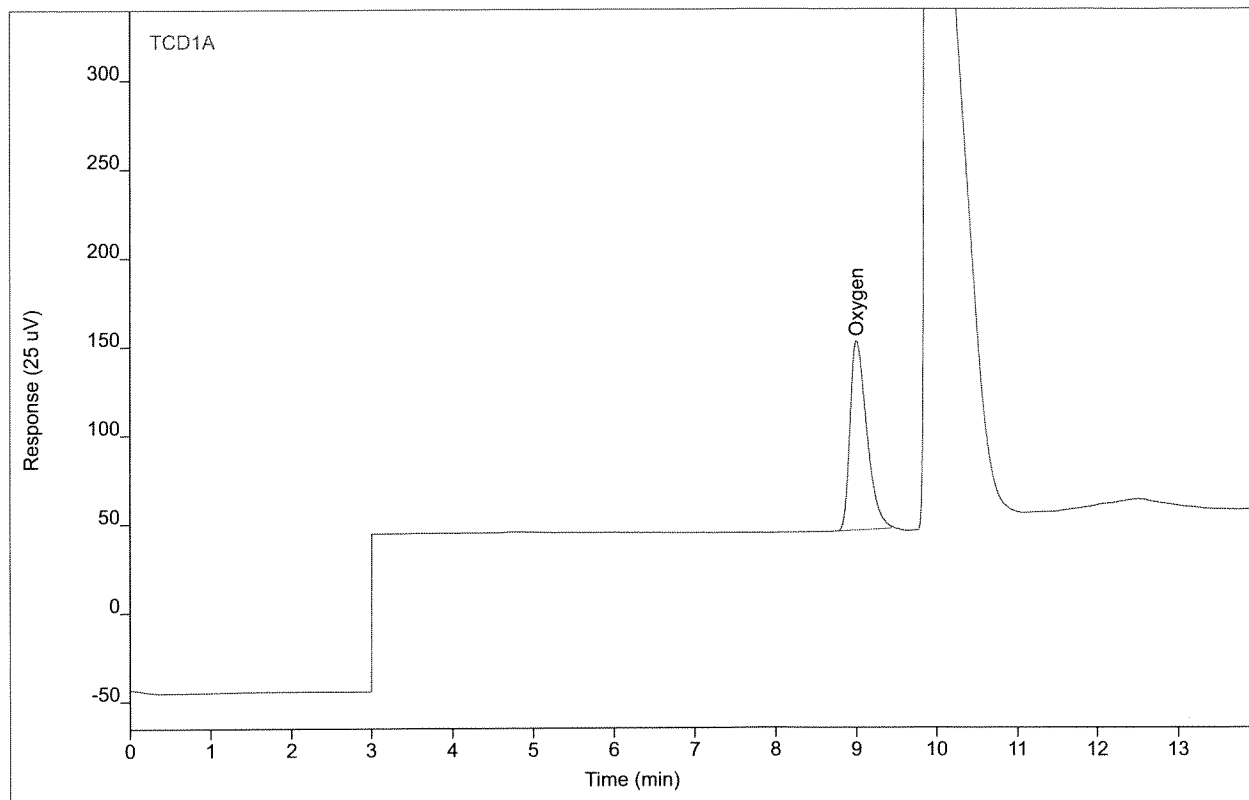
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Oxygen	BB	9.01	1547.29	106.519	4.02395	1	4.02395	%
Carbon Dioxide	MM	19.50	2825.52	255.620	3.90669	1	3.90669	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP472 #FG3 ENV(1=374.56,2=391.07)
Sequence Name BETTYP477B ver.5
Inj Data File 009F2002.D
File Location GC/2016/Betty/Quarter 4
Injection Date 10/29/2016 4:42 PM
File Modified 11/1/2016 9:32 AM
Instrument Betty
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 2 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 10/29/2016 11:39 AM
Printed 11/4/2016 10:11 AM



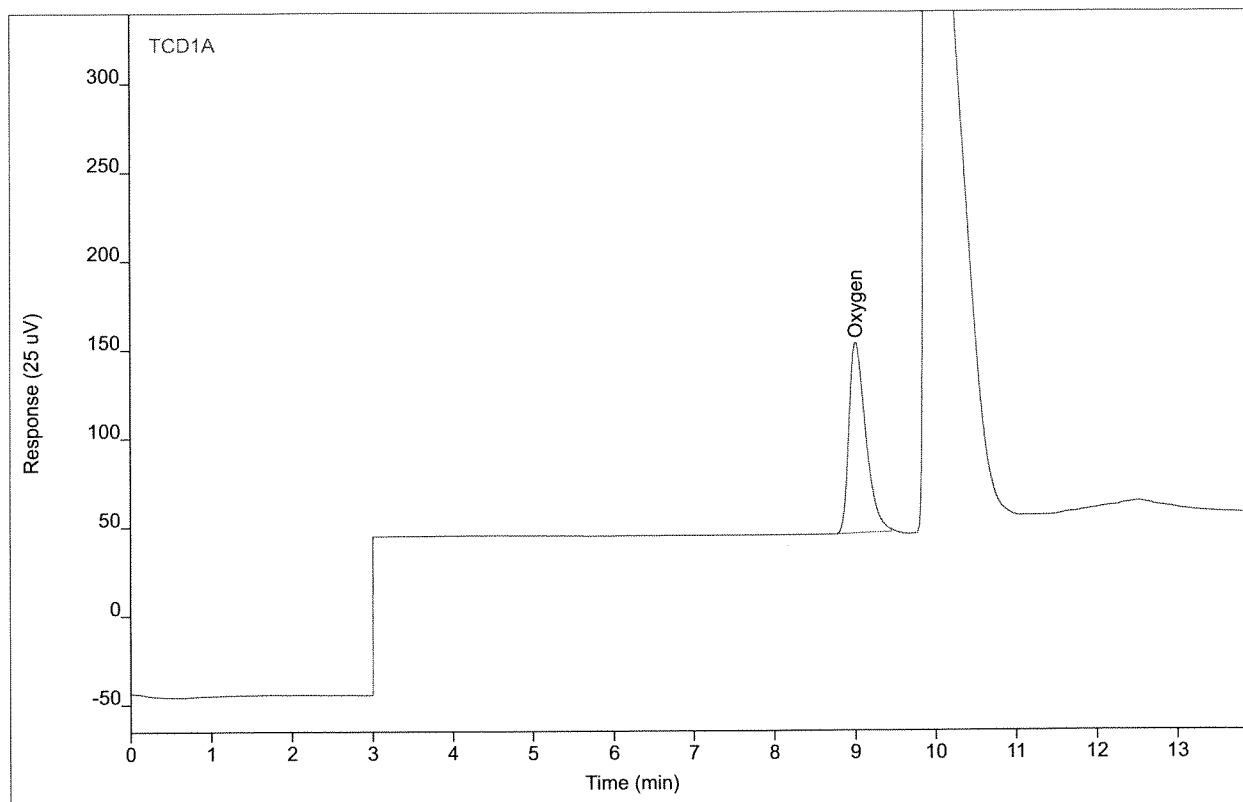
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Oxygen	BB	9.01	1552.28	106.932	4.03701	1	4.03701	%
Carbon Dioxide	MM	19.50	2814.14	254.966	3.89073	1	3.89073	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP472 #FG3 ENV(1=374.56,2=391.07)
Sequence Name BETTYP477B ver.5
Inj Data File 009F2003.D
File Location GC/2016/Betty/Quarter 4
Injection Date 10/29/2016 5:14 PM
File Modified 11/1/2016 9:32 AM
Instrument Betty
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 3 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 10/29/2016 11:39 AM
Printed 11/4/2016 10:11 AM



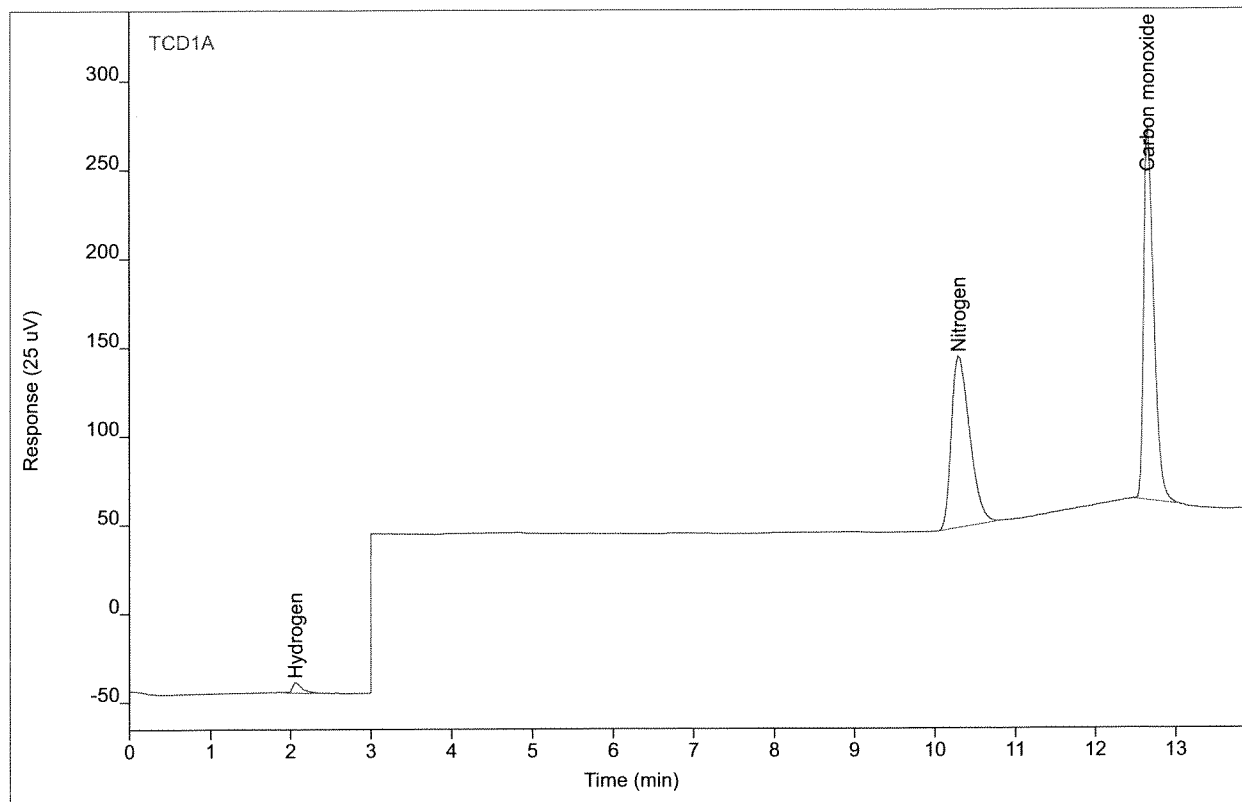
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Oxygen	BB	9.01	1568.70	107.426	4.08002	1	4.08002	%
Carbon Dioxide	MM	19.50	2824.61	254.083	3.90542	1	3.90542	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG7 ENV(1=530,6=319.09)
Sequence Name BETTYP478 1 ver.3
Inj Data File 009F0901.D
File Location GC/2016/Betty/Quarter 4
Injection Date 11/1/2016 7:53 PM
File Modified 11/2/2016 6:49 AM
Instrument Betty
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 1 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 11/1/2016 9:30 AM
Printed 11/4/2016 10:11 AM



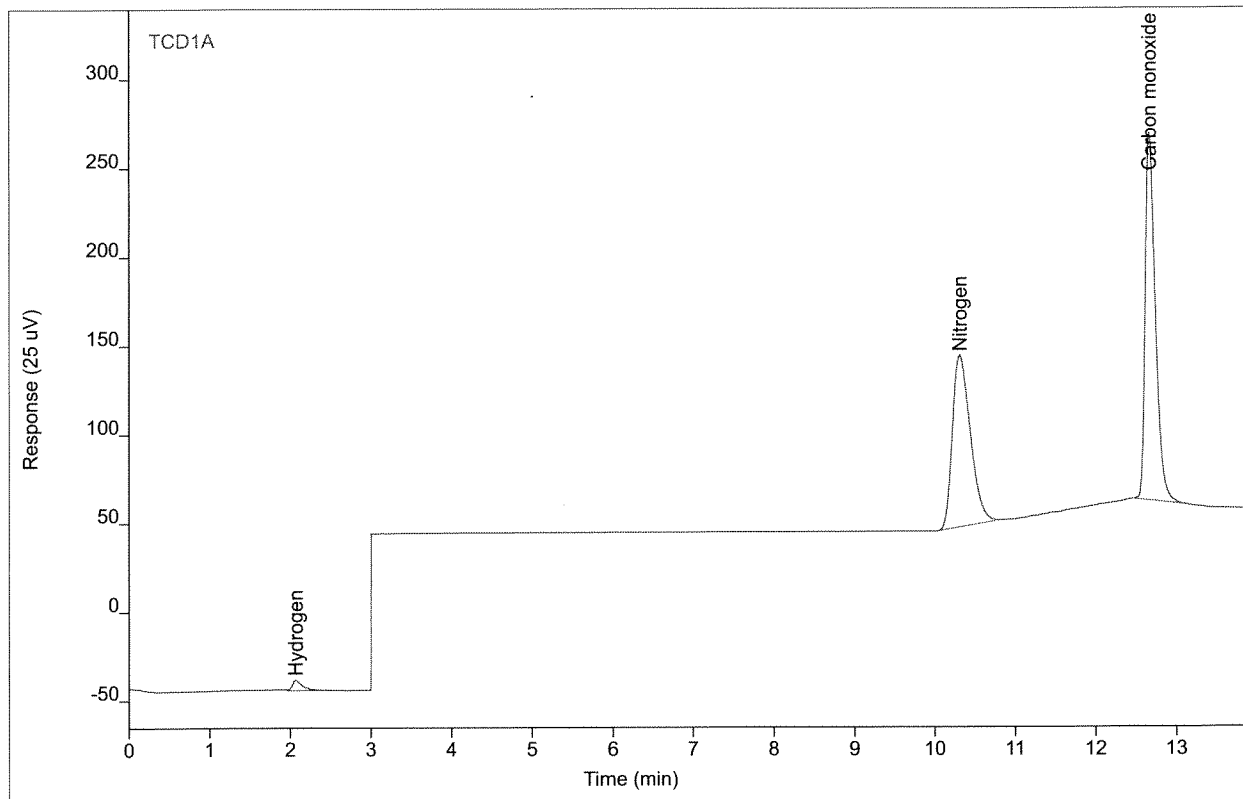
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	MM	2.06	49.6569	5.80026	2.77024	1	2.77024	%
Nitrogen	BB	10.31	1510.05	96.5473	3.47085	1	3.47085	%
Carbon monoxide	MM	12.66	1806.51	210.523	3.41205	1	3.41205	%
Methane	MM	16.46	1231.43	146.729	2.72384	1	2.72384	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG7 ENV(1=530,6=319.09)
 Sequence Name BETTYP478 1 ver.3
 Inj Data File 009F0902.D
 File Location GC/2016/Betty/Quarter 4
 Injection Date 11/1/2016 8:24 PM
 File Modified 11/2/2016 6:49 AM
 Instrument Betty
 Operator Justin Guenzler

Sample Type
 Vial Number Vial 9
 Injection Volume 250
 Injection 2 of 3
 Acquisition Method BETTYP017_CAL.M
 Analysis Method BETTYP348_FGA_CRYO.M
 Method Modified 11/1/2016 9:30 AM
 Printed 11/4/2016 10:11 AM



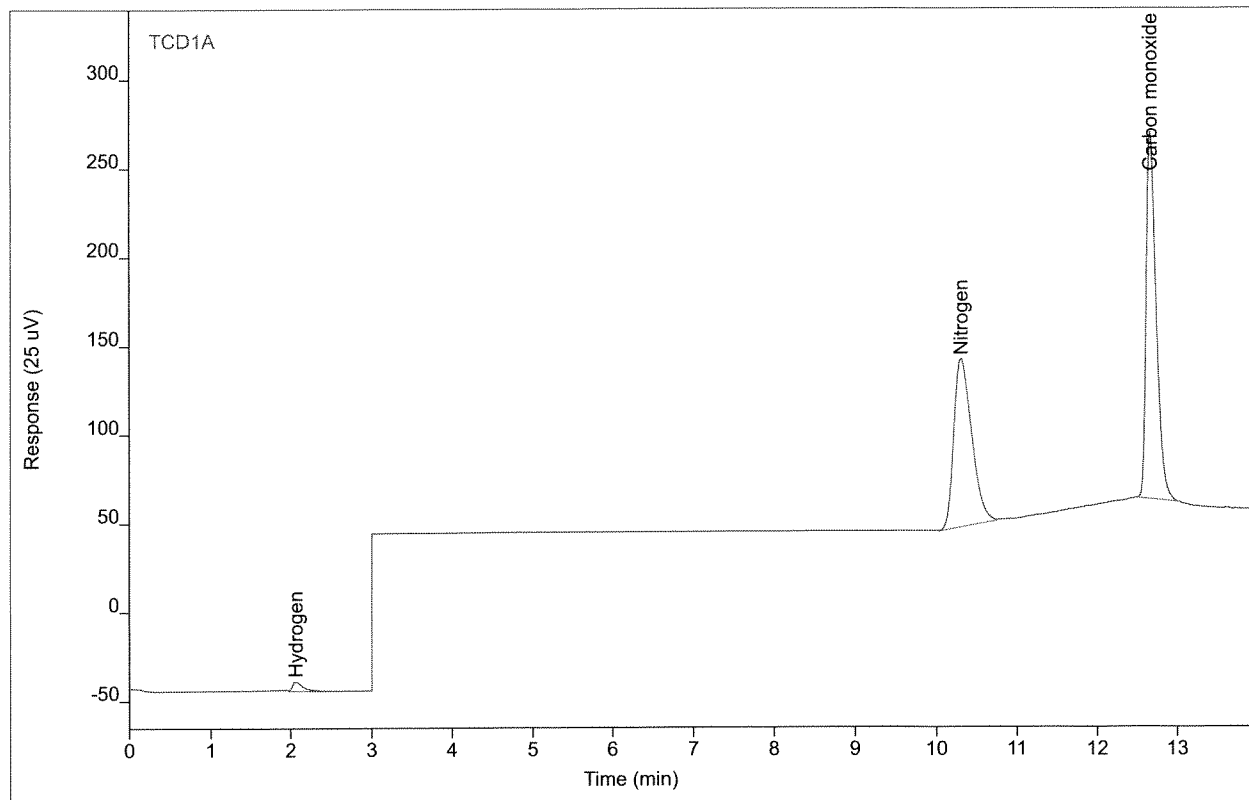
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	MM	2.07	50.6145	5.97039	2.82356	1	2.82356	%
Nitrogen	BB	10.31	1494.56	96.6945	3.43463	1	3.43463	%
Carbon monoxide	MM	12.67	1819.79	206.423	3.43733	1	3.43733	%
Methane	MM	16.46	1230.60	147.283	2.72198	1	2.72198	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG7 ENV(1=530,6=319.09)
Sequence Name BETTYP478 1 ver.3
Inj Data File 009F0903.D
File Location GC/2016/Betty/Quarter 4
Injection Date 11/1/2016 8:55 PM
File Modified 11/2/2016 6:49 AM
Instrument Betty
Operator Justin Guenzler

Sample Type
Vial Number
Injection Volume 250
Injection 3 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 11/1/2016 9:30 AM
Printed 11/4/2016 10:11 AM



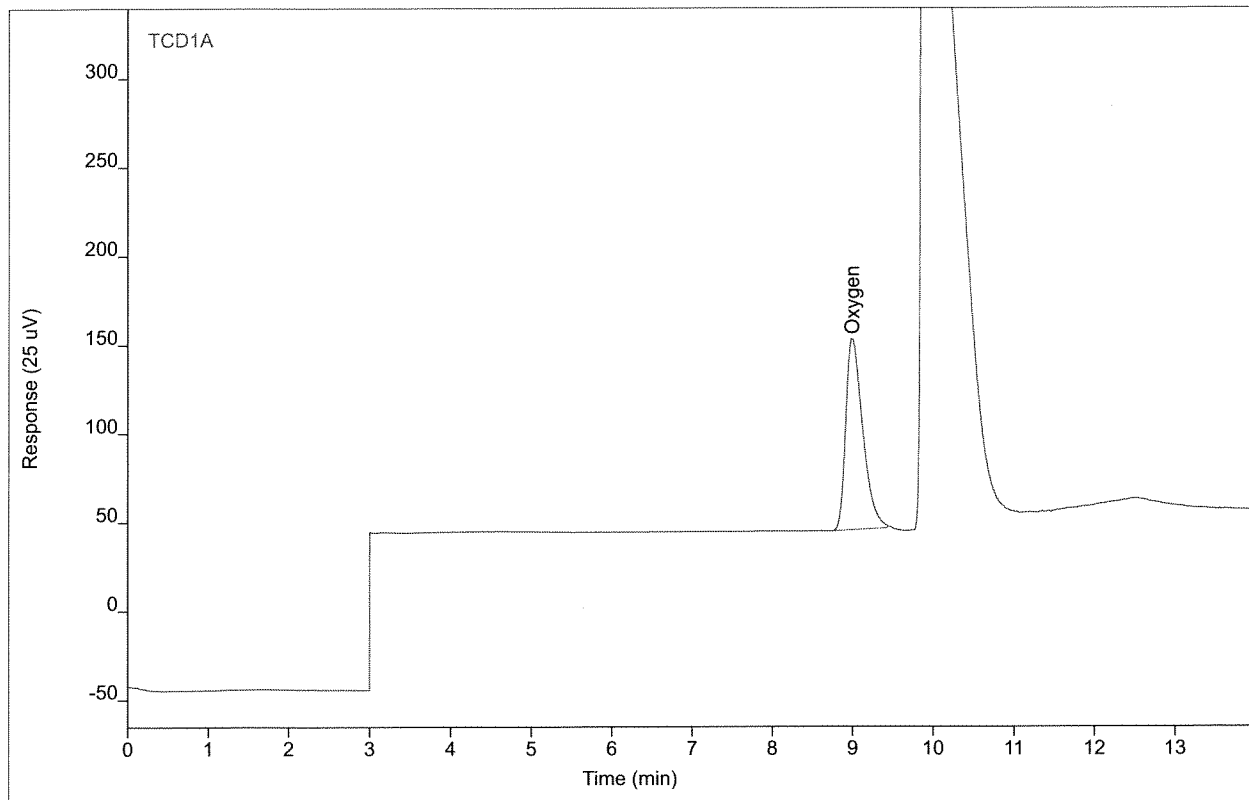
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	MM	2.06	47.3068	5.60715	2.63937	1	2.63937	%
Nitrogen	BB	10.31	1485.35	94.6541	3.41309	1	3.41309	%
Carbon monoxide	MM	12.67	1783.19	206.455	3.36764	1	3.36764	%
Methane	MM	16.47	1195.23	145.315	2.64261	1	2.64261	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP472 #FG3 ENV(1=374.56,2=391.07)
Sequence Name BETTYP478 1 ver.3
Inj Data File 009F1001.D
File Location GC/2016/Betty/Quarter 4
Injection Date 11/1/2016 9:26 PM
File Modified 11/2/2016 6:49 AM
Instrument Betty
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 1 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 11/1/2016 9:30 AM
Printed 11/4/2016 10:11 AM



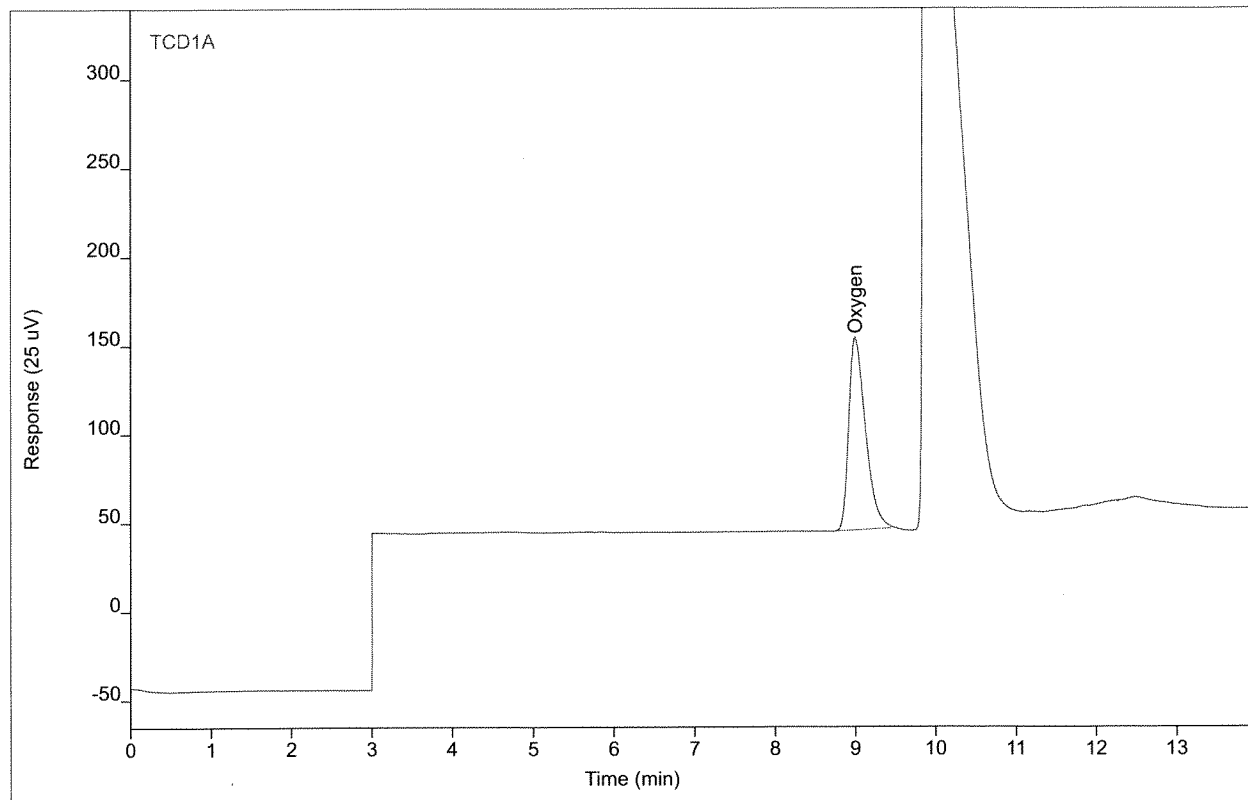
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Oxygen	BB	9.01	1555.15	107.838	4.04453	1	4.04453	%
Carbon Dioxide	MM	19.50	2831.61	254.275	3.91525	1	3.91525	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP472 #FG3 ENV(1=374.56,2=391.07)
Sequence Name BETTYP478 1 ver.3
Inj Data File 009F1002.D
File Location GC/2016/Betty/Quarter 4
Injection Date 11/1/2016 9:58 PM
File Modified 11/2/2016 6:49 AM
Instrument Betty
Operator Justin Guenzler

Sample Type
Vial Number
Injection Volume
Injection
Acquisition Method
Analysis Method
Method Modified
Printed
Calibration
Vial 9
250
2 of 3
BETTYP017_CAL.M
BETTYP348_FGA_CRYO.M
11/1/2016 9:30 AM
11/4/2016 10:11 AM



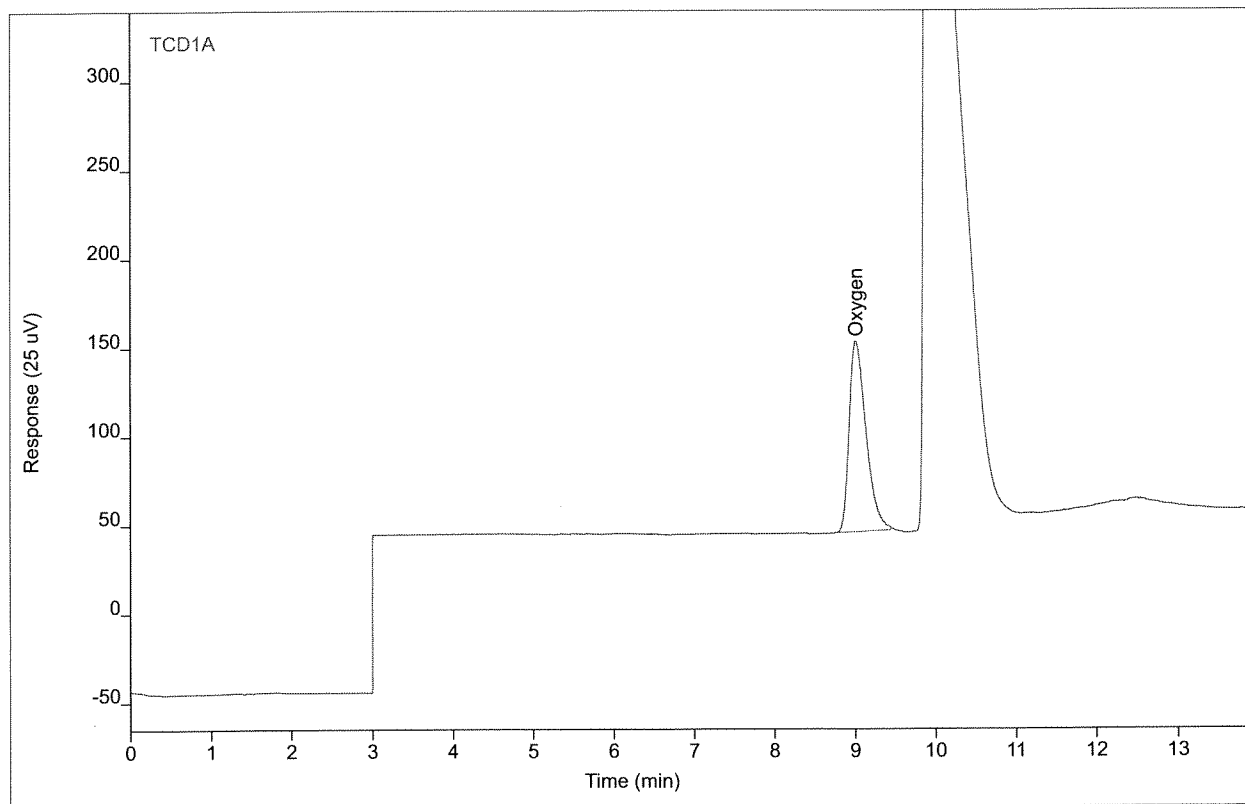
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Oxygen	BB	9.01	1580.40	108.349	4.11065	1	4.11065	%
Carbon Dioxide	MM	19.50	2840.61	256.556	3.92786	1	3.92786	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP472 #FG3 ENV(1=374.56,2=391.07)
Sequence Name BETTYP478 1 ver.3
Inj Data File 009F1003.D
File Location GC/2016/Betty/Quarter 4
Injection Date 11/1/2016 10:29 PM
File Modified 11/2/2016 6:49 AM
Instrument Betty
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 3 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 11/1/2016 9:30 AM
Printed 11/4/2016 10:11 AM



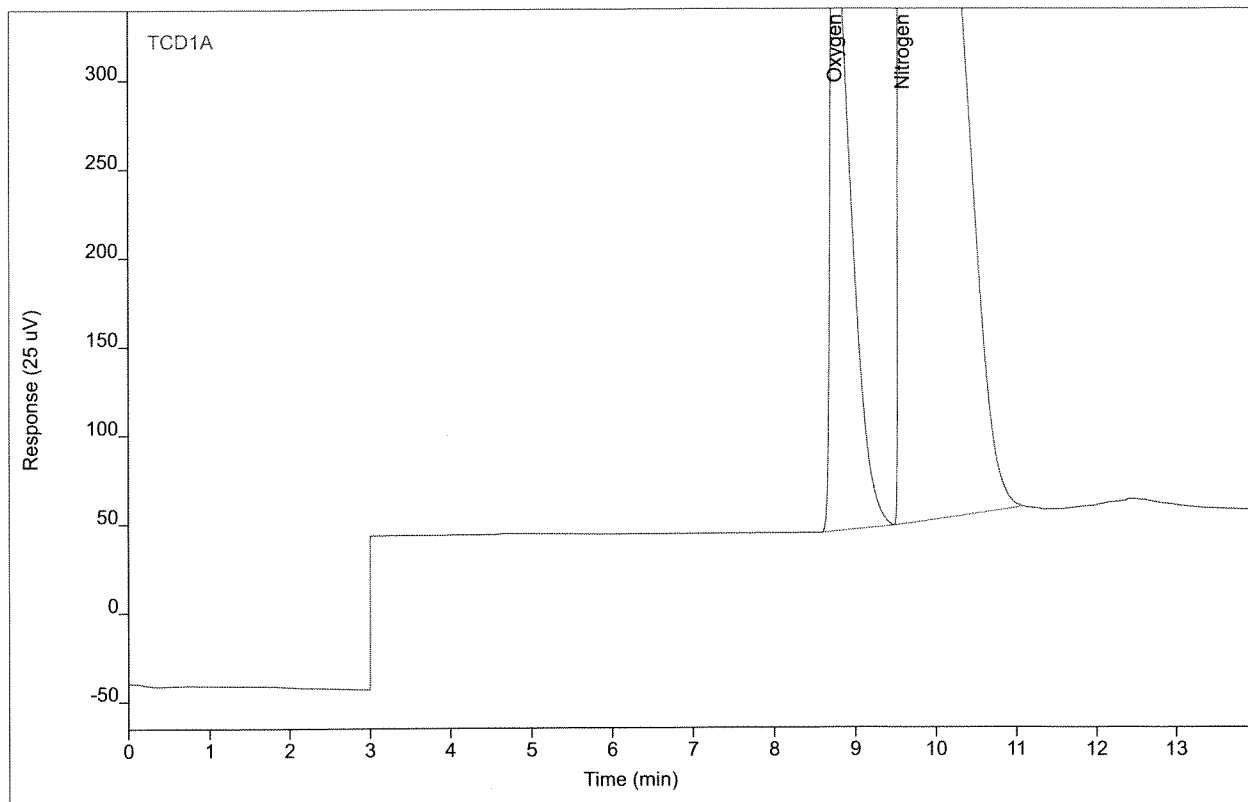
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Oxygen	BB	9.01	1571.71	107.736	4.08788	1	4.08788	%
Carbon Dioxide	MM	19.50	2864.40	258.763	3.96125	1	3.96125	%

Chromatogram Report

Enthalpy Analytical

Sample Name 1016-147.Unit 3 C3 Run 2 Split.Bag
Sequence Name BETTYP480 ver.3
Inj Data File 007F0101.D
File Location GC/2016/Betty/Quarter 4
Injection Date 11/2/2016 6:35 AM
File Modified 11/3/2016 10:56 AM
Instrument Betty
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 7
Injection Volume 250
Injection 1 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 11/3/2016 10:56 AM
Printed 11/4/2016 10:11 AM



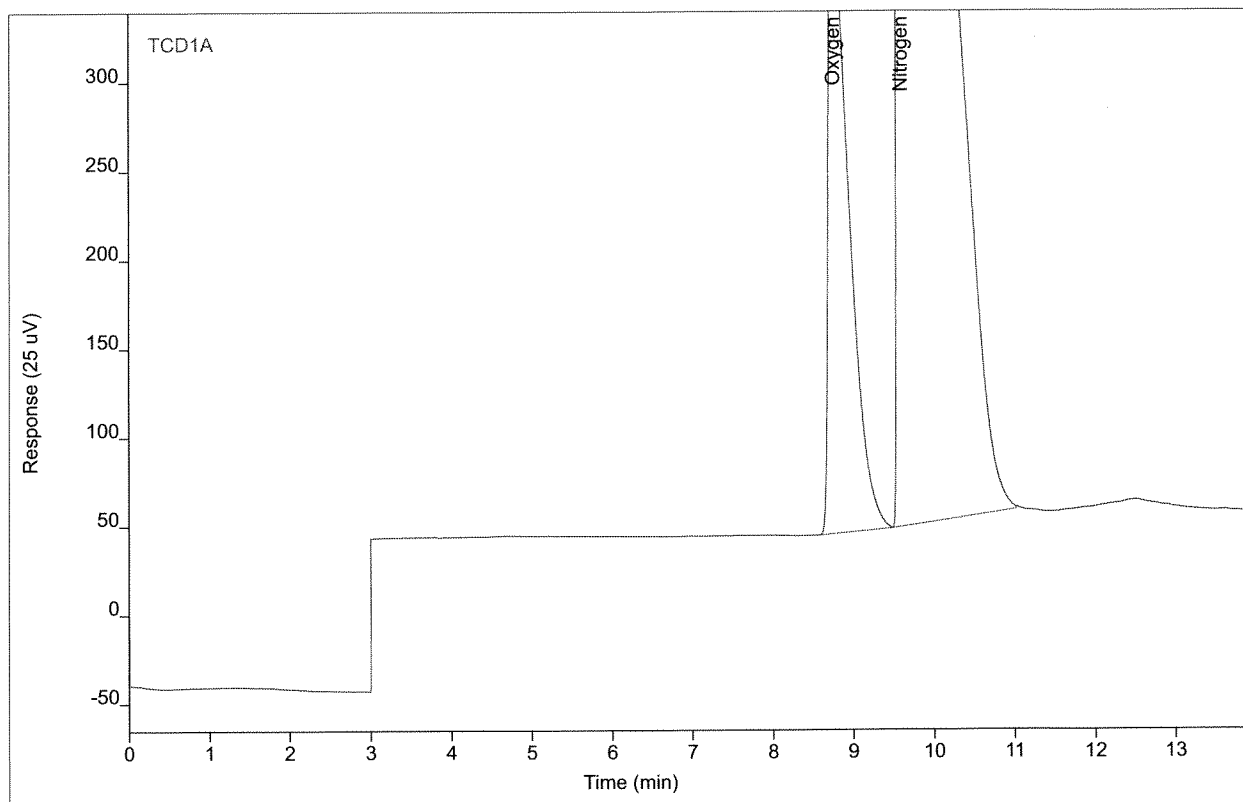
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(2.05)				1		
Oxygen	BB	8.77	6439.13	376.939	16.8331	1	16.8331	%
Nitrogen	BB	9.61	31055.5	832.721	72.5727	1	72.5727	%
Carbon monoxide		(12.59)				1		
Methane		(16.39)				1		
Carbon Dioxide	MM	19.53	1522.95	141.929	2.07882	1	2.07882	%

Chromatogram Report

Enthalpy Analytical

Sample Name 1016-147.Unit 3 C3 Run 2 Split.Bag
Sequence Name BETTYP480 ver.3
Inj Data File 007F0102.D
File Location GC/2016/Betty/Quarter 4
Injection Date 11/2/2016 7:04 AM
File Modified 11/3/2016 10:56 AM
Instrument Betty
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 7
Injection Volume 250
Injection 2 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 11/3/2016 10:56 AM
Printed 11/4/2016 10:11 AM



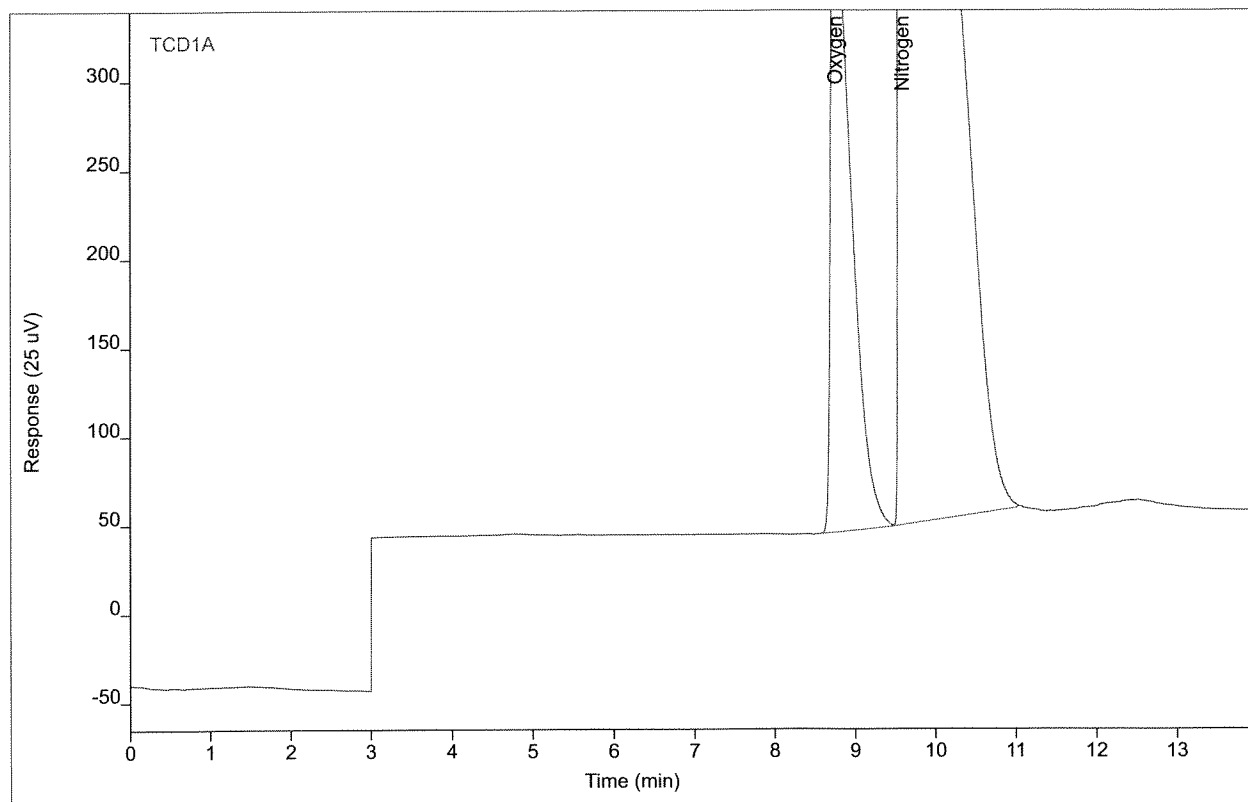
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(2.05)				1		
Oxygen	BB	8.77	6394.32	375.402	16.7158	1	16.7158	%
Nitrogen	BB	9.61	30822.3	824.637	72.0271	1	72.0271	%
Carbon monoxide		(12.59)				1		
Methane		(16.39)				1		
Carbon Dioxide	MM	19.54	1507.98	140.649	2.05782	1	2.05782	%

Chromatogram Report

Enthalpy Analytical

Sample Name 1016-147.Unit 3 C3 Run 2 Split.Bag
Sequence Name BETTYP480 ver.3
Inj Data File 007F0103.D
File Location GC/2016/Betty/Quarter 4
Injection Date 11/2/2016 7:33 AM
File Modified 11/3/2016 10:56 AM
Instrument Betty
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 7
Injection Volume 250
Injection 3 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 11/3/2016 10:56 AM
Printed 11/4/2016 10:11 AM



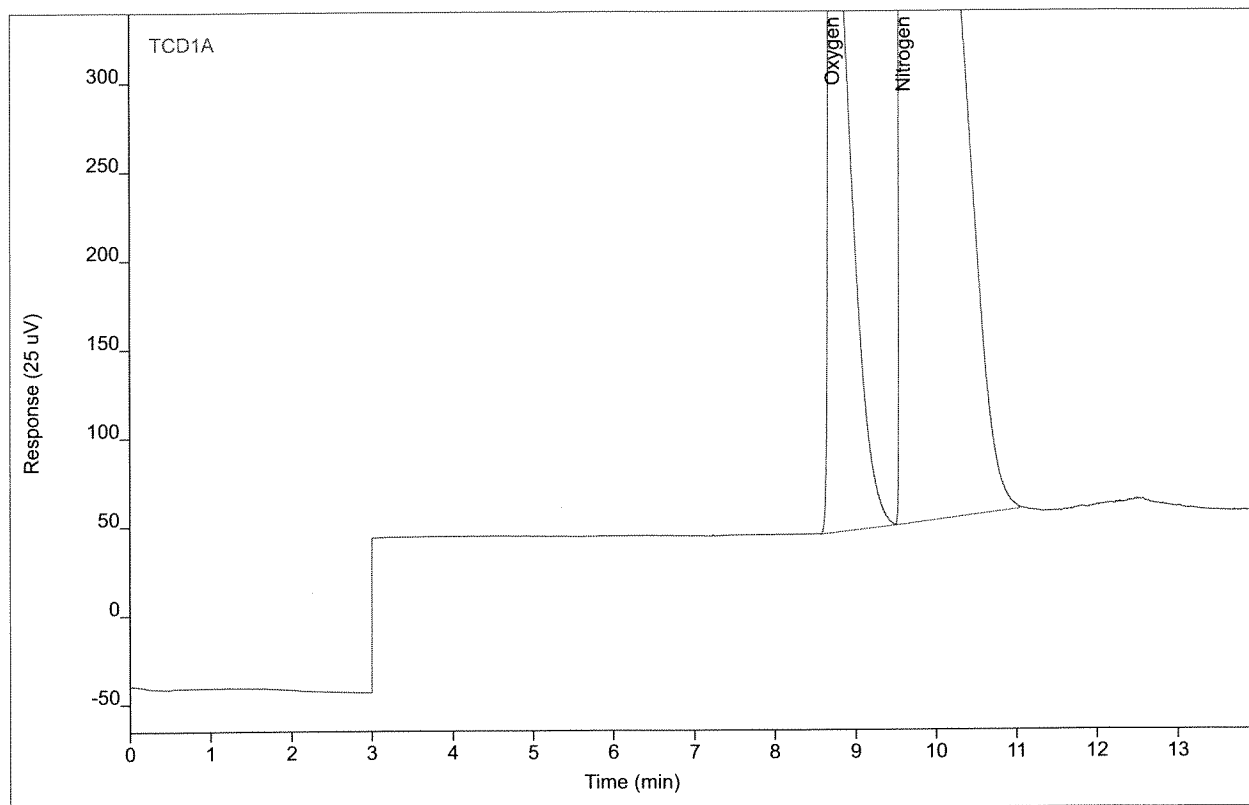
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(2.05)				1		
Oxygen	BV	8.77	6441.03	378.343	16.8381	1	16.8381	%
Nitrogen	VB	9.61	31068.9	835.056	72.6039	1	72.6039	%
Carbon monoxide		(12.59)				1		
Methane		(16.39)				1		
Carbon Dioxide	MM	19.53	1514.94	140.421	2.06758	1	2.06758	%

Chromatogram Report

Enthalpy Analytical

Sample Name 1016-147.Unit 3 C3 Run 3 Split.Bag
Sequence Name BETTYP480 ver.3
Inj Data File 007F0201.D
File Location GC/2016/Betty/Quarter 4
Injection Date 11/2/2016 8:01 AM
File Modified 11/3/2016 10:57 AM
Instrument Betty
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 7
Injection Volume 250
Injection 1 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 11/3/2016 10:56 AM
Printed 11/4/2016 10:11 AM



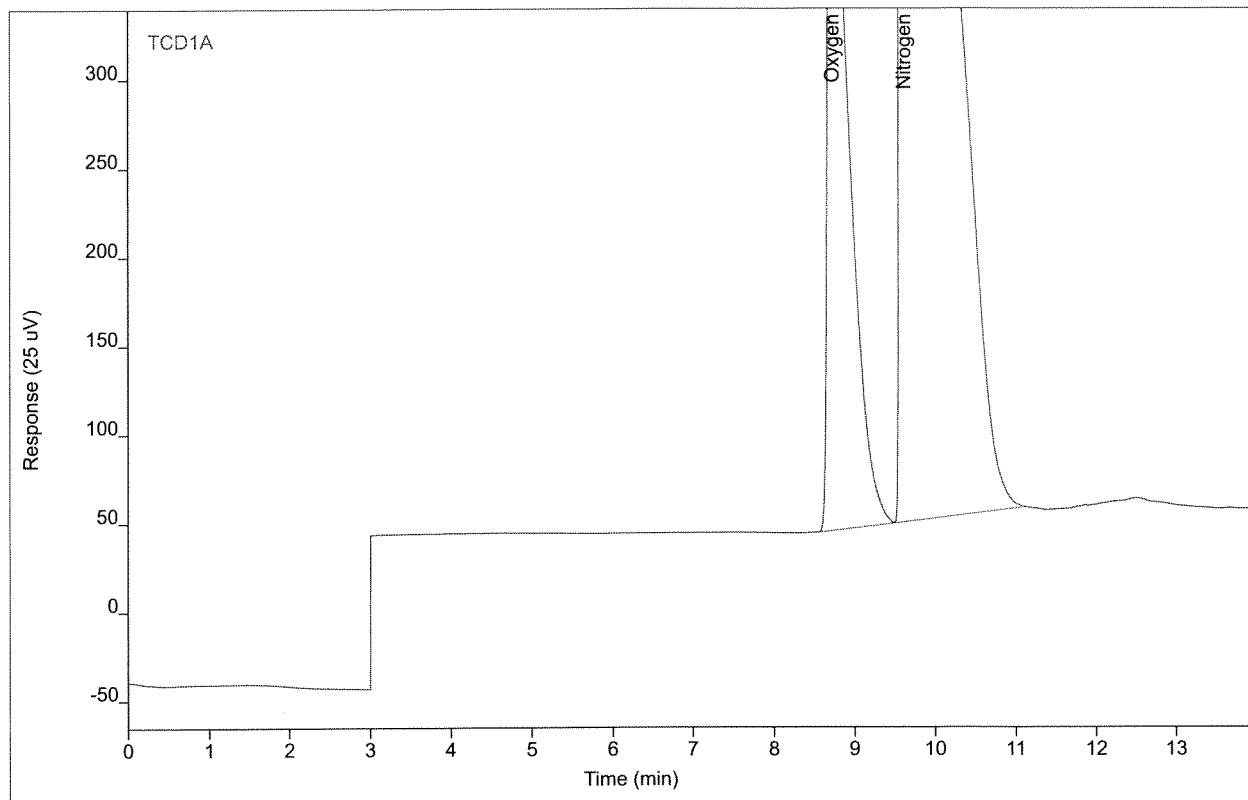
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(2.05)				1		
Oxygen	BV	8.74	7983.84	440.898	20.8779	1	20.8779	%
Nitrogen	VB	9.62	30388.7	820.819	71.0130	1	71.0130	%
Carbon monoxide		(12.59)				1		
Methane		(16.39)				1		
Carbon Dioxide	MM	19.58	33.5681	3.51326	0.04254	1	0.04254	%

Chromatogram Report

Enthalpy Analytical

Sample Name 1016-147.Unit 3 C3 Run 3 Split.Bag
Sequence Name BETTYP480 ver.3
Inj Data File 007F0202.D
File Location GC/2016/Betty/Quarter 4
Injection Date 11/2/2016 8:30 AM
File Modified 11/3/2016 10:57 AM
Instrument Betty
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 7
Injection Volume 250
Injection 2 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 11/3/2016 10:56 AM
Printed 11/4/2016 10:11 AM



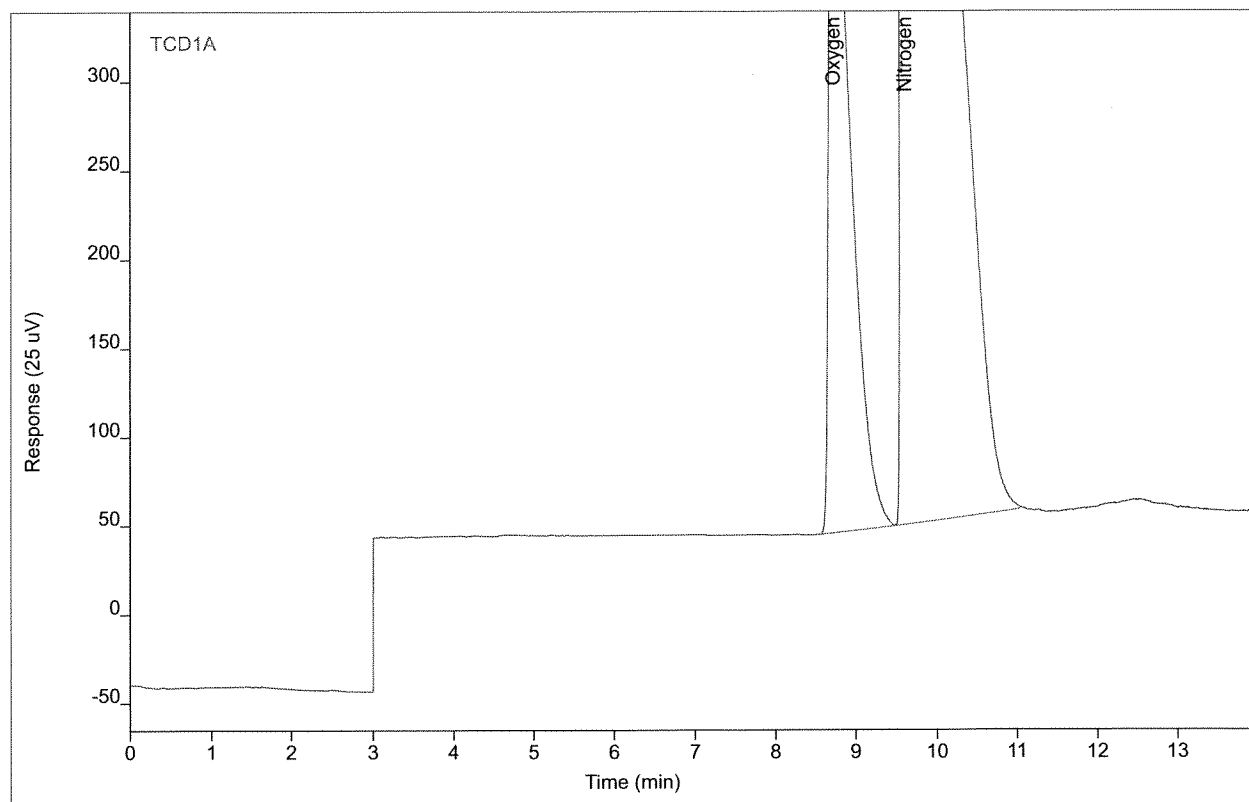
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(2.05)				1		
Oxygen	BV	8.74	7939.86	436.230	20.7627	1	20.7627	%
Nitrogen	VB	9.62	30213.2	814.931	70.6027	1	70.6027	%
Carbon monoxide		(12.59)				1		
Methane		(16.39)				1		
Carbon Dioxide	MM	19.59	29.9545	3.09036	0.03796	1	0.03796	%

Chromatogram Report

Enthalpy Analytical

Sample Name 1016-147.Unit 3 C3 Run 3 Split.Bag
Sequence Name BETTYP480 ver.3
Inj Data File 007F0203.D
File Location GC/2016/Betty/Quarter 4
Injection Date 11/2/2016 8:59 AM
File Modified 11/3/2016 10:57 AM
Instrument Betty
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 7
Injection Volume 250
Injection 3 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 11/3/2016 10:56 AM
Printed 11/4/2016 10:11 AM



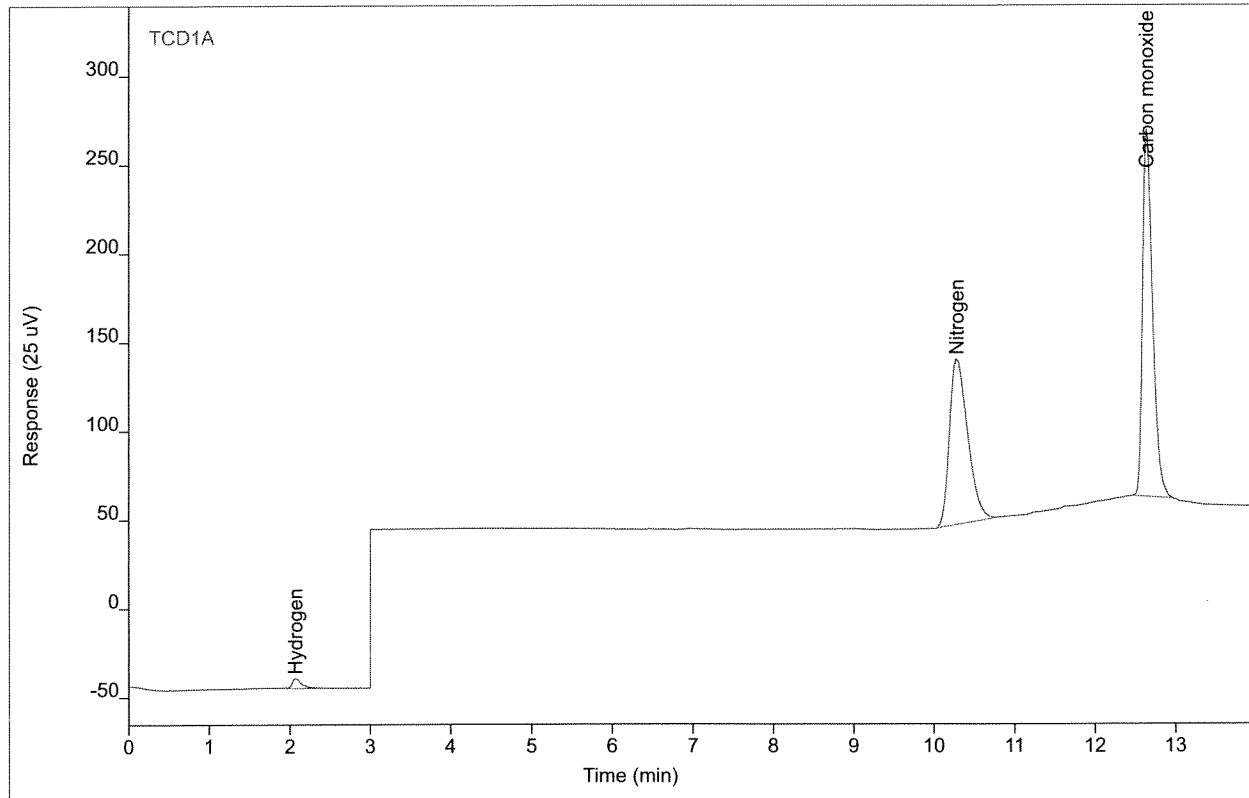
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(2.05)				1		
Oxygen	BV	8.73	7993.57	438.030	20.9033	1	20.9033	%
Nitrogen	VB	9.62	30255.9	810.840	70.7025	1	70.7025	%
Carbon monoxide		(12.59)				1		
Methane		(16.39)				1		
Carbon Dioxide	MM	19.59	31.1468	3.39610	0.03948	1	0.03948	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG7 ENV(1=530,6=319.09)
Sequence Name BETTYP482B ver.3
Inj Data File 009F0601.D
File Location GC/2016/Betty/Quarter 4
Injection Date 11/3/2016 5:09 PM
File Modified 11/4/2016 10:04 AM
Instrument Betty
Operator Justin Guenzler

Sample Type
Vial Number
Injection Volume
Injection
Acquisition Method
Analysis Method
Method Modified
Printed
Calibration
Vial 9
250
1 of 3
BETTYP017_CAL.M
BETTYP348_FGA_CRYO.M
11/4/2016 8:50 AM
11/4/2016 10:11 AM



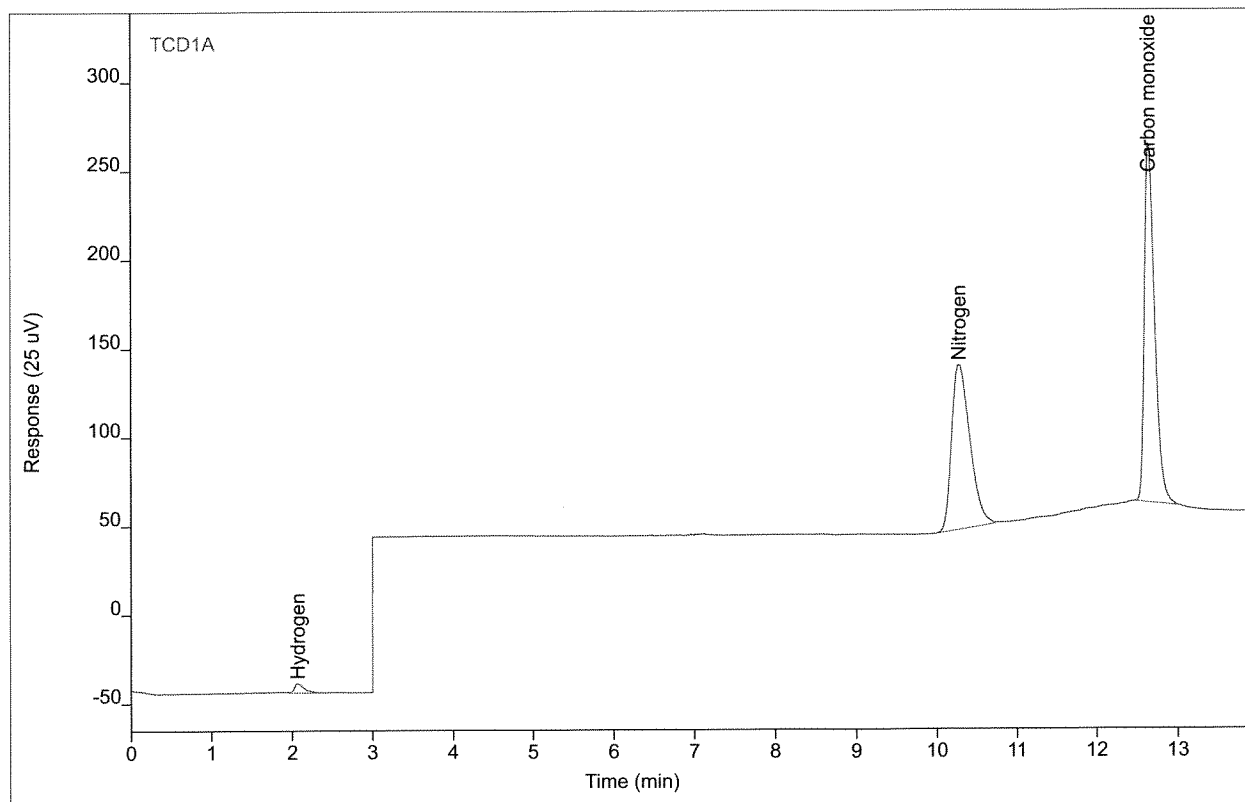
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	BB	2.07	48.6741	5.67975	2.71551	1	2.71551	%
Nitrogen	BB	10.28	1467.67	93.5075	3.37173	1	3.37173	%
Carbon monoxide	MM	12.65	1768.40	206.679	3.33948	1	3.33948	%
Methane	MM	16.45	1199.02	145.059	2.65112	1	2.65112	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG7 ENV(1=530,6=319.09)
Sequence Name BETTYP482B ver.3
Inj Data File 009F0602.D
File Location GC/2016/Betty/Quarter 4
Injection Date 11/3/2016 5:39 PM
File Modified 11/4/2016 10:05 AM
Instrument Betty
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 2 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 11/4/2016 8:50 AM
Printed 11/4/2016 10:11 AM



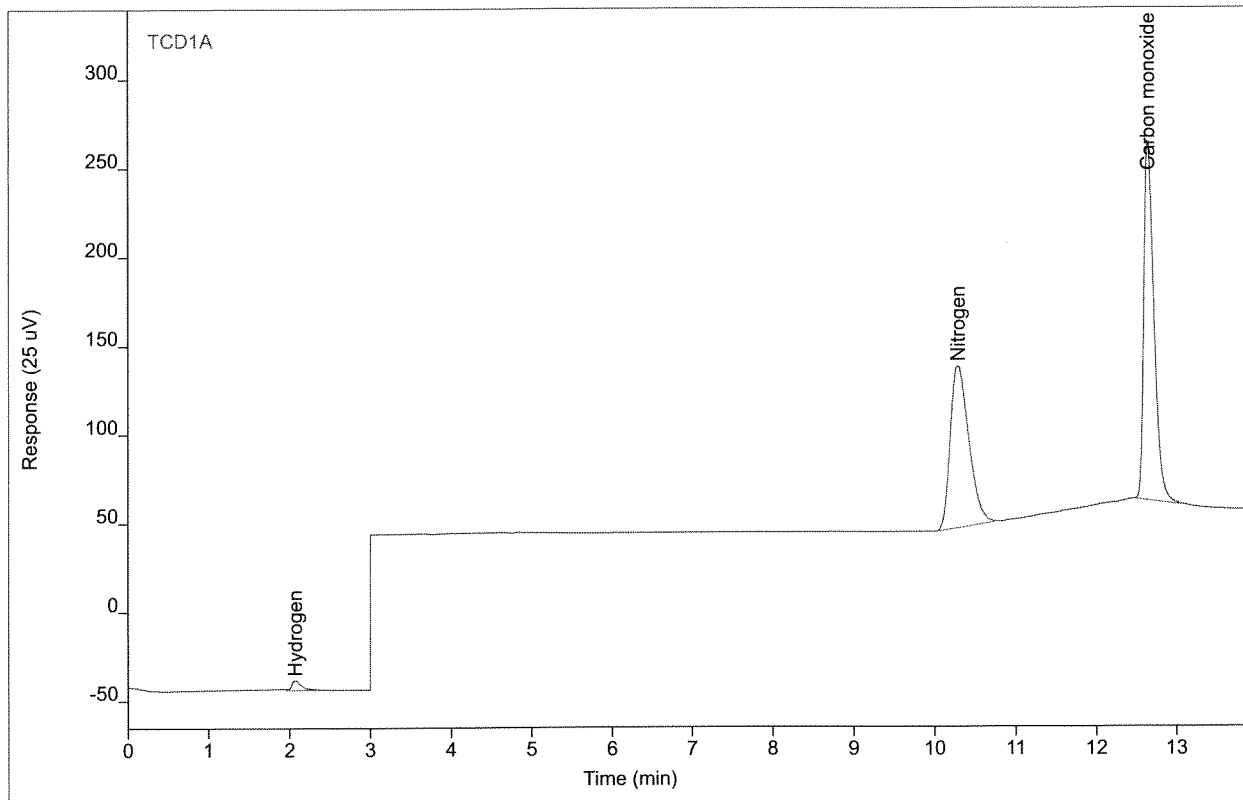
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	BB	2.07	48.1969	5.49631	2.68894	1	2.68894	%
Nitrogen	BB	10.29	1472.33	92.9742	3.38263	1	3.38263	%
Carbon monoxide	MM	12.65	1762.93	201.730	3.32908	1	3.32908	%
Methane	MM	16.45	1186.22	143.832	2.62240	1	2.62240	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG7 ENV(1=530,6=319.09)
Sequence Name BETTYP482B ver.3
Inj Data File 009F0603.D
File Location GC/2016/Betty/Quarter 4
Injection Date 11/3/2016 6:10 PM
File Modified 11/4/2016 10:05 AM
Instrument Betty
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 3 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 11/4/2016 8:50 AM
Printed 11/4/2016 10:11 AM



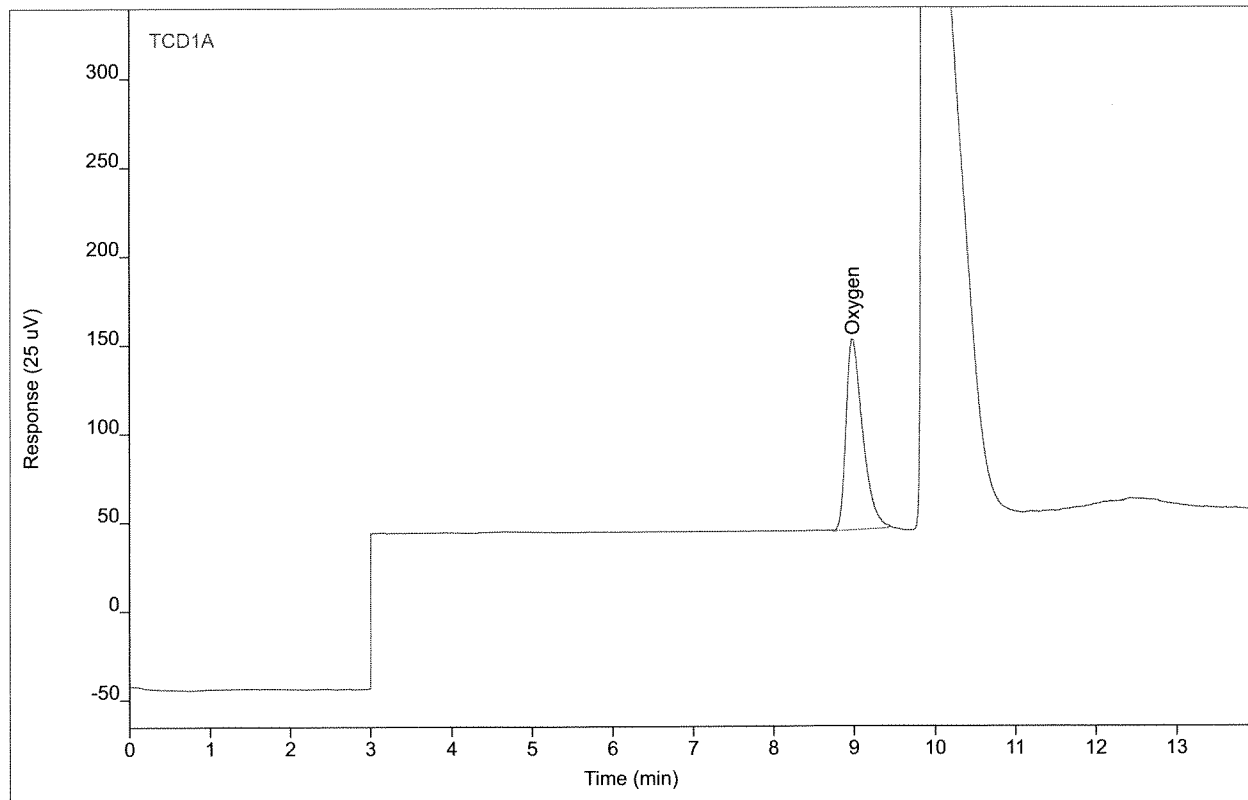
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	MM	2.07	49.4890	5.72272	2.76089	1	2.76089	%
Nitrogen	BB	10.29	1451.95	91.5978	3.33496	1	3.33496	%
Carbon monoxide	MM	12.65	1785.25	202.542	3.37157	1	3.37157	%
Methane	MM	16.45	1197.17	145.136	2.64698	1	2.64698	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP472 #FG3 ENV(1=374.56,2=391.07)
Sequence Name BETTYP482B ver.3
Inj Data File 009F0701.D
File Location GC/2016/Betty/Quarter 4
Injection Date 11/3/2016 6:40 PM
File Modified 11/4/2016 10:05 AM
Instrument Betty
Operator Justin Guenzler

Sample Type
Vial Number
Injection Volume 250
Injection 1 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 11/4/2016 8:50 AM
Printed 11/4/2016 10:11 AM



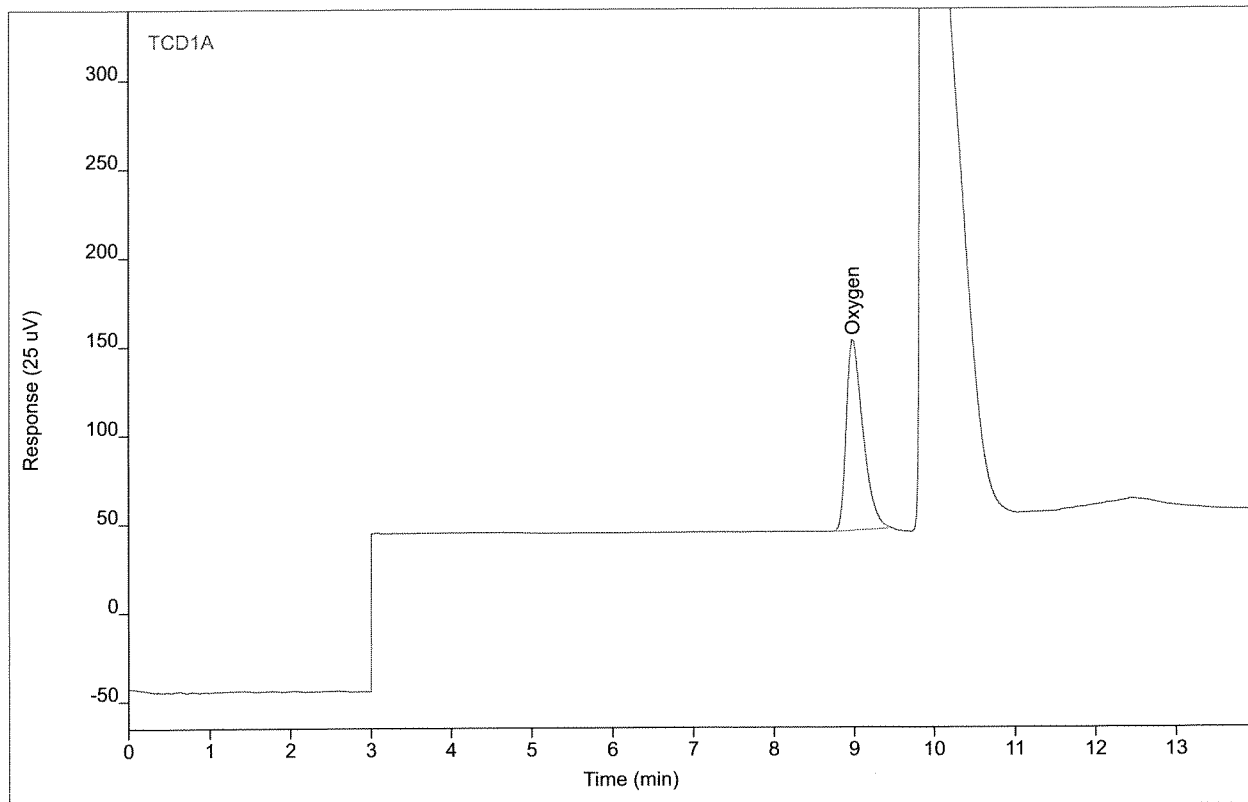
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Oxygen	BB	8.99	1543.91	107.440	4.01510	1	4.01510	%
Carbon Dioxide	MM	19.49	2779.60	251.367	3.84225	1	3.84225	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP472 #FG3 ENV(1=374.56,2=391.07)
Sequence Name BETTYP482B ver.3
Inj Data File 009F0702.D
File Location GC/2016/Betty/Quarter 4
Injection Date 11/3/2016 7:11 PM
File Modified 11/4/2016 10:05 AM
Instrument Betty
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 2 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 11/4/2016 8:50 AM
Printed 11/4/2016 10:11 AM



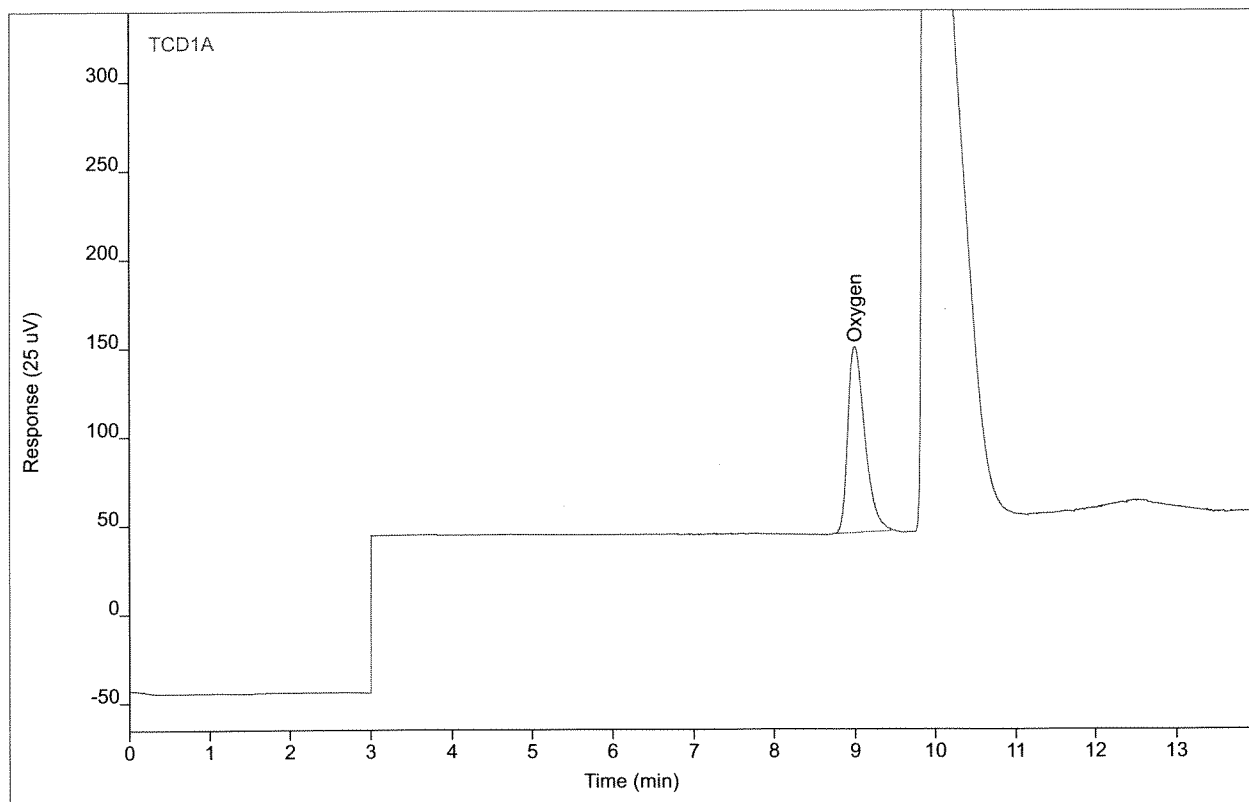
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Oxygen	BB	8.99	1544.74	107.722	4.01727	1	4.01727	%
Carbon Dioxide	MM	19.49	2815.25	253.948	3.89228	1	3.89228	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP472 #FG3 ENV(1=374.56,2=391.07)
Sequence Name BETTYP482B ver.3
Inj Data File 009F0703.D
File Location GC/2016/Betty/Quarter 4
Injection Date 11/3/2016 7:41 PM
File Modified 11/4/2016 10:05 AM
Instrument Betty
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 3 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 11/4/2016 8:50 AM
Printed 11/4/2016 10:11 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Oxygen	BB	9.00	1554.46	104.898	4.04273	1	4.04273	%
Carbon Dioxide	MM	19.50	2859.26	257.556	3.95405	1	3.95405	%

Enthalpy Analytical

Company: METCO Environmental

Job No.: 0816-140 EPA Method 3C Tedlar Bag Analysis

Client No.: 16-323

Sample Name	Filename #1	Filename #2	Filename #3	Analysis Method	Ret Time (min)	Ret Time (min)	%diff RT	Conc #1 (%)	Conc #2 (%)	Conc #3 (%)	%diff conc	Avg Conc (%)	Standard Tag	% Tag
Carbon Dioxide -- Calibration Standards														
BettyP300 #FG3 ENV(1=374.56,2=391.07)	009F0303.D	009F0304.D	009F0305.D	BETTP348_FGA_CRYO.M	19.48	19.48	0.0	4.64	4.64	4.64	0.1	4.64	4.80	96.7
BettyP374 Method Blank-1	001F0401.D	001F0402.D	001F0403.D	BETTP348_FGA_CRYO.M	NA	NA	NA	0.0544	0.0544	0.0544	0.0	0.0544	NA	NA
BettyP300 #FG3 ENV(1=374.56,2=391.07)	009F0401.D	009F0402.D	009F0403.D	BETTP348_FGA_CRYO.M	19.48	19.48	0.0	4.49	4.48	4.45	0.5	4.48	4.80	93.3
BettyP300 #FG3 ENV(1=374.56,2=391.07)	009F1201.D	009F1202.D	009F1203.D	BETTP348_FGA_CRYO.M	19.48	19.48	0.0	4.41	4.45	4.41	0.6	4.42	4.80	92.2
BettyP300 #FG3 ENV(1=374.56,2=391.07)	009F0802.D	009F0803.D	009F0804.D	BETTP348_FGA_CRYO.M	19.49	19.48	0.0	4.48	4.47	4.50	0.3	4.48	4.80	93.4
BettyP300 #FG3 ENV(1=374.56,2=391.07)	009F0702.D	009F0703.D	009F0704.D	BETTP348_FGA_CRYO.M	19.49	19.48	0.0	4.52	4.57	4.51	0.8	4.53	4.80	94.4
BettyP300 #FG3 ENV(1=374.56,2=391.07)	009F1502.D	009F1503.D	009F1504.D	BETTP348_FGA_CRYO.M	19.49	19.49	0.0	4.55	4.54	4.54	0.0	4.54	4.80	94.7
BettyP300 #FG3 ENV(1=374.56,2=391.07)	009F0202.D	009F0203.D	009F0204.D	BETTP348_FGA_CRYO.M	19.49	19.49	0.0	4.56	4.58	4.56	0.4	4.57	4.80	95.2
BettyP300 #FG3 ENV(1=374.56,2=391.07)	009F0603.D	009F0604.D	009F0605.D	BETTP348_FGA_CRYO.M	19.50	19.50	0.1	4.43	4.49	4.48	0.8	4.47	4.80	93.1
BettyP300 #FG3 ENV(1=374.56,2=391.07)	009F0701.D	009F0702.D	009F0703.D	BETTP348_FGA_CRYO.M	19.49	19.49	0.0	4.48	4.47	4.47	0.2	4.47	4.80	93.1
BettyP300 #FG3 ENV(1=374.56,2=391.07)	009F1501.D	009F1502.D	009F1503.D	BETTP348_FGA_CRYO.M	19.50	19.49	0.0	4.41	4.45	4.49	0.9	4.45	4.80	92.8
BettyP300 #FG3 ENV(1=374.56,2=391.07)	009F2501.D	009F2502.D	009F2503.D	BETTP348_FGA_CRYO.M	19.49	19.49	0.0	4.36	4.39	4.39	0.4	4.38	4.80	91.2
BettyP300 #FG3 ENV(1=374.56,2=391.07)	009F0201.D	009F0202.D	009F0203.D	BETTP348_FGA_CRYO.M	19.48	19.48	0.0	4.53	4.58	4.55	0.6	4.55	4.80	94.9
BettyP300 #FG3 ENV(1=374.56,2=391.07)	009F0701.D	009F0702.D	009F0703.D	BETTP348_FGA_CRYO.M	19.49	19.49	0.0	4.56	4.56	4.55	0.1	4.56	4.80	94.9
BettyP472 #FG3 ENV(1=374.56,2=391.07)	009F0301.D	009F0302.D	009F0303.D	BETTP348_FGA_CRYO.M	19.49	19.49	0.0	3.94	3.89	3.90	0.8	3.91	4.14	94.4
BettyP374 Method Blank-1	001F0901.D	001F0902.D	001F0903.D	BETTP348_FGA_CRYO.M				0.00	0.00	0.00		0.00		
BettyP472 #FG3 ENV(1=374.56,2=391.07)	009F1101.D	009F1102.D	009F1103.D	BETTP348_FGA_CRYO.M	19.49	19.49	0.0	3.92	3.91	3.89	0.5	3.91	4.14	94.4
BettyP472 #FG3 ENV(1=374.56,2=391.07)	009F2001.D	009F2002.D	009F2003.D	BETTP348_FGA_CRYO.M	19.50	19.50	0.0	3.91	3.89	3.91	0.3	3.90	4.14	94.3
BettyP472 #FG3 ENV(1=374.56,2=391.07)	009F1001.D	009F1002.D	009F1003.D	BETTP348_FGA_CRYO.M	19.50	19.50	0.0	3.92	3.93	3.96	0.7	3.93	4.14	95.1
BettyP472 #FG3 ENV(1=374.56,2=391.07)	009F0701.D	009F0702.D	009F0703.D	BETTP348_FGA_CRYO.M	19.49	19.49	0.0	3.84	3.89	3.95	1.5	3.90	4.14	94.2

Enthalpy Analytical

Company: METCO Environmental

Job No.: 0816-140 EPA Method 3C Tedlar Bag Analysis

Client No.: 16-323

Sample Name	Filename #1	Filename #2	Filename #3	Analysis Method	Ret Time (min)	Ret Time (min)	%diff RT	Conc # 1 (%)	Conc # 2 (%)	Conc # 3 (%)	%diff conc	Avg Conc (%)	Standard Tag	% Tag
Carbon monoxide -- Calibration Standards														
BettyP300 #FG7 ENV(1=530,3=319.09)	009F0103.D	009F0201.D	009F0202.D	BETTP348_FGA_CRYO.M	12.65	12.65	0.0	3.38	3.39	3.39	0.2	3.39	3.37	101
BettyP374 Method Blank-1	001F0401.D	001F0402.D	001F0403.D	BETTP348_FGA_CRYO.M	NA	NA	NA	0.0380	0.0380	0.0380	0.0	0.0380	NA	NA
BettyP300 #FG7 ENV(1=530,3=319.09)	009F0301.D	009F0302.D	009F0303.D	BETTP348_FGA_CRYO.M	12.64	12.65	0.0	3.32	3.30	3.29	0.5	3.30	3.37	98.0
BettyP300 #FG7 ENV(1=530,3=319.09)	009F1101.D	009F1102.D	009F1103.D	BETTP348_FGA_CRYO.M	12.65	12.65	0.0	3.25	3.26	3.29	0.8	3.27	3.37	96.9
BettyP300 #FG7 ENV(1=530,3=319.09)	009F0702.D	009F0703.D	009F0704.D	BETTP348_FGA_CRYO.M	12.66	12.65	0.0	3.26	3.23	3.28	0.7	3.26	3.37	96.7
BettyP300 #FG7 ENV(1=530,3=319.09)	009F0602.D	009F0603.D	009F0604.D	BETTP348_FGA_CRYO.M	12.66	12.66	0.0	3.34	3.34	3.34	0.1	3.34	3.37	99.2
BettyP300 #FG7 ENV(1=530,3=319.09)	009F1402.D	009F1403.D	009F1404.D	BETTP348_FGA_CRYO.M	12.66	12.66	0.0	3.36	3.36	3.34	0.3	3.35	3.37	99.5
BettyP300 #FG7 ENV(1=530,3=319.09)	009F0102.D	009F0103.D	009F0104.D	BETTP348_FGA_CRYO.M	12.66	12.66	0.0	3.31	3.34	3.33	0.4	3.33	3.37	98.7
BettyP300 #FG7 ENV(1=530,3=319.09)	009F0503.D	009F0504.D	009F0505.D	BETTP348_FGA_CRYO.M	12.67	12.67	0.0	3.32	3.29	3.34	0.8	3.32	3.37	98.4
BettyP300 #FG7 ENV(1=530,3=319.09)	009F0601.D	009F0602.D	009F0603.D	BETTP348_FGA_CRYO.M	12.67	12.67	0.0	3.24	3.22	3.28	1.0	3.25	3.37	96.4
BettyP300 #FG7 ENV(1=530,3=319.09)	009F1401.D	009F1402.D	009F1403.D	BETTP348_FGA_CRYO.M	12.67	12.67	0.0	3.29	3.30	3.31	0.4	3.30	3.37	98.0
BettyP300 #FG7 ENV(1=530,3=319.09)	009F2401.D	009F2402.D	009F2403.D	BETTP348_FGA_CRYO.M	12.67	12.67	0.0	3.16	3.21	3.17	0.9	3.18	3.37	94.4
BettyP300 #FG7 ENV(1=530,3=319.09)	009F0101.D	009F0102.D	009F0103.D	BETTP348_FGA_CRYO.M	12.66	12.66	0.0	3.42	3.37	3.35	1.2	3.38	3.37	100
BettyP300 #FG7 ENV(1=530,3=319.09)	009F0601.D	009F0602.D	009F0603.D	BETTP348_FGA_CRYO.M	12.67	12.67	0.0	3.30	3.40	3.38	1.7	3.36	3.37	99.7
BettyP300 #FG7 ENV(1=530,6=319.09)	009F0201.D	009F0202.D	009F0203.D	BETTP348_FGA_CRYO.M	12.65	12.65	0.0	3.44	3.38	3.33	1.6	3.39	3.37	100.5
BettyP374 Method Blank-1	001F0901.D	001F0902.D	001F0903.D	BETTP348_FGA_CRYO.M				0.00	0.00	0.00		0.00		
BettyP300 #FG7 ENV(1=530,6=319.09)	009F1001.D	009F1002.D	009F1003.D	BETTP348_FGA_CRYO.M	12.66	12.66	0.0	3.31	3.37	3.39	1.4	3.35	3.37	99.5
BettyP300 #FG7 ENV(1=530,6=319.09)	009F1901.D	009F1902.D	009F1903.D	BETTP348_FGA_CRYO.M	12.66	12.66	0.0	3.32	3.33	3.35	0.4	3.33	3.37	98.9
BettyP300 #FG7 ENV(1=530,6=319.09)	009F0901.D	009F0902.D	009F0903.D	BETTP348_FGA_CRYO.M	12.66	12.67	0.0	3.41	3.44	3.37	1.1	3.41	3.37	101.1
BettyP300 #FG7 ENV(1=530,6=319.09)	009F0601.D	009F0602.D	009F0603.D	BETTP348_FGA_CRYO.M	12.65	12.65	0.0	3.34	3.33	3.37	0.7	3.35	3.37	99.3

Enthalpy Analytical

Company: METCO Environmental

Job No.: 0816-140 EPA Method 3C Tedlar Bag Analysis

Client No.: 16-323

Sample Name	Filename #1	Filename #2	Filename #3	Analysis Method	Ret Time (min)	Ret Time (min)	Ret Time RT (min)	%diff RT	Conc #1 (%)	Conc #2 (%)	Conc #3 (%)	%diff conc	Avg Conc (%)	Standard Tag	% Tag
Hydrogen -- Calibration Standards															
BettyP300 #FG7 ENV(1=530,3=319.09)	009F0103.D	009F0201.D	009F0202.D	BETTP348_FGA_CRYO.M	2.07	2.07	2.07	0.1	2.47	2.58	2.56	2.7	2.53	2.76	91.8
BettyP374 Method Blank-1	001F0401.D	001F0402.D	001F0403.D	BETTP348_FGA_CRYO.M	NA	NA	NA	NA	0.0360	0.0360	0.0360	0.0	0.0360	NA	NA
BettyP300 #FG7 ENV(1=530,3=319.09)	009F0301.D	009F0302.D	009F0303.D	BETTP348_FGA_CRYO.M	2.07	2.07	2.07	0.1	2.56	2.47	2.69	4.7	2.57	2.76	93.3
BettyP300 #FG7 ENV(1=530,3=319.09)	009F1101.D	009F1102.D	009F1103.D	BETTP348_FGA_CRYO.M	2.07	2.07	2.07	0.0	2.58	2.47	2.42	3.8	2.49	2.76	90.3
BettyP300 #FG7 ENV(1=530,3=319.09)	009F0702.D	009F0703.D	009F0704.D	BETTP348_FGA_CRYO.M	2.07	2.07	2.07	0.1	2.45	2.61	2.48	3.7	2.51	2.76	91.0
BettyP300 #FG7 ENV(1=530,3=319.09)	009F0602.D	009F0603.D	009F0604.D	BETTP348_FGA_CRYO.M	2.07	2.07	2.07	0.1	2.55	2.51	2.55	1.1	2.54	2.76	92.0
BettyP300 #FG7 ENV(1=530,3=319.09)	009F1402.D	009F1403.D	009F1404.D	BETTP348_FGA_CRYO.M	2.07	2.07	2.07	0.1	2.53	2.57	2.63	2.0	2.58	2.76	93.4
BettyP300 #FG7 ENV(1=530,3=319.09)	009F0102.D	009F0103.D	009F0104.D	BETTP348_FGA_CRYO.M	2.07	2.07	2.07	0.1	2.56	2.64	2.68	2.6	2.63	2.76	95.2
BettyP300 #FG7 ENV(1=530,3=319.09)	009F0503.D	009F0504.D	009F0505.D	BETTP348_FGA_CRYO.M	2.07	2.07	2.07	0.1	2.98	2.82	2.97	3.4	2.92	2.76	106
BettyP300 #FG7 ENV(1=530,3=319.09)	009F0601.D	009F0602.D	009F0603.D	BETTP348_FGA_CRYO.M	2.07	2.07	2.07	0.1	2.71	2.75	2.93	4.7	2.79	2.76	101
BettyP300 #FG7 ENV(1=530,3=319.09)	009F1401.D	009F1402.D	009F1403.D	BETTP348_FGA_CRYO.M	2.07	2.08	2.07	0.2	2.52	2.57	2.41	3.6	2.50	2.76	90.7
BettyP300 #FG7 ENV(1=530,3=319.09)	009F2401.D	009F2402.D	009F2403.D	BETTP348_FGA_CRYO.M	2.07	2.07	2.07	0.1	2.63	2.53	2.56	2.0	2.57	2.76	93.2
BettyP300 #FG7 ENV(1=530,3=319.09)	009F0101.D	009F0102.D	009F0103.D	BETTP348_FGA_CRYO.M	2.07	2.07	2.07	0.1	2.55	2.58	2.54	0.9	2.56	2.76	92.6
BettyP300 #FG7 ENV(1=530,3=319.09)	009F0601.D	009F0602.D	009F0603.D	BETTP348_FGA_CRYO.M	2.07	2.07	2.07	0.1	2.77	2.61	2.66	3.4	2.68	2.76	97.1
BettyP300 #FG7 ENV(1=530,6=319.09)	009F0201.D	009F0202.D	009F0203.D	BETTP348_FGA_CRYO.M	2.06	2.06	2.06	0.1	2.57	2.58	2.56	0.6	2.57	2.76	93.0
BettyP374 Method Blank-1	001F0901.D	001F0902.D	001F0903.D	BETTP348_FGA_CRYO.M					0.00	0.00	0.00		0.00		
BettyP300 #FG7 ENV(1=530,6=319.09)	009F1001.D	009F1002.D	009F1003.D	BETTP348_FGA_CRYO.M	2.07	2.07	2.07	0.0	2.55	2.62	2.70	2.9	2.62	2.76	95.1
BettyP300 #FG7 ENV(1=530,6=319.09)	009F1901.D	009F1902.D	009F1903.D	BETTP348_FGA_CRYO.M	2.06	2.07	2.07	0.2	2.52	2.51	2.57	1.4	2.53	2.76	91.6
BettyP300 #FG7 ENV(1=530,6=319.09)	009F0901.D	009F0902.D	009F0903.D	BETTP348_FGA_CRYO.M	2.06	2.07	2.06	0.1	2.77	2.82	2.64	3.8	2.74	2.76	99.4
BettyP300 #FG7 ENV(1=530,6=319.09)	009F0601.D	009F0602.D	009F0603.D	BETTP348_FGA_CRYO.M	2.07	2.07	2.07	0.0	2.72	2.69	2.76	1.4	2.72	2.76	98.6

Enthalpy Analytical

Company: METCO Environmental

Job No.: 0816-140 EPA Method 3C Tedlar Bag Analysis

Client No.: 16-323

Sample Name	Filename #1	Filename #2	Filename #3	Analysis Method	Ret Time (min)	Ret Time (min)	Ret Time (min)	%dif RT	Conc #1 (%)	Conc #2 (%)	Conc #3 (%)	%dif conc	Avg Conc (%)	Standard Tag	% Tag
Methane -- Calibration Standards															
BettyP300 #FG7 ENV(1=530,3=319.09)	009F0103.D	009F0201.D	009F0202.D	BETTP348_FGA_CRYO.M	16.44	16.44	16.44	0.0	2.70	2.68	2.69	0.4	2.69	2.70	99.7
BettyP374 Method Blank-1	001F0401.D	001F0402.D	001F0403.D	BETTP348_FGA_CRYO.M	NA	NA	NA	NA	0.0310	0.0310	0.0310	0.0	0.0310	NA	NA
BettyP300 #FG7 ENV(1=530,3=319.09)	009F0301.D	009F0302.D	009F0303.D	BETTP348_FGA_CRYO.M	16.44	16.45	16.45	0.0	2.64	2.61	2.64	0.7	2.63	2.70	97.3
BettyP300 #FG7 ENV(1=530,3=319.09)	009F1101.D	009F1102.D	009F1103.D	BETTP348_FGA_CRYO.M	16.45	16.45	16.45	0.0	2.58	2.59	2.61	0.7	2.59	2.70	96.0
BettyP300 #FG7 ENV(1=530,3=319.09)	009F0702.D	009F0703.D	009F0704.D	BETTP348_FGA_CRYO.M	16.45	16.45	16.45	0.0	2.59	2.56	2.61	1.1	2.59	2.70	95.9
BettyP300 #FG7 ENV(1=530,3=319.09)	009F0602.D	009F0603.D	009F0604.D	BETTP348_FGA_CRYO.M	16.45	16.45	16.45	0.0	2.66	2.64	2.65	0.4	2.65	2.70	98.0
BettyP300 #FG7 ENV(1=530,3=319.09)	009F1402.D	009F1403.D	009F1404.D	BETTP348_FGA_CRYO.M	16.45	16.45	16.45	0.0	2.64	2.64	2.62	0.5	2.63	2.70	97.5
BettyP300 #FG7 ENV(1=530,3=319.09)	009F0102.D	009F0103.D	009F0104.D	BETTP348_FGA_CRYO.M	16.46	16.46	16.46	0.0	2.64	2.65	2.64	0.3	2.64	2.70	97.9
BettyP300 #FG7 ENV(1=530,3=319.09)	009F0503.D	009F0504.D	009F0505.D	BETTP348_FGA_CRYO.M	16.46	16.46	16.46	0.0	2.68	2.63	2.65	1.1	2.65	2.70	98.2
BettyP300 #FG7 ENV(1=530,3=319.09)	009F0601.D	009F0602.D	009F0603.D	BETTP348_FGA_CRYO.M	16.46	16.46	16.46	0.0	2.59	2.61	2.60	0.4	2.60	2.70	96.3
BettyP300 #FG7 ENV(1=530,3=319.09)	009F1401.D	009F1402.D	009F1403.D	BETTP348_FGA_CRYO.M	16.46	16.46	16.46	0.0	2.65	2.61	2.60	1.2	2.62	2.70	96.9
BettyP300 #FG7 ENV(1=530,3=319.09)	009F2401.D	009F2402.D	009F2403.D	BETTP348_FGA_CRYO.M	16.46	16.46	16.46	0.0	2.52	2.51	2.55	0.9	2.53	2.70	93.7
BettyP300 #FG7 ENV(1=530,3=319.09)	009F0101.D	009F0102.D	009F0103.D	BETTP348_FGA_CRYO.M	16.45	16.46	16.46	0.0	2.67	2.67	2.67	0.0	2.67	2.70	99.0
BettyP300 #FG7 ENV(1=530,3=319.09)	009F0601.D	009F0602.D	009F0603.D	BETTP348_FGA_CRYO.M	16.46	16.46	16.46	0.0	2.59	2.70	2.67	2.4	2.65	2.70	98.2
BettyP300 #FG7 ENV(1=530,6=319.09)	009F0201.D	009F0202.D	009F0203.D	BETTP348_FGA_CRYO.M	16.45	16.45	16.45	0.0	2.69	2.70	2.65	1.1	2.68	2.70	99.2
BettyP374 Method Blank-1	001F0901.D	001F0902.D	001F0903.D	BETTP348_FGA_CRYO.M					0.00	0.00	0.00		0.00		
BettyP300 #FG7 ENV(1=530,6=319.09)	009F1001.D	009F1002.D	009F1003.D	BETTP348_FGA_CRYO.M	16.46	16.46	16.46	0.0	2.63	2.68	2.69	1.4	2.67	2.70	98.7
BettyP300 #FG7 ENV(1=530,6=319.09)	009F1901.D	009F1902.D	009F1903.D	BETTP348_FGA_CRYO.M	16.46	16.46	16.46	0.0	2.67	2.64	2.66	0.5	2.66	2.70	98.4
BettyP300 #FG7 ENV(1=530,6=319.09)	009F0901.D	009F0902.D	009F0903.D	BETTP348_FGA_CRYO.M	16.46	16.46	16.46	0.0	2.72	2.72	2.64	2.0	2.70	2.70	99.9
BettyP300 #FG7 ENV(1=530,6=319.09)	009F0601.D	009F0602.D	009F0603.D	BETTP348_FGA_CRYO.M	16.45	16.45	16.45	0.0	2.65	2.62	2.65	0.7	2.64	2.70	97.8

Enthalpy Analytical

Company: METCO Environmental

Job No.: 0816-140 EPA Method 3C Tedlar Bag Analysis

Client No.: 16-323

Sample Name	Filename #1	Filename #2	Filename #3	Analysis Method	Ret Time (min)	Ret Time (min)	%dif RT	Conc # 1 (%)	Conc # 2 (%)	Conc # 3 (%)	%dif conc	Avg Conc (%)	Standard Tag	% Tag
Nitrogen -- Calibration Standards														
BettyP300 #FG7 ENV(1=530,3=319.09)	009F0103.D	009F0201.D	009F0202.D	BETTP348_FGA_CRYO.M	10.27	10.27	0.0	3.33	3.33	3.34	0.2	3.33	3.37	98.9
BettyP374 Method Blank-1	001F0401.D	001F0402.D	001F0403.D	BETTP348_FGA_CRYO.M	NA	NA	NA	0.0380	0.0380	0.0380	0.0	0.0380	NA	NA
BettyP300 #FG7 ENV(1=530,3=319.09)	009F0301.D	009F0302.D	009F0303.D	BETTP348_FGA_CRYO.M	10.28	10.28	0.0	3.29	3.28	3.30	0.3	3.29	3.37	97.6
BettyP300 #FG7 ENV(1=530,3=319.09)	009F1101.D	009F1102.D	009F1103.D	BETTP348_FGA_CRYO.M	10.29	10.29	0.0	3.24	3.25	3.26	0.3	3.25	3.37	96.5
BettyP300 #FG7 ENV(1=530,3=319.09)	009F0702.D	009F0703.D	009F0704.D	BETTP348_FGA_CRYO.M	10.30	10.30	0.0	3.26	3.24	3.28	0.6	3.26	3.37	96.7
BettyP300 #FG7 ENV(1=530,3=319.09)	009F0602.D	009F0603.D	009F0604.D	BETTP348_FGA_CRYO.M	10.30	10.30	0.0	3.32	3.30	3.32	0.4	3.31	3.37	98.3
BettyP300 #FG7 ENV(1=530,3=319.09)	009F1402.D	009F1403.D	009F1404.D	BETTP348_FGA_CRYO.M	10.30	10.30	0.0	3.33	3.31	3.29	0.5	3.31	3.37	98.2
BettyP300 #FG7 ENV(1=530,3=319.09)	009F0102.D	009F0103.D	009F0104.D	BETTP348_FGA_CRYO.M	10.31	10.32	0.0	3.33	3.32	3.32	0.1	3.33	3.37	98.7
BettyP300 #FG7 ENV(1=530,3=319.09)	009F0503.D	009F0504.D	009F0505.D	BETTP348_FGA_CRYO.M	10.32	10.32	0.0	3.28	3.28	3.31	0.5	3.29	3.37	97.7
BettyP300 #FG7 ENV(1=530,3=319.09)	009F0601.D	009F0602.D	009F0603.D	BETTP348_FGA_CRYO.M	10.32	10.32	0.0	3.24	3.26	3.23	0.4	3.24	3.37	96.3
BettyP300 #FG7 ENV(1=530,3=319.09)	009F1401.D	009F1402.D	009F1403.D	BETTP348_FGA_CRYO.M	10.32	10.33	0.0	3.29	3.32	3.31	0.5	3.30	3.37	98.1
BettyP300 #FG7 ENV(1=530,3=319.09)	009F2401.D	009F2402.D	009F2403.D	BETTP348_FGA_CRYO.M	10.32	10.32	0.0	3.22	3.25	3.25	0.5	3.24	3.37	96.2
BettyP300 #FG7 ENV(1=530,3=319.09)	009F0101.D	009F0102.D	009F0103.D	BETTP348_FGA_CRYO.M	10.31	10.32	0.0	3.37	3.37	3.34	0.7	3.36	3.37	99.7
BettyP300 #FG7 ENV(1=530,3=319.09)	009F0601.D	009F0602.D	009F0603.D	BETTP348_FGA_CRYO.M	10.33	10.33	0.0	3.29	3.37	3.37	1.6	3.34	3.37	99.2
BettyP300 #FG7 ENV(1=530,6=319.09)	009F0201.D	009F0202.D	009F0203.D	BETTP348_FGA_CRYO.M	10.29	10.29	0.0	3.43	3.43	3.33	2.0	3.40	3.37	100.8
BettyP374 Method Blank-1	001F0901.D	001F0902.D	001F0903.D	BETTP348_FGA_CRYO.M				0.00	0.00	0.00	0.00	0.00		
BettyP300 #FG7 ENV(1=530,6=319.09)	009F1001.D	009F1002.D	009F1003.D	BETTP348_FGA_CRYO.M	10.31	10.31	0.0	3.41	3.41	3.40	0.2	3.41	3.37	101.1
BettyP300 #FG7 ENV(1=530,6=319.09)	009F1901.D	009F1902.D	009F1903.D	BETTP348_FGA_CRYO.M	10.31	10.31	0.0	3.40	3.38	3.37	0.4	3.39	3.37	100.5
BettyP300 #FG7 ENV(1=530,6=319.09)	009F0901.D	009F0902.D	009F0903.D	BETTP348_FGA_CRYO.M	10.31	10.31	0.0	3.47	3.43	3.41	0.9	3.44	3.37	102.1
BettyP300 #FG7 ENV(1=530,6=319.09)	009F0601.D	009F0602.D	009F0603.D	BETTP348_FGA_CRYO.M	10.28	10.29	0.0	3.37	3.38	3.33	0.8	3.36	3.37	99.8

Enthalpy Analytical

Company: METCO Environmental

Job No.: 0816-140 EPA Method 3C Tedlar Bag Analysis

Client No.: 16-323

Sample Name	Filename #1	Filename #2	Filename #3	Analysis Method	Ret Time (min)	Ret Time (min)	Ret Time (min)	%diff RT	Conc #1 (%)	Conc #2 (%)	Conc #3 (%)	%diff conc	Avg Conc (%)	Standard Tag	% Tag
Oxygen -- Calibration Standards															
BettyP300 #FG3 ENV(1=374.56,2=391.07)	009F0303.D	009F0304.D	009F0305.D	BETTP348_FGA_CRYO.M	9.03	9.03	9.03	0.0	4.95	4.95	4.94	0.1	4.95	4.80	103
BettyP374 Method Blank-1	001F0401.D	001F0402.D	001F0403.D	BETTP348_FGA_CRYO.M	NA	NA	NA	NA	0.0544	0.0544	0.0544	0.0	0.0544	NA	NA
BettyP300 #FG3 ENV(1=374.56,2=391.07)	009F0401.D	009F0402.D	009F0403.D	BETTP348_FGA_CRYO.M	9.03	9.03	9.04	0.0	4.61	4.64	4.66	0.5	4.64	4.80	96.5
BettyP300 #FG3 ENV(1=374.56,2=391.07)	009F1201.D	009F1202.D	009F1203.D	BETTP348_FGA_CRYO.M	9.04	9.04	9.04	0.0	4.55	4.58	4.60	0.6	4.58	4.80	95.2
BettyP300 #FG3 ENV(1=374.56,2=391.07)	009F0802.D	009F0803.D	009F0804.D	BETTP348_FGA_CRYO.M	9.05	9.05	9.05	0.0	4.65	4.61	4.63	0.4	4.63	4.80	96.4
BettyP300 #FG3 ENV(1=374.56,2=391.07)	009F0702.D	009F0703.D	009F0704.D	BETTP348_FGA_CRYO.M	9.06	9.05	9.06	0.0	4.67	4.66	4.63	0.5	4.65	4.80	96.8
BettyP300 #FG3 ENV(1=374.56,2=391.07)	009F1502.D	009F1503.D	009F1504.D	BETTP348_FGA_CRYO.M	9.05	9.06	9.06	0.0	4.67	4.67	4.67	0.1	4.67	4.80	97.2
BettyP300 #FG3 ENV(1=374.56,2=391.07)	009F0202.D	009F0203.D	009F0204.D	BETTP348_FGA_CRYO.M	9.06	9.07	9.07	0.0	4.70	4.73	4.71	0.4	4.72	4.80	98.1
BettyP300 #FG3 ENV(1=374.56,2=391.07)	009F0603.D	009F0604.D	009F0605.D	BETTP348_FGA_CRYO.M	9.07	9.07	9.08	0.1	4.60	4.64	4.66	0.8	4.63	4.80	96.4
BettyP300 #FG3 ENV(1=374.56,2=391.07)	009F0701.D	009F0702.D	009F0703.D	BETTP348_FGA_CRYO.M	9.07	9.07	9.07	0.0	4.64	4.63	4.58	0.8	4.61	4.80	96.0
BettyP300 #FG3 ENV(1=374.56,2=391.07)	009F1501.D	009F1502.D	009F1503.D	BETTP348_FGA_CRYO.M	9.08	9.07	9.07	0.0	4.58	4.54	4.53	0.6	4.55	4.80	94.7
BettyP300 #FG3 ENV(1=374.56,2=391.07)	009F2501.D	009F2502.D	009F2503.D	BETTP348_FGA_CRYO.M	9.07	9.07	9.07	0.0	4.50	4.47	4.55	0.9	4.51	4.80	93.8
BettyP300 #FG3 ENV(1=374.56,2=391.07)	009F0201.D	009F0202.D	009F0203.D	BETTP348_FGA_CRYO.M	9.06	9.06	9.07	0.0	4.70	4.73	4.73	0.4	4.72	4.80	98.2
BettyP300 #FG3 ENV(1=374.56,2=391.07)	009F0701.D	009F0702.D	009F0703.D	BETTP348_FGA_CRYO.M	9.07	9.07	9.07	0.0	4.72	4.71	4.73	0.3	4.72	4.80	98.2
BettyP472 #FG3 ENV(1=374.56,2=391.07)	009F0301.D	009F0302.D	009F0303.D	BETTP348_FGA_CRYO.M	9.00	9.00	9.00	0.0	4.06	4.09	4.08	0.4	4.08	4.15	98.3
BettyP374 Method Blank-1	001F0901.D	001F0902.D	001F0903.D	BETTP348_FGA_CRYO.M					0.00	0.00	0.00		0.00		
BettyP472 #FG3 ENV(1=374.56,2=391.07)	009F1101.D	009F1102.D	009F1103.D	BETTP348_FGA_CRYO.M	9.01	9.01	9.01	0.0	4.10	4.05	4.07	0.6	4.07	4.15	98.2
BettyP472 #FG3 ENV(1=374.56,2=391.07)	009F2001.D	009F2002.D	009F2003.D	BETTP348_FGA_CRYO.M	9.01	9.01	9.01	0.0	4.02	4.04	4.08	0.8	4.05	4.15	97.5
BettyP472 #FG3 ENV(1=374.56,2=391.07)	009F1001.D	009F1002.D	009F1003.D	BETTP348_FGA_CRYO.M	9.01	9.01	9.01	0.0	4.04	4.11	4.09	0.9	4.08	4.15	98.4
BettyP472 #FG3 ENV(1=374.56,2=391.07)	009F0701.D	009F0702.D	009F0703.D	BETTP348_FGA_CRYO.M	8.99	8.99	8.99	0.0	4.02	4.02	4.04	0.4	4.03	4.15	97.0

Calibration Table

Calib. Data Modified : 3/24/2016 9:43:21 AM

Rel. Reference Window : 2.000 %
 Abs. Reference Window : 0.000 min
 Rel. Non-ref. Window : 2.000 %
 Abs. Non-ref. Window : 0.200 min
 Uncalibrated Peaks : not reported
 Partial Calibration : Yes, identified peaks are recalibrated
 Correct All Ret. Times: No, only for identified peaks

Curve Type : Linear
 Origin : Connected
 Weight : Quadratic (Amnt)

Recalibration Settings:
 Average Response : Average all calibrations
 Average Retention Time: Floating Average New 75%

Calibration Report Options :
 Printout of recalibrations within a sequence:
 Calibration Table after Recalibration
 Normal Report after Recalibration
 If the sequence is done with bracketing:
 Results of first cycle (ending previous bracket)

Signal 1: TCD1 A,
 Signal 2: FID2 B,

RetTime	Lvl	Amount	Area	Amt/Area	Ref Grp Name
[min]	Sig	[%]			
2.047	1	5 3.10000e-1	5.38499	5.75674e-2	Hydrogen
		6 7.90000e-1	14.64684	5.39365e-2	
		7 2.76000	51.33442	5.37651e-2	
		8 8.20000	134.78149	6.08392e-2	
	29	28.54000	524.85293	5.43771e-2	
8.969	1	1 5.44000e-1	215.66828	2.52239e-3	Oxygen
		2 1.33000	532.64663	2.49697e-3	
		3 4.81000	1881.28426	2.55676e-3	
		4 10.01000	3778.10091	2.64948e-3	
	23	99.99900	3.74652e4	2.66912e-3	
10.169	1	5 3.80000e-1	185.00033	2.05405e-3	Nitrogen
		6 9.60000e-1	453.97759	2.11464e-3	
		7 3.37000	1545.65592	2.18030e-3	
		8 10.00000	4163.20394	2.40200e-3	
	22	99.90000	4.08941e4	2.44290e-3	
12.591	1	5 3.80000e-1	211.16778	1.79952e-3	Carbon monoxide
		6 9.60000e-1	532.27047	1.80359e-3	
		7 3.37000	1855.44157	1.81628e-3	
		8 10.00000	4982.55648	2.00700e-3	
16.387	1	5 3.10000e-1	153.20321	2.02346e-3	Methane
		6 7.70000e-1	374.54545	2.05583e-3	
		7 2.70000	1267.01778	2.13099e-3	
		8 8.00000	3367.32218	2.37578e-3	
19.573	1	1 5.44000e-1	423.74036	1.28381e-3	Carbon Dioxide
		2 1.33000	1022.49255	1.30074e-3	
		3 4.81000	3525.11686	1.36449e-3	
		4 10.01000	6909.76790	1.44867e-3	

More compound-specific settings:

Compound: Hydrogen

Time Window : From 1.929 min To 2.165 min

Compound: Oxygen

Time Window : From 8.686 min To 9.125 min

Compound: Nitrogen

Time Window : From 9.829 min To 10.369 min

Compound: Carbon monoxide

Time Window : From 11.991 min To 12.741 min

Compound: Methane

Time Window : From 15.969 min To 16.737 min

Compound: Carbon Dioxide

Time Window : From 18.958 min To 19.804 min

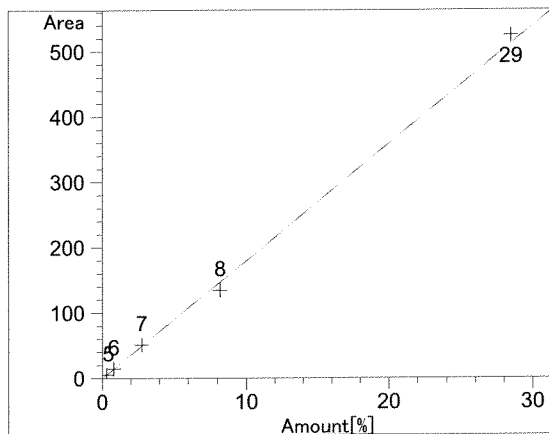
1 Warnings or Errors :

Warning : Cal. table open and changed while report was generated.

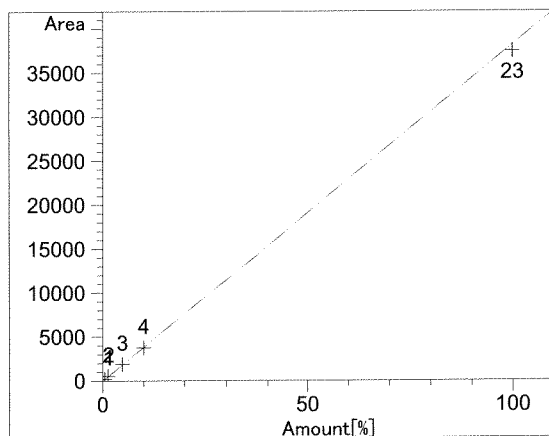
=====
Peak Sum Table
=====

No Entries in table
=====

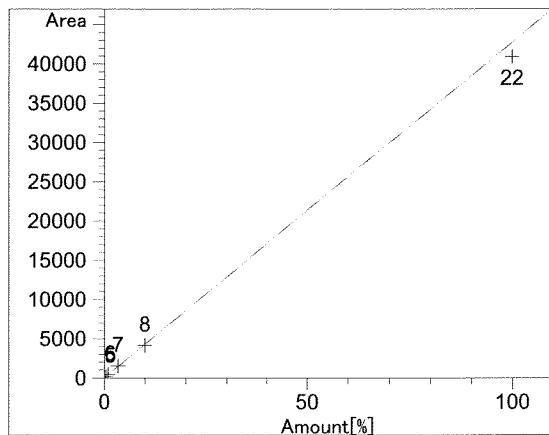
=====
Calibration Curves
=====



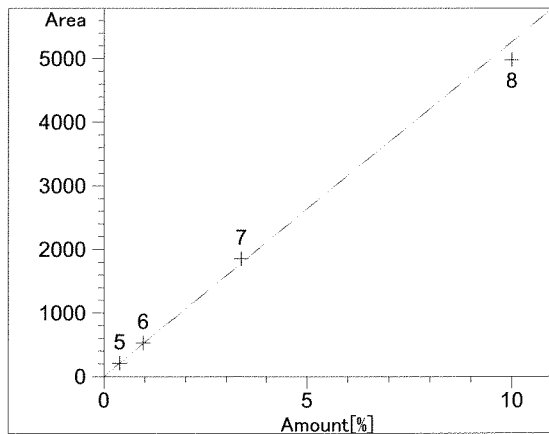
Hydrogen at exp. RT: 2.047
TCD1 A,
Correlation: 0.99816
Residual Std. Dev.: 10.19235
Formula: $y = mx + b$
m: 17.95758
b: $-8.98765e-2$
x: Amount
y: Area
Calibration Level Weights:
Level 5 : 1
Level 6 : 0.153982
Level 7 : 0.012616
Level 8 : 0.001429
Level 29 : 0.000118



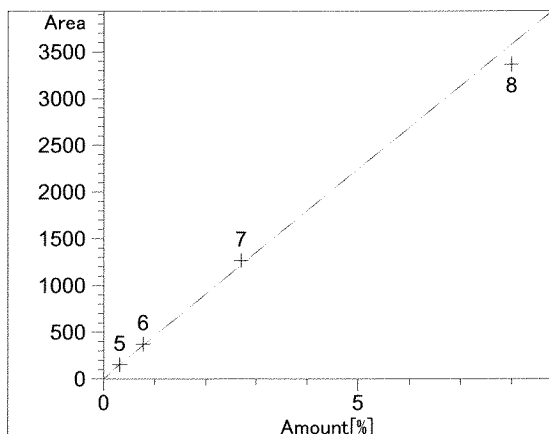
Oxygen at exp. RT: 8.969
TCD1 A,
Correlation: 0.99968
Residual Std. Dev.: 426.21037
Formula: $y = mx + b$
m: 381.90247
b: 10.53345
x: Amount
y: Area
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.167299
Level 3 : 0.012791
Level 4 : 0.002953
Level 23 : 0.00003



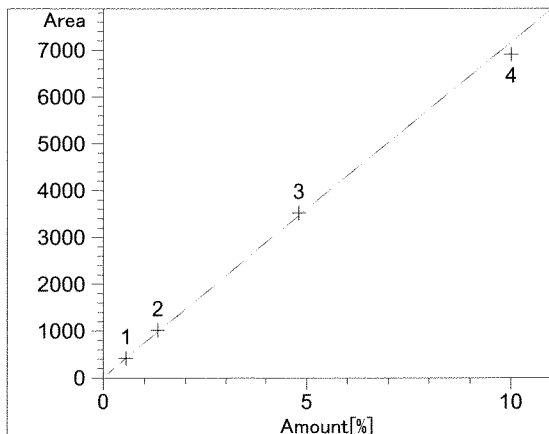
Nitrogen at exp. RT: 10.169
 TCD1 A,
 Correlation: 0.99861
 Residual Std. Dev.: 1069.57781
 Formula: $y = mx + b$
 m: 427.56420
 b: 26.03866
 x: Amount
 y: Area
 Calibration Level Weights:
 Level 5 : 1
 Level 6 : 0.156684
 Level 7 : 0.012715
 Level 8 : 0.001444
 Level 22 : 0.000014



Carbon monoxide at exp. RT: 12.591
 TCD1 A,
 Correlation: 0.99861
 Residual Std. Dev.: 207.59836
 Formula: $y = mx + b$
 m: 525.28704
 b: 14.21056
 x: Amount
 y: Area
 Calibration Level Weights:
 Level 5 : 1
 Level 6 : 0.156684
 Level 7 : 0.012715
 Level 8 : 0.001444



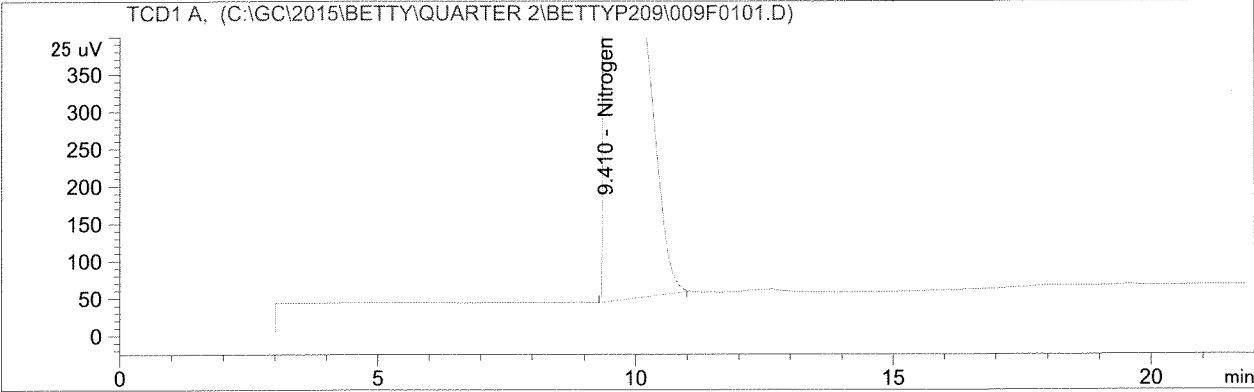
Methane at exp. RT: 16.387
 TCD1 A,
 Correlation: 0.99818
 Residual Std. Dev.: 156.06275
 Formula: $y = mx + b$
 m: 445.63688
 b: 17.58213
 x: Amount
 y: Area
 Calibration Level Weights:
 Level 5 : 1
 Level 6 : 0.162085
 Level 7 : 0.013182
 Level 8 : 0.001502



Carbon Dioxide at exp. RT: 19.573
 TCD1 A,
 Correlation: 0.99919
 Residual Std. Dev.: 193.00669
 Formula: $y = mx + b$
 m: 712.61305
 b: 41.55839
 x: Amount
 y: Area
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.167299
 Level 3 : 0.012791
 Level 4 : 0.002953

=====

Acq. Operator	: Chester Burnett	Seq. Line	: 1
Acq. Instrument	: Betty	Location	: Vial 9
Injection Date	: 6/24/2015 10:01:37 AM	Inj	: 1
		Inj Volume	: 250 µl
Acq. Method	: C:\GC\2015\BETTY\QUARTER 2\BETTY209\BETTY017_CAL.M		
Last changed	: 6/30/2014 5:46:14 PM by Thorne Gregory		
Analysis Method	: C:\GC\2015\BETTY\METHODS\BETTY209_FGA_CRYO.M		
Last changed	: 3/24/2016 9:25:02 AM by Nicholas Traversa		
ECM Server	: http://ecm-server/enthalpy		
ECM Operator	: Nicholas Traversa		
ECM Path	: GC\2015\Betty\Quarter 2\BETTY209.SC.SSIzip		
ECM Version	: 15 (modified after loading)		



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External Standard Report

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Sorted By : Signal
Calib. Data Modified : 3/24/2016 9:24:48 AM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: TCD1 A,

RetTime [min]	Type	Area [25 uV*s]	Amt/Area	Amount [%]	Grp	Name
2.047	-	-	-	-	-	Hydrogen
8.969	-	-	-	-	-	Oxygen
9.410	BB	4.06542e4	2.33733e-3	95.02229	-	Nitrogen
12.591	-	-	-	-	-	Carbon monoxide
16.387	-	-	-	-	-	Methane
19.573	-	-	-	-	-	Carbon Dioxide
Totals :				95.02229		

2 Warnings or Errors :

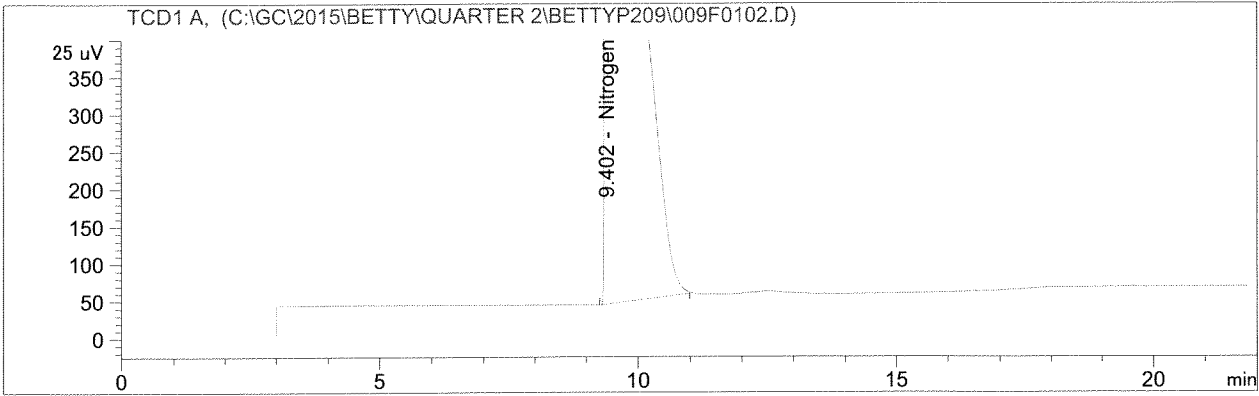
Warning : Calibration warnings (see calibration table listing)
Warning : Calibrated compound(s) not found

=====

*** End of Report ***

=====

Acq. Operator	: Chester Burnett	Seq. Line	: 1
Acq. Instrument	: Betty	Location	: Vial 9
Injection Date	: 6/24/2015 10:31:36 AM	Inj	: 2
		Inj Volume	: 250 µl
Acq. Method	: C:\GC\2015\BETTY\QUARTER 2\BETTYP209\BETTYP017_CAL.M		
Last changed	: 6/30/2014 5:46:14 PM by Thorne Gregory		
Analysis Method	: C:\GC\2015\BETTY\METHODS\BETTYP209_FGA_CRYO.M		
Last changed	: 3/24/2016 9:25:02 AM by Nicholas Traversa		
ECM Server	: http://ecm-server/enthalpy		
ECM Operator	: Nicholas Traversa		
ECM Path	: GC\2015\Betty\Quarter 2\BETTYP209.SC.SSIzip		
ECM Version	: 15 (modified after loading)		



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External Standard Report

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Sorted By : Signal
Calib. Data Modified : 3/24/2016 9:24:48 AM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: TCD1 A,

RetTime [min]	Type	Area [25 uV*s]	Amt/Area	Amount [%]	Grp	Name
2.047		-	-	-		Hydrogen
8.969		-	-	-		Oxygen
9.402	BB	4.10650e4	2.33735e-3	95.98314		Nitrogen
12.591		-	-	-		Carbon monoxide
16.387		-	-	-		Methane
19.573		-	-	-		Carbon Dioxide

Totals : 95.98314

2 Warnings or Errors :

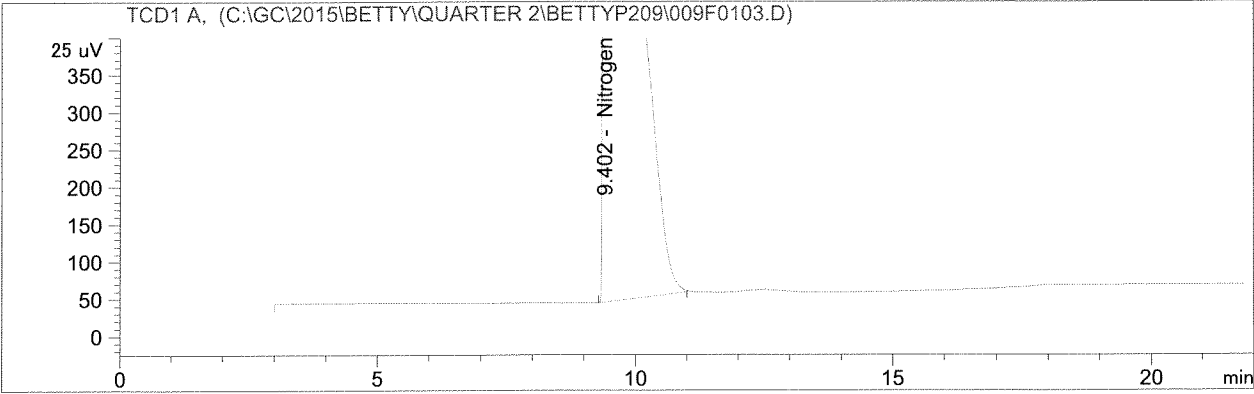
Warning : Calibration warnings (see calibration table listing)
Warning : Calibrated compound(s) not found

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*** End of Report ***

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Acq. Operator	: Chester Burnett	Seq. Line	: 1
Acq. Instrument	: Betty	Location	: Vial 9
Injection Date	: 6/24/2015 11:01:25 AM	Inj	: 3
		Inj Volume	: 250 µl
Acq. Method	: C:\GC\2015\BETTY\QUARTER 2\BETTYP209\BETTYP017_CAL.M		
Last changed	: 6/30/2014 5:46:14 PM by Thorne Gregory		
Analysis Method	: C:\GC\2015\BETTY\METHODS\BETTYP209_FGA_CRYO.M		
Last changed	: 3/24/2016 9:25:02 AM by Nicholas Traversa		
ECM Server	: http://ecm-server/enthalpy		
ECM Operator	: Nicholas Traversa		
ECM Path	: GC\2015\Betty\Quarter 2\BETTYP209.SC.SSIzip		
ECM Version	: 15 (modified after loading)		



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External Standard Report

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Sorted By : Signal
Calib. Data Modified : 3/24/2016 9:24:48 AM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: TCD1 A,

RetTime [min]	Type	Area [25 uV*s]	Amt/Area	Amount [%]	Grp	Name
2.047		-	-	-		Hydrogen
8.969		-	-	-		Oxygen
9.402	BB	4.09631e4	2.33734e-3	95.74482		Nitrogen
12.591		-	-	-		Carbon monoxide
16.387		-	-	-		Methane
19.573		-	-	-		Carbon Dioxide

Totals : 95.74482

2 Warnings or Errors :

Warning : Calibration warnings (see calibration table listing)
Warning : Calibrated compound(s) not found

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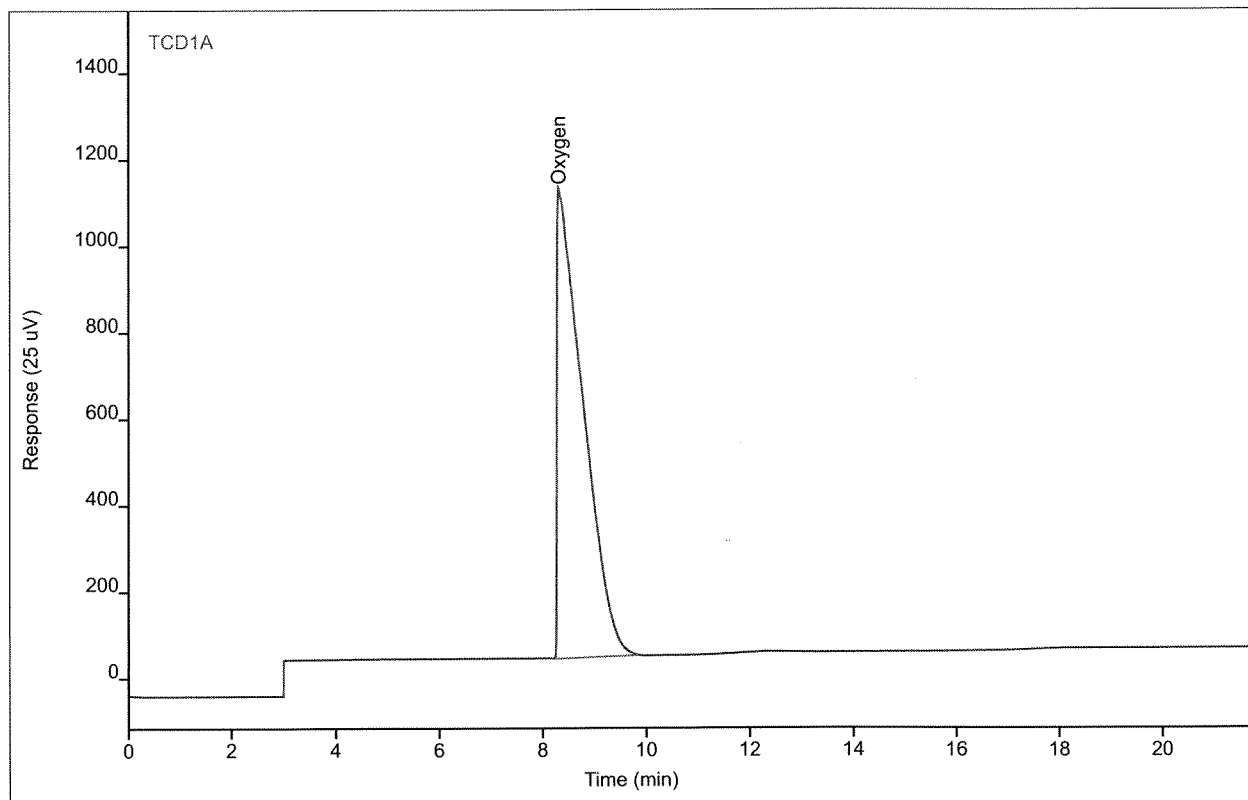
*** End of Report ***

Chromatogram Report

Enthalpy Analytical

Sample Name O2 99.999% #FG23
Sequence Name BETTYP209 ver.15
Data File 016F0301.D
File Location GC/2015/Betty/Quarter 2
Injection Date 6/24/2015 11:28 AM
File Modified 7/23/2015 12:11 PM
Instrument Betty
Operator Chester Burnett

Sample Type Calibration
Vial Number Vial 16
Injection Volume 250
Injection 1 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP209_FGA_CRYO.M
Method Modified 7/23/2015 12:10 PM
Printed 7/23/2015 12:47 PM



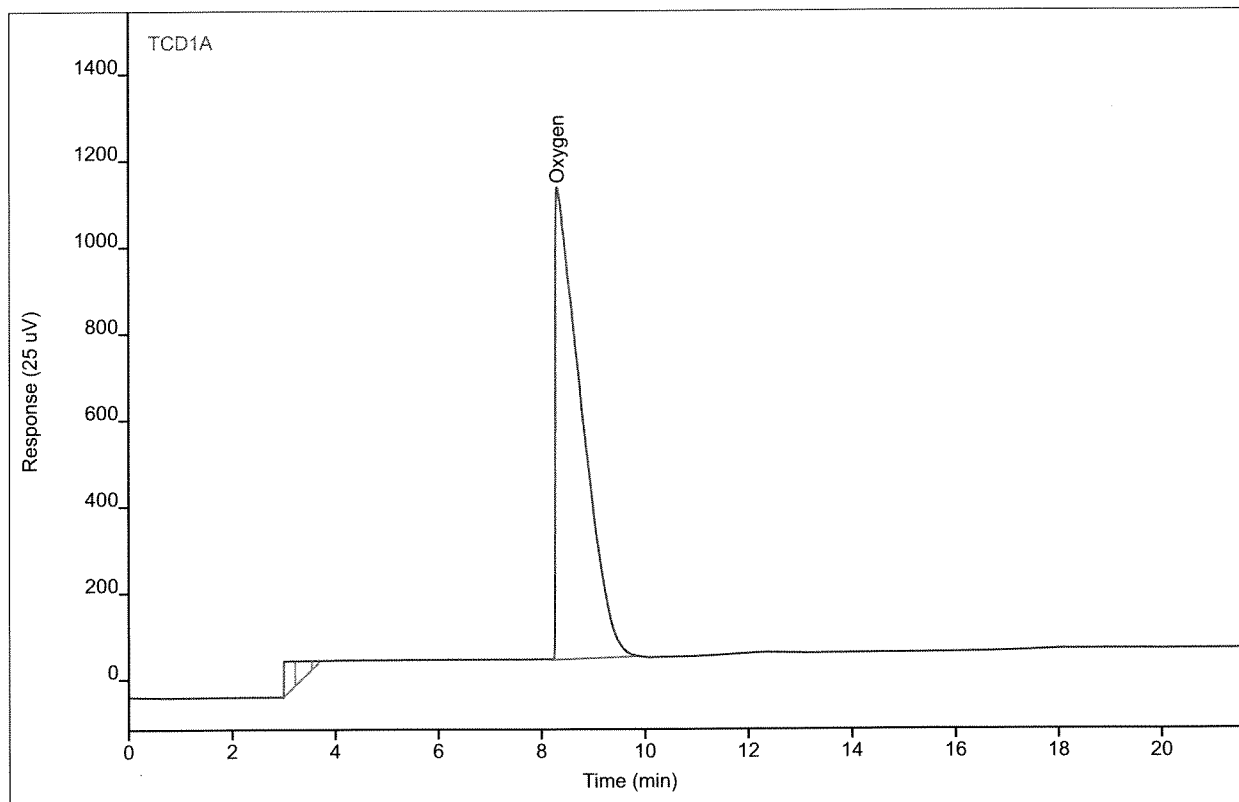
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(2.07)				1		
Oxygen	BB	8.33	37554.3	1087.29	98.3071	1	98.3071	%
Nitrogen		(9.41)				1		
Carbon monoxide		(12.66)				1		
Methane		(16.47)				1		
Carbon Dioxide		(19.57)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name O2 99.999% #FG23
Sequence Name BETTYP209 ver.15
Data File 016F0302.D
File Location GC/2015/Betty/Quarter 2
Injection Date 6/24/2015 11:56 AM
File Modified 7/23/2015 12:11 PM
Instrument Betty
Operator Chester Burnett

Sample Type Calibration
Vial Number Vial 16
Injection Volume 250
Injection 2 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP209_FGA_CRYO.M
Method Modified 7/23/2015 12:10 PM
Printed 7/23/2015 12:47 PM



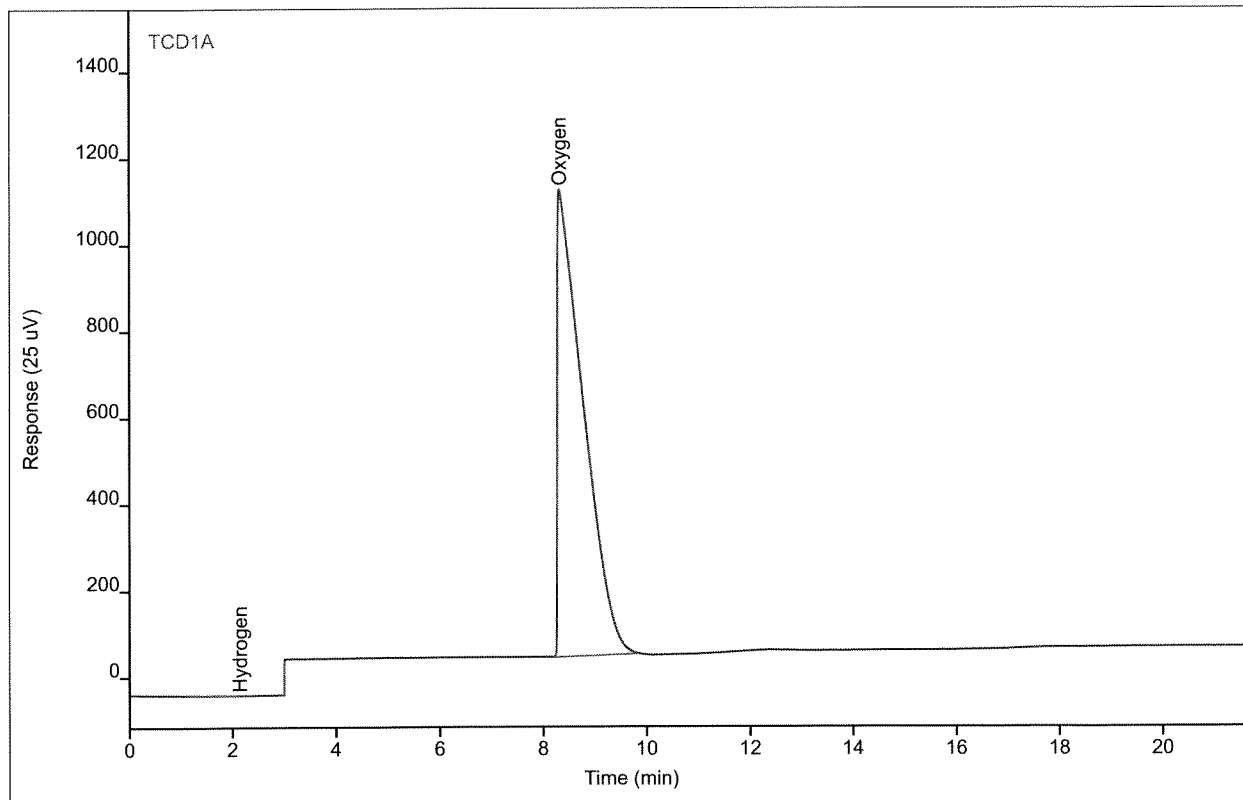
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
?	VV	3.51	771.074	25.0036	-	1		
?	VB	3.59	103.631	16.1120		1		
?	BV	3.20	928.600	60.9281		1		
Hydrogen		(2.07)				1		
Oxygen	BB	8.33	37575.0	1091.96	98.3614	1	98.3614	%
Nitrogen		(9.41)				1		
Carbon monoxide		(12.66)				1		
Methane		(16.47)				1		
Carbon Dioxide		(19.57)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name O2 99.999% #FG23
Sequence Name BETTYP209 ver.15
Data File 016F0303.D
File Location GC/2015/Betty/Quarter 2
Injection Date 6/24/2015 12:23 PM
File Modified 7/23/2015 12:11 PM
Instrument Betty
Operator Chester Burnett

Sample Type Calibration
Vial Number Vial 16
Injection Volume 250
Injection 3 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP209_FGA_CRYO.M
Method Modified 7/23/2015 12:10 PM
Printed 7/23/2015 12:47 PM



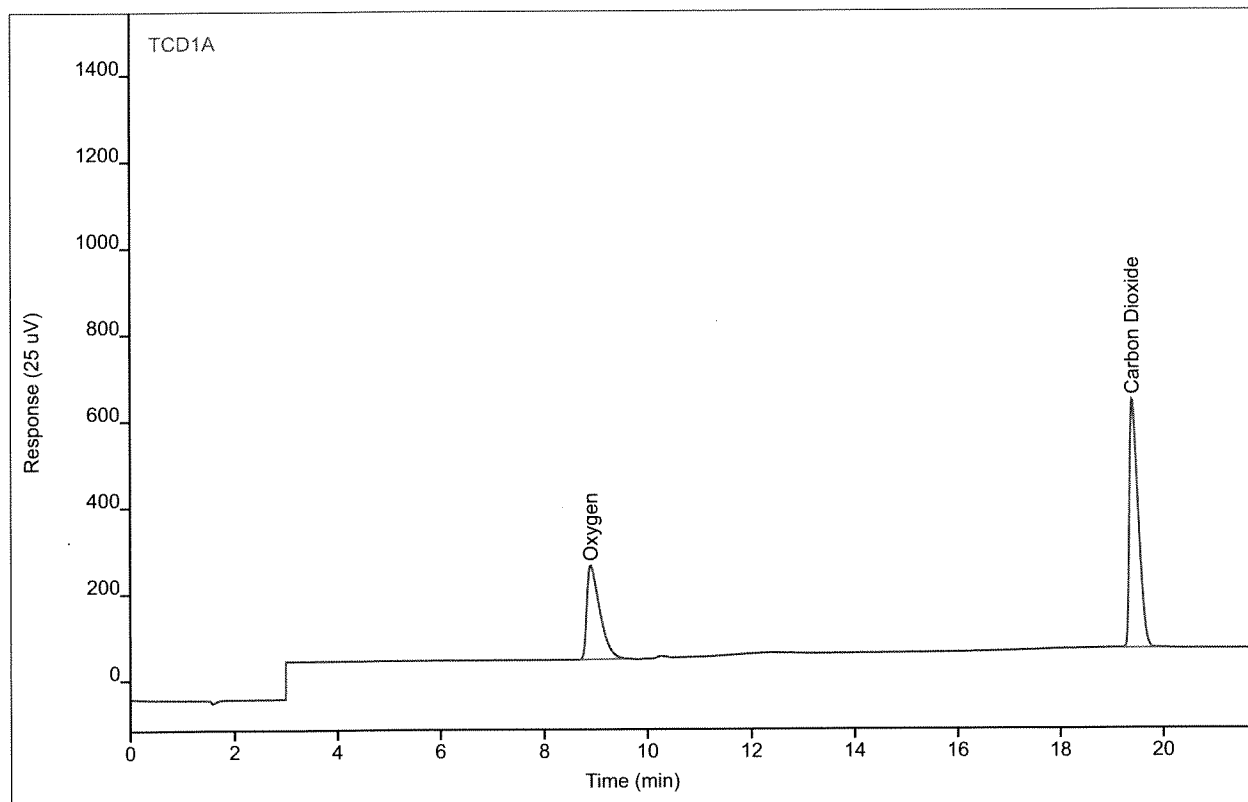
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
?	BV	1.44	35.8647	1.00630		1		
Hydrogen	VB	2.14	2.56380	0.30871	0.18578	1	0.18578	%
Oxygen	BB	8.33	37266.3	1080.49	97.5530	1	97.5530	%
Nitrogen		(9.41)				1		
Carbon monoxide		(12.66)				1		
Methane		(16.47)				1		
Carbon Dioxide		(19.57)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP070 #FG4 ENV(1=0,2=358.99)
Sequence Name BETTYP209 ver.15
Data File 009F0401.D
File Location GC/2015/Betty/Quarter 2
Injection Date 6/24/2015 12:53 PM
File Modified 7/23/2015 11:29 AM
Instrument Betty
Operator Chester Burnett

Sample Type
Vial Number
Injection Volume
Injection
Acquisition Method
Analysis Method
Method Modified
Printed
Calibration
Vial 9
250
1 of 3
BETTYP017_CAL.M
BETTYP209_FGA_CRYO.M
7/23/2015 12:10 PM
7/23/2015 12:47 PM



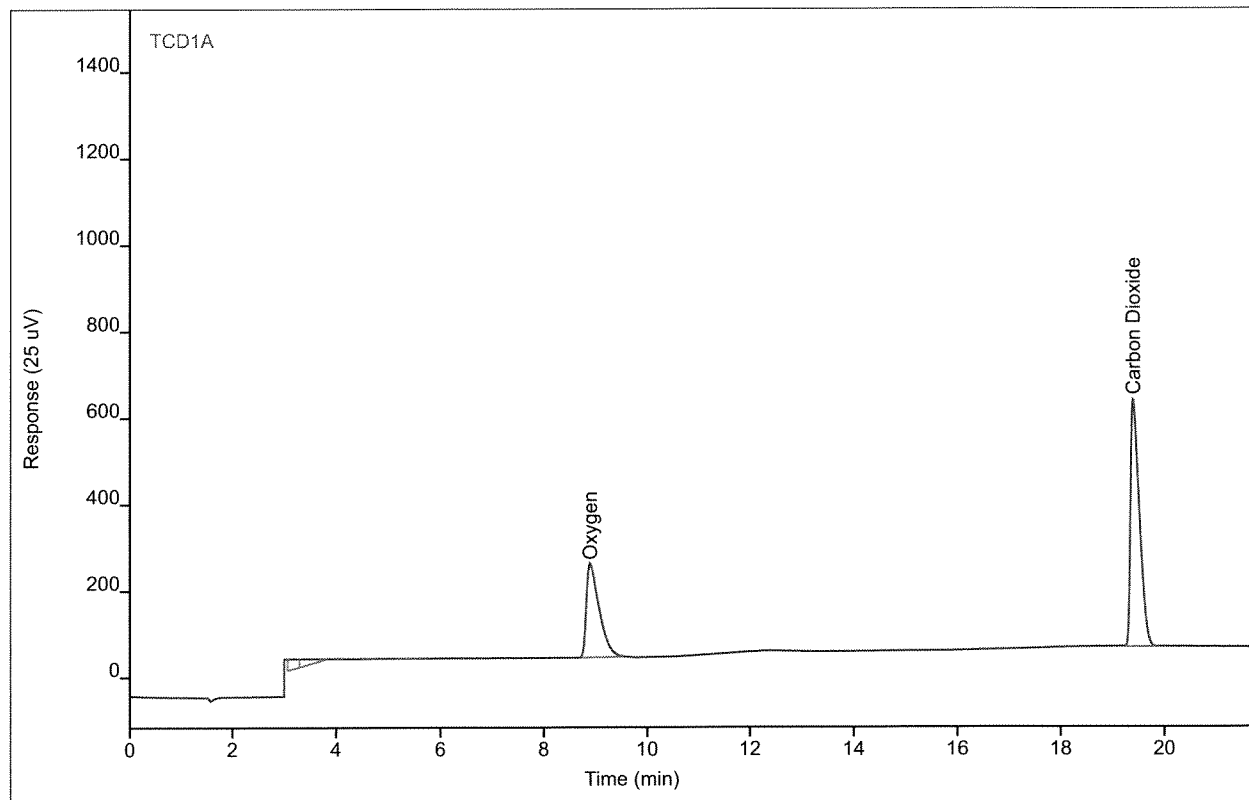
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(2.12)				1		
Oxygen	BB	8.90	3794.10	218.358	9.90714	1	9.90714	%
Nitrogen		(10.32)				1		
Carbon monoxide		(12.66)				1		
Methane		(16.47)				1		
Carbon Dioxide	MM	19.41	6917.48	576.146	9.65631	1	9.65631	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP070 #FG4 ENV(1=0,2=358.99)
Sequence Name BETTYP209 ver.15
Data File 009F0402.D
File Location GC/2015/Betty/Quarter 2
Injection Date 6/24/2015 1:23 PM
File Modified 7/23/2015 11:29 AM
Instrument Betty
Operator Chester Burnett

Sample Type
Vial Number
Injection Volume
Injection
Acquisition Method
Analysis Method
Method Modified
Printed
Calibration
Vial 9
250
2 of 3
BETTYP017_CAL.M
BETTYP209_FGA_CRYO.M
7/23/2015 12:10 PM
7/23/2015 12:47 PM



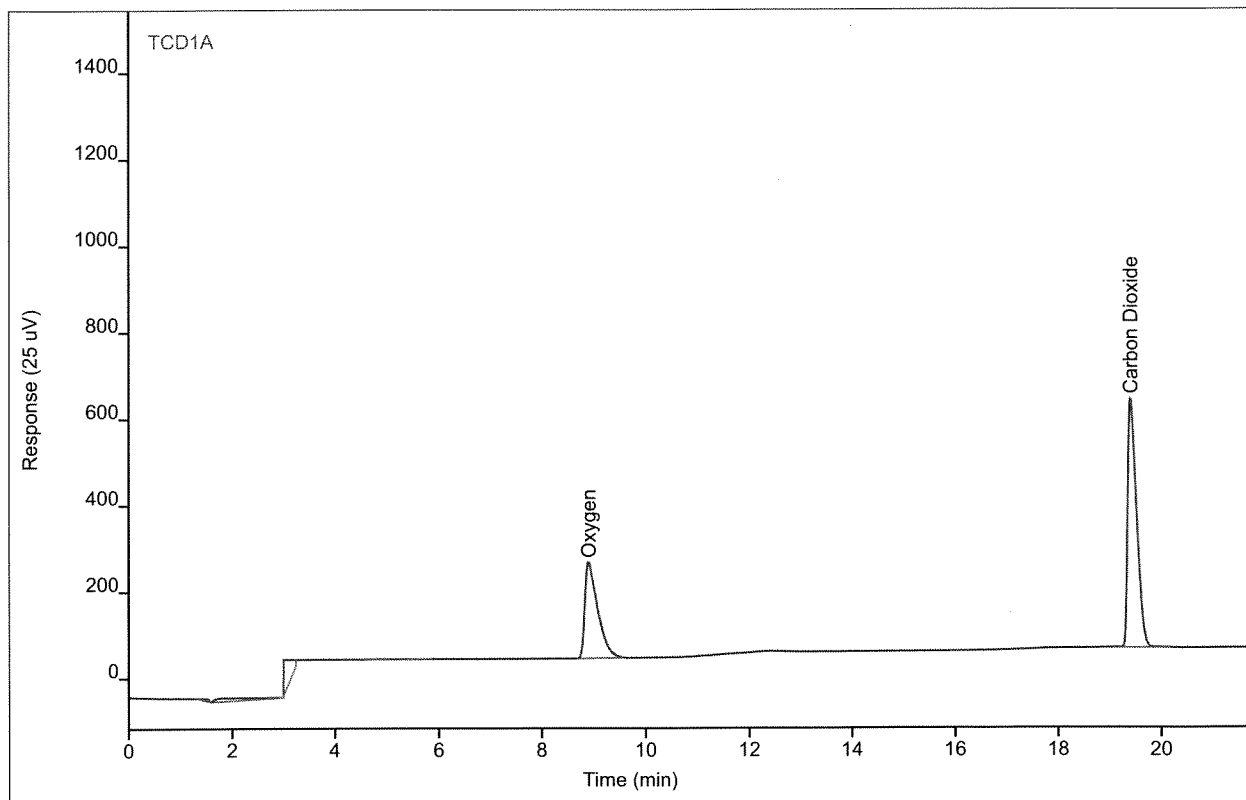
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
?	BV	4.74	4.04918	0.40809		1		
?	BV	4.10	1.30274	0.27732		1		
?	BV	3.23	332.033	22.6362		1		
?	VV	5.53	1.69649	0.24561		1		
?	BV	5.24	2.99967	0.39018		1		
?	VB	5.63	1.11602	0.26381		1		
?	VB	3.45	322.496	15.1499		1		
?	BB	3.74	28.3920	4.98907		1		
Hydrogen		(2.12)				1		
Oxygen	BB	8.91	3749.89	216.664	9.79139	1	9.79139	%
Nitrogen		(10.32)				1		
Carbon monoxide		(12.66)				1		
Methane		(16.47)				1		
Carbon Dioxide	MM	19.41	6854.54	573.042	9.56788	1	9.56788	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP070 #FG4 ENV(1=0,2=358.99)
 Sequence Name BETTYP209 ver.15
 Data File 009F0403.D
 File Location GC/2015/Betty/Quarter 2
 Injection Date 6/24/2015 1:52 PM
 File Modified 7/23/2015 11:29 AM
 Instrument Betty
 Operator Chester Burnett

Sample Type Calibration
 Vial Number Vial 9
 Injection Volume 250
 Injection 3 of 3
 Acquisition Method BETTYP017_CAL.M
 Analysis Method BETTYP209_FGA_CRYO.M
 Method Modified 7/23/2015 12:10 PM
 Printed 7/23/2015 12:47 PM



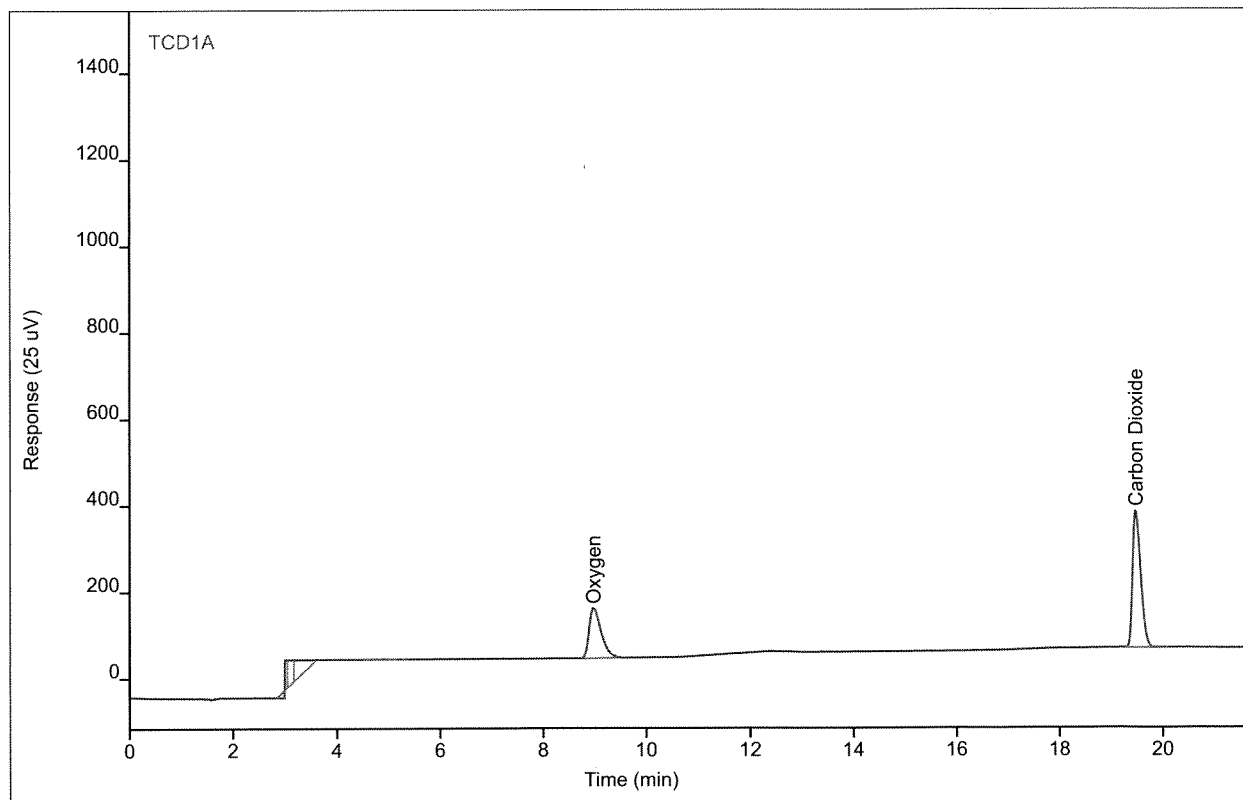
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
?	BV	5.59	1.76345	0.28809		1		
?	BB	5.30	1.09445	0.26829		1		
?	VB	5.73	1.08640	0.35516		1		
?	BV	1.48	66.5766	6.47789		1		
?	BV	4.77	4.11549	0.40070		1		
?	VV	2.47	403.496	4.35509		1		
?	VB	3.07	725.880	64.1523		1		
?	VB	4.90	2.13294	0.36700		1		
Hydrogen		(2.12)				1		
Oxygen	BB	8.91	3790.32	223.265	9.89725	1	9.89725	%
Nitrogen		(10.32)				1		
Carbon monoxide		(12.66)				1		
Methane		(16.47)				1		
Carbon Dioxide	MM	19.41	6957.29	577.325	9.71225	1	9.71225	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP070 #FG3 ENV(1=374.56,2=391.18)
 Sequence Name BETTYP209 ver.15
 Data File 009F0501.D
 File Location GC/2015/Betty/Quarter 2
 Injection Date 6/24/2015 2:22 PM
 File Modified 7/23/2015 11:29 AM
 Instrument Betty
 Operator Chester Burnett

Sample Type
 Vial Number
 Injection Volume
 Injection
 Acquisition Method
 Analysis Method
 Method Modified
 Printed
 Calibration
 Vial 9
 250
 1 of 3
 BETTYP017_CAL.M
 BETTYP209_FGA_CRYO.M
 7/23/2015 12:10 PM
 7/23/2015 12:47 PM



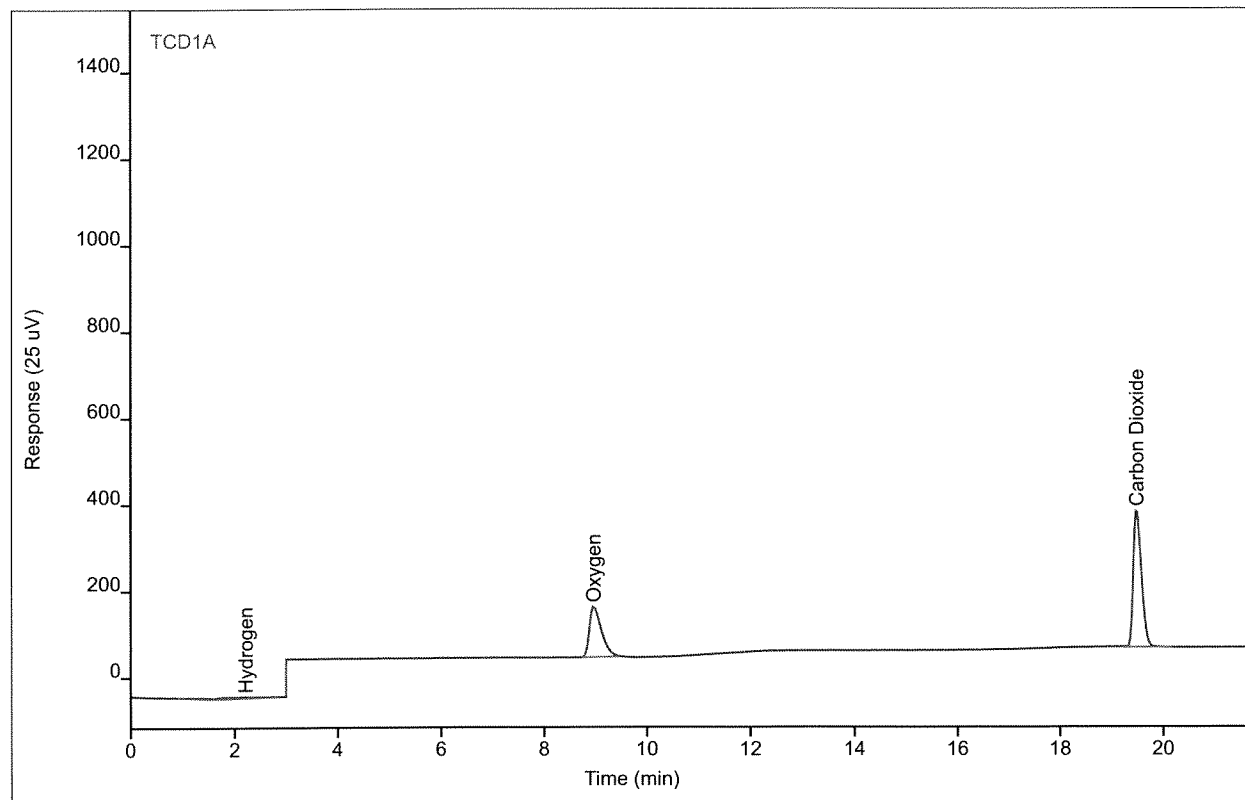
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
?	BV	3.02	119.761	70.5758		1		
?	VV	4.72	4.83026	0.62773		1		
?	BB	5.05	4.73888	0.46953		1		
?	VB	3.29	671.787	37.7567		1		
?	VV	3.12	439.998	57.6324		1		
?	VB	4.84	1.76323	0.45602		1		
?	BV	4.60	1.15390	0.35488		1		
?	BB	5.31	1.09147	0.22290		1		
Hydrogen		(2.12)				1		
Oxygen	BB	8.97	1886.74	116.525	4.91280	1	4.91280	%
Nitrogen		(10.32)				1		
Carbon monoxide		(12.66)				1		
Methane		(16.47)				1		
Carbon Dioxide	MM	19.48	3534.71	317.187	4.90362	1	4.90362	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP070 #FG3 ENV(1=374.56,2=391.18)
 Sequence Name BETTYP209 ver.15
 Data File 009F0502.D
 File Location GC/2015/Betty/Quarter 2
 Injection Date 6/24/2015 2:52 PM
 File Modified 7/23/2015 11:29 AM
 Instrument Betty
 Operator Chester Burnett

Sample Type
 Vial Number
 Injection Volume
 Injection
 Acquisition Method
 Analysis Method
 Method Modified
 Printed
 Calibration
 Vial 9
 250
 2 of 3
 BETTYP017_CAL.M
 BETTYP209_FGA_CRYO.M
 7/23/2015 12:10 PM
 7/23/2015 12:47 PM



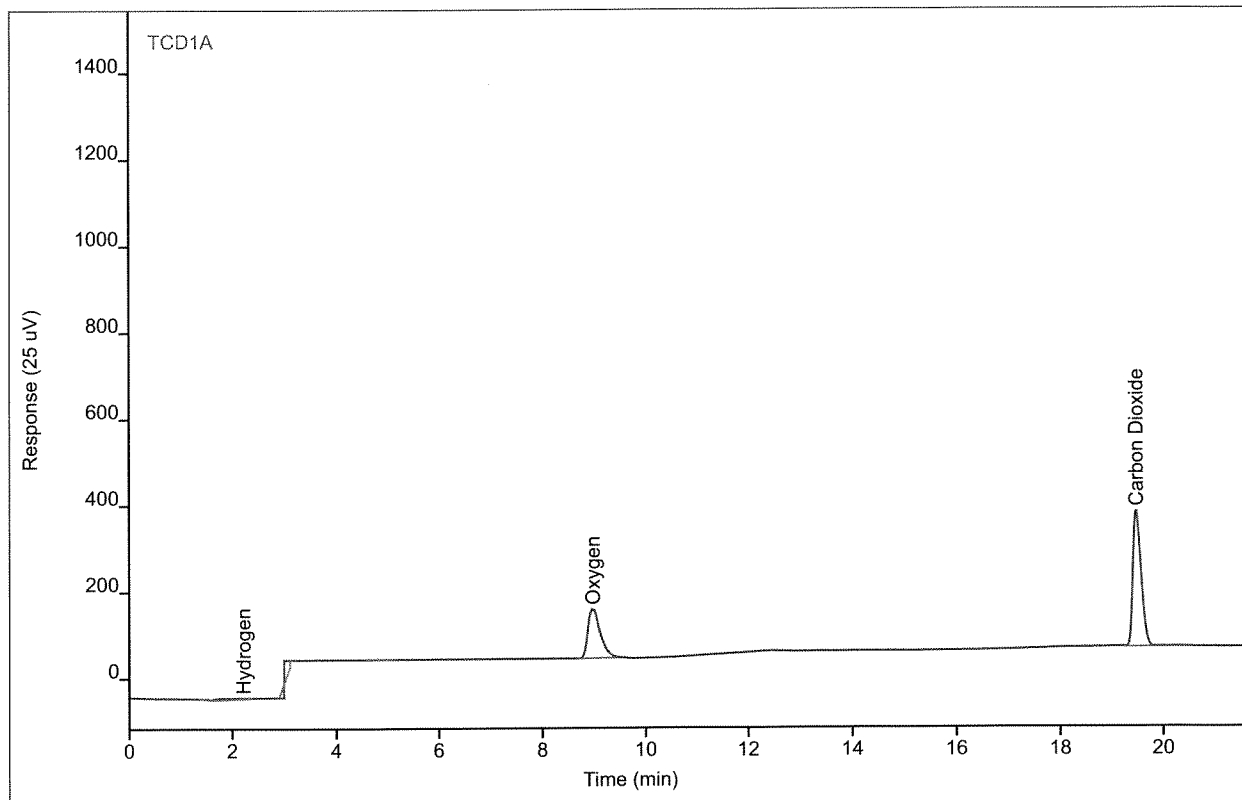
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
?	VV	1.50	87.2012	4.63347		1		
?	BV	1.11	33.1340	2.56250		1		
Hydrogen	VV	2.22	180.488	2.86920	11.9571	1	11.9571	%
Oxygen	BB	8.97	1879.79	116.870	4.89460	1	4.89460	%
Nitrogen		(10.32)				1		
Carbon monoxide		(12.66)				1		
Methane		(16.47)				1		
Carbon Dioxide	MM	19.48	3520.38	316.168	4.88348	1	4.88348	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP070 #FG3 ENV(1=374.56,2=391.18)
Sequence Name BETTYP209 ver.15
Data File 009F0503.D
File Location GC/2015/Betty/Quarter 2
Injection Date 6/24/2015 3:22 PM
File Modified 7/23/2015 11:30 AM
Instrument Betty
Operator Chester Burnett

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 3 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP209_FGA_CRYO.M
Method Modified 7/23/2015 12:10 PM
Printed 7/23/2015 12:47 PM



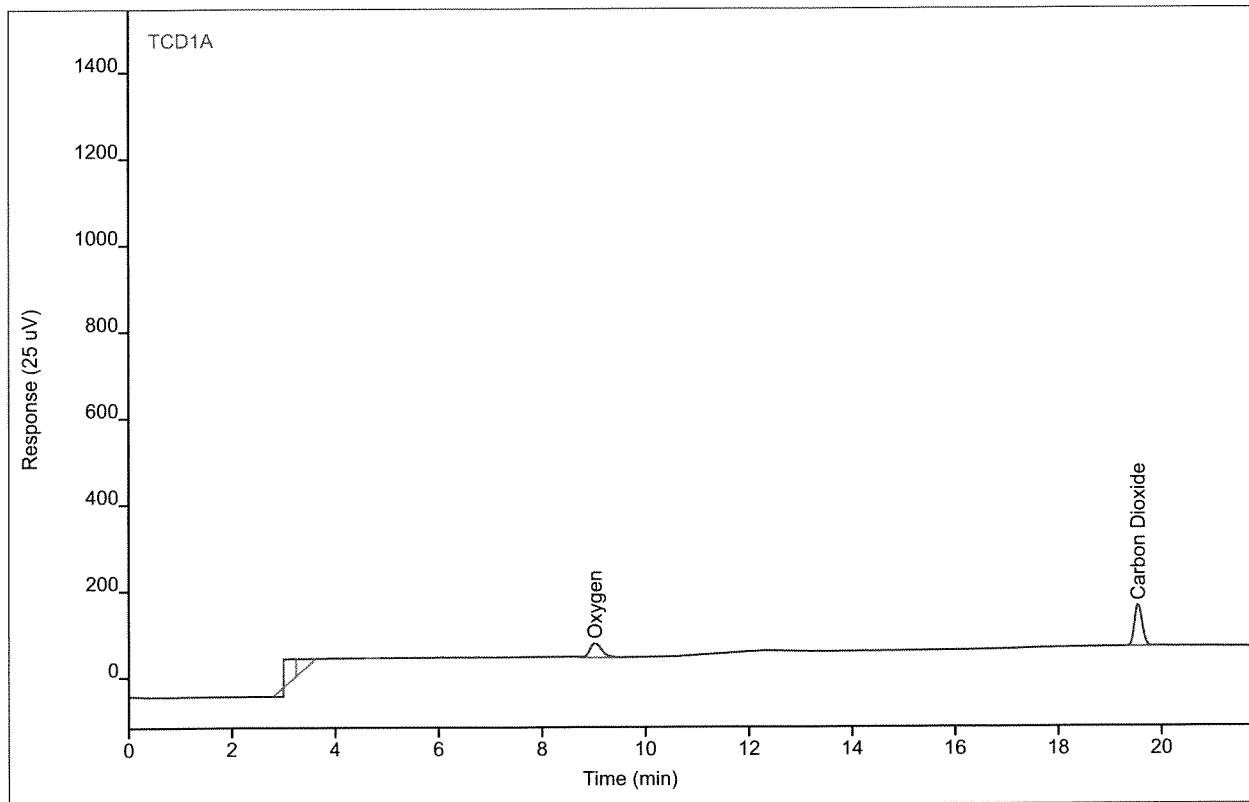
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
?	VV	4.90	3.31082	0.43548		1		
?	BV	1.46	29.2454	2.75103		1		
?	VB	5.02	2.90801	0.32670		1		
?	BB	3.02	154.023	50.7444		1		
?	VV	4.69	4.26213	0.46804		1		
Hydrogen	VV	2.23	135.263	2.45799	8.96517	1	8.96517	%
Oxygen	BB	8.99	1877.32	114.333	4.88811	1	4.88811	%
Nitrogen		(10.32)				1		
Carbon monoxide		(12.66)				1		
Methane		(16.47)				1		
Carbon Dioxide	MM	19.48	3520.26	315.360	4.88331	1	4.88331	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP070 #FG2 ENV(1=1272.08,2=219.94)
 Sequence Name BETTYP209 ver.15
 Data File 009F0601.D
 File Location GC/2015/Betty/Quarter 2
 Injection Date 6/24/2015 3:52 PM
 File Modified 7/23/2015 11:30 AM
 Instrument Betty
 Operator Chester Burnett

Sample Type Calibration
 Vial Number Vial 9
 Injection Volume 250
 Injection 1 of 3
 Acquisition Method BETTYP017_CAL.M
 Analysis Method BETTYP209_FGA_CRYO.M
 Method Modified 7/23/2015 12:10 PM
 Printed 7/23/2015 12:47 PM



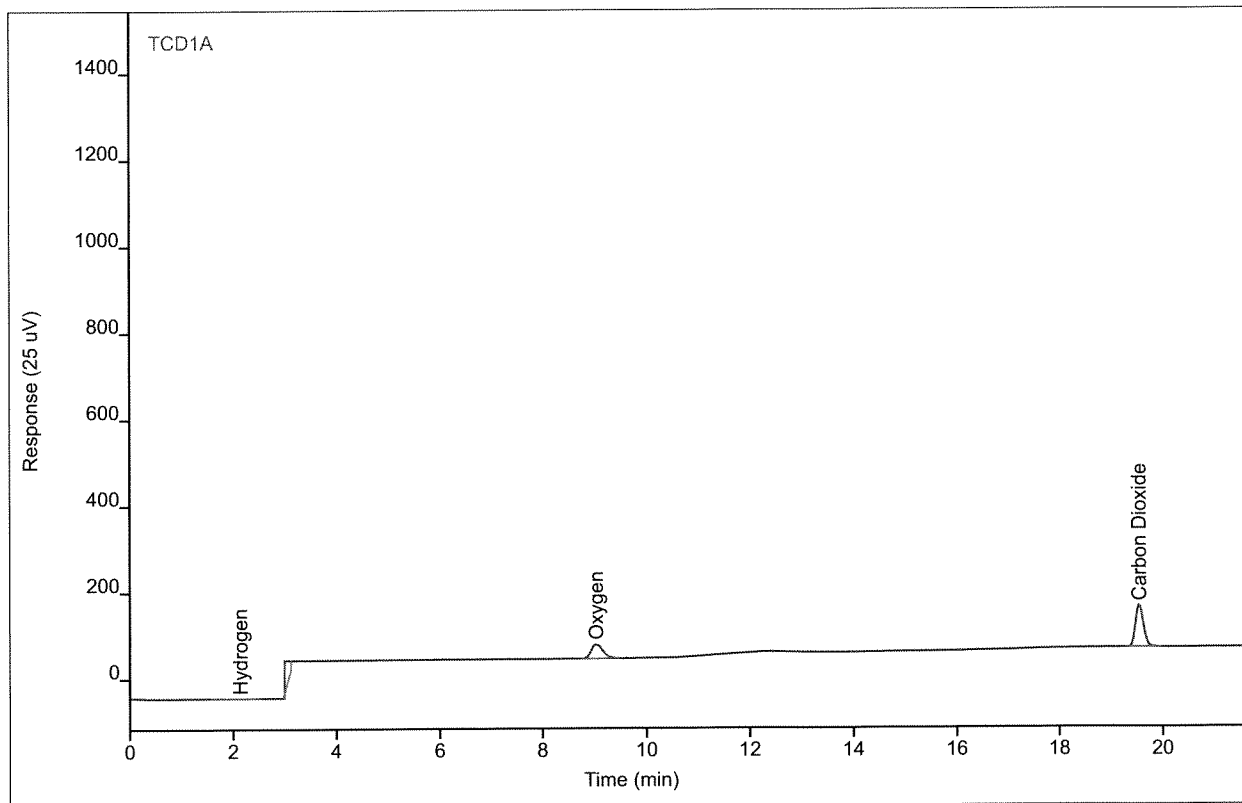
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
?	VB	3.36	480.188	29.2607		1		
?	BB	4.72	2.62776	0.42083		1		
?	BV	3.02	643.563	65.7392		1		
Hydrogen		(2.12)				1		
Oxygen	BB	9.03	529.673	33.9172	1.35935	1	1.35935	%
Nitrogen		(10.32)				1		
Carbon monoxide		(12.66)				1		
Methane		(16.47)				1		
Carbon Dioxide	MM	19.55	1015.25	96.0081	1.36384	1	1.36384	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP070 #FG2 ENV(1=1272.08,2=219.94)
 Sequence Name BETTYP209 ver.15
 Data File 009F0602.D
 File Location GC/2015/Betty/Quarter 2
 Injection Date 6/24/2015 4:21 PM
 File Modified 7/23/2015 11:30 AM
 Instrument Betty
 Operator Chester Burnett

Sample Type
 Vial Number
 Injection Volume
 Injection
 Acquisition Method
 Analysis Method
 Method Modified
 Printed
 Calibration
 Vial 9
 250
 2 of 3
 BETTYP017_CAL.M
 BETTYP209_FGA_CRYO.M
 7/23/2015 12:10 PM
 7/23/2015 12:47 PM



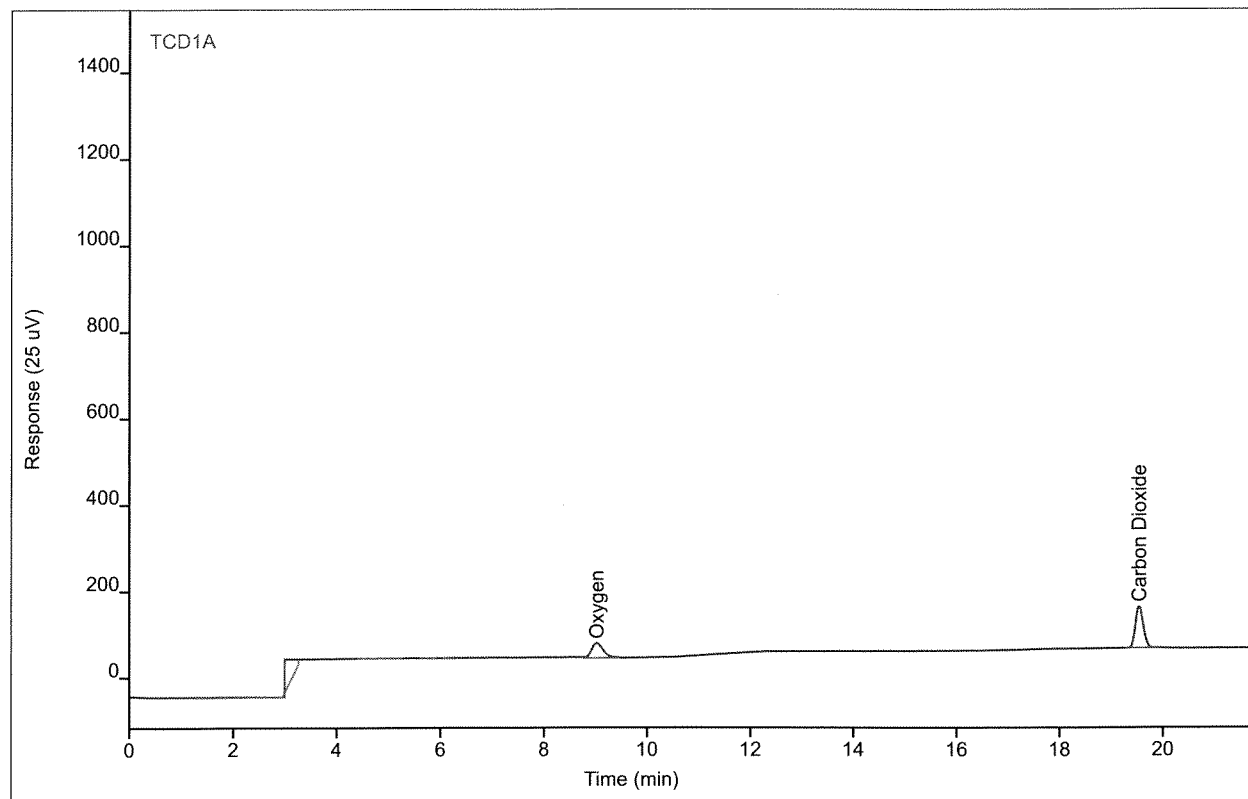
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
?	VB	2.43	1.90608	0.28758		1		
?	VV	2.26	2.81387	0.41121		1		
?	BB	3.02	365.282	71.3322		1		
Hydrogen	BV	2.14	12.6786	0.60943	0.85551	1	0.85551	%
Oxygen	BB	9.03	532.716	34.0263	1.36732	1	1.36732	%
Nitrogen		(10.32)				1		
Carbon monoxide		(12.66)				1		
Methane		(16.47)				1		
Carbon Dioxide	MM	19.55	1027.99	96.6383	1.38175	1	1.38175	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP070 #FG2 ENV(1=1272.08,2=219.94)
 Sequence Name BETTYP209 ver.15
 Data File 009F0603.D
 File Location GC/2015/Betty/Quarter 2
 Injection Date 6/24/2015 4:51 PM
 File Modified 7/23/2015 11:30 AM
 Instrument Betty
 Operator Chester Burnett

Sample Type Calibration
 Vial Number Vial 9
 Injection Volume 250
 Injection 3 of 3
 Acquisition Method BETTYP017_CAL.M
 Analysis Method BETTYP209_FGA_CRYO.M
 Method Modified 7/23/2015 12:10 PM
 Printed 7/23/2015 12:47 PM



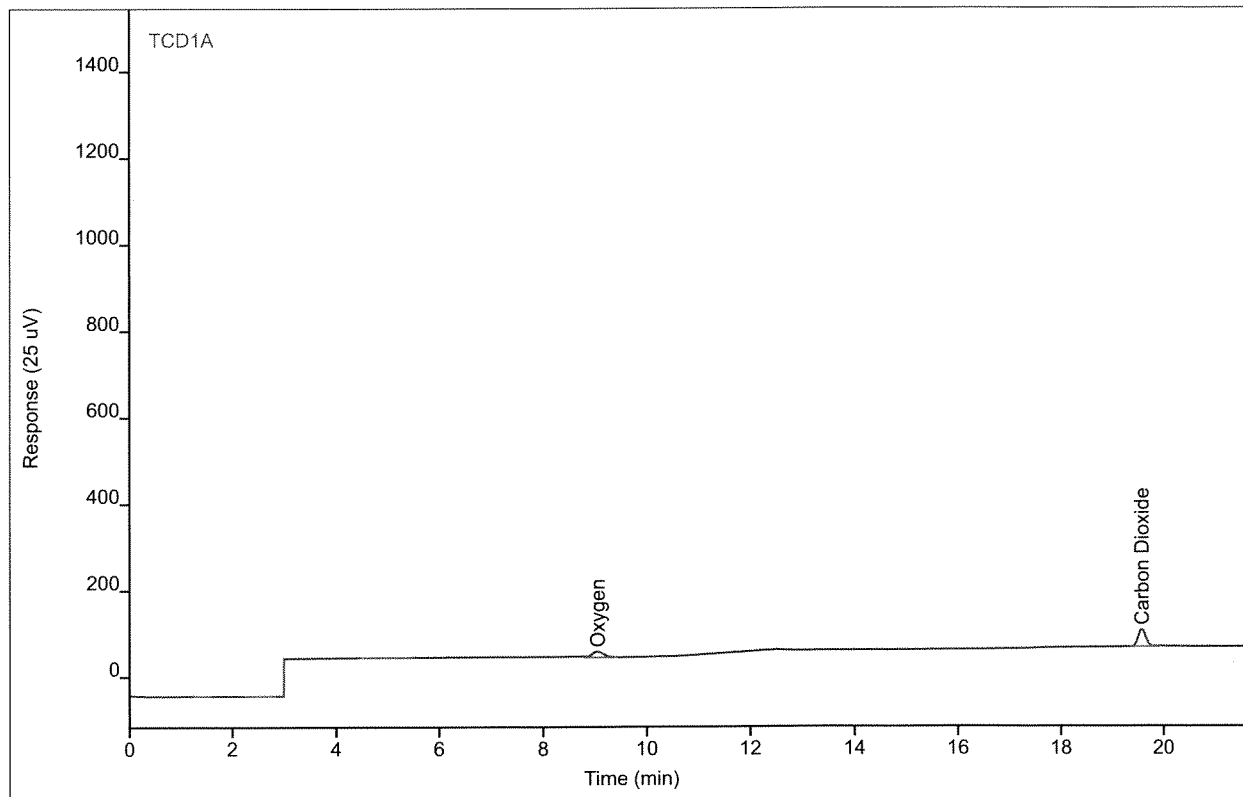
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
?	VB	5.79	1.92117	0.37755		1		
?	VV	5.00	2.66323	0.43564		1		
?	VV	2.64	5.97584	0.62839		1		
?	BV	4.62	1.99308	0.38828		1		
?	VV	2.27	61.2127	1.14749		1		
?	VB	5.11	1.54117	0.31966		1		
?	VV	2.88	1.60954	0.35413		1		
?	BV	1.46	18.9470	1.37617		1		
?	VB	3.07	728.380	62.1411		1		
?	VB	6.13	2.70757	0.37252		1		
?	BV	5.64	1.14716	0.31755		1		
?	VV	4.76	4.01393	0.39793		1		
Hydrogen		(2.12)				1		
Oxygen	BB	9.03	535.550	34.8530	1.37474	1	1.37474	%
Nitrogen		(10.32)				1		
Carbon monoxide		(12.66)				1		
Methane		(16.47)				1		
Carbon Dioxide	MM	19.55	1024.24	96.9965	1.37647	1	1.37647	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP070 #FG1 ENV(1=3392.23,2=219.94)
 Sequence Name BETTYP209 ver.15
 Data File 009F0701.D
 File Location GC/2015/Betty/Quarter 2
 Injection Date 6/24/2015 5:21 PM
 File Modified 7/23/2015 11:30 AM
 Instrument Betty
 Operator Chester Burnett

Sample Type
 Vial Number
 Injection Volume
 Injection
 Acquisition Method
 Analysis Method
 Method Modified
 Printed
 Calibration
 Vial 9
 250
 1 of 8
 BETTYP017_CAL.M
 BETTYP209_FGA_CRYO.M
 7/23/2015 12:10 PM
 7/23/2015 12:47 PM



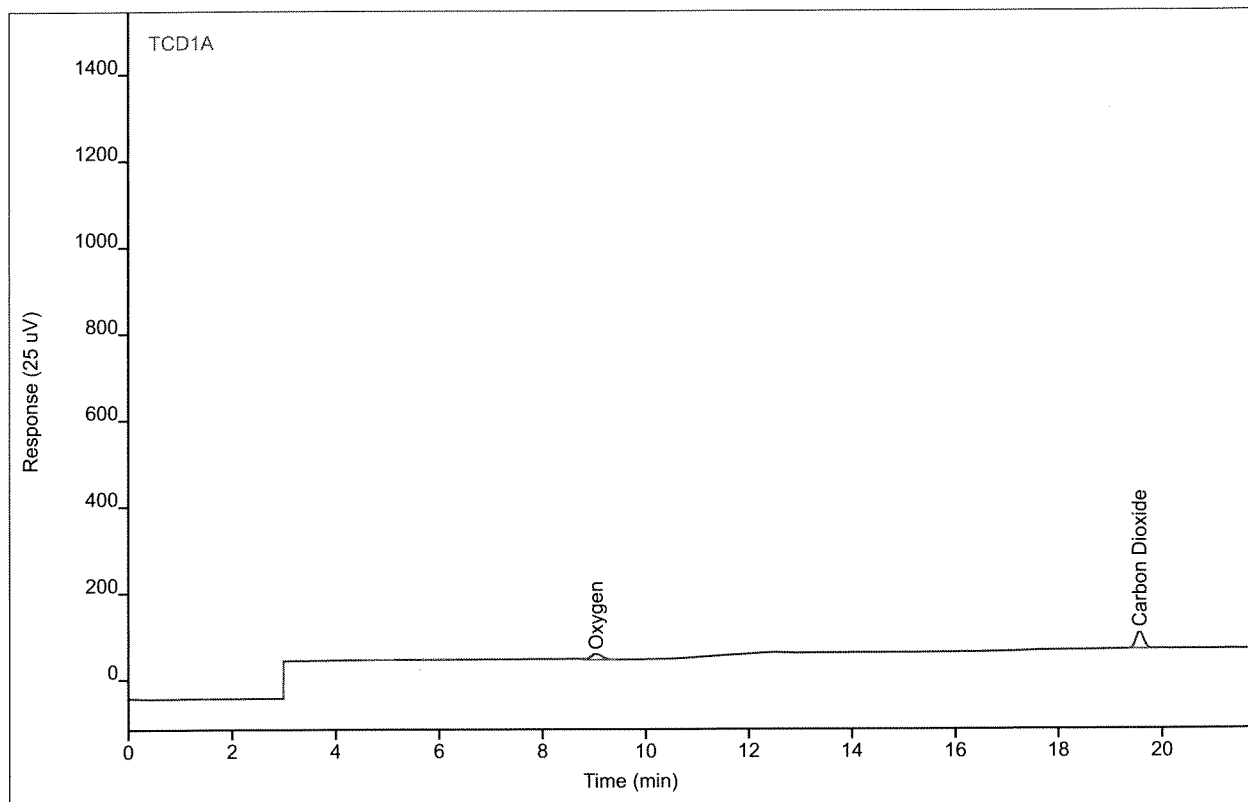
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
?	BV	4.99	17.6586	0.54161		1		
?	BV	2.32	5.57168	0.59586		1		
?	BV	1.51	5.65855	0.50313		1		
?	VV	2.61	3.12562	0.38332		1		
?	VV	2.78	1.54822	0.30933		1		
?	VV	2.47	2.12618	0.45412		1		
Hydrogen		(2.12)				1		
Oxygen	BB	9.05	214.725	13.9341	0.53512	1	0.53512	%
Nitrogen		(10.32)				1		
Carbon monoxide		(12.66)				1		
Methane		(16.47)				1		
Carbon Dioxide	MM	19.57	423.172	40.1297	0.53283	1	0.53283	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP070 #FG1 ENV(1=3392.23,2=219.94)
Sequence Name BETTYP209 ver.15
Data File 009F0702.D
File Location GC/2015/Betty/Quarter 2
Injection Date 6/24/2015 5:51 PM
File Modified 7/23/2015 11:30 AM
Instrument Betty
Operator Chester Burnett

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 2 of 8
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP209_FGA_CRYO.M
Method Modified 7/23/2015 12:10 PM
Printed 7/23/2015 12:47 PM



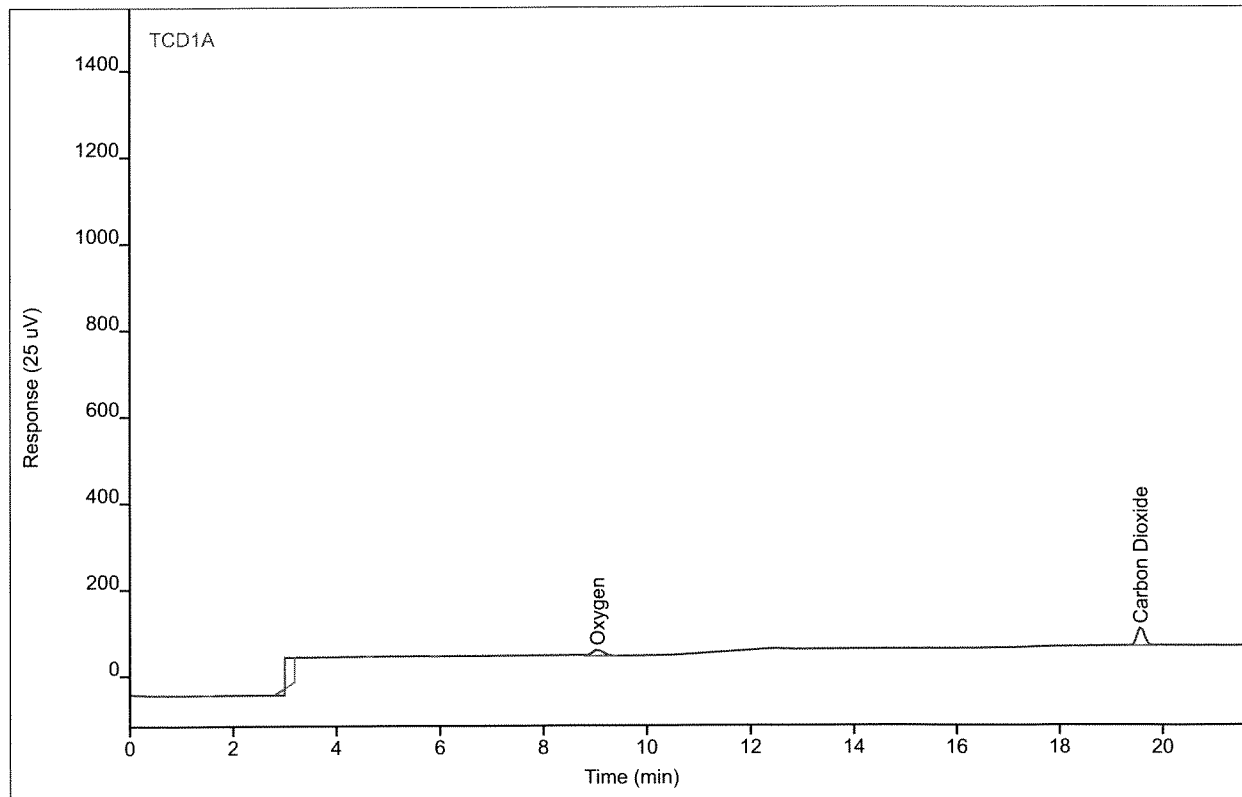
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
?	BV	1.45	3.15087	0.44002		1		
?	BV	4.72	4.20614	0.48932		1		
?	VB	5.02	2.55183	0.27862		1		
?	BB	6.14	1.24686	0.23469		1		
?	BB	5.82	1.51287	0.22623		1		
?	VV	4.90	2.86163	0.44424		1		
Hydrogen		(2.12)				1		
Oxygen	BB	9.05	215.668	13.8467	0.53747	1	0.53747	%
Nitrogen		(10.32)				1		
Carbon monoxide		(12.66)				1		
Methane		(16.47)				1		
Carbon Dioxide	MM	19.57	420.526	39.8516	0.52949	1	0.52949	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP070 #FG1 ENV(1=3392.23,2=219.94)
 Sequence Name BETTYP209 ver.15
 Data File 009F0703.D
 File Location GC/2015/Betty/Quarter 2
 Injection Date 6/24/2015 6:20 PM
 File Modified 7/23/2015 11:30 AM
 Instrument Betty
 Operator Chester Burnett

Sample Type Calibration
 Vial Number Vial 9
 Injection Volume 250
 Injection 3 of 8
 Acquisition Method BETTYP017_CAL.M
 Analysis Method BETTYP209_FGA_CRYO.M
 Method Modified 7/23/2015 12:10 PM
 Printed 7/23/2015 12:47 PM



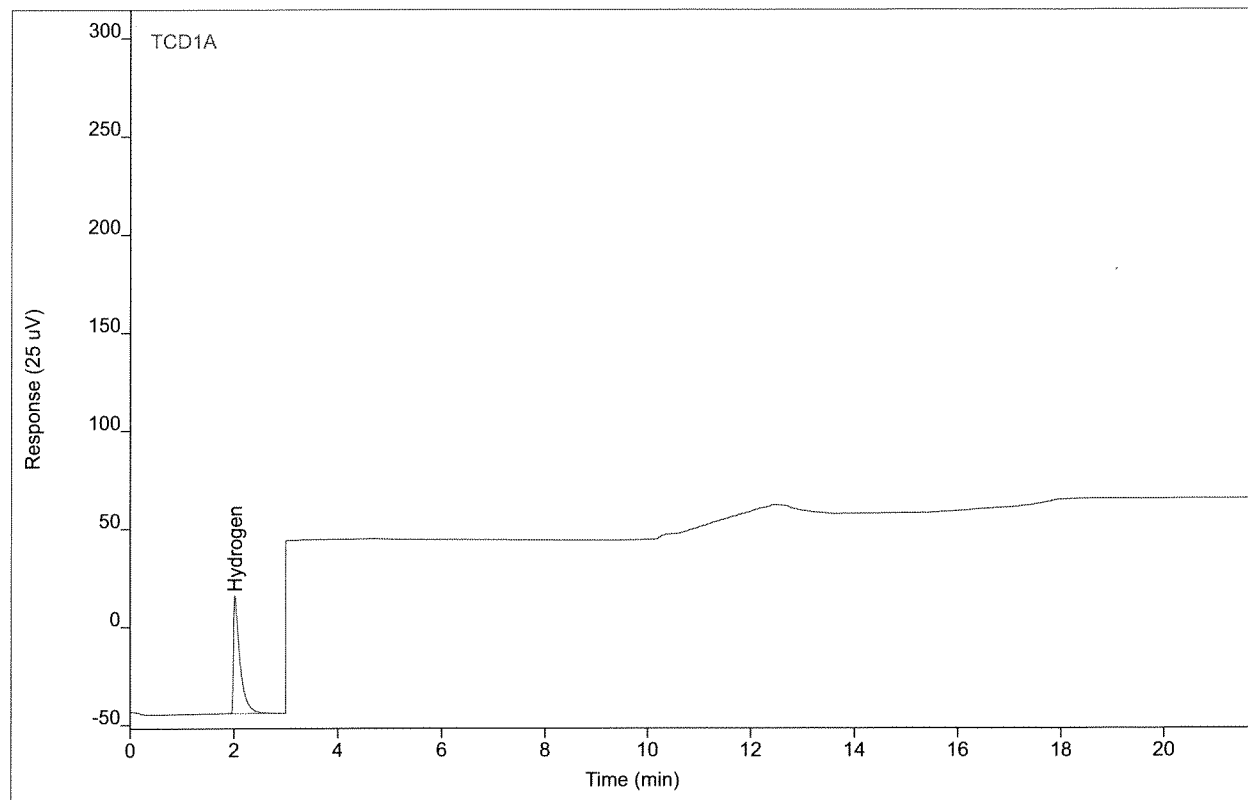
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
?	VB	3.04	668.472	70.3759		1		
?	BB	4.62	1.62261	0.34018		1		
?	BV	1.50	3.80463	0.53505		1		
?	VB	5.89	1.40129	0.35491		1		
Hydrogen		(2.12)				1		
Oxygen	BB	9.05	216.612	14.2341	0.53982	1	0.53982	%
Nitrogen		(10.32)				1		
Carbon monoxide		(12.66)				1		
Methane		(16.47)				1		
Carbon Dioxide	MM	19.57	427.523	40.6313	0.53830	1	0.53830	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG29 ENV(1=706.66,6=396.04)
Sequence Name BETTYP348 ver.3
Data File 009F0401.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/23/2016 9:02 AM
File Modified 3/24/2016 10:17 AM
Instrument
Operator Justin Guenzler

Sample Type
Vial Number Vial 9
Injection Volume 250
Injection 1 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 3/24/2016 9:36 AM
Printed 4/5/2016 7:49 AM



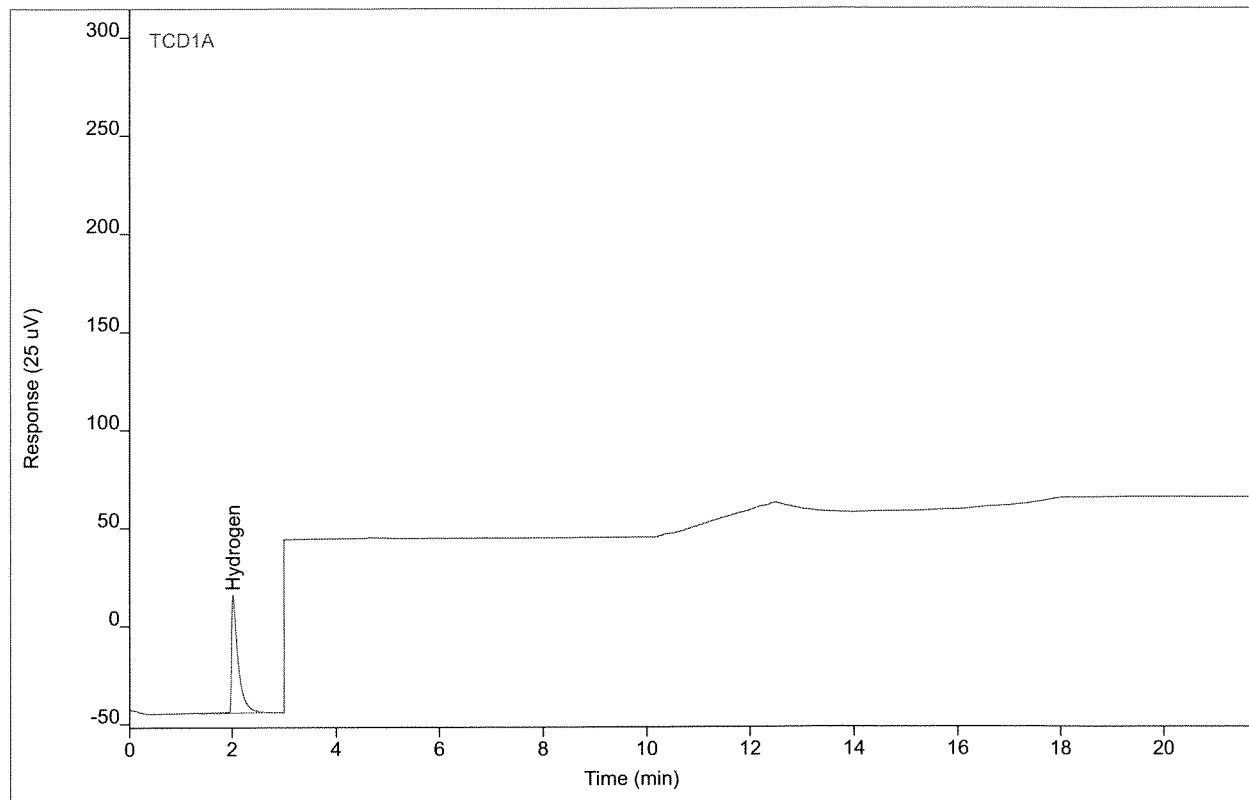
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	BB	2.02	519.372	60.1510	28.9272	1	28.9272	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG29 ENV(1=706.66,6=396.04)
Sequence Name BETTYP348 ver.3
Data File 009F0402.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/23/2016 9:32 AM
File Modified 3/24/2016 10:18 AM
Instrument
Operator Justin Guenzler

Sample Type
Vial Number Vial 9
Injection Volume 250
Injection 2 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 3/24/2016 9:36 AM
Printed 4/5/2016 7:49 AM



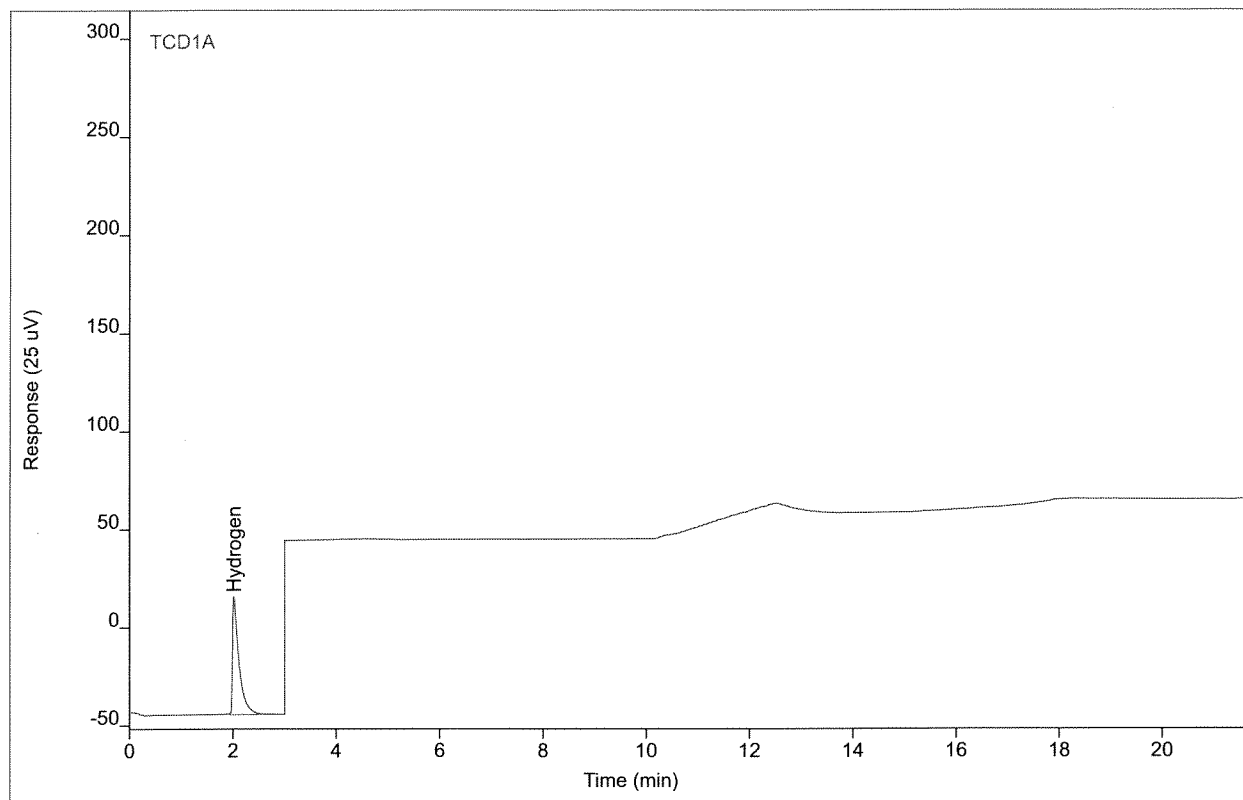
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	VB	2.02	533.976	60.3929	29.7404	1	29.7404	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG29 ENV(1=706.66,6=396.04)
Sequence Name BETTYP348 ver.3
Data File 009F0403.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/23/2016 10:02 AM
File Modified 3/24/2016 10:18 AM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 3 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 3/24/2016 9:36 AM
Printed 4/5/2016 7:49 AM



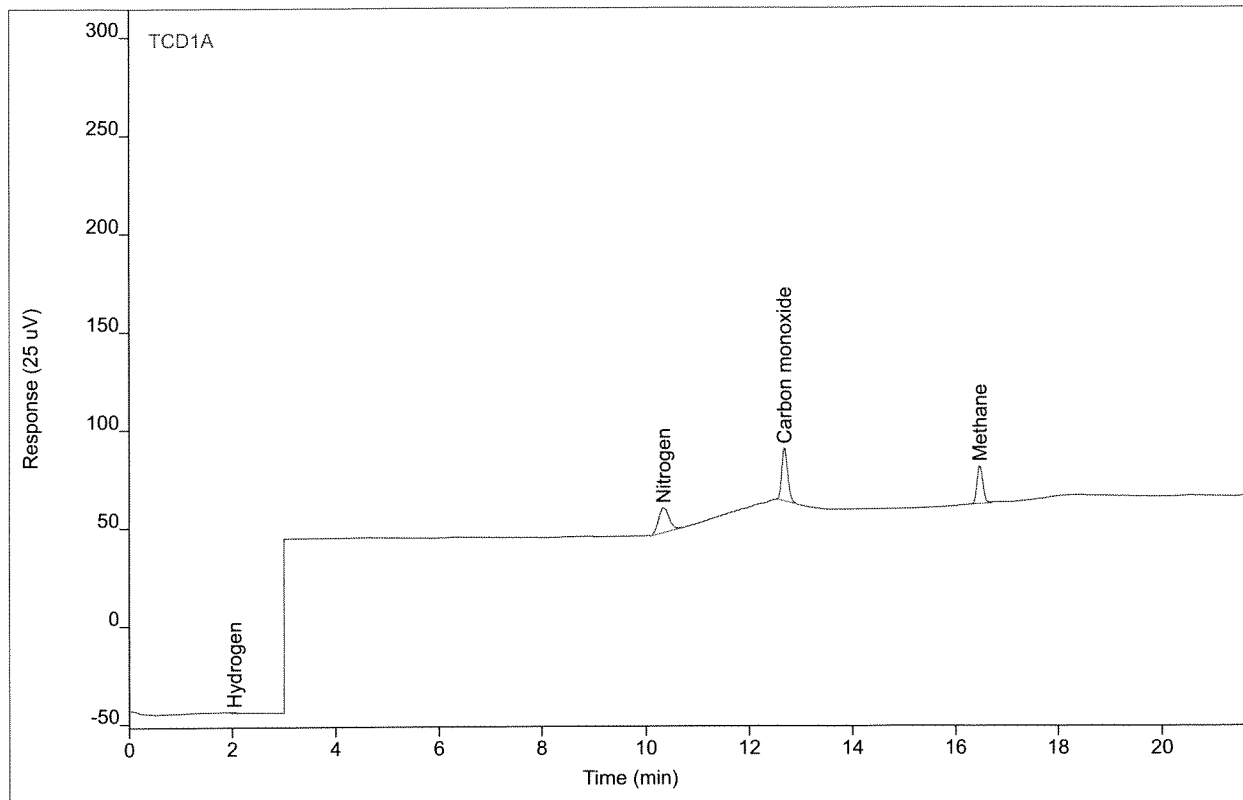
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	BB	2.02	521.211	60.2486	29.0296	1	29.0296	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG5 ENV(1=3391.99,3=159.55)
Sequence Name BETTYP348 ver.3
Data File 009F0801.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/23/2016 1:34 PM
File Modified 4/5/2016 7:38 AM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 1 of 2
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 3/24/2016 9:36 AM
Printed 4/5/2016 7:49 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	MM	2.04	5.49422	0.77557	0.31096	1	0.31096	%
Nitrogen	BB	10.35	185.913	12.9416	0.37476	1	0.37476	%
Carbon monoxide	MM	12.69	213.187	26.9160	0.37888	1	0.37888	%
Methane	MM	16.49	154.929	19.4239	0.30841	1	0.30841	%

Analyst Peak Integration Comments

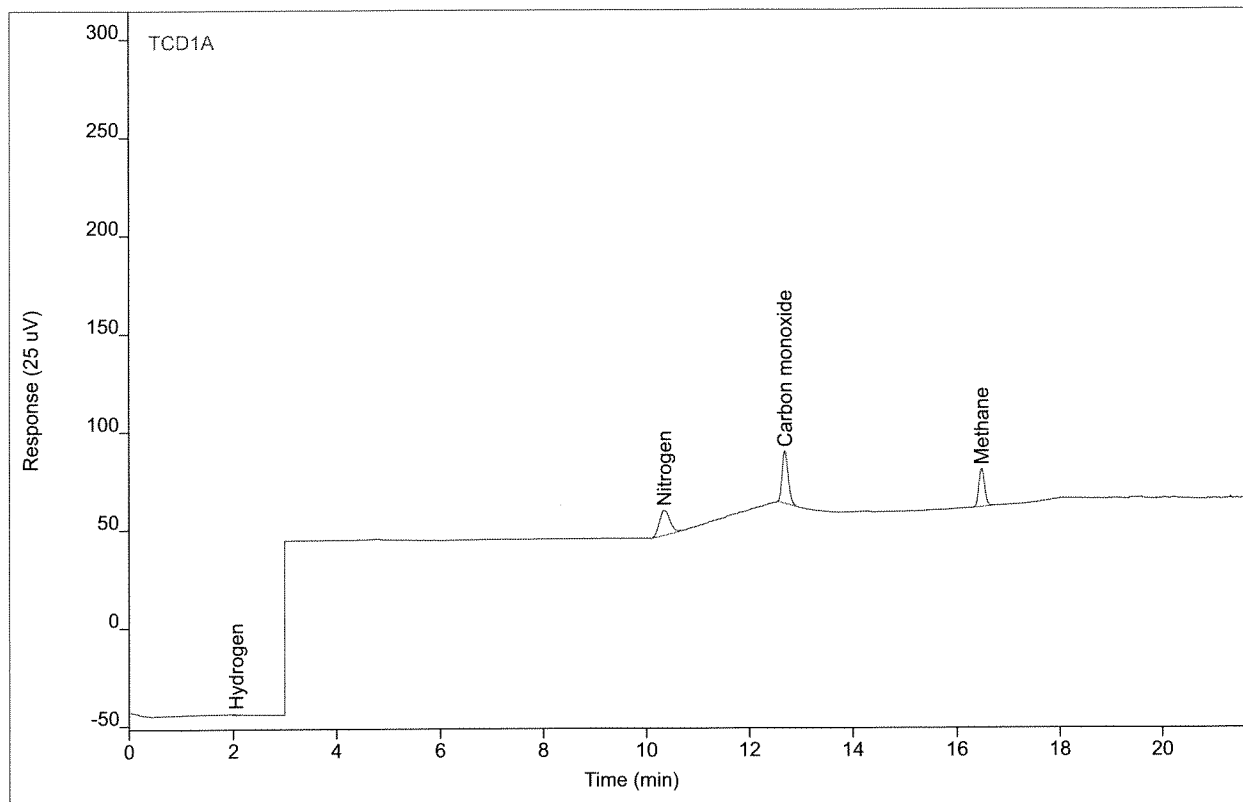
08:55:18 03/24/16 Nicholas Traversa II-Baseline
09:03:17 03/24/16 Nicholas Traversa II-Baseline

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG5 ENV(1=3391.99,3=159.55)
Sequence Name BETTYP348 ver.3
Data File 009F0802.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/23/2016 2:04 PM
File Modified 4/5/2016 7:38 AM
Instrument
Operator Justin Guenzler

Sample Type
Vial Number
Injection Volume 250
Injection 2 of 2
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 3/24/2016 9:36 AM
Printed 4/5/2016 7:49 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	MM	2.06	5.36152	0.91806	0.30347	1	0.30347	%
Nitrogen	BB	10.35	185.816	12.9857	0.37456	1	0.37456	%
Carbon monoxide	MM	12.70	212.362	26.5751	0.37741	1	0.37741	%
Methane	MM	16.49	150.895	19.2575	0.30038	1	0.30038	%

Analyst Peak Integration Comments

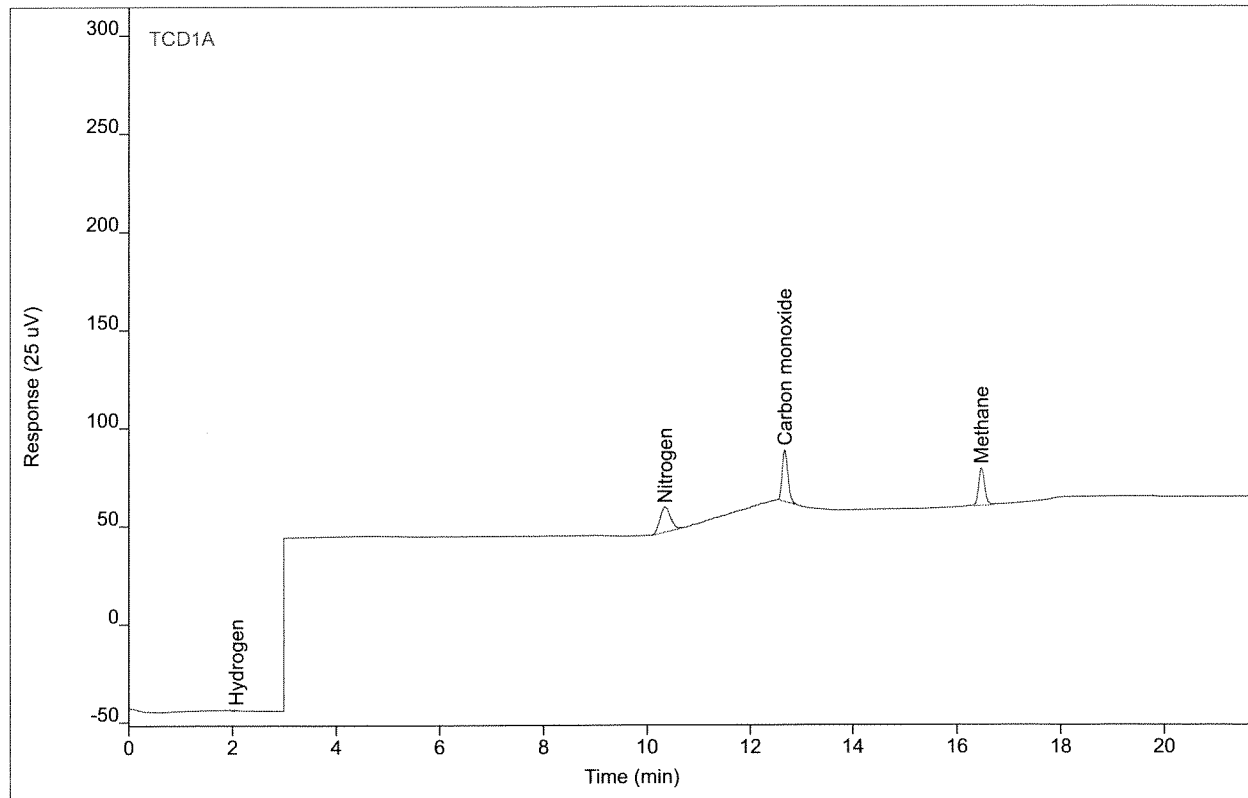
08:55:45 03/24/16 Nicholas Traversa II-Baseline
09:02:45 03/24/16 Nicholas Traversa II-Baseline
09:03:30 03/24/16 Nicholas Traversa II-Baseline

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG5 ENV(1=3391.99,3=159.55)
Sequence Name BETTYP348 ver.3
Data File 009F0901.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/23/2016 2:34 PM
File Modified 4/5/2016 7:39 AM
Instrument
Operator Justin Guenzler

Sample Type
Vial Number Vial 9
Injection Volume 250
Injection 1 of 1
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 3/24/2016 9:36 AM
Printed 4/5/2016 7:49 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	MM	2.07	5.29924	0.81828	0.29994	1	0.29994	%
Nitrogen	BB	10.36	183.272	12.8308	0.36944	1	0.36944	%
Carbon monoxide	MM	12.70	207.954	26.3487	0.36957	1	0.36957	%
Methane	MM	16.49	153.785	19.1904	0.30613	1	0.30613	%

Analyst Peak Integration Comments

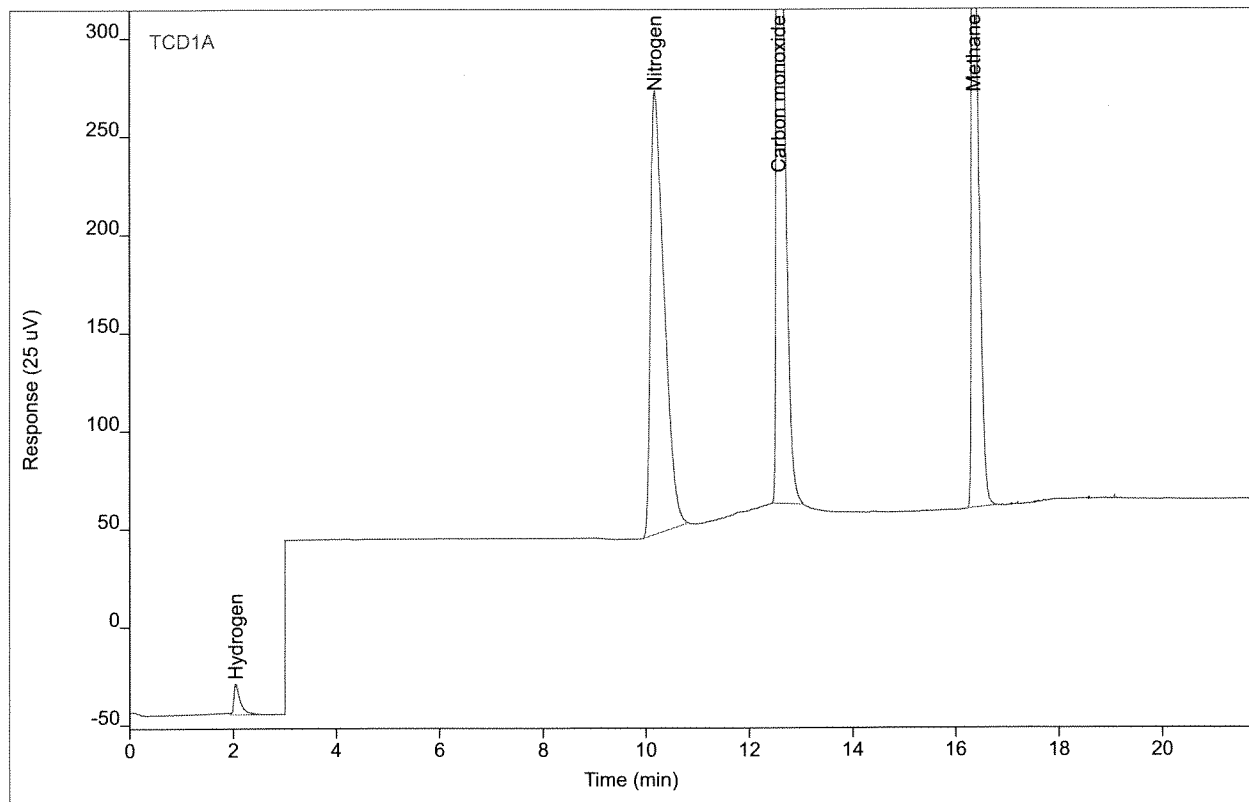
08:56:13 03/24/16 Nicholas Traversa II-Baseline
09:03:42 03/24/16 Nicholas Traversa II-Baseline

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG8 ENV(1=0,3=319.09)
Sequence Name BETTYP348 ver.3
Data File 009F1001.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/23/2016 3:04 PM
File Modified 4/5/2016 7:39 AM
Instrument
Operator Justin Guenzler

Sample Type
Vial Number
Injection Volume 250
Injection 1 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 3/24/2016 9:36 AM
Printed 4/5/2016 7:49 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	MM	2.05	137.324	15.8087	7.65211	1	7.65211	%
Nitrogen	BB	10.18	4148.31	225.866	9.64130	1	9.64130	%
Carbon monoxide	MM	12.59	4977.34	498.519	9.44841	1	9.44841	%
Methane	MM	16.39	3354.70	371.621	7.48842	1	7.48842	%

Analyst Peak Integration Comments

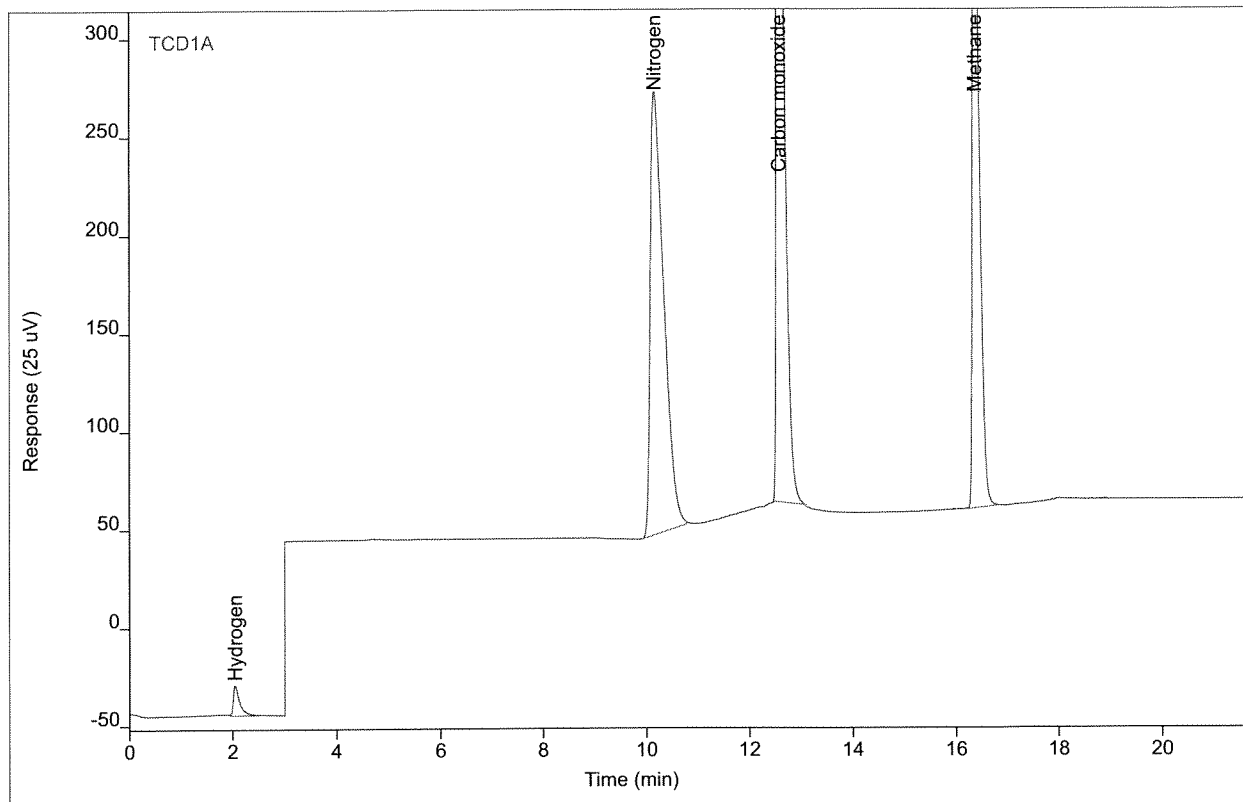
08:45:25 03/24/16 Nicholas Traversa II-Baseline
09:03:55 03/24/16 Nicholas Traversa II-Baseline
09:12:14 03/24/16 Nicholas Traversa II-Baseline

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG8 ENV(1=0,3=319.09)
Sequence Name BETTYP348 ver.3
Data File 009F1002.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/23/2016 3:35 PM
File Modified 4/5/2016 7:39 AM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 2 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 3/24/2016 9:36 AM
Printed 4/5/2016 7:49 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	MM	2.05	134.279	15.7425	7.48258	1	7.48258	%
Nitrogen	BB	10.18	4153.57	225.778	9.65360	1	9.65360	%
Carbon monoxide	MM	12.59	4951.82	497.879	9.39983	1	9.39983	%
Methane	MM	16.39	3360.50	368.710	7.50143	1	7.50143	%

Analyst Peak Integration Comments

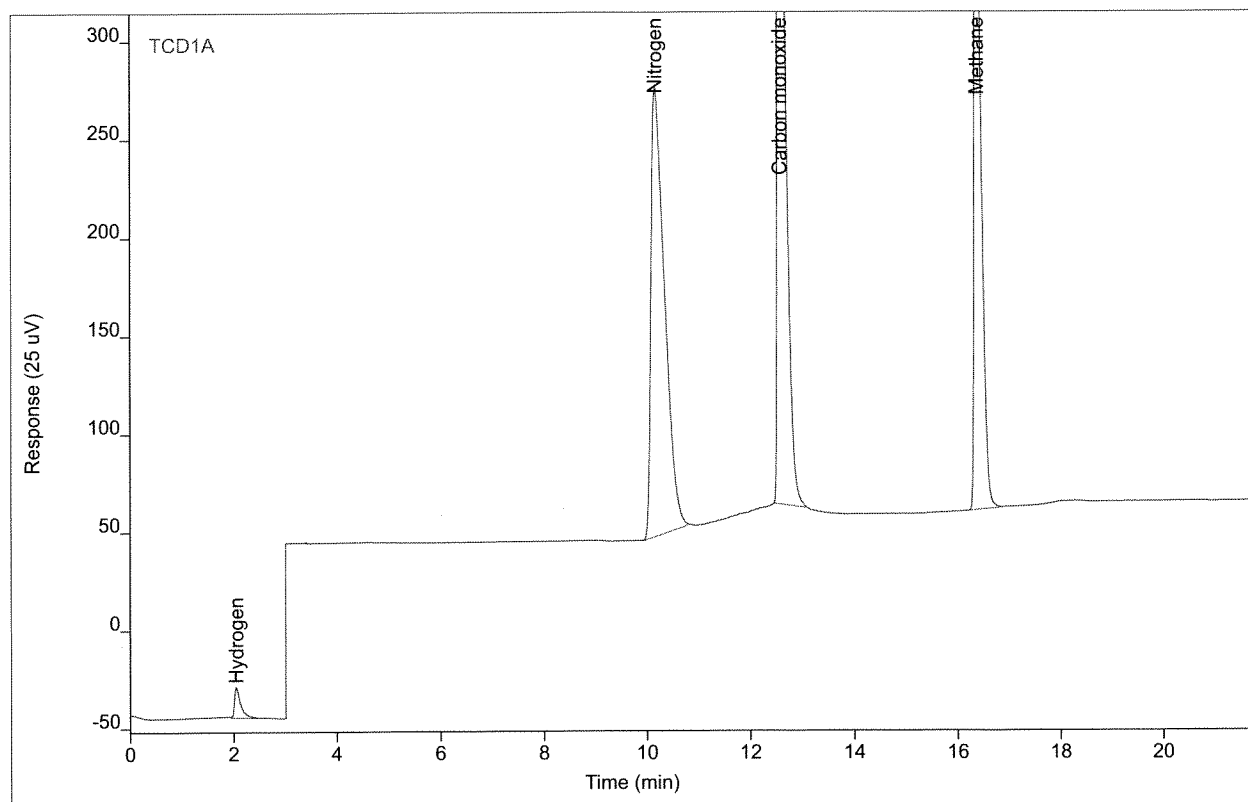
08:45:39 03/24/16 Nicholas Traversa II-Baseline
09:04:06 03/24/16 Nicholas Traversa II-Baseline
09:12:36 03/24/16 Nicholas Traversa II-Baseline

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG8 ENV(1=0,3=319.09)
Sequence Name BETTYP348 ver.3
Data File 009F1003.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/23/2016 4:05 PM
File Modified 4/5/2016 7:39 AM
Instrument
Operator Justin Guenzler

Sample Type
Vial Number Vial 9
Injection Volume 250
Injection 3 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 3/24/2016 9:36 AM
Printed 4/5/2016 7:49 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	MM	2.05	132.742	15.7215	7.39697	1	7.39697	%
Nitrogen	BB	10.18	4187.73	228.103	9.73348	1	9.73348	%
Carbon monoxide	MM	12.59	5018.52	501.603	9.52680	1	9.52680	%
Methane	MM	16.39	3386.77	373.896	7.56039	1	7.56039	%

Analyst Peak Integration Comments

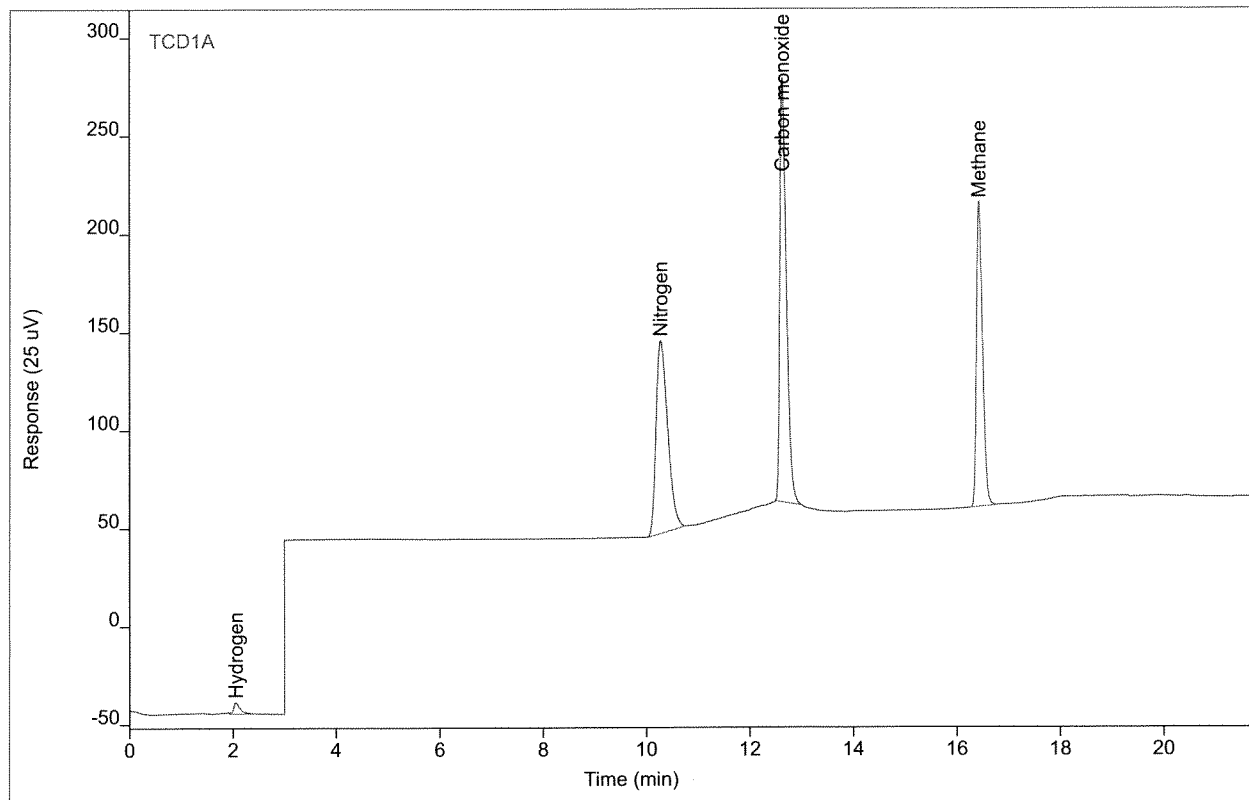
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09:04:39 03/24/16 Nicholas Traversa II-Baseline
09:12:45 03/24/16 Nicholas Traversa II-Baseline

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG7 ENV(1=530,3=319.09)
Sequence Name BETTYP348 ver.3
Data File 009F1101.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/23/2016 4:35 PM
File Modified 4/5/2016 7:39 AM
Instrument
Operator Nicholas Traversa

Sample Type
Vial Number
Injection Volume 250
Injection 1 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 3/24/2016 9:36 AM
Printed 4/5/2016 7:49 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	BB	2.05	52.6585	5.96946	2.93739	1	2.93739	%
Nitrogen	BB	10.29	1547.13	98.3703	3.55757	1	3.55757	%
Carbon monoxide	MM	12.66	1870.95	216.410	3.53472	1	3.53472	%
Methane	MM	16.45	1276.56	155.048	2.82513	1	2.82513	%

Analyst Peak Integration Comments

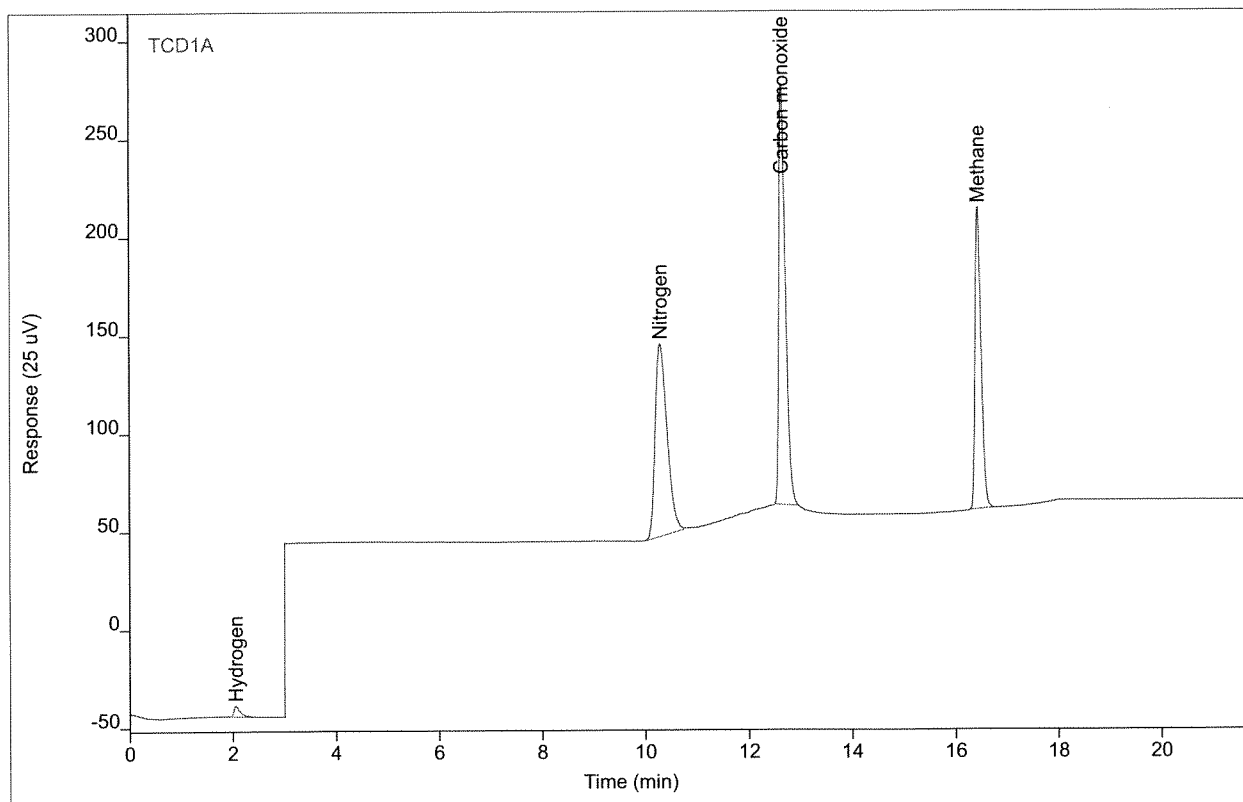
08:45:59 03/24/16 Nicholas Traversa II-Baseline
09:04:47 03/24/16 Nicholas Traversa II-Baseline

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG7 ENV(1=530,3=319.09)
Sequence Name BETTYP348 ver.3
Data File 009F1102.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/23/2016 5:05 PM
File Modified 4/5/2016 7:39 AM
Instrument
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 2 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 3/24/2016 9:36 AM
Printed 4/5/2016 7:49 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	BB	2.05	48.9512	5.67245	2.73094	1	2.73094	%
Nitrogen	BB	10.29	1549.76	98.3593	3.56372	1	3.56372	%
Carbon monoxide	MM	12.66	1848.34	213.936	3.49166	1	3.49166	%
Methane	MM	16.45	1256.81	153.654	2.78080	1	2.78080	%

Analyst Peak Integration Comments

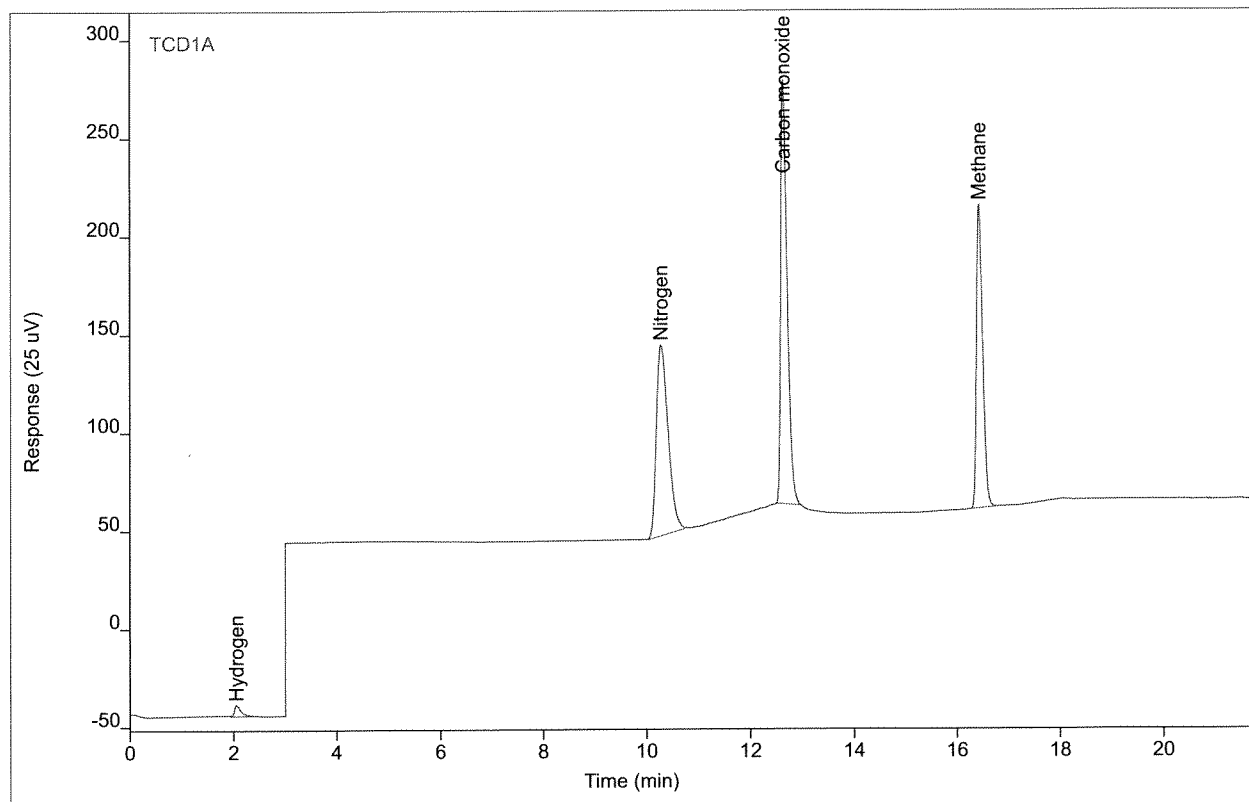
08:46:16 03/24/16 Nicholas Traversa II-Baseline
08:46:28 03/24/16 Nicholas Traversa II-Baseline
09:05:03 03/24/16 Nicholas Traversa II-Baseline

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG7 ENV(1=530,3=319.09)
Sequence Name BETTYP348 ver.3
Data File 009F1103.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/23/2016 5:35 PM
File Modified 4/5/2016 7:39 AM
Instrument
Operator Nicholas Traversa

Sample Type
Vial Number
Injection Volume 250
Injection 3 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 3/24/2016 9:36 AM
Printed 4/5/2016 7:49 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	BB	2.05	52.3935	5.77112	2.92263	1	2.92263	%
Nitrogen	BB	10.29	1540.08	97.4970	3.54109	1	3.54109	%
Carbon monoxide	MM	12.66	1847.04	216.057	3.48919	1	3.48919	%
Methane	MM	16.45	1267.68	154.655	2.80520	1	2.80520	%

Analyst Peak Integration Comments

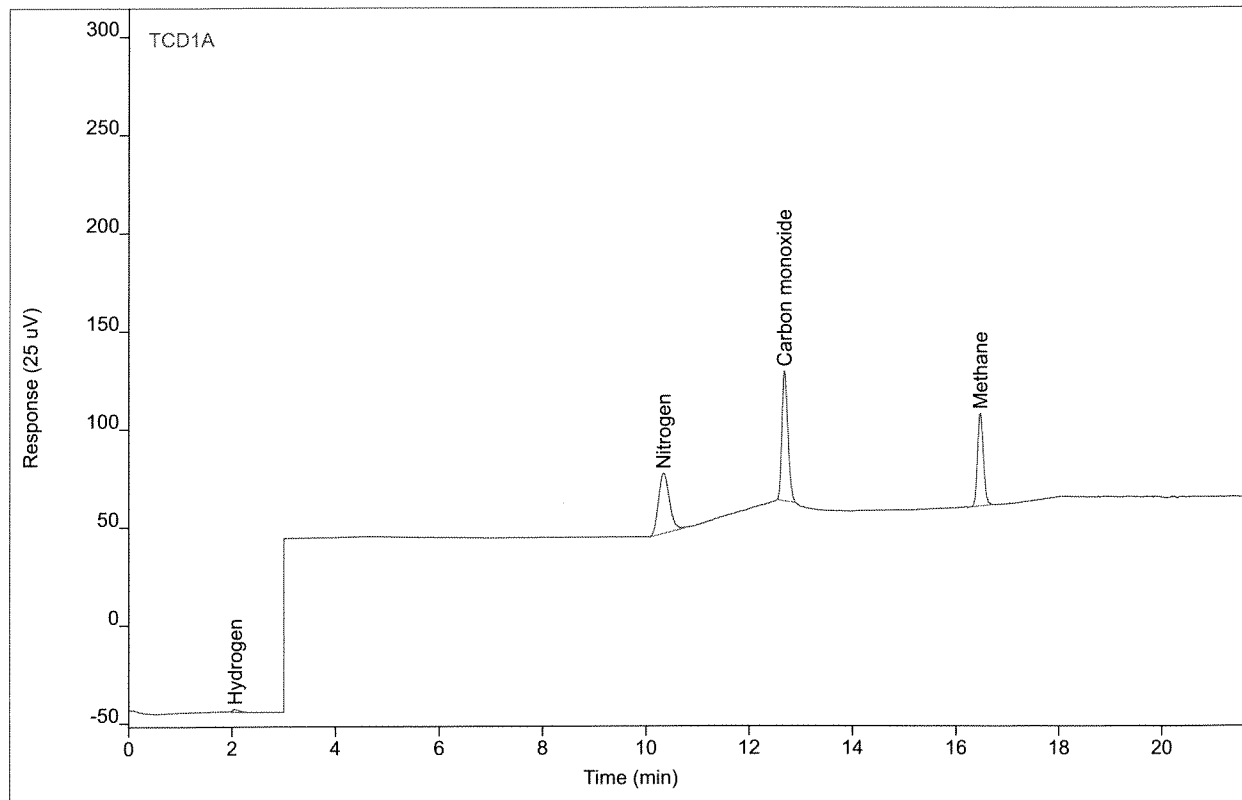
08:46:39 03/24/16 Nicholas Traversa II-Baseline
09:05:13 03/24/16 Nicholas Traversa II-Baseline

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG6 ENV(1=1271.99,3=159.55)
Sequence Name BETTYP348 ver.3
Data File 009F1201.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/23/2016 6:05 PM
File Modified 4/5/2016 7:39 AM
Instrument
Operator Nicholas Traversa

Sample Type
Vial Number
Injection Volume
Injection
Acquisition Method
Analysis Method
Method Modified
Printed
Calibration
Vial 9
250
1 of 3
BETTYP017_CAL.M
BETTYP348_FGA_CRYO.M
3/24/2016 9:36 AM
4/5/2016 7:49 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	MM	2.06	14.7037	1.68924	0.82381	1	0.82381	%
Nitrogen	BB	10.35	452.429	30.8067	0.99726	1	0.99726	%
Carbon monoxide	MM	12.69	527.447	66.4169	0.97706	1	0.97706	%
Methane	MM	16.48	380.129	47.3088	0.81355	1	0.81355	%

Analyst Peak Integration Comments

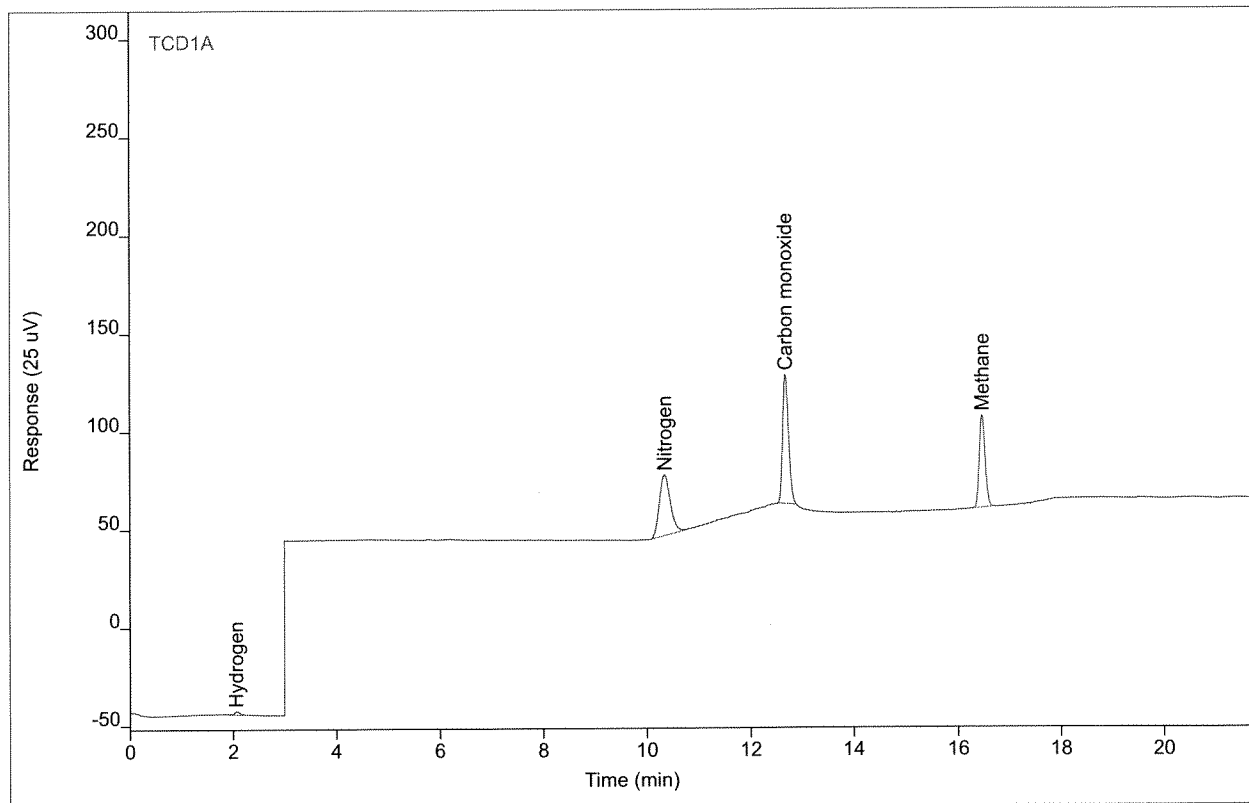
08:46:48 03/24/16 Nicholas Traversa II-Baseline
08:56:44 03/24/16 Nicholas Traversa II-Baseline
09:05:21 03/24/16 Nicholas Traversa II-Baseline

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG6 ENV(1=1271.99,3=159.55)
Sequence Name BETTYP348 ver.3
Data File 009F1202.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/23/2016 6:35 PM
File Modified 4/5/2016 7:39 AM
Instrument
Operator Nicholas Traversa

Sample Type
Vial Number
Injection Volume
Injection
Acquisition Method
Analysis Method
Method Modified
Printed
Calibration
Vial 9
250
2 of 3
BETTYP017_CAL.M
BETTYP348_FGA_CRYO.M
3/24/2016 9:36 AM
4/5/2016 7:49 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	MM	2.06	14.6516	1.80771	0.82091	1	0.82091	%
Nitrogen	BB	10.35	454.621	30.9233	1.00238	1	1.00238	%
Carbon monoxide	MM	12.69	525.484	65.7675	0.97332	1	0.97332	%
Methane	MM	16.48	368.696	46.9784	0.78789	1	0.78789	%

Analyst Peak Integration Comments

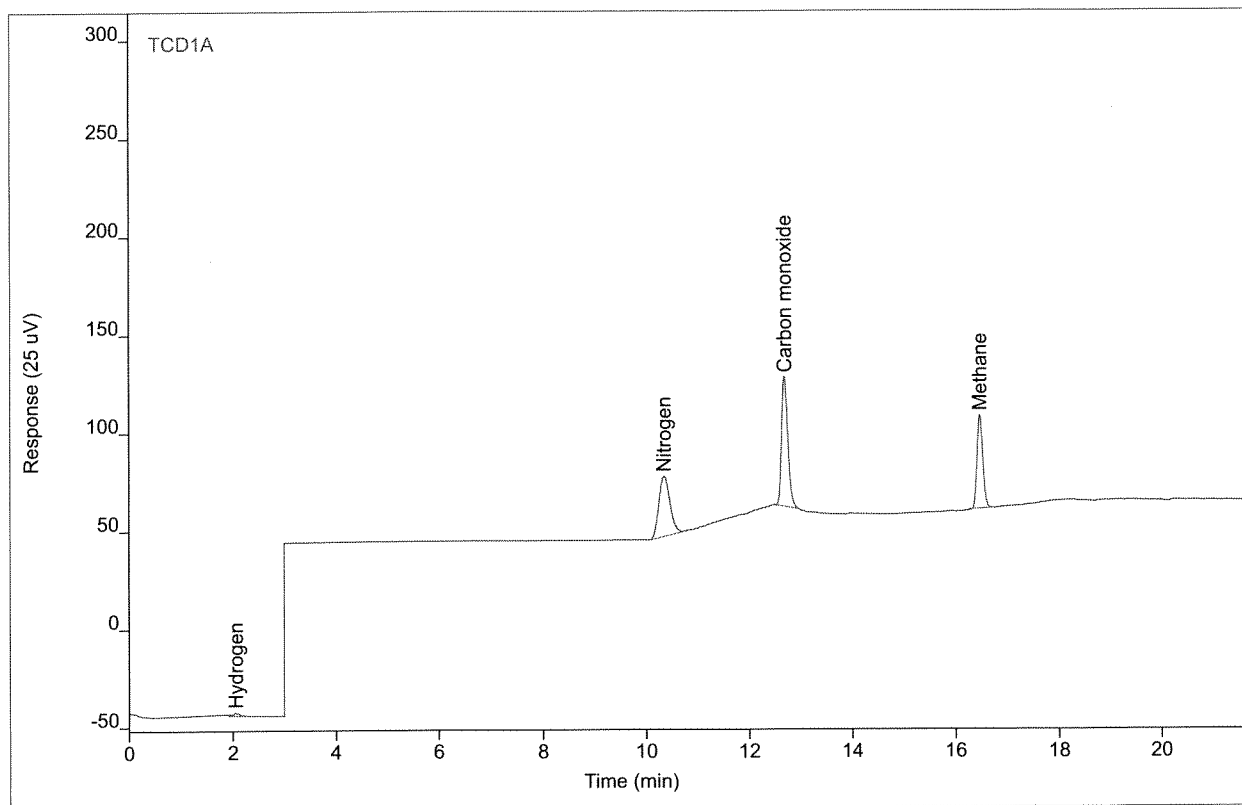
08:46:58 03/24/16 Nicholas Traversa II-Baseline
08:49:19 03/24/16 Nicholas Traversa II-FP
08:56:59 03/24/16 Nicholas Traversa II-Baseline
09:05:28 03/24/16 Nicholas Traversa II-Baseline

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG6 ENV(1=1271.99,3=159.55)
Sequence Name BETTYP348 ver.3
Data File 009F1203.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/23/2016 7:05 PM
File Modified 4/5/2016 7:39 AM
Instrument
Operator Nicholas Traversa

Sample Type
Vial Number
Injection Volume 250
Injection 3 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 3/24/2016 9:36 AM
Printed 4/5/2016 7:49 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	MM	2.06	14.5852	1.85799	0.81721	1	0.81721	%
Nitrogen	BB	10.35	454.883	30.8415	1.00299	1	1.00299	%
Carbon monoxide	MM	12.69	543.881	66.0508	1.00834	1	1.00834	%
Methane	MM	16.48	374.812	47.6111	0.80162	1	0.80162	%

Analyst Peak Integration Comments

08:47:08 03/24/16 Nicholas Traversa II-Baseline
08:51:29 03/24/16 Nicholas Traversa II-Baseline
08:57:16 03/24/16 Nicholas Traversa II-Baseline
09:05:37 03/24/16 Nicholas Traversa II-Baseline

Issue Date: 12-08-2014

To:

Attn:

Praxair Order Number:
Customer Order Number:
Customer Reference
Number:

Product Lot Number: 1124002724A1
Product Part Number: ME 5.0RS-G

CERTIFICATE OF ANALYSIS

(Methane 99.999%, Research)

Cylinder Serial Number	Analytes	Specification	
RA071907	Methane	99.999	%
RA072283	Ethane	ND < 0.1	ppm
*RA072293	Nitrogen	ND < 0.1	ppm
RA072328	Oxygen	0.1	ppm
	Moisture	0.3	ppm
	Other Hydrocarbons	ND < 0.1	ppm

Cylinder Style: G
Cylinder Pressure @70°F (21°C): 2000 PSI
Cylinder Volume: 40 Cubic Feet

Valve Outlet Connection: 350 CGA
Filling Method: Pressure

Approved Signer: _____

Patrick Philpot

This analysis of the product described herein was prepared by Praxair Distribution using instruments whose calibration is certified using Praxair Reference Materials. Praxair Reference Materials are prepared either by weights traceable to the National Institute of Standards and Technology (NIST), Measurement Canada or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted

*Key to Analytical Principle:

A. Flame Ionization with Methanizer	F. Gas Chromatography with Helium Ionization Detector	K. Gas Chromatography with Ultrasonic Detector	P. Electrochemical
B. Gas Chromatography with Discharge Ionization Detector	G. Gas Chromatography with Methanizer Carbonizer	L. Gravimetric Methods	Q. Total Hydrocarbon Analyzer
C. Gas Chromatography with Electrolytic Conductivity Detector	H. Gas Chromatography with Photoionization Detector	M. Infrared – FTIR or NDIR	R. Wet Chemical
D. Gas Chromatography with Flame Ionization Detector	I. Gas Chromatography with Reduction Gas Analyzer	N. Mass Spectrometry – MS or GC/MS	S. Detector Tube
E. Gas Chromatography with Flame Photometric Detector	J. Gas Chromatography with Thermal Conductivity Detector	O. Paramagnetic	T. Odor

IMPORTANT

The information contained herein has been prepared at your request by personnel within Praxair Distribution. While we believe the information is accurate within the limits of the analytical methods employed and is complete to the extent of the specific analyses performed, we make no warranty or representation as to the suitability of the use of the information for any particular purpose. The information is offered with the understanding that any use of the information is at the sole discretion and risk of the user. In no event shall liability of Praxair Distribution arising out of the use of the information contained herein exceed the fee established for providing such information.

CUSTOMGAS SOLUTIONS



1750 East Club Boulevard
Durham, NC 27704
Phone: (919) 220-2570
Fax: (919) 220-4540

Certificate of Analysis

Customer:

Enthalpy Analytical, Inc.
800-1 Capitola Drive
Durham, NC 27713

Tel: (919) 595-1377

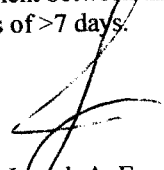
Cylinder Number: XC010510B
Cylinder Size/CGA: 150/590
Fill Pressure: 2015 PSIA
Gas Volume: 3700 liters
Date of Mfg: 02/04/14
Expiration Date: 02/04/16

Customer Number	Ship VIA	Job No.	Customer PO	Mixture Type
00127703NC	Pick up	011614-004	01151401	Gravimetric

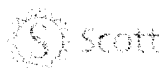
Component	Nominal Concentration	Actual Concentration*	Mixture Type
Oxygen	10 %	10.01 % +/- 0.2 %	Gravimetric Master Gas
Carbon Dioxide	10 %	10.01 % +/- 0.2 %	
Helium	balance	balance	

NOTES: Blend Tolerance: +/- 2 %
Analytical Tolerance: +/- 2 %
Traceability: NIST by weight set. NIST Traceability No MT5061.
Internal Standards by analysis
Reactive Mixtures: Analyzed twice with required agreement between analyses of 2%.
Required wait time between analyses of >7 days.
Caution: Do not use below 150 PSIG.

Authorized Signature:


Joseph A. Ernst

*Every effort has been made to establish the actual concentration of the components using master gas blending technology however, Custom Gas Solutions shall have no liability in excess of the established charge for this material.

**AIR LIQUIDE**Air Liquide America
Specialty Gases LLC**CERTIFIED MASTER CLASS**
Single-Certified Calibration Standard

6141 EASTON ROAD, BLDG 1, PLUMSTEADVILLE, PA 18949-0310

Phone: 800-331-4953 Fax: 215-766-7226

CERTIFICATE OF ACCURACY: Certified Master Class Calibration Standard**Product Information**

Document # : 55814398-001

Item No.: MC500418-P-44

P.O. No.: 06181401

Cylinder Number: NKA197

Cylinder Size: 44

Certification Date: 30Jun2014

Expiration Date: 01Jul2017

Lot Number: PLU0288940

Customer

ENTHALPY ANALYTICAL, INC.

GREG TATE

800-1 CAPITOLA DRIVE

DURHAM, NC 27703

US

CERTIFIED CONCENTRATION**Component Name****Concentration
(Moles)****Accuracy
(+/-%)**

CARBON MONOXIDE

10.0

%

2

HYDROGEN

8.2

%

2

METHANE

8.0

%

2

NITROGEN

10.0

%

2

HELIUM

BALANCE

TRACEABILITY**Traceable To**

Scott Reference Standard

APPROVED BY:

LAMONT SHIELDS

DATE:

SPECIFICATIONS

Component Name	Requested Concentration (Moles)		Certified Concentration (Moles)		Blend Tolerance Result (+/- %)	Certified Accuracy Result (+/- %)
CARBON MONOXIDE	10.	%	10.0	%	.0	2.00
HYDROGEN	8.	%	8.2	%	2.5	2.00
METHANE	8.	%	8.0	%	.0	2.00
NITROGEN	10.	%	10.0	%	.0	2.00
HELIUM		BAL		BAL		

TRACEABILITY

Traceable To

Scott Reference Standard

PHYSICAL PROPERTIES

Cylinder Size: 44

Pressure: 2015 PSIG
Expiration Date: 01Jul2017

Valve Connection: CGA 350

SPECIAL HANDLING INSTRUCTIONS

Do not use or store cylinder at or below the stated dew point temperature. Possible condensation of heavier components could result. In the event the cylinder has been exposed to temperatures at or below the dew point, place cylinder in heated area for 24 hours and then roll cylinder for 15 minutes to re-mix.

Use of calibration standards at or below dew point temperature may result in calibration error.

Calibration Table

Calib. Data Modified : 3/24/2016 9:24:48 AM

Rel. Reference Window : 2.000 %
 Abs. Reference Window : 0.000 min
 Rel. Non-ref. Window : 2.000 %
 Abs. Non-ref. Window : 0.200 min
 Uncalibrated Peaks : not reported
 Partial Calibration : Yes, identified peaks are recalibrated
 Correct All Ret. Times: No, only for identified peaks

Curve Type : Linear
 Origin : Connected
 Weight : Quadratic (Amnt)

Recalibration Settings:
 Average Response : Average all calibrations
 Average Retention Time: Floating Average New 75%

Calibration Report Options :
 Printout of recalibrations within a sequence:
 Calibration Table after Recalibration
 Normal Report after Recalibration
 If the sequence is done with bracketing:
 Results of first cycle (ending previous bracket)

Signal 1: TCD1 A,
 Signal 2: FID2 B,

RetTime	Lvl	Amount	Area	Amt/Area	Ref Grp Name
[min]	Sig	[%]			
2.047	1	5 3.10000e-1	5.38499	5.75674e-2	Hydrogen
		6 7.90000e-1	14.64684	5.39365e-2	
		7 2.76000	51.33442	5.37651e-2	
		8 8.20000	134.78149	6.08392e-2	
	29	28.54000	524.85293	5.43771e-2	
8.969	1	1 5.44000e-1	215.66828	2.52239e-3	Oxygen
		2 1.33000	532.64663	2.49697e-3	
		3 4.81000	1881.28426	2.55676e-3	
		4 10.01000	3778.10091	2.64948e-3	
	23	99.99900	3.74652e4	2.66912e-3	
9.410	1	5 3.80000e-1	185.00033	2.05405e-3	Nitrogen
		6 9.60000e-1	453.97759	2.11464e-3	
		7 3.37000	1545.65592	2.18030e-3	
		8 10.00000	4163.20394	2.40200e-3	
	22	99.90000	4.08941e4	2.44290e-3	
12.591	1	5 3.80000e-1	211.16778	1.79952e-3	Carbon monoxide
		6 9.60000e-1	532.27047	1.80359e-3	
		7 3.37000	1855.44157	1.81628e-3	
		8 10.00000	4982.55648	2.00700e-3	
16.387	1	5 3.10000e-1	153.20321	2.02346e-3	Methane
		6 7.70000e-1	374.54545	2.05583e-3	
		7 2.70000	1267.01778	2.13099e-3	
		8 8.00000	3367.32218	2.37578e-3	
19.573	1	1 5.44000e-1	423.74036	1.28381e-3	Carbon Dioxide
		2 1.33000	1022.49255	1.30074e-3	
		3 4.81000	3525.11686	1.36449e-3	
		4 10.01000	6909.76790	1.44867e-3	

More compound-specific settings:

Compound: Hydrogen

Time Window : From 1.929 min To 2.165 min

Compound: Oxygen

Time Window : From 8.686 min To 9.125 min

Compound: Nitrogen

Time Window : From 9.070 min To 9.610 min

Compound: Carbon monoxide

Time Window : From 11.991 min To 12.741 min

Compound: Methane

Time Window : From 15.969 min To 16.737 min

Compound: Carbon Dioxide

Time Window : From 18.958 min To 19.804 min

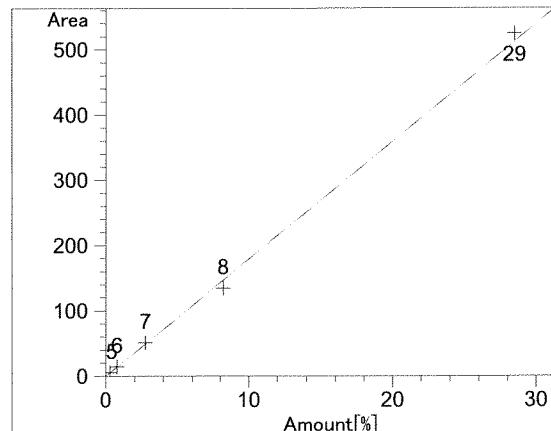
1 Warnings or Errors :

Warning : Overlapping peak time windows at 8.969 min, signal 1

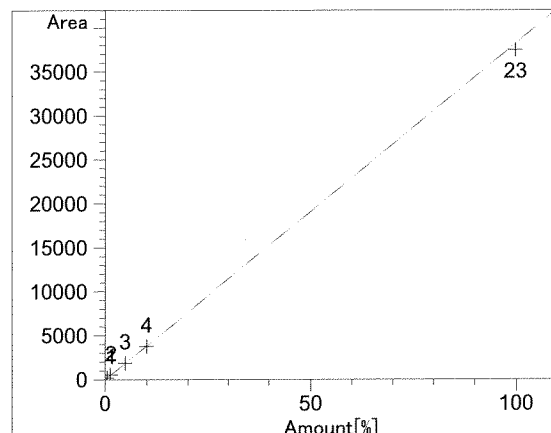
Peak Sum Table

No Entries in table

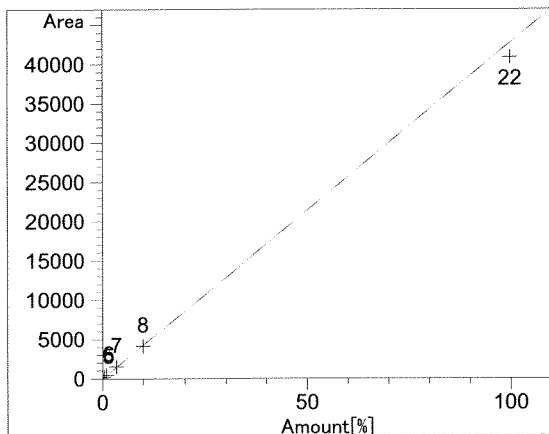
Calibration Curves



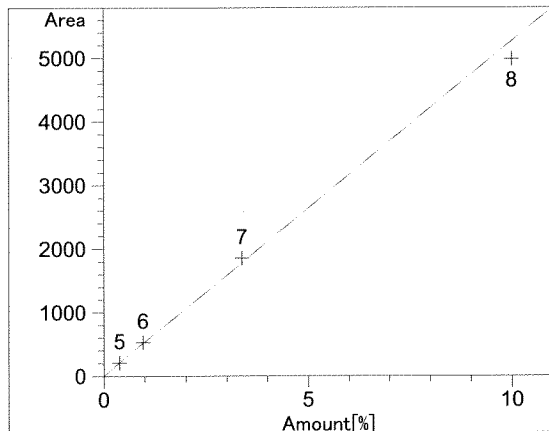
Hydrogen at exp. RT: 2.047
TCD1 A,
Correlation: 0.99816
Residual Std. Dev.: 10.19235
Formula: $y = mx + b$
m: 17.95758
b: -8.98765e-2
x: Amount
y: Area
Calibration Level Weights:
Level 5 : 1
Level 6 : 0.153982
Level 7 : 0.012616
Level 8 : 0.001429
Level 29 : 0.000118



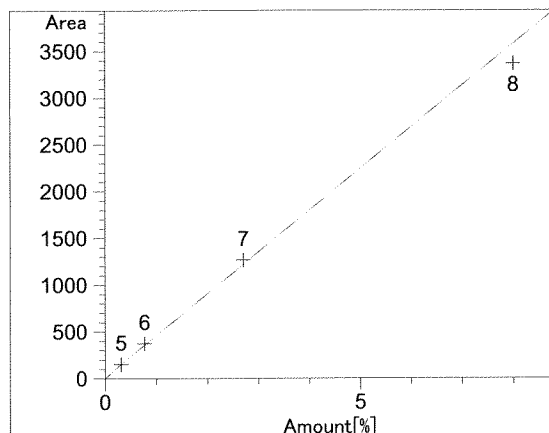
Oxygen at exp. RT: 8.969
TCD1 A,
Correlation: 0.99968
Residual Std. Dev.: 426.21037
Formula: $y = mx + b$
m: 381.90247
b: 10.53345
x: Amount
y: Area
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.167299
Level 3 : 0.012791
Level 4 : 0.002953
Level 23 : 0.00003



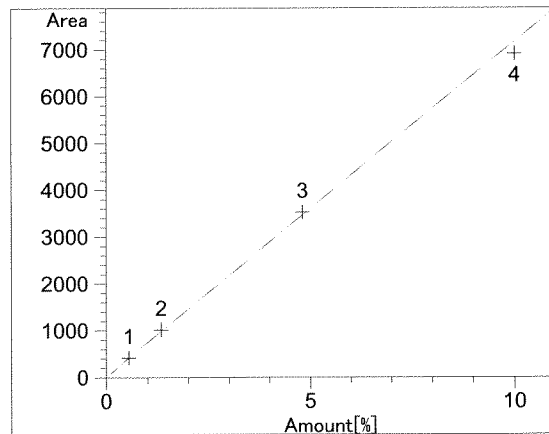
Nitrogen at exp. RT: 9.410
 TCD1 A,
 Correlation: 0.99861
 Residual Std. Dev.: 1069.57781
 Formula: $y = mx + b$
 m: 427.56420
 b: 26.03866
 x: Amount
 y: Area
 Calibration Level Weights:
 Level 5 : 1
 Level 6 : 0.156684
 Level 7 : 0.012715
 Level 8 : 0.001444
 Level 22 : 0.000014



Carbon monoxide at exp. RT: 12.591
 TCD1 A,
 Correlation: 0.99861
 Residual Std. Dev.: 207.59836
 Formula: $y = mx + b$
 m: 525.28704
 b: 14.21056
 x: Amount
 y: Area
 Calibration Level Weights:
 Level 5 : 1
 Level 6 : 0.156684
 Level 7 : 0.012715
 Level 8 : 0.001444

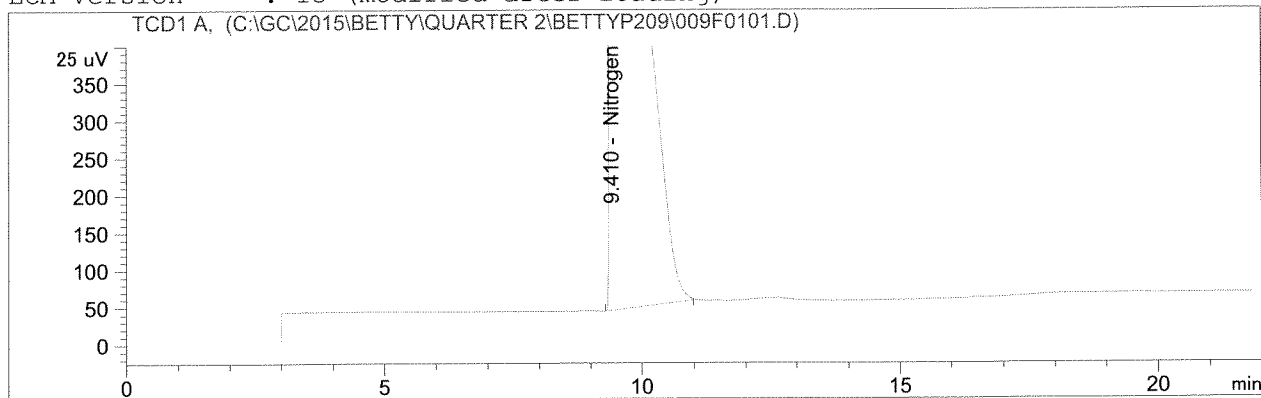


Methane at exp. RT: 16.387
 TCD1 A,
 Correlation: 0.99818
 Residual Std. Dev.: 156.06275
 Formula: $y = mx + b$
 m: 445.63688
 b: 17.58213
 x: Amount
 y: Area
 Calibration Level Weights:
 Level 5 : 1
 Level 6 : 0.162085
 Level 7 : 0.013182
 Level 8 : 0.001502



Carbon Dioxide at exp. RT: 19.573
 TCD1 A,
 Correlation: 0.99919
 Residual Std. Dev.: 193.00669
 Formula: $y = mx + b$
 m: 712.61305
 b: 41.55839
 x: Amount
 y: Area
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.167299
 Level 3 : 0.012791
 Level 4 : 0.002953

```
=====
Acq. Operator   : Chester Burnett                      Seq. Line :    1
Acq. Instrument : Betty                               Location  : Vial 9
Injection Date  : 6/24/2015 10:01:37 AM                Inj       :    1
                                                Inj Volume: 250 µl
Acq. Method     : C:\GC\2015\BETTY\QUARTER 2\BETTYP209\BETTYP017_CAL.M
Last changed    : 6/30/2014 5:46:14 PM by Thorne Gregory
Analysis Method : C:\GC\2015\BETTY\METHODS\BETTYP209_FGA_CRYO.M
Last changed    : 3/24/2016 9:25:02 AM by Nicholas Traversa
ECM Server      : http://ecm-server/enthalpy
ECM Operator    : Nicholas Traversa
ECM Path        : GC\2015\Betty\Quarter 2\BETTYP209.SC.SSIzip
ECM Version     : 15 (modified after loading)
=====
```



External Standard Report

```
=====
Sorted By           : Signal
Calib. Data Modified : 3/24/2016 9:24:48 AM
Multiplier          : 1.0000
Dilution            : 1.0000
Use Multiplier & Dilution Factor with ISTDs
=====
```

Signal 1: TCD1 A,

RetTime [min]	Type	Area [25 uV*s]	Amt/Area	Amount [%]	Grp	Name
2.047		-	-	-		Hydrogen
8.969		-	-	-		Oxygen
9.410	BB	4.06542e4	2.33733e-3	95.02229		Nitrogen
12.591		-	-	-		Carbon monoxide
16.387		-	-	-		Methane
19.573		-	-	-		Carbon Dioxide

Totals : 95.02229

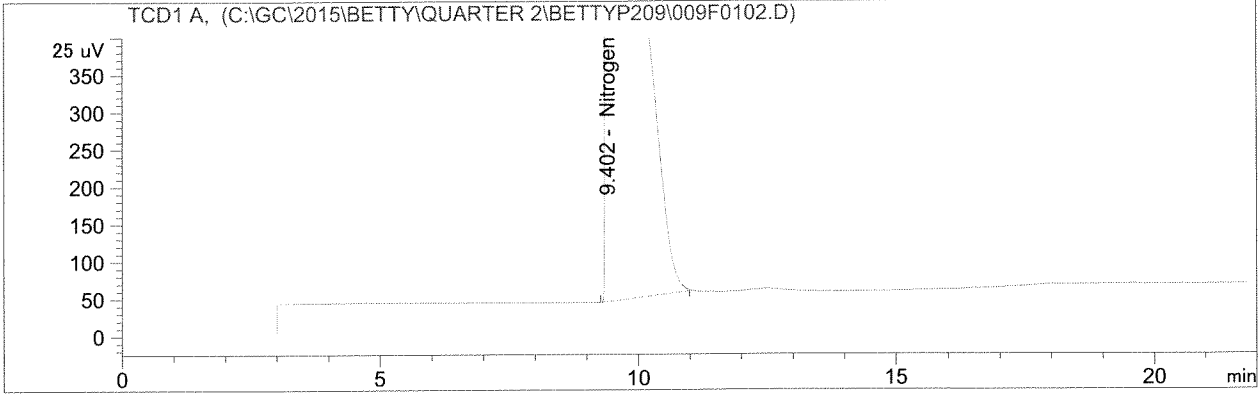
2 Warnings or Errors :

Warning : Calibration warnings (see calibration table listing)
Warning : Calibrated compound(s) not found

*** End of Report ***

=====

Acq. Operator	: Chester Burnett	Seq. Line	: 1
Acq. Instrument	: Betty	Location	: Vial 9
Injection Date	: 6/24/2015 10:31:36 AM	Inj	: 2
		Inj Volume	: 250 µl
Acq. Method	: C:\GC\2015\BETTY\QUARTER 2\BETTYP209\BETTYP017_CAL.M		
Last changed	: 6/30/2014 5:46:14 PM by Thorne Gregory		
Analysis Method	: C:\GC\2015\BETTY\METHODS\BETTYP209_FGA_CRYO.M		
Last changed	: 3/24/2016 9:25:02 AM by Nicholas Traversa		
ECM Server	: http://ecm-server/enthalpy		
ECM Operator	: Nicholas Traversa		
ECM Path	: GC\2015\Betty\Quarter 2\BETTYP209.SC.SSIzip		
ECM Version	: 15 (modified after loading)		



=====

External Standard Report

=====

Sorted By : Signal
Calib. Data Modified : 3/24/2016 9:24:48 AM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: TCD1 A,

RetTime [min]	Type	Area [25 uV*s]	Amt/Area	Amount [%]	Grp	Name
2.047	-	-	-	-	-	Hydrogen
8.969	-	-	-	-	-	Oxygen
9.402	BB	4.10650e4	2.33735e-3	95.98314	-	Nitrogen
12.591	-	-	-	-	-	Carbon monoxide
16.387	-	-	-	-	-	Methane
19.573	-	-	-	-	-	Carbon Dioxide

Totals : 95.98314

2 Warnings or Errors :

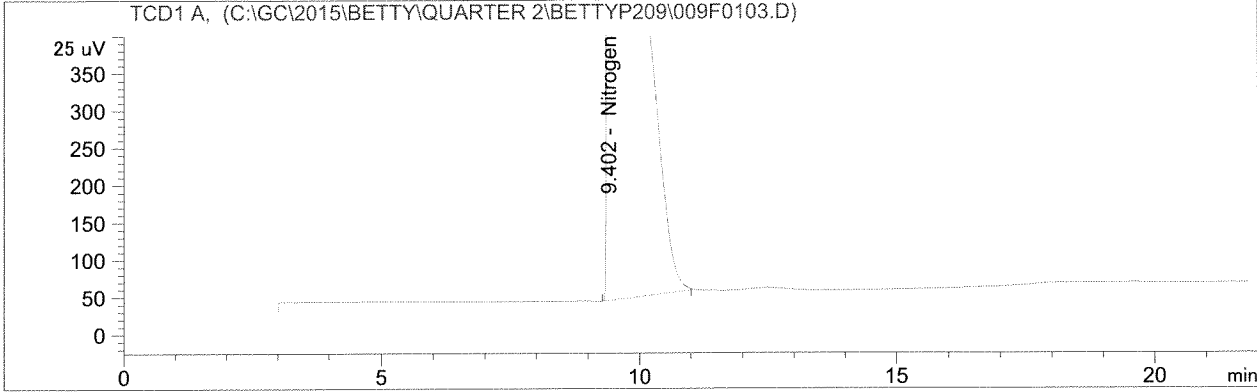
Warning : Calibration warnings (see calibration table listing)
Warning : Calibrated compound(s) not found

=====

*** End of Report ***

=====

Acq. Operator	: Chester Burnett	Seq. Line	: 1
Acq. Instrument	: Betty	Location	: Vial 9
Injection Date	: 6/24/2015 11:01:25 AM	Inj	: 3
		Inj Volume	: 250 µl
Acq. Method	: C:\GC\2015\BETTY\QUARTER 2\BETTY209\BETTY017_CAL.M		
Last changed	: 6/30/2014 5:46:14 PM by Thorne Gregory		
Analysis Method	: C:\GC\2015\BETTY\METHODS\BETTY209_FGA_CRYO.M		
Last changed	: 3/24/2016 9:25:02 AM by Nicholas Traversa		
ECM Server	: http://ecm-server/enthalpy		
ECM Operator	: Nicholas Traversa		
ECM Path	: GC\2015\Betty\Quarter 2\BETTY209.SC.SSIzip		
ECM Version	: 15 (modified after loading)		



=====

External Standard Report

=====

Sorted By : Signal
Calib. Data Modified : 3/24/2016 9:24:48 AM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: TCD1 A,

RetTime [min]	Type	Area [25 uV*s]	Amt/Area	Amount [%]	Grp	Name
2.047		-	-	-		Hydrogen
8.969		-	-	-		Oxygen
9.402	BB	4.09631e4	2.33734e-3	95.74482		Nitrogen
12.591		-	-	-		Carbon monoxide
16.387		-	-	-		Methane
19.573		-	-	-		Carbon Dioxide

Totals : 95.74482

2 Warnings or Errors :

Warning : Calibration warnings (see calibration table listing)
Warning : Calibrated compound(s) not found

=====

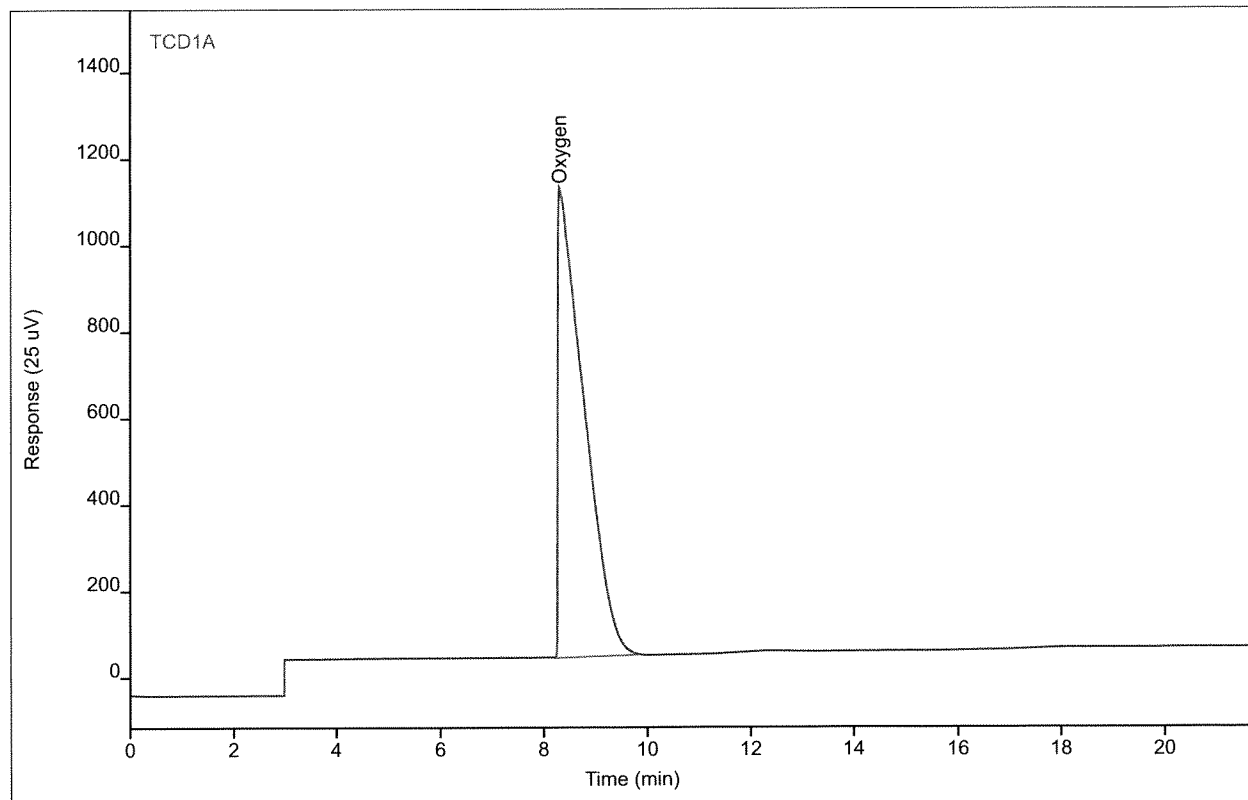
*** End of Report ***

Chromatogram Report

Enthalpy Analytical

Sample Name O2 99.999% #FG23
Sequence Name BETTYP209 ver.15
Data File 016F0301.D
File Location GC/2015/Betty/Quarter 2
Injection Date 6/24/2015 11:28 AM
File Modified 7/23/2015 12:11 PM
Instrument Betty
Operator Chester Burnett

Sample Type
Vial Number
Injection Volume
Injection
Acquisition Method
Analysis Method
Method Modified
Printed
Calibration
Vial 16
250
1 of 3
BETTYP017_CAL.M
BETTYP209_FGA_CRYO.M
7/23/2015 12:10 PM
7/23/2015 12:47 PM



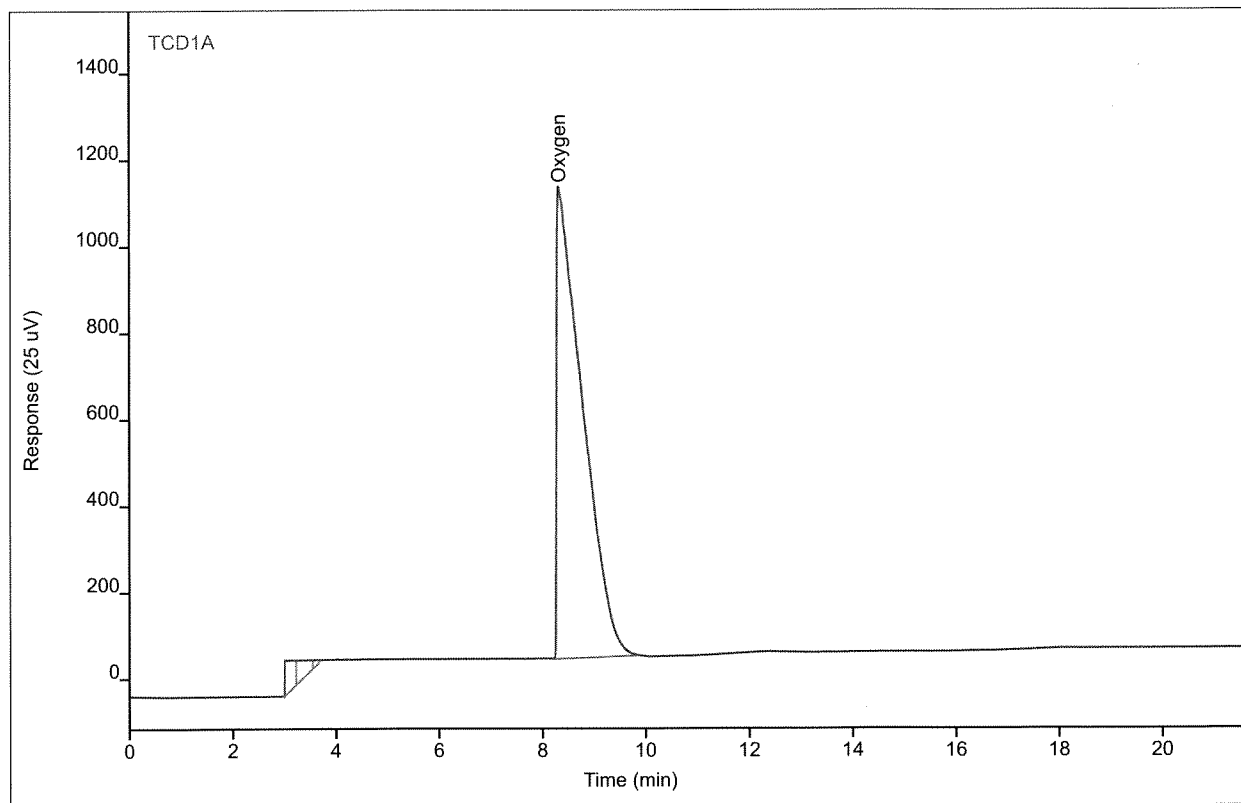
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(2.07)				1		
Oxygen	BB	8.33	37554.3	1087.29	98.3071	1	98.3071	%
Nitrogen		(9.41)				1		
Carbon monoxide		(12.66)				1		
Methane		(16.47)				1		
Carbon Dioxide		(19.57)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name O2 99.999% #FG23
Sequence Name BETTYP209 ver.15
Data File 016F0302.D
File Location GC/2015/Betty/Quarter 2
Injection Date 6/24/2015 11:56 AM
File Modified 7/23/2015 12:11 PM
Instrument Betty
Operator Chester Burnett

Sample Type Calibration
Vial Number Vial 16
Injection Volume 250
Injection 2 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP209_FGA_CRYO.M
Method Modified 7/23/2015 12:10 PM
Printed 7/23/2015 12:47 PM



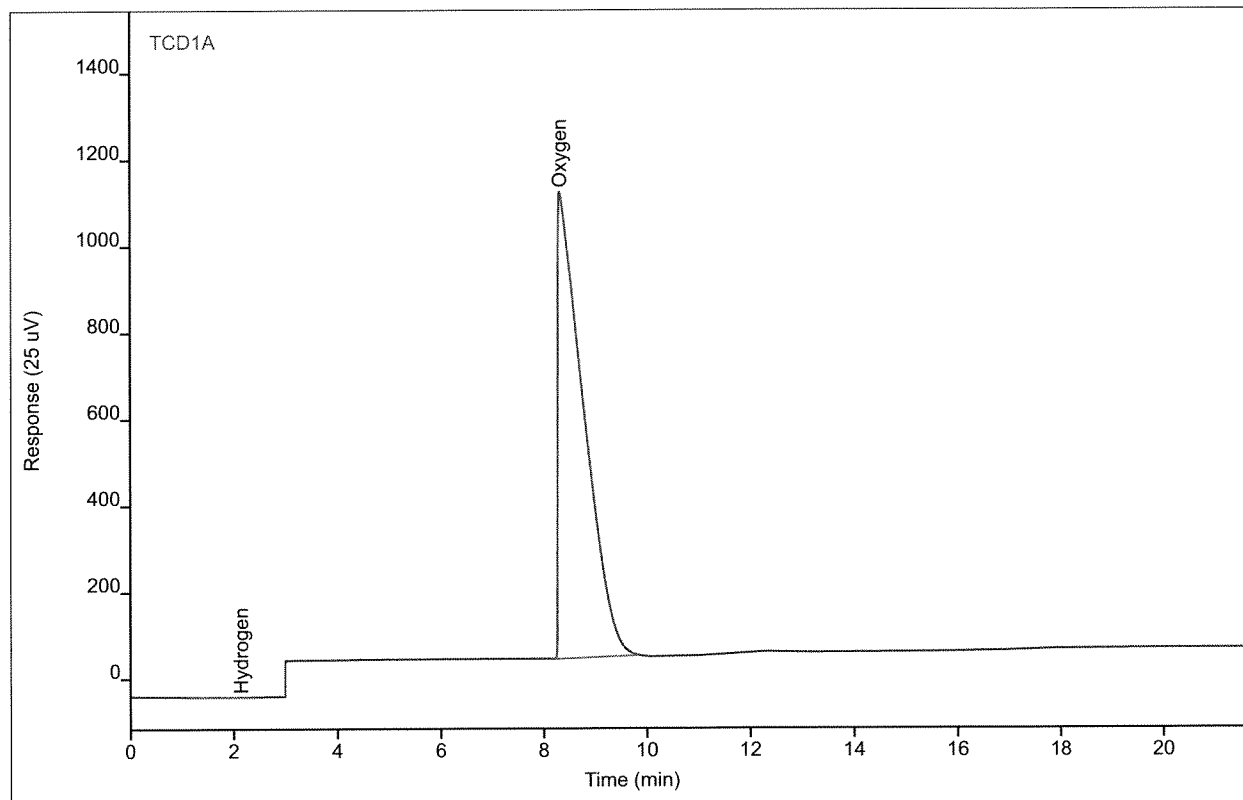
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
?	VV	3.51	771.074	25.0036		1		
?	VB	3.59	103.631	16.1120		1		
?	BV	3.20	928.600	60.9281		1		
Hydrogen		(2.07)				1		
Oxygen	BB	8.33	37575.0	1091.96	98.3614	1	98.3614	%
Nitrogen		(9.41)				1		
Carbon monoxide		(12.66)				1		
Methane		(16.47)				1		
Carbon Dioxide		(19.57)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name O2 99.999% #FG23
Sequence Name BETTYP209 ver.15
Data File 016F0303.D
File Location GC/2015/Betty/Quarter 2
Injection Date 6/24/2015 12:23 PM
File Modified 7/23/2015 12:11 PM
Instrument Betty
Operator Chester Burnett

Sample Type Calibration
Vial Number Vial 16
Injection Volume 250
Injection 3 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP209_FGA_CRYO.M
Method Modified 7/23/2015 12:10 PM
Printed 7/23/2015 12:47 PM



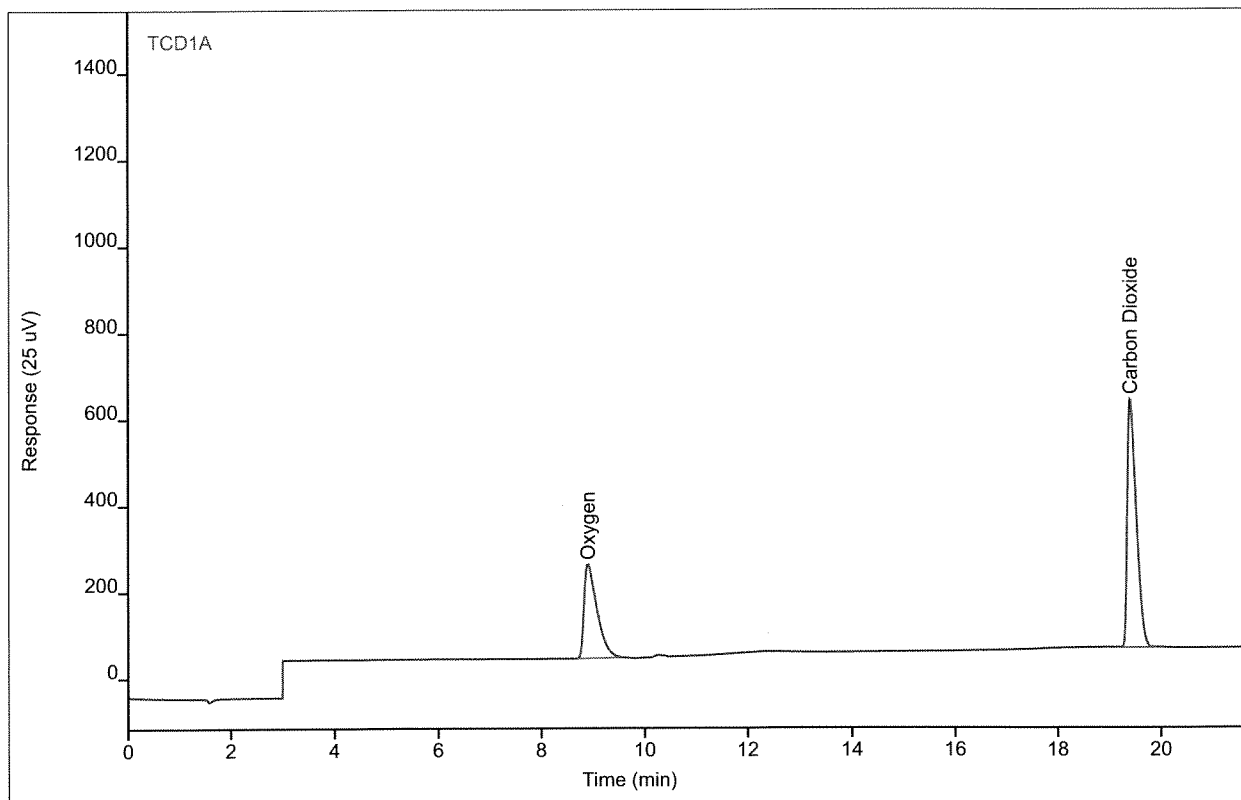
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
?	BV	1.44	35.8647	1.00630		1		
Hydrogen	VB	2.14	2.56380	0.30871	0.18578	1	0.18578	%
Oxygen	BB	8.33	37266.3	1080.49	97.5530	1	97.5530	%
Nitrogen		(9.41)				1		
Carbon monoxide		(12.66)				1		
Methane		(16.47)				1		
Carbon Dioxide		(19.57)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP070 #FG4 ENV(1=0,2=358.99)
Sequence Name BETTYP209 ver.15
Data File 009F0401.D
File Location GC/2015/Betty/Quarter 2
Injection Date 6/24/2015 12:53 PM
File Modified 7/23/2015 11:29 AM
Instrument Betty
Operator Chester Burnett

Sample Type
Vial Number
Injection Volume
Injection
Acquisition Method
Analysis Method
Method Modified
Printed
Calibration
Vial 9
250
1 of 3
BETTYP017_CAL.M
BETTYP209_FGA_CRYO.M
7/23/2015 12:10 PM
7/23/2015 12:47 PM



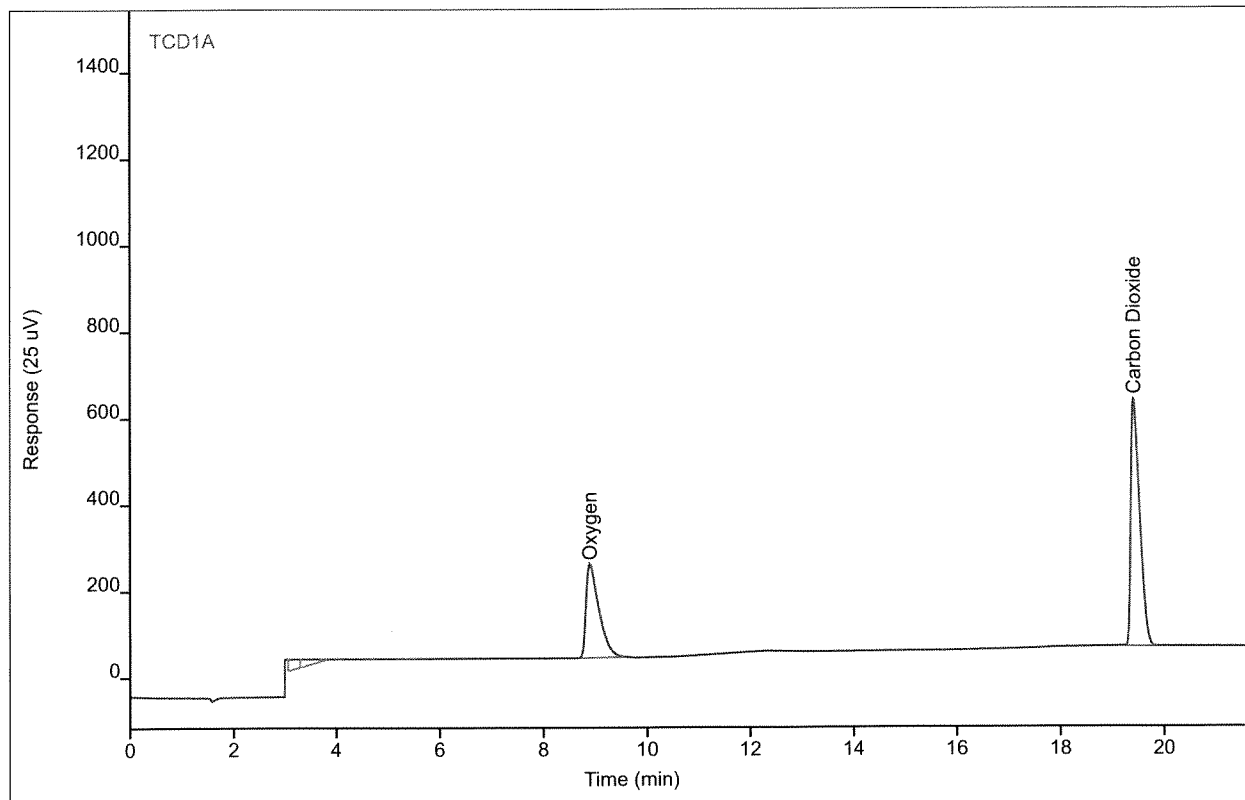
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(2.12)				1		
Oxygen	BB	8.90	3794.10	218.358	9.90714	1	9.90714	%
Nitrogen		(10.32)				1		
Carbon monoxide		(12.66)				1		
Methane		(16.47)				1		
Carbon Dioxide	MM	19.41	6917.48	576.146	9.65631	1	9.65631	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP070 #FG4 ENV(1=0,2=358.99)
 Sequence Name BETTYP209 ver.15
 Data File 009F0402.D
 File Location GC/2015/Betty/Quarter 2
 Injection Date 6/24/2015 1:23 PM
 File Modified 7/23/2015 11:29 AM
 Instrument Betty
 Operator Chester Burnett

Sample Type Calibration
 Vial Number Vial 9
 Injection Volume 250
 Injection 2 of 3
 Acquisition Method BETTYP017_CAL.M
 Analysis Method BETTYP209_FGA_CRYO.M
 Method Modified 7/23/2015 12:10 PM
 Printed 7/23/2015 12:47 PM



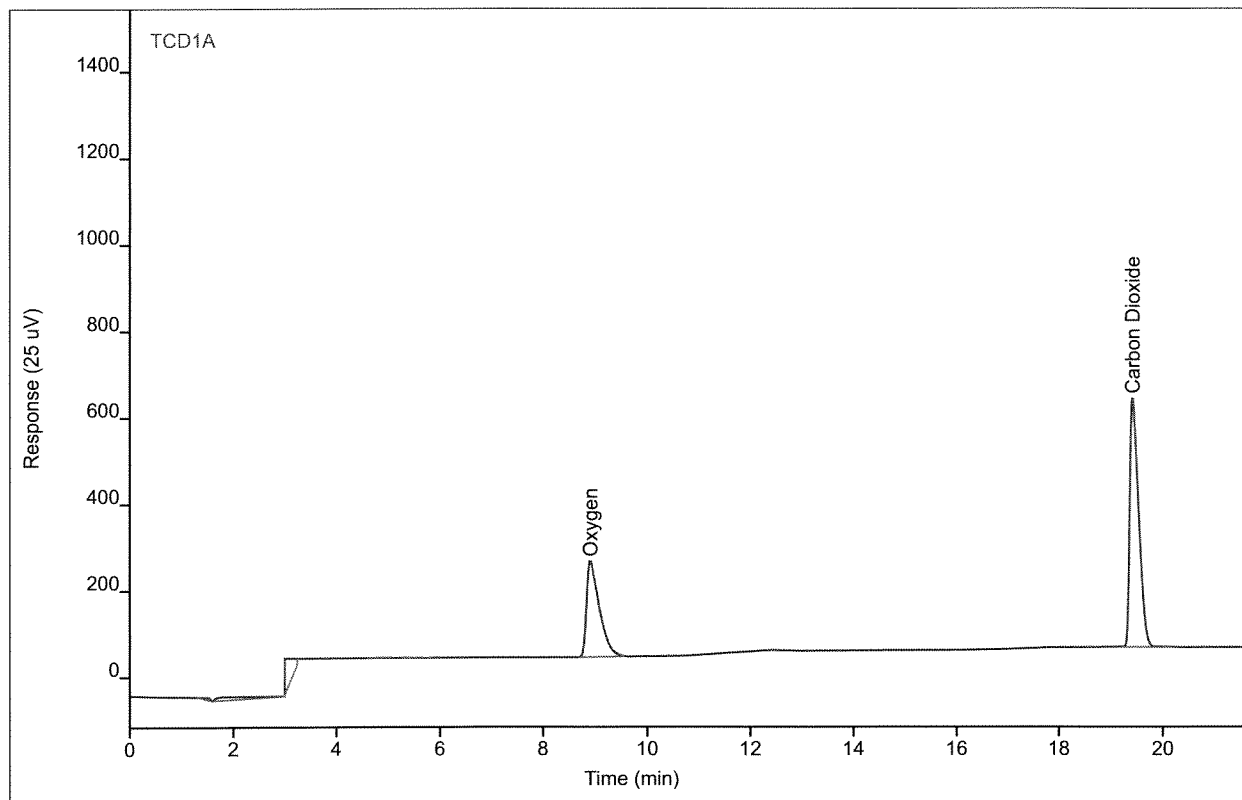
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
?	BV	4.74	4.04918	0.40809		1		
?	BV	4.10	1.30274	0.27732		1		
?	BV	3.23	332.033	22.6362		1		
?	VV	5.53	1.69649	0.24561		1		
?	BV	5.24	2.99967	0.39018		1		
?	VB	5.63	1.11602	0.26381		1		
?	VB	3.45	322.496	15.1499		1		
?	BB	3.74	28.3920	4.98907		1		
Hydrogen		(2.12)				1		
Oxygen	BB	8.91	3749.89	216.664	9.79139	1	9.79139	%
Nitrogen		(10.32)				1		
Carbon monoxide		(12.66)				1		
Methane		(16.47)				1		
Carbon Dioxide	MM	19.41	6854.54	573.042	9.56788	1	9.56788	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP070 #FG4 ENV(1=0,2=358.99)
 Sequence Name BETTYP209 ver.15
 Data File 009F0403.D
 File Location GC/2015/Betty/Quarter 2
 Injection Date 6/24/2015 1:52 PM
 File Modified 7/23/2015 11:29 AM
 Instrument Betty
 Operator Chester Burnett

Sample Type
 Vial Number Vial 9
 Injection Volume 250
 Injection 3 of 3
 Acquisition Method BETTYP017_CAL.M
 Analysis Method BETTYP209_FGA_CRYO.M
 Method Modified 7/23/2015 12:10 PM
 Printed 7/23/2015 12:47 PM



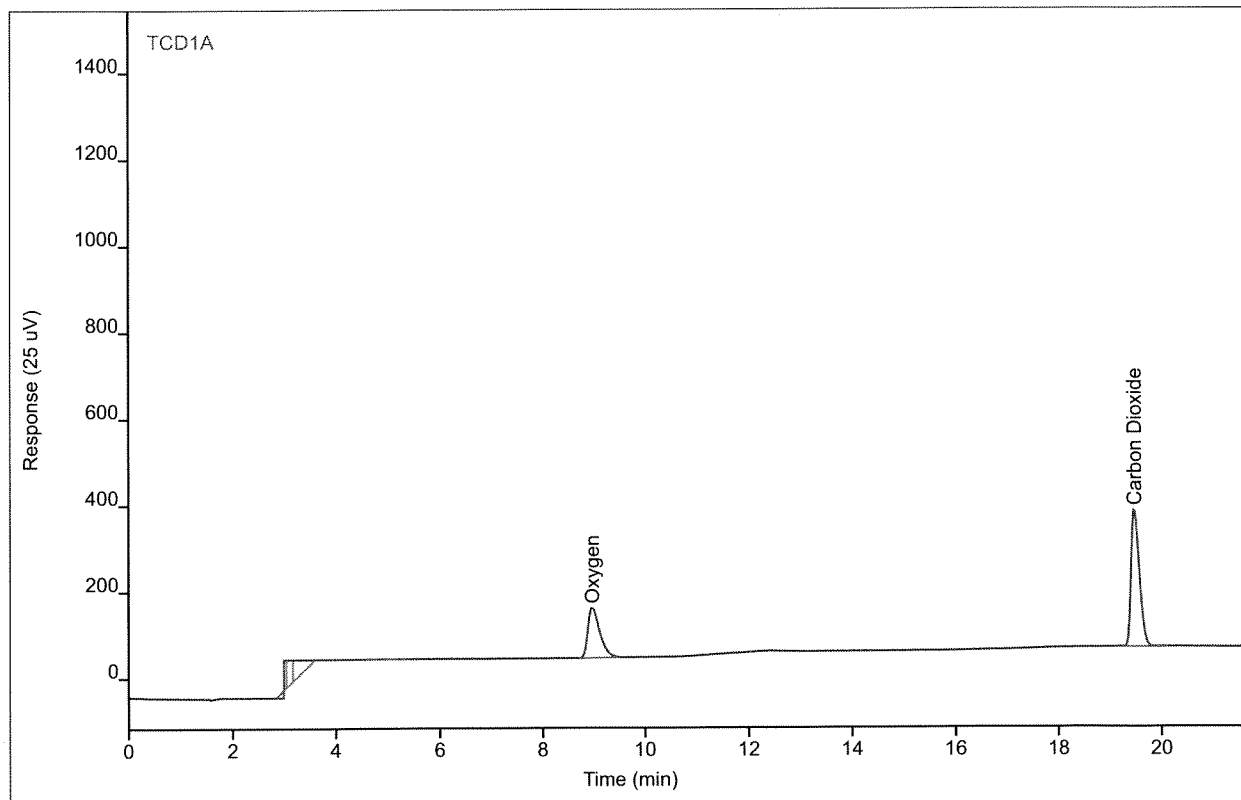
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
?	BV	5.59	1.76345	0.28809		1		
?	BB	5.30	1.09445	0.26829		1		
?	VB	5.73	1.08640	0.35516		1		
?	BV	1.48	66.5766	6.47789		1		
?	BV	4.77	4.11549	0.40070		1		
?	VV	2.47	403.496	4.35509		1		
?	VB	3.07	725.880	64.1523		1		
?	VB	4.90	2.13294	0.36700		1		
Hydrogen		(2.12)				1		
Oxygen	BB	8.91	3790.32	223.265	9.89725	1	9.89725	%
Nitrogen		(10.32)				1		
Carbon monoxide		(12.66)				1		
Methane		(16.47)				1		
Carbon Dioxide	MM	19.41	6957.29	577.325	9.71225	1	9.71225	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP070 #FG3 ENV(1=374.56,2=391.18)
 Sequence Name BETTYP209 ver.15
 Data File 009F0501.D
 File Location GC/2015/Betty/Quarter 2
 Injection Date 6/24/2015 2:22 PM
 File Modified 7/23/2015 11:29 AM
 Instrument Betty
 Operator Chester Burnett

Sample Type Calibration
 Vial Number Vial 9
 Injection Volume 250
 Injection 1 of 3
 Acquisition Method BETTYP017_CAL.M
 Analysis Method BETTYP209_FGA_CRYO.M
 Method Modified 7/23/2015 12:10 PM
 Printed 7/23/2015 12:47 PM



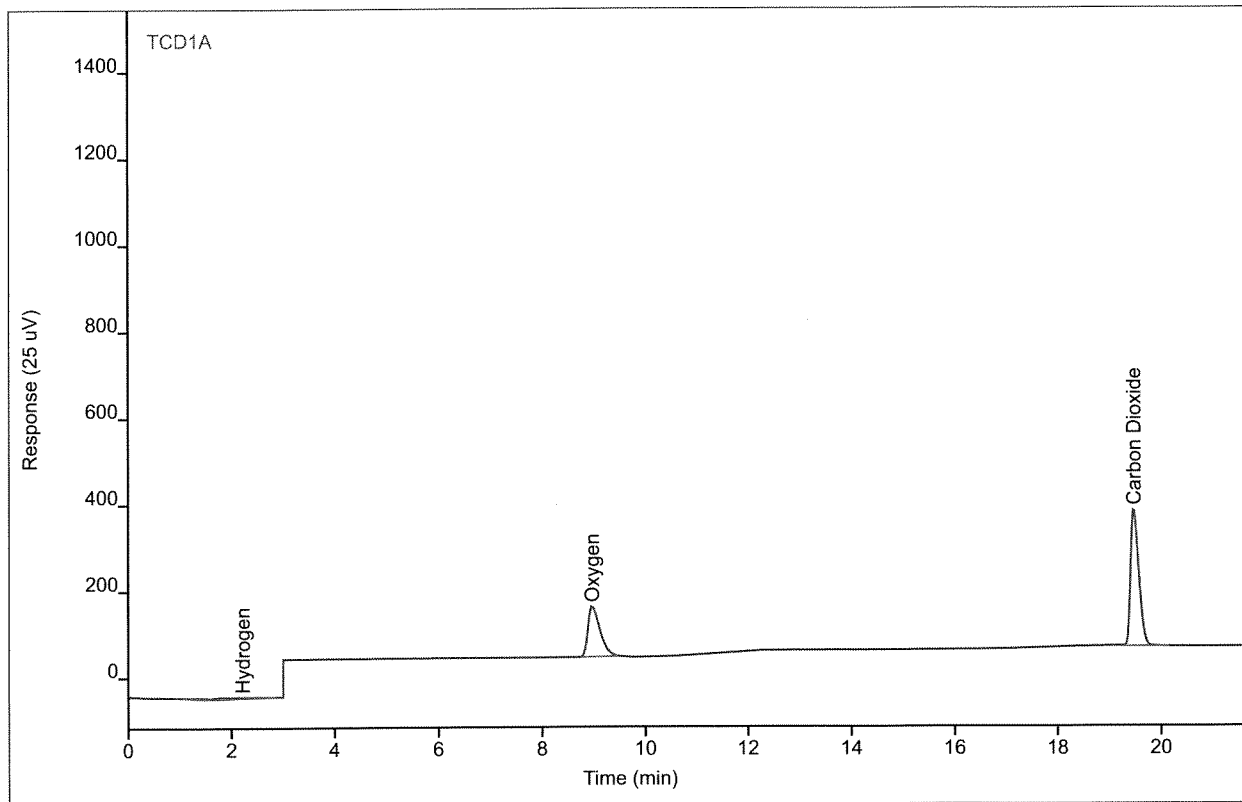
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
?	BV	3.02	119.761	70.5758		1		
?	VV	4.72	4.83026	0.62773		1		
?	BB	5.05	4.73888	0.46953		1		
?	VB	3.29	671.787	37.7567		1		
?	VV	3.12	439.998	57.6324		1		
?	VB	4.84	1.76323	0.45602		1		
?	BV	4.60	1.15390	0.35488		1		
?	BB	5.31	1.09147	0.22290		1		
Hydrogen		(2.12)				1		
Oxygen	BB	8.97	1886.74	116.525	4.91280	1	4.91280	%
Nitrogen		(10.32)				1		
Carbon monoxide		(12.66)				1		
Methane		(16.47)				1		
Carbon Dioxide	MM	19.48	3534.71	317.187	4.90362	1	4.90362	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP070 #FG3 ENV(1=374.56,2=391.18)
Sequence Name BETTYP209 ver.15
Data File 009F0502.D
File Location GC/2015/Betty/Quarter 2
Injection Date 6/24/2015 2:52 PM
File Modified 7/23/2015 11:29 AM
Instrument Betty
Operator Chester Burnett

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 2 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP209_FGA_CRYO.M
Method Modified 7/23/2015 12:10 PM
Printed 7/23/2015 12:47 PM



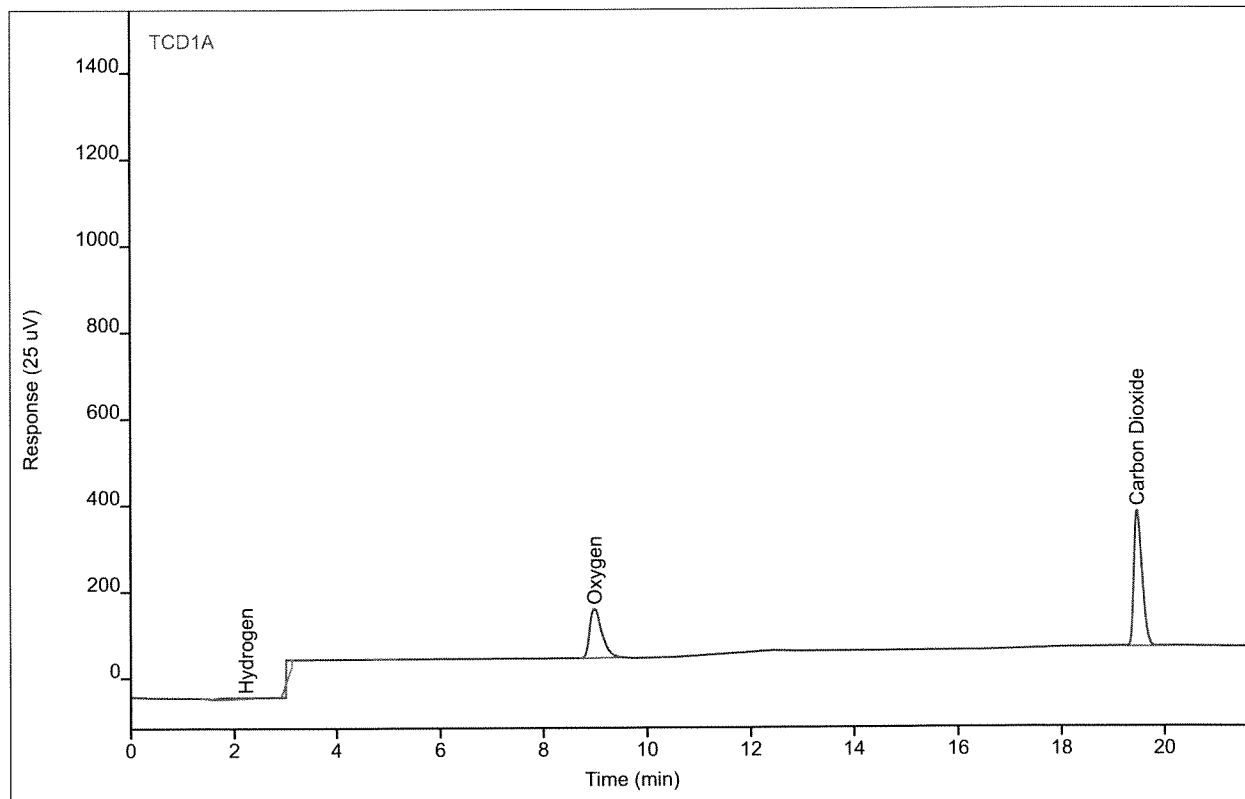
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
?	VV	1.50	87.2012	4.63347		1		
?	BV	1.11	33.1340	2.56250		1		
Hydrogen	VV	2.22	180.488	2.86920	11.9571	1	11.9571	%
Oxygen	BB	8.97	1879.79	116.870	4.89460	1	4.89460	%
Nitrogen		(10.32)				1		
Carbon monoxide		(12.66)				1		
Methane		(16.47)				1		
Carbon Dioxide	MM	19.48	3520.38	316.168	4.88348	1	4.88348	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP070 #FG3 ENV(1=374.56,2=391.18)
 Sequence Name BETTYP209 ver.15
 Data File 009F0503.D
 File Location GC/2015/Betty/Quarter 2
 Injection Date 6/24/2015 3:22 PM
 File Modified 7/23/2015 11:30 AM
 Instrument Betty
 Operator Chester Burnett

Sample Type Calibration
 Vial Number Vial 9
 Injection Volume 250
 Injection 3 of 3
 Acquisition Method BETTYP017_CAL.M
 Analysis Method BETTYP209_FGA_CRYO.M
 Method Modified 7/23/2015 12:10 PM
 Printed 7/23/2015 12:47 PM



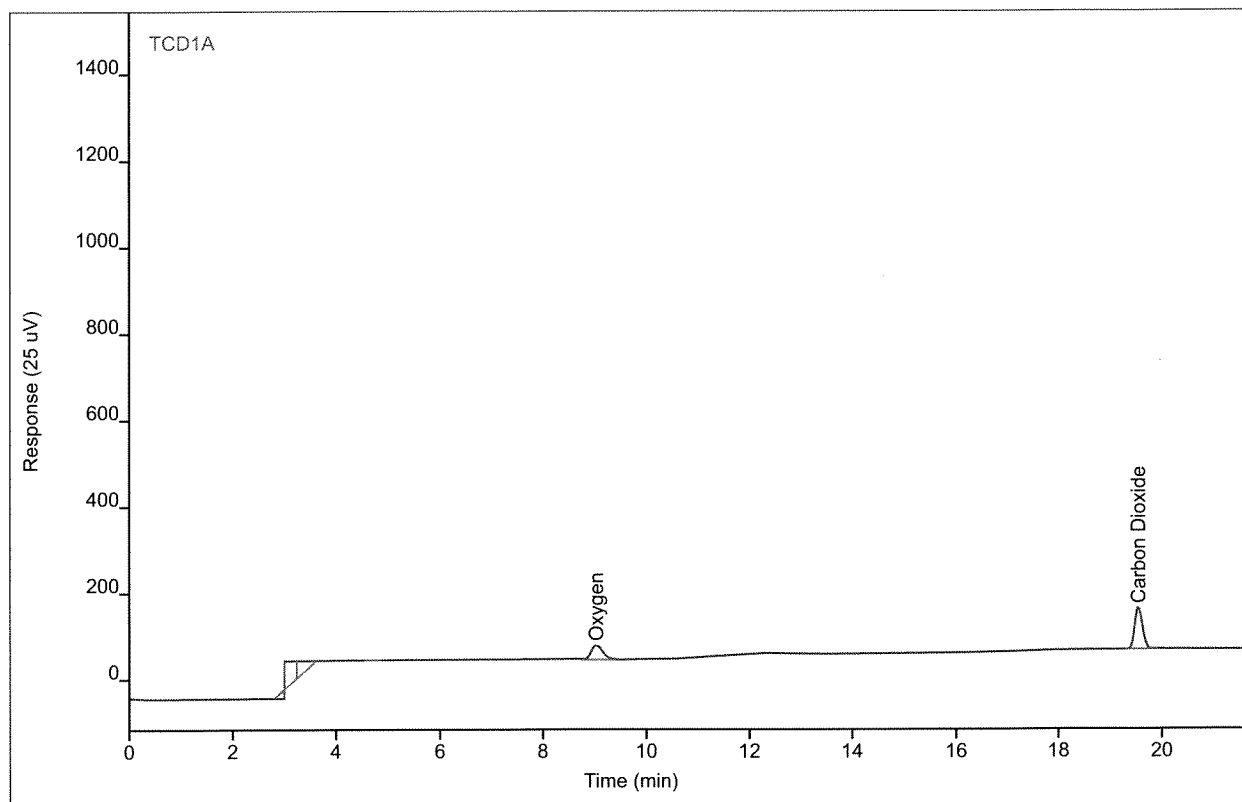
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
?	VV	4.90	3.31082	0.43548		1		
?	BV	1.46	29.2454	2.75103		1		
?	VB	5.02	2.90801	0.32670		1		
?	BB	3.02	154.023	50.7444		1		
?	VV	4.69	4.26213	0.46804		1		
Hydrogen	VV	2.23	135.263	2.45799	8.96517	1	8.96517	%
Oxygen	BB	8.99	1877.32	114.333	4.88811	1	4.88811	%
Nitrogen		(10.32)				1		
Carbon monoxide		(12.66)				1		
Methane		(16.47)				1		
Carbon Dioxide	MM	19.48	3520.26	315.360	4.88331	1	4.88331	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP070 #FG2 ENV(1=1272.08,2=219.94)
 Sequence Name BETTYP209 ver.15
 Data File 009F0601.D
 File Location GC/2015/Betty/Quarter 2
 Injection Date 6/24/2015 3:52 PM
 File Modified 7/23/2015 11:30 AM
 Instrument Betty
 Operator Chester Burnett

Sample Type Calibration
 Vial Number Vial 9
 Injection Volume 250
 Injection 1 of 3
 Acquisition Method BETTYP017_CAL.M
 Analysis Method BETTYP209_FGA_CRYO.M
 Method Modified 7/23/2015 12:10 PM
 Printed 7/23/2015 12:47 PM



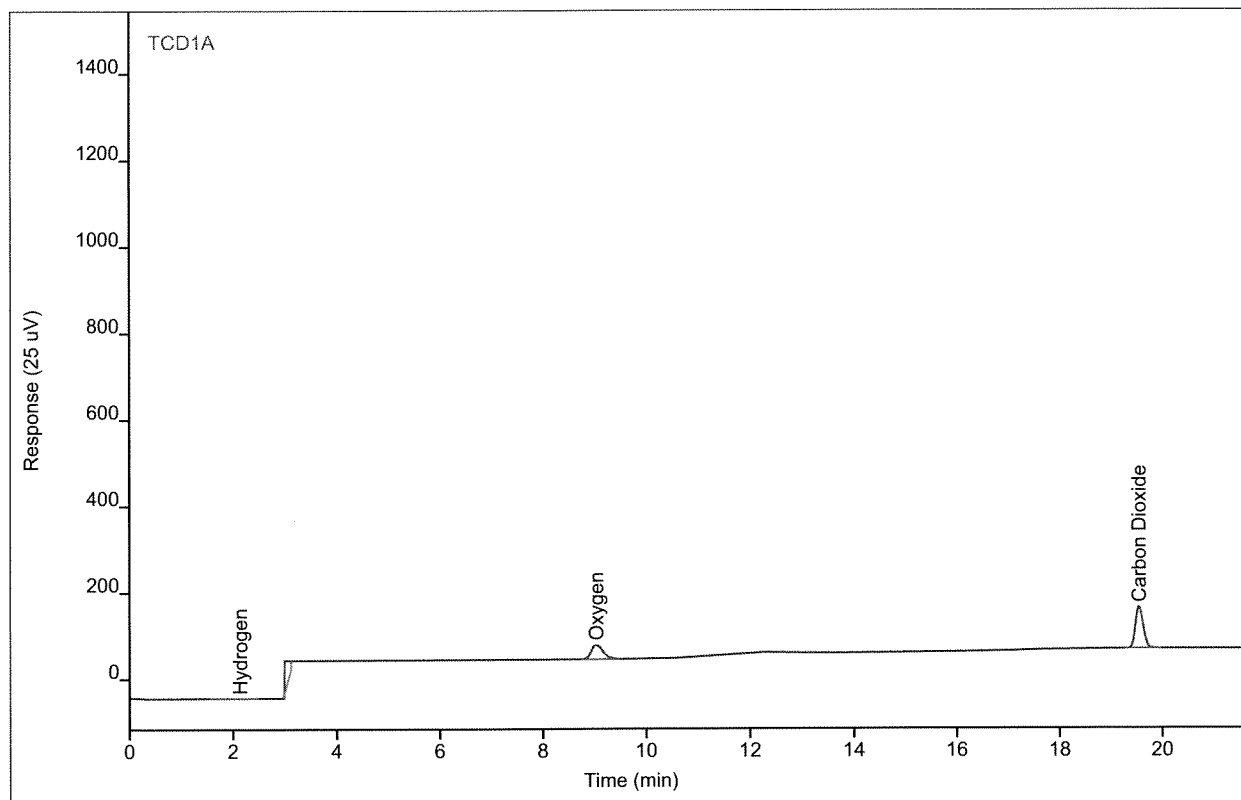
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
?	VB	3.36	480.188	29.2607		1		
?	BB	4.72	2.62776	0.42083		1		
?	BV	3.02	643.563	65.7392		1		
Hydrogen		(2.12)				1		
Oxygen	BB	9.03	529.673	33.9172	1.35935	1	1.35935	%
Nitrogen		(10.32)				1		
Carbon monoxide		(12.66)				1		
Methane		(16.47)				1		
Carbon Dioxide	MM	19.55	1015.25	96.0081	1.36384	1	1.36384	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP070 #FG2 ENV(1=1272.08,2=219.94)
 Sequence Name BETTYP209 ver.15
 Data File 009F0602.D
 File Location GC/2015/Betty/Quarter 2
 Injection Date 6/24/2015 4:21 PM
 File Modified 7/23/2015 11:30 AM
 Instrument Betty
 Operator Chester Burnett

Sample Type Calibration
 Vial Number Vial 9
 Injection Volume 250
 Injection 2 of 3
 Acquisition Method BETTYP017_CAL.M
 Analysis Method BETTYP209_FGA_CRYO.M
 Method Modified 7/23/2015 12:10 PM
 Printed 7/23/2015 12:47 PM



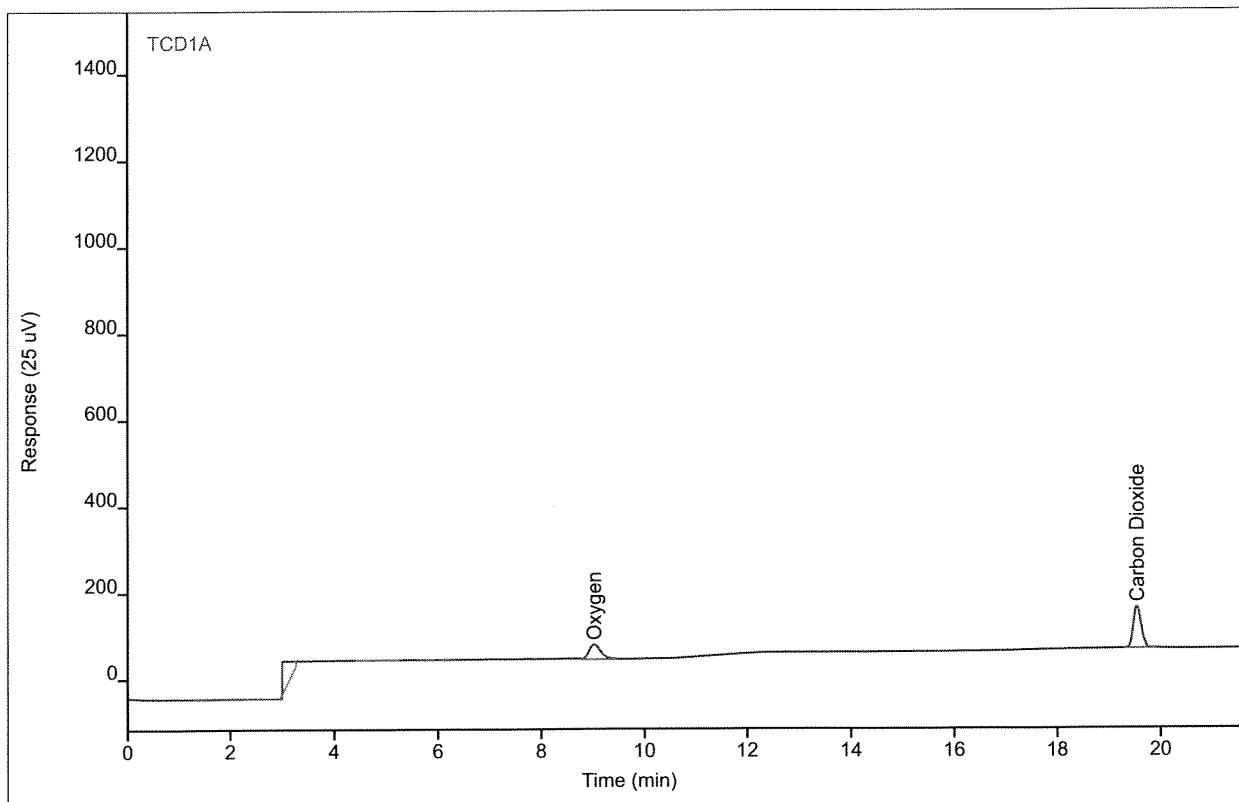
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
?	VB	2.43	1.90608	0.28758		1		
?	VV	2.26	2.81387	0.41121		1		
?	BB	3.02	365.282	71.3322		1		
Hydrogen	BV	2.14	12.6786	0.60943	0.85551	1	0.85551	%
Oxygen	BB	9.03	532.716	34.0263	1.36732	1	1.36732	%
Nitrogen		(10.32)				1		
Carbon monoxide		(12.66)				1		
Methane		(16.47)				1		
Carbon Dioxide	MM	19.55	1027.99	96.6383	1.38175	1	1.38175	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP070 #FG2 ENV(1=1272.08,2=219.94)
 Sequence Name BETTYP209 ver.15
 Data File 009F0603.D
 File Location GC/2015/Betty/Quarter 2
 Injection Date 6/24/2015 4:51 PM
 File Modified 7/23/2015 11:30 AM
 Instrument Betty
 Operator Chester Burnett

Sample Type Calibration
 Vial Number Vial 9
 Injection Volume 250
 Injection 3 of 3
 Acquisition Method BETTYP017_CAL.M
 Analysis Method BETTYP209_FGA_CRYO.M
 Method Modified 7/23/2015 12:10 PM
 Printed 7/23/2015 12:47 PM



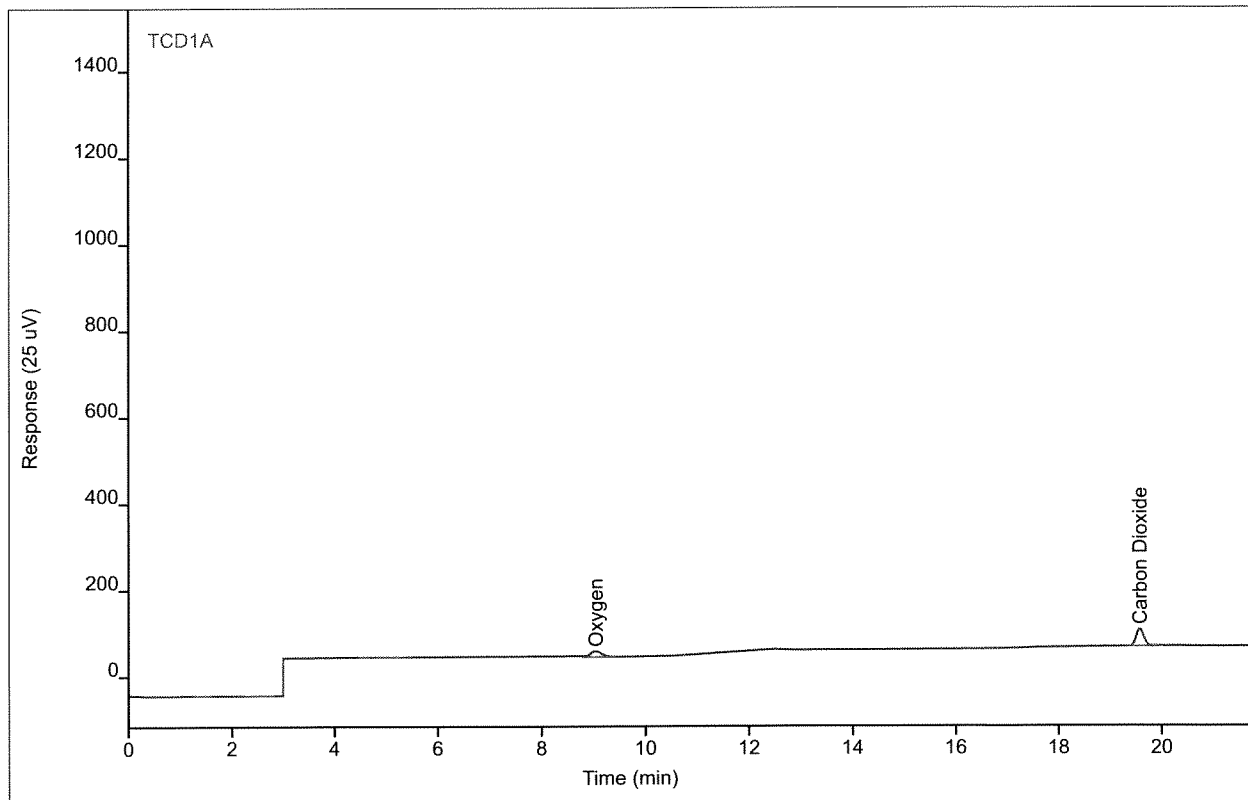
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
?	VB	5.79	1.92117	0.37755		1		
?	VV	5.00	2.66323	0.43564		1		
?	VV	2.64	5.97584	0.62839		1		
?	BV	4.62	1.99308	0.38828		1		
?	VV	2.27	61.2127	1.14749		1		
?	VB	5.11	1.54117	0.31966		1		
?	VV	2.88	1.60954	0.35413		1		
?	BV	1.46	18.9470	1.37617		1		
?	VB	3.07	728.380	62.1411		1		
?	VB	6.13	2.70757	0.37252		1		
?	BV	5.64	1.14716	0.31755		1		
?	VV	4.76	4.01393	0.39793		1		
Hydrogen		(2.12)				1		
Oxygen	BB	9.03	535.550	34.8530	1.37474	1	1.37474	%
Nitrogen		(10.32)				1		
Carbon monoxide		(12.66)				1		
Methane		(16.47)				1		
Carbon Dioxide	MM	19.55	1024.24	96.9965	1.37647	1	1.37647	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP070 #FG1 ENV(1=3392.23,2=219.94)
 Sequence Name BETTYP209 ver.15
 Data File 009F0701.D
 File Location GC/2015/Betty/Quarter 2
 Injection Date 6/24/2015 5:21 PM
 File Modified 7/23/2015 11:30 AM
 Instrument Betty
 Operator Chester Burnett

Sample Type Calibration
 Vial Number Vial 9
 Injection Volume 250
 Injection 1 of 8
 Acquisition Method BETTYP017_CAL.M
 Analysis Method BETTYP209_FGA_CRYO.M
 Method Modified 7/23/2015 12:10 PM
 Printed 7/23/2015 12:47 PM



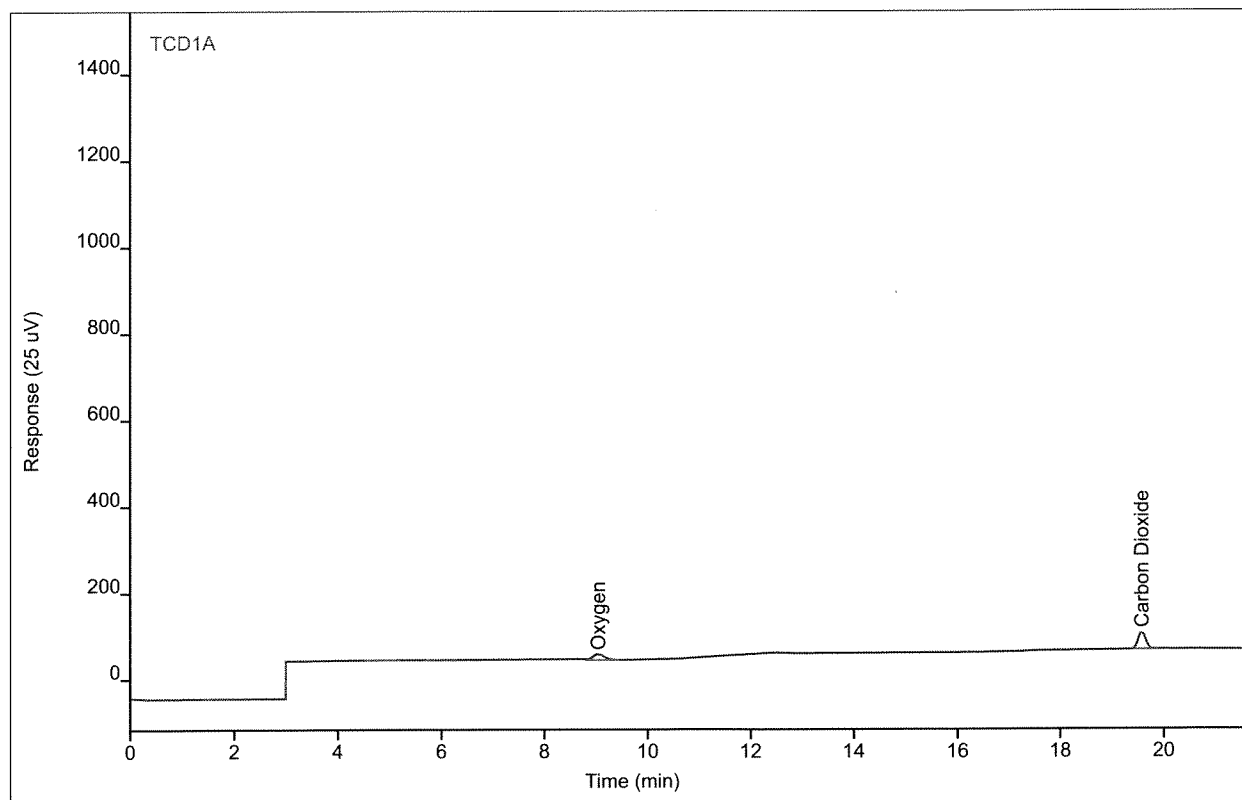
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
?	BV	4.99	17.6586	0.54161		1		
?	BV	2.32	5.57168	0.59586		1		
?	BV	1.51	5.65855	0.50313		1		
?	VV	2.61	3.12562	0.38332		1		
?	VV	2.78	1.54822	0.30933		1		
?	VV	2.47	2.12618	0.45412		1		
Hydrogen		(2.12)				1		
Oxygen	BB	9.05	214.725	13.9341	0.53512	1	0.53512	%
Nitrogen		(10.32)				1		
Carbon monoxide		(12.66)				1		
Methane		(16.47)				1		
Carbon Dioxide	MM	19.57	423.172	40.1297	0.53283	1	0.53283	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP070 #FG1 ENV(1=3392.23,2=219.94)
 Sequence Name BETTYP209 ver.15
 Data File 009F0702.D
 File Location GC/2015/Betty/Quarter 2
 Injection Date 6/24/2015 5:51 PM
 File Modified 7/23/2015 11:30 AM
 Instrument Betty
 Operator Chester Burnett

Sample Type Calibration
 Vial Number Vial 9
 Injection Volume 250
 Injection 2 of 8
 Acquisition Method BETTYP017_CAL.M
 Analysis Method BETTYP209_FGA_CRYO.M
 Method Modified 7/23/2015 12:10 PM
 Printed 7/23/2015 12:47 PM



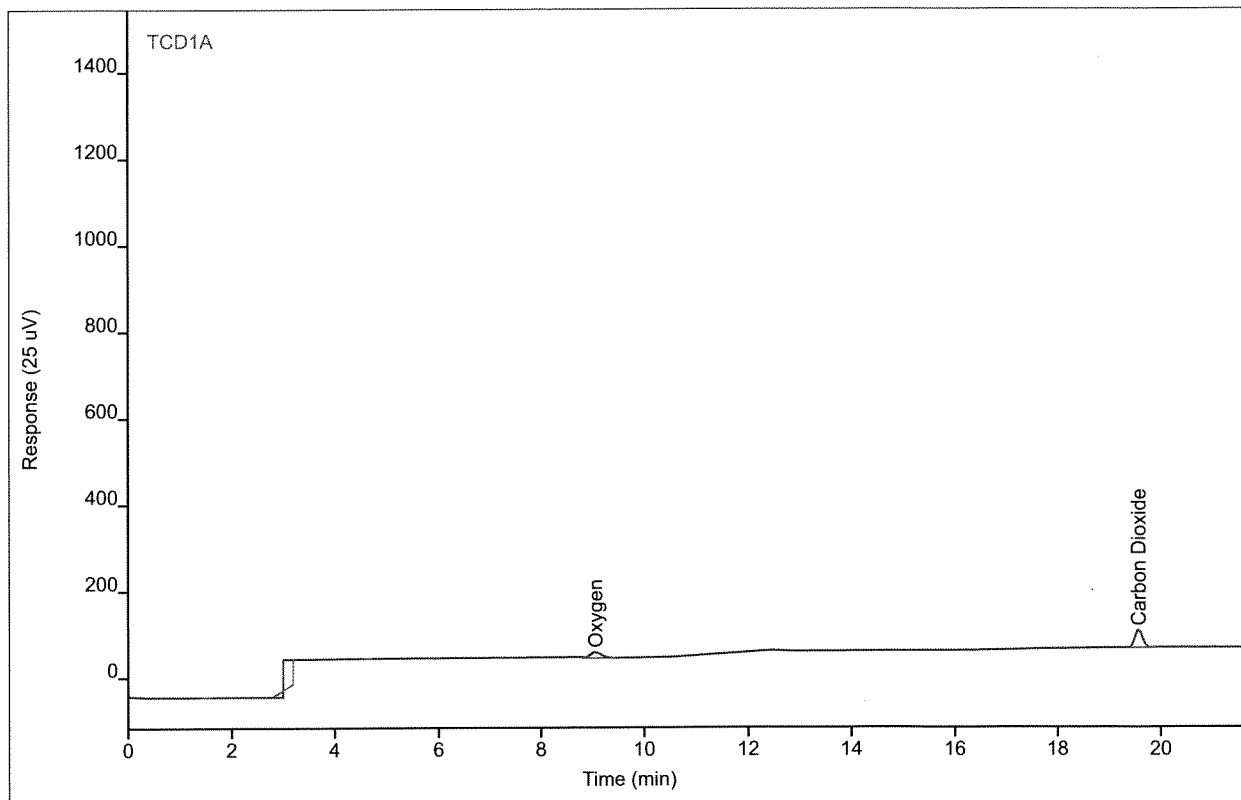
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
?	BV	1.45	3.15087	0.44002		1		
?	BV	4.72	4.20614	0.48932		1		
?	VB	5.02	2.55183	0.27862		1		
?	BB	6.14	1.24686	0.23469		1		
?	BB	5.82	1.51287	0.22623		1		
?	VV	4.90	2.86163	0.44424		1		
Hydrogen		(2.12)				1		
Oxygen	BB	9.05	215.668	13.8467	0.53747	1	0.53747	%
Nitrogen		(10.32)				1		
Carbon monoxide		(12.66)				1		
Methane		(16.47)				1		
Carbon Dioxide	MM	19.57	420.526	39.8516	0.52949	1	0.52949	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP070 #FG1 ENV(1=3392.23,2=219.94)
 Sequence Name BETTYP209 ver.15
 Data File 009F0703.D
 File Location GC/2015/Betty/Quarter 2
 Injection Date 6/24/2015 6:20 PM
 File Modified 7/23/2015 11:30 AM
 Instrument Betty
 Operator Chester Burnett

Sample Type Calibration
 Vial Number Vial 9
 Injection Volume 250
 Injection 3 of 8
 Acquisition Method BETTYP017_CAL.M
 Analysis Method BETTYP209_FGA_CRYO.M
 Method Modified 7/23/2015 12:10 PM
 Printed 7/23/2015 12:47 PM



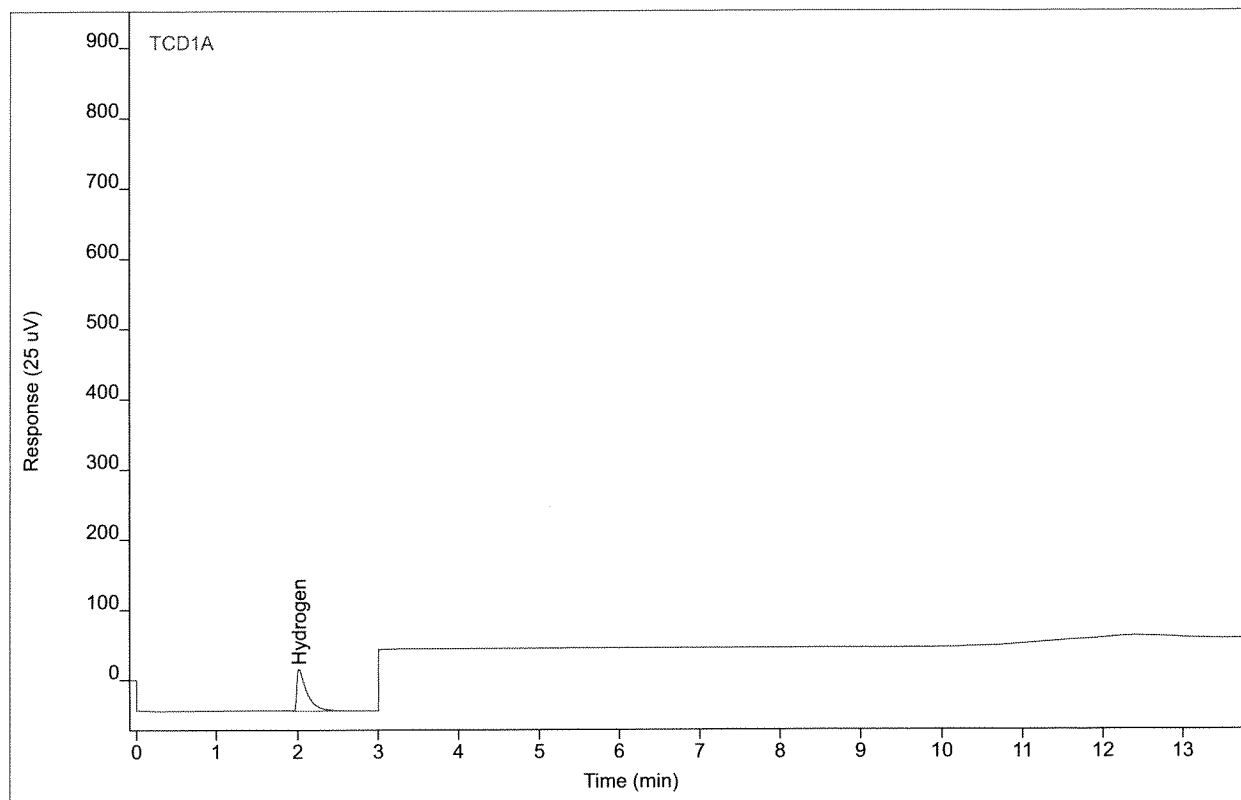
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
?	VB	3.04	668.472	70.3759		1		
?	BB	4.62	1.62261	0.34018		1		
?	BV	1.50	3.80463	0.53505		1		
?	VB	5.89	1.40129	0.35491		1		
Hydrogen		(2.12)				1		
Oxygen	BB	9.05	216.612	14.2341	0.53982	1	0.53982	%
Nitrogen		(10.32)				1		
Carbon monoxide		(12.66)				1		
Methane		(16.47)				1		
Carbon Dioxide	MM	19.57	427.523	40.6313	0.53830	1	0.53830	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG29 ENV(1=706.66,6=396.04)
Sequence Name BETTYP348 ver.1
Data File 009F0401.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/23/2016 9:02 AM
File Modified 3/24/2016 9:52 AM
Instrument
Operator Justin Guenzler

Sample Type
Vial Number
Injection Volume
Injection
Acquisition Method
Analysis Method
Method Modified
Printed
Calibration
Vial 9
250
1 of 3
BETTYP017_CAL.M
BETTYP348_FGA_CRYO.M
3/24/2016 9:43 AM
3/24/2016 9:56 AM



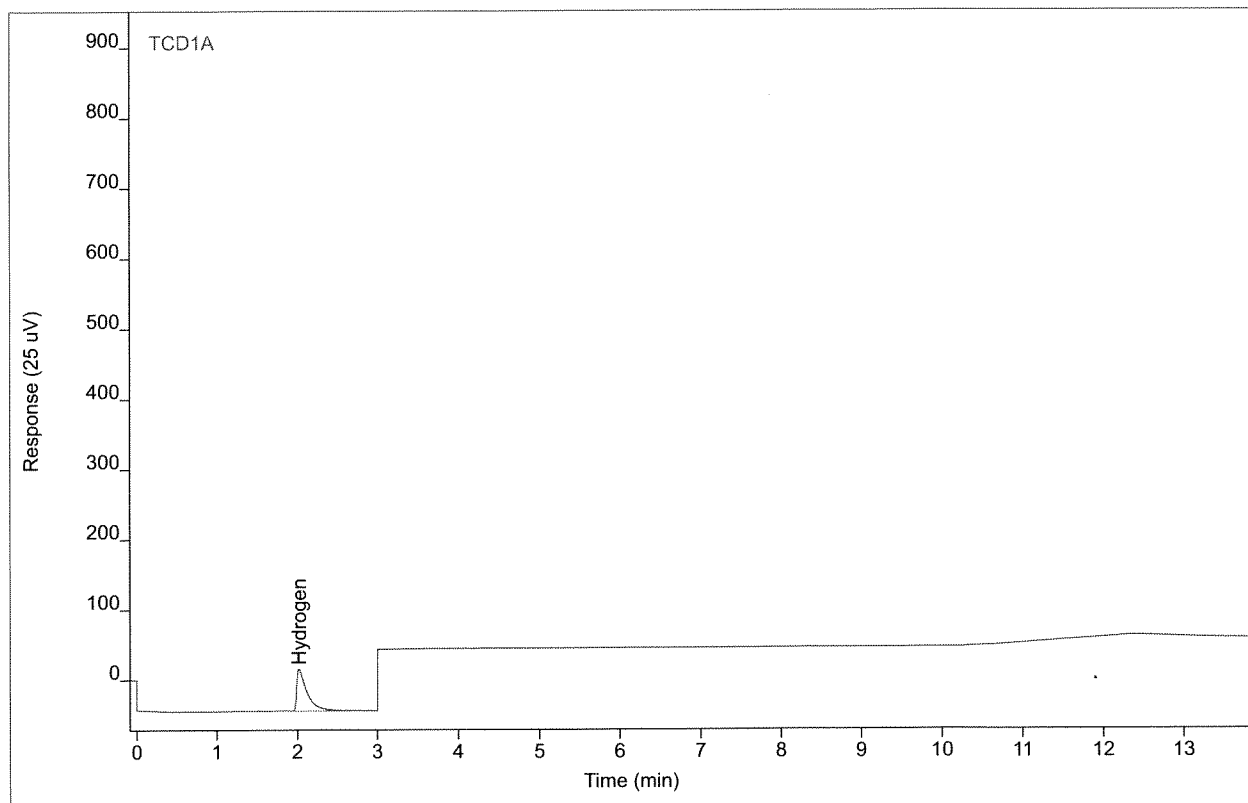
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	BB	2.02	519.372	60.1510	28.9272	1	28.9272	%
Nitrogen		(10.17)				1		
Carbon monoxide		(12.59)				1		
Methane		(16.39)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG29 ENV(1=706.66,6=396.04)
Sequence Name BETTYP348 ver.1
Data File 009F0402.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/23/2016 9:32 AM
File Modified 3/24/2016 9:52 AM
Instrument
Operator Justin Guenzler

Sample Type
Vial Number Vial 9
Injection Volume 250
Injection 2 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 3/24/2016 9:43 AM
Printed 3/24/2016 9:56 AM



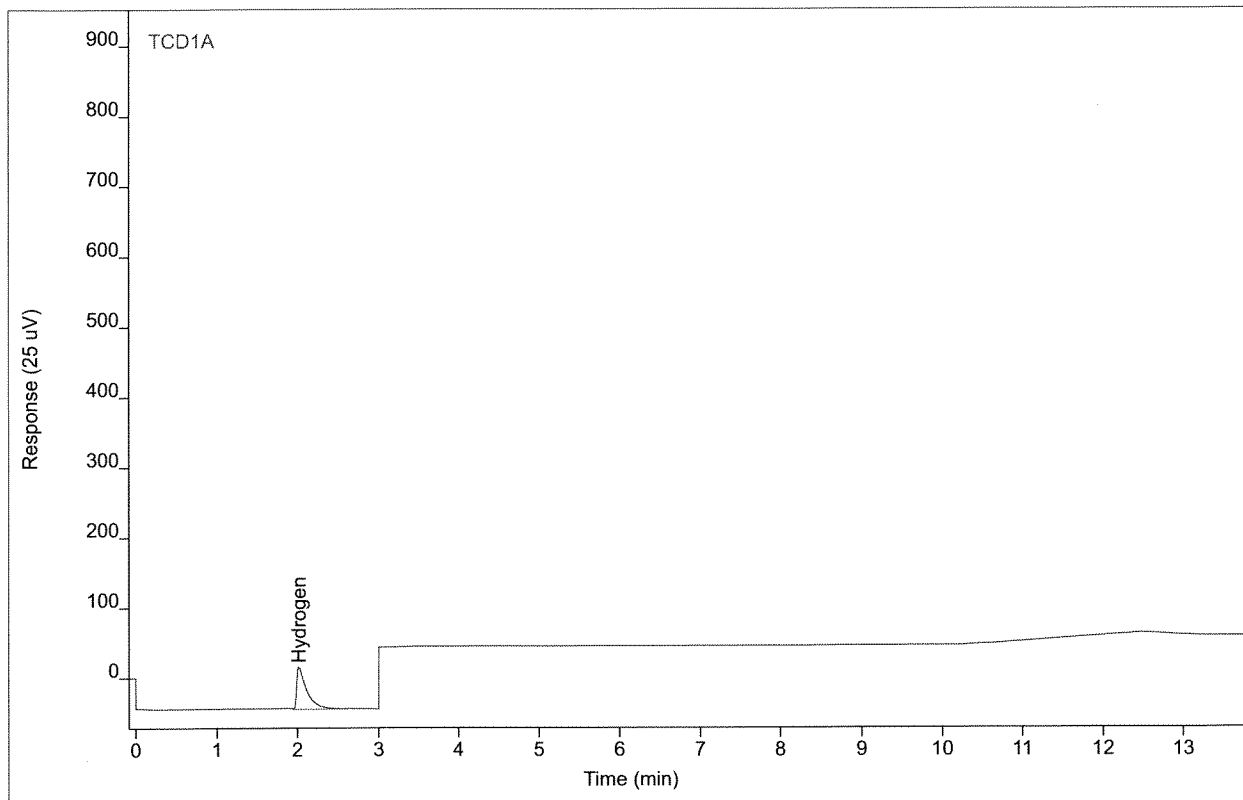
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	VB	2.02	533.976	60.3929	29.7404	1	29.7404	%
Nitrogen		(10.17)				1		
Carbon monoxide		(12.59)				1		
Methane		(16.39)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG29 ENV(1=706.66,6=396.04)
Sequence Name BETTYP348 ver.1
Data File 009F0403.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/23/2016 10:02 AM
File Modified 3/24/2016 9:52 AM
Instrument
Operator Justin Guenzler

Sample Type
Vial Number
Injection Volume
Injection
Acquisition Method
Analysis Method
Method Modified
Printed
Calibration
Vial 9
250
3 of 3
BETTYP017_CAL.M
BETTYP348_FGA_CRYO.M
3/24/2016 9:43 AM
3/24/2016 9:56 AM



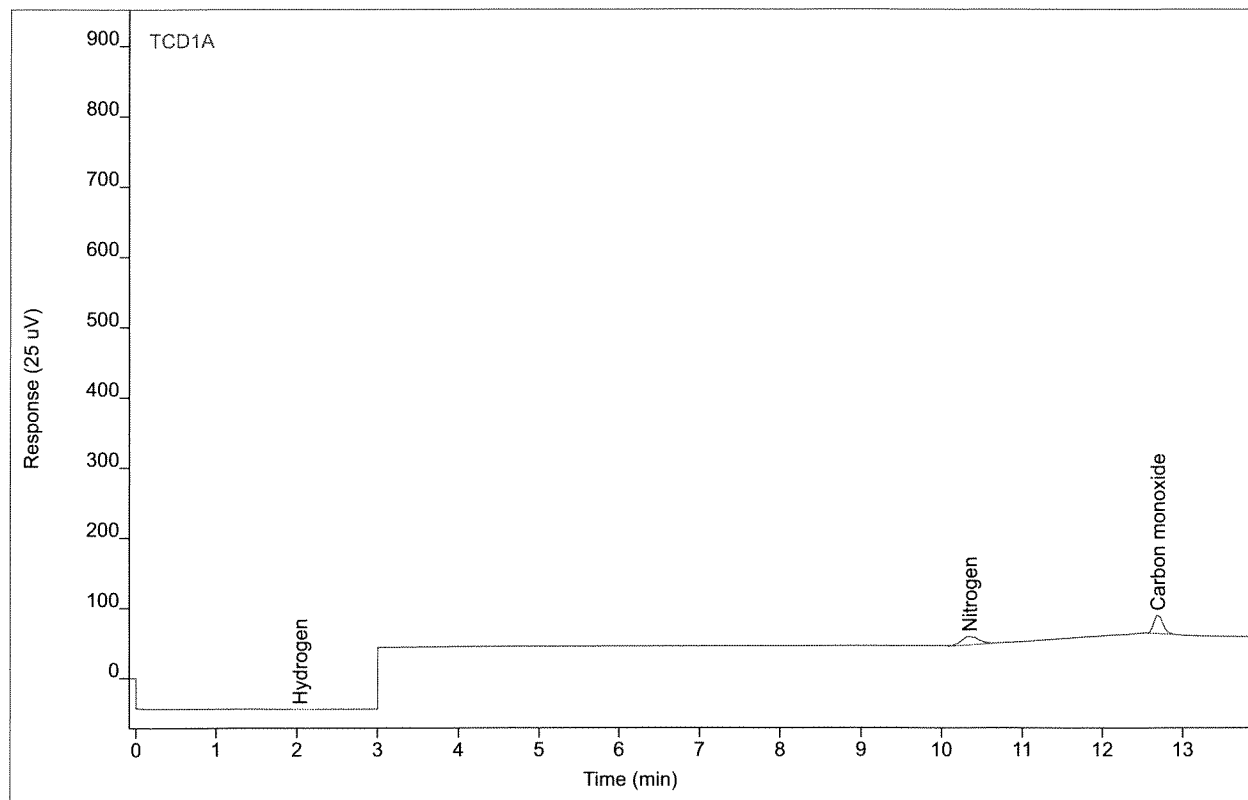
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	BB	2.02	521.211	60.2486	29.0296	1	29.0296	%
Nitrogen		(10.17)				1		
Carbon monoxide		(12.59)				1		
Methane		(16.39)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG5 ENV(1=3391.99,3=159.55)
Sequence Name BETTYP348 ver.1
Data File 009F0801.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/23/2016 1:34 PM
File Modified 3/24/2016 9:52 AM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 1 of 2
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 3/24/2016 9:43 AM
Printed 3/24/2016 9:56 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	MM	2.04	5.49422	0.77557	0.31096	1	0.31096	%
Nitrogen	BB	10.35	185.913	12.9416	0.37476	1	0.37476	%
Carbon monoxide	MM	12.69	213.187	26.9160	0.37888	1	0.37888	%
Methane	MM	16.49	154.929	19.4239	0.30841	1	0.30841	%

Analyst Peak Integration Comments

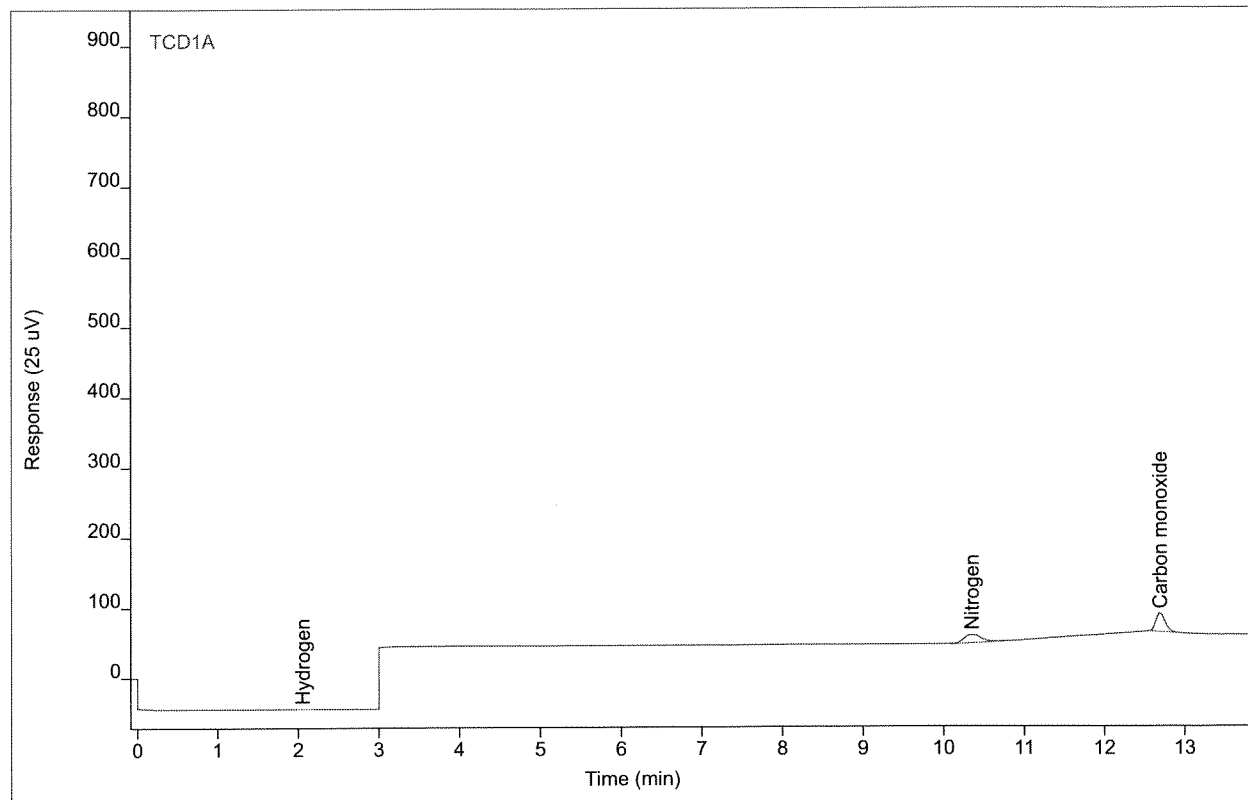
08:55:18 03/24/16 Nicholas Traversa II-Baseline
09:03:17 03/24/16 Nicholas Traversa II-Baseline

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG5 ENV(1=3391.99,3=159.55)
Sequence Name BETTYP348 ver.1
Data File 009F0802.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/23/2016 2:04 PM
File Modified 3/24/2016 9:52 AM
Instrument
Operator Justin Guenzler

Sample Type
Vial Number
Injection Volume 250
Injection 2 of 2
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 3/24/2016 9:43 AM
Printed 3/24/2016 9:56 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	MM	2.06	5.36152	0.91806	0.30347	1	0.30347	%
Nitrogen	BB	10.35	185.816	12.9857	0.37456	1	0.37456	%
Carbon monoxide	MM	12.70	212.362	26.5751	0.37741	1	0.37741	%
Methane	MM	16.49	150.895	19.2575	0.30038	1	0.30038	%

Analyst Peak Integration Comments

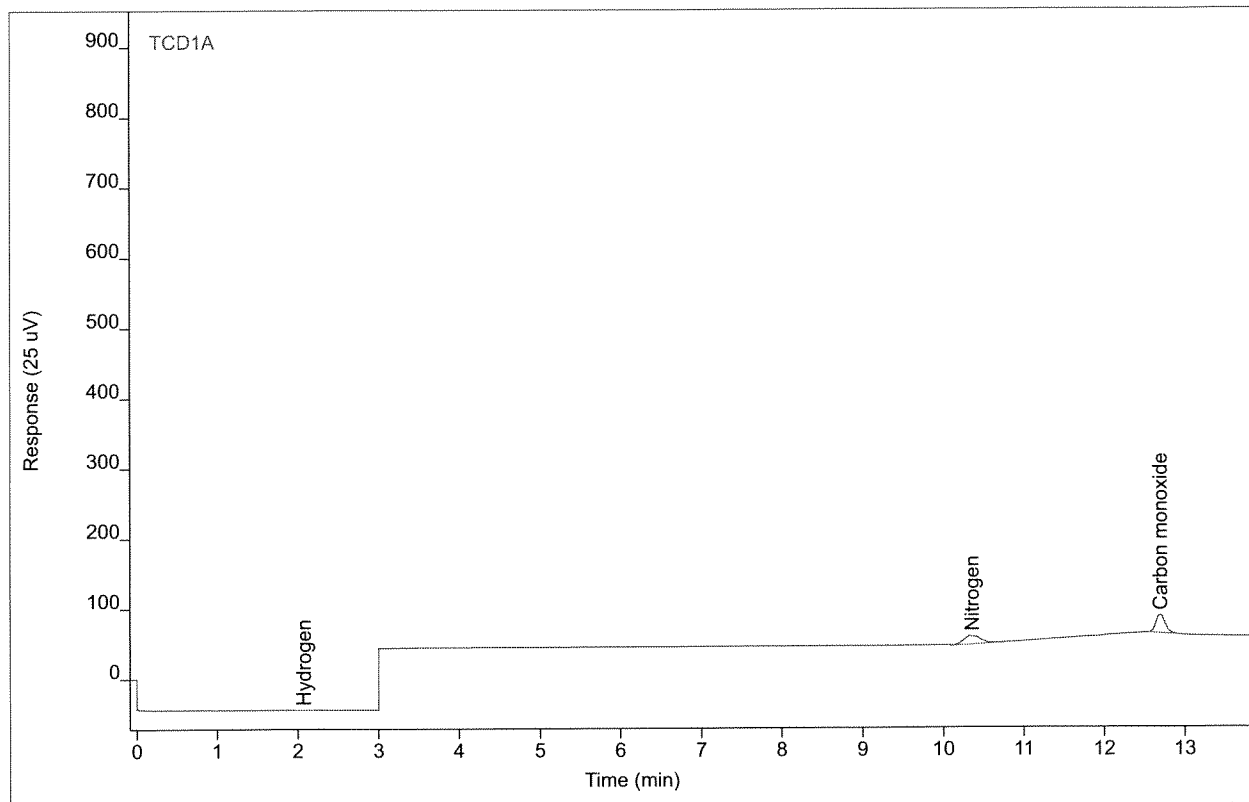
08:55:45 03/24/16 Nicholas Traversa II-Baseline
09:02:45 03/24/16 Nicholas Traversa II-Baseline
09:03:30 03/24/16 Nicholas Traversa II-Baseline

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG5 ENV(1=3391.99,3=159.55)
Sequence Name BETTYP348 ver.1
Data File 009F0901.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/23/2016 2:34 PM
File Modified 3/24/2016 9:52 AM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 1 of 1
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 3/24/2016 9:43 AM
Printed 3/24/2016 9:56 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	MM	2.07	5.29924	0.81828	0.29994	1	0.29994	%
Nitrogen	BB	10.36	183.272	12.8308	0.36944	1	0.36944	%
Carbon monoxide	MM	12.70	207.954	26.3487	0.36957	1	0.36957	%
Methane	MM	16.49	153.785	19.1904	0.30613	1	0.30613	%

Analyst Peak Integration Comments

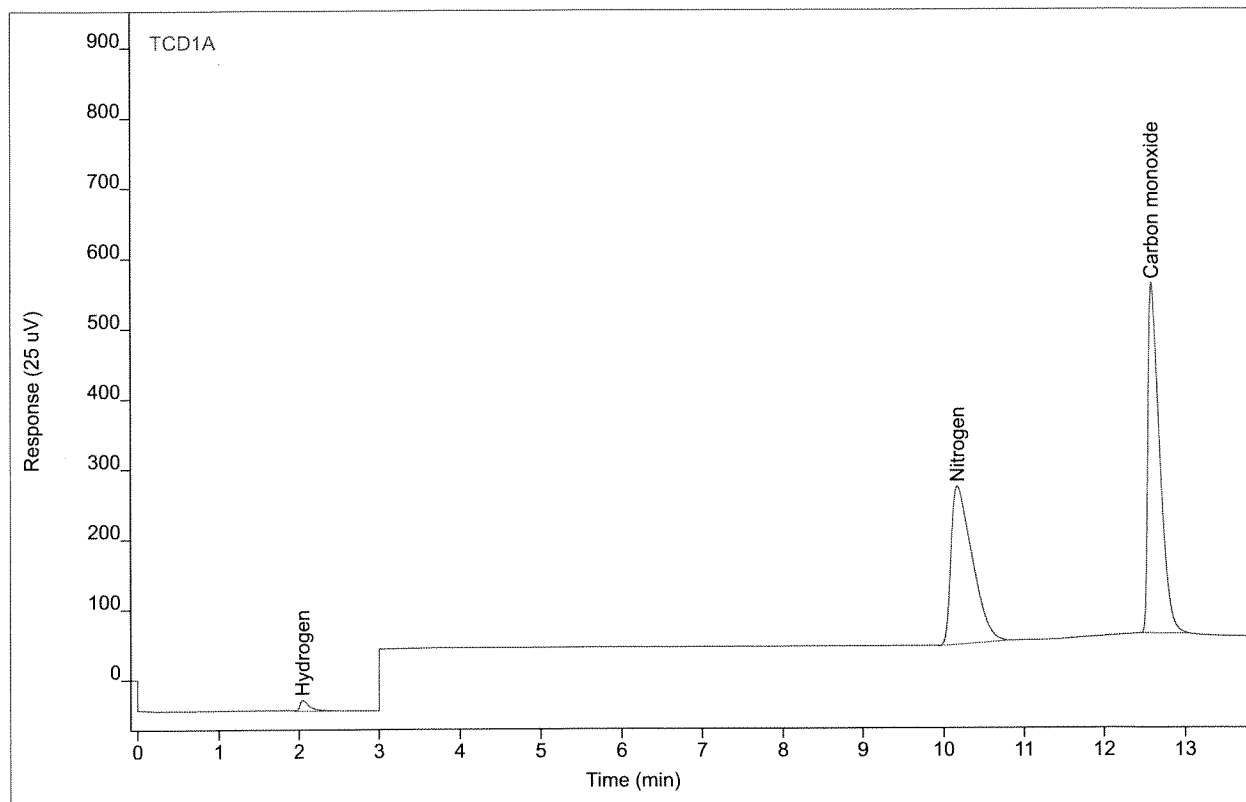
08:56:13 03/24/16 Nicholas Traversa II-Baseline
09:03:42 03/24/16 Nicholas Traversa II-Baseline

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG8 ENV(1=0,3=319.09)
Sequence Name BETTYP348 ver.1
Data File 009F1001.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/23/2016 3:04 PM
File Modified 3/24/2016 9:52 AM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 1 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 3/24/2016 9:43 AM
Printed 3/24/2016 9:56 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	MM	2.05	137.324	15.8087	7.65211	1	7.65211	%
Nitrogen	BB	10.18	4148.31	225.866	9.64130	1	9.64130	%
Carbon monoxide	MM	12.59	4977.34	498.519	9.44841	1	9.44841	%
Methane	MM	16.39	3354.70	371.621	7.48842	1	7.48842	%

Analyst Peak Integration Comments

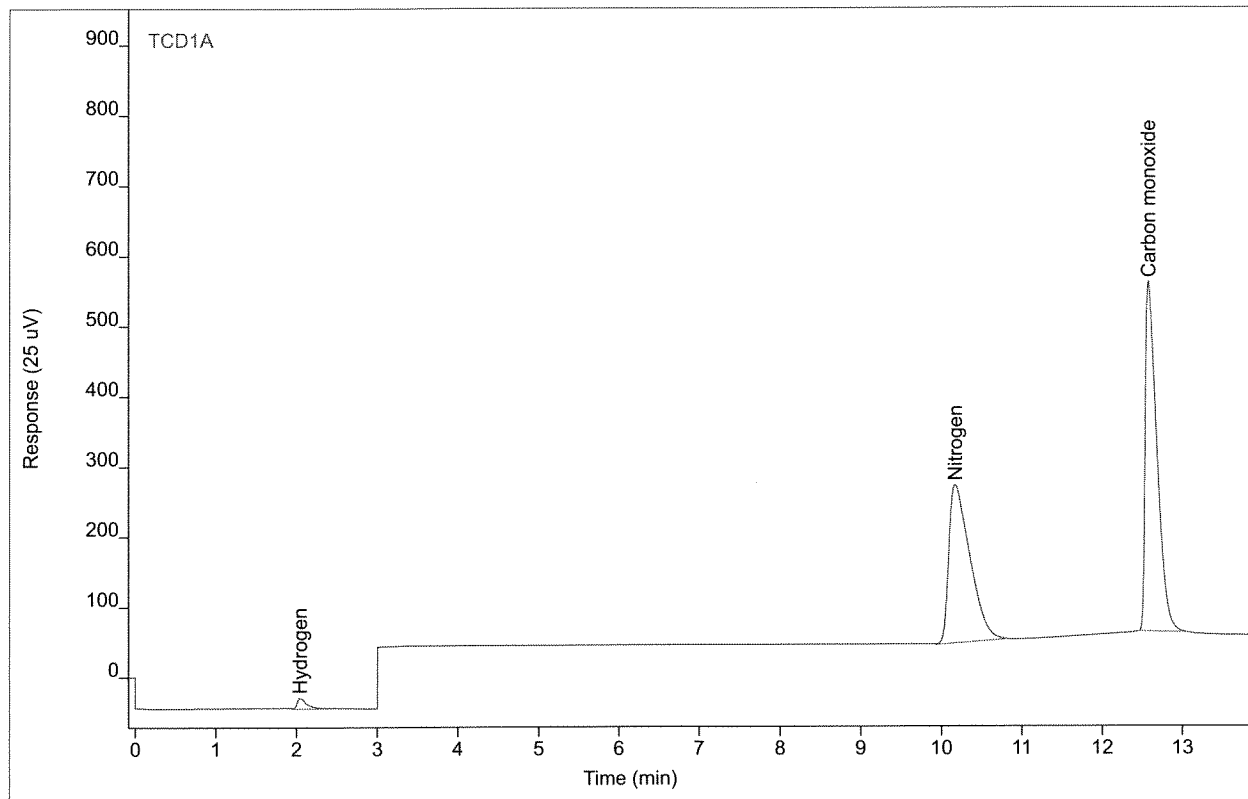
08:45:25 03/24/16 Nicholas Traversa II-Baseline
09:03:55 03/24/16 Nicholas Traversa II-Baseline
09:12:14 03/24/16 Nicholas Traversa II-Baseline

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG8 ENV(1=0,3=319.09)
Sequence Name BETTYP348 ver.1
Data File 009F1002.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/23/2016 3:35 PM
File Modified 3/24/2016 9:52 AM
Instrument
Operator Justin Guenzler

Sample Type
Vial Number
Injection Volume 250
Injection 2 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 3/24/2016 9:43 AM
Printed 3/24/2016 9:56 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	MM	2.05	134.279	15.7425	7.48258	1	7.48258	%
Nitrogen	BB	10.18	4153.57	225.778	9.65360	1	9.65360	%
Carbon monoxide	MM	12.59	4951.82	497.879	9.39983	1	9.39983	%
Methane	MM	16.39	3360.50	368.710	7.50143	1	7.50143	%

Analyst Peak Integration Comments

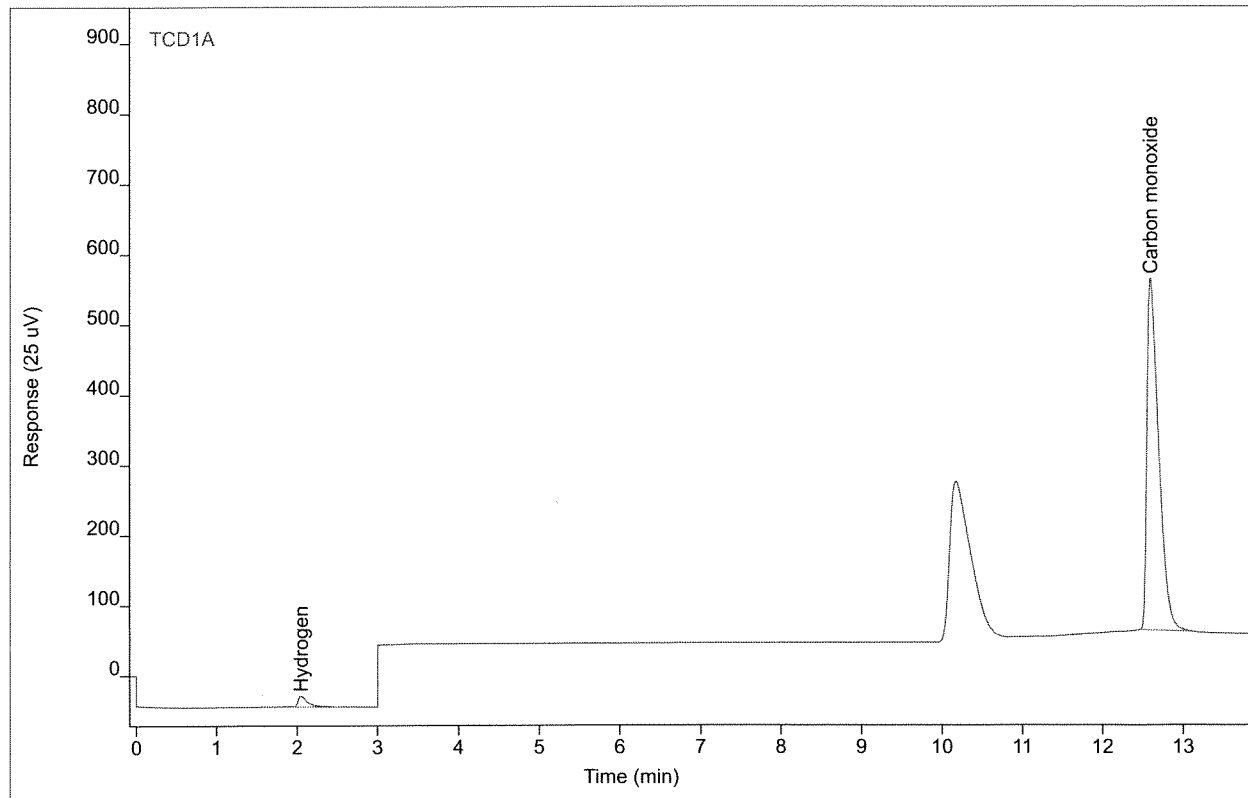
08:45:39 03/24/16 Nicholas Traversa II-Baseline
09:04:06 03/24/16 Nicholas Traversa II-Baseline
09:12:36 03/24/16 Nicholas Traversa II-Baseline

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG8 ENV(1=0,3=319.09)
Sequence Name BETTYP348 ver.1
Data File 009F1003.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/23/2016 4:05 PM
File Modified 3/24/2016 9:45 AM
Instrument
Operator Justin Guenzler

Sample Type
Vial Number Calibration
Injection Volume 250
Injection 3 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 3/24/2016 9:43 AM
Printed 3/24/2016 9:56 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	MM	2.05	132.742	15.7215	7.39697	1	7.39697	%
Nitrogen		(9.41)				1		
Carbon monoxide	MM	12.59	5018.52	501.603	9.52680	1	9.52680	%
Methane	MM	16.39	3386.77	373.896	7.56039	1	7.56039	%

Analyst Peak Integration Comments

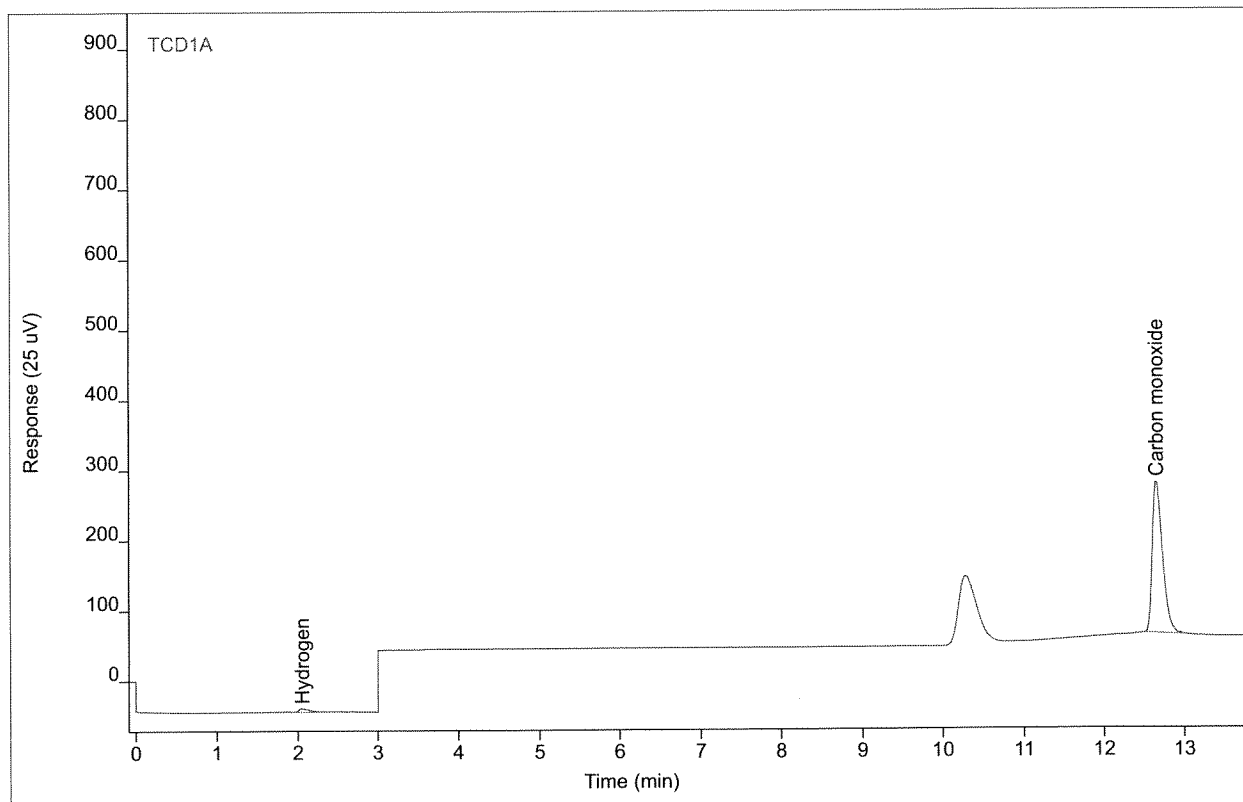
08:45:48 03/24/16 Nicholas Traversa II-Baseline
09:04:39 03/24/16 Nicholas Traversa II-Baseline
09:12:45 03/24/16 Nicholas Traversa II-Baseline

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG7 ENV(1=530,3=319.09)
Sequence Name BETTYP348 ver.1
Data File 009F1101.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/23/2016 4:35 PM
File Modified 3/24/2016 9:45 AM
Instrument
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 1 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 3/24/2016 9:43 AM
Printed 3/24/2016 9:56 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	BB	2.05	52.6585	5.96946	2.93739	1	2.93739	%
Nitrogen		(9.41)				1		
Carbon monoxide	MM	12.66	1870.95	216.410	3.53472	1	3.53472	%
Methane	MM	16.45	1276.56	155.048	2.82513	1	2.82513	%

Analyst Peak Integration Comments

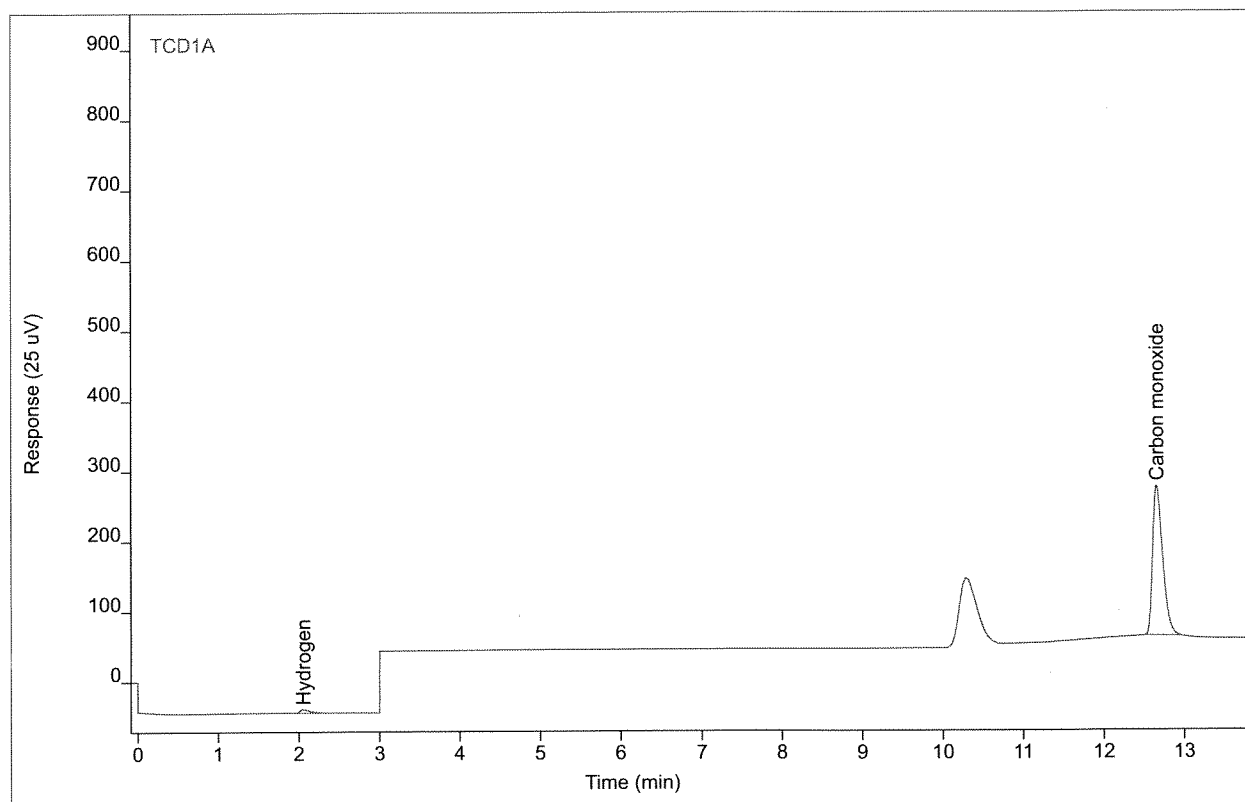
08:45:59 03/24/16 Nicholas Traversa II-Baseline
09:04:47 03/24/16 Nicholas Traversa II-Baseline

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG7 ENV(1=530,3=319.09)
Sequence Name BETTYP348 ver.1
Data File 009F1102.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/23/2016 5:05 PM
File Modified 3/24/2016 9:45 AM
Instrument
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 2 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 3/24/2016 9:43 AM
Printed 3/24/2016 9:56 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	BB	2.05	48.9512	5.67245	2.73094	1	2.73094	%
Nitrogen		(9.41)				1		
Carbon monoxide	MM	12.66	1848.34	213.936	3.49166	1	3.49166	%
Methane	MM	16.45	1256.81	153.654	2.78080	1	2.78080	%

Analyst Peak Integration Comments

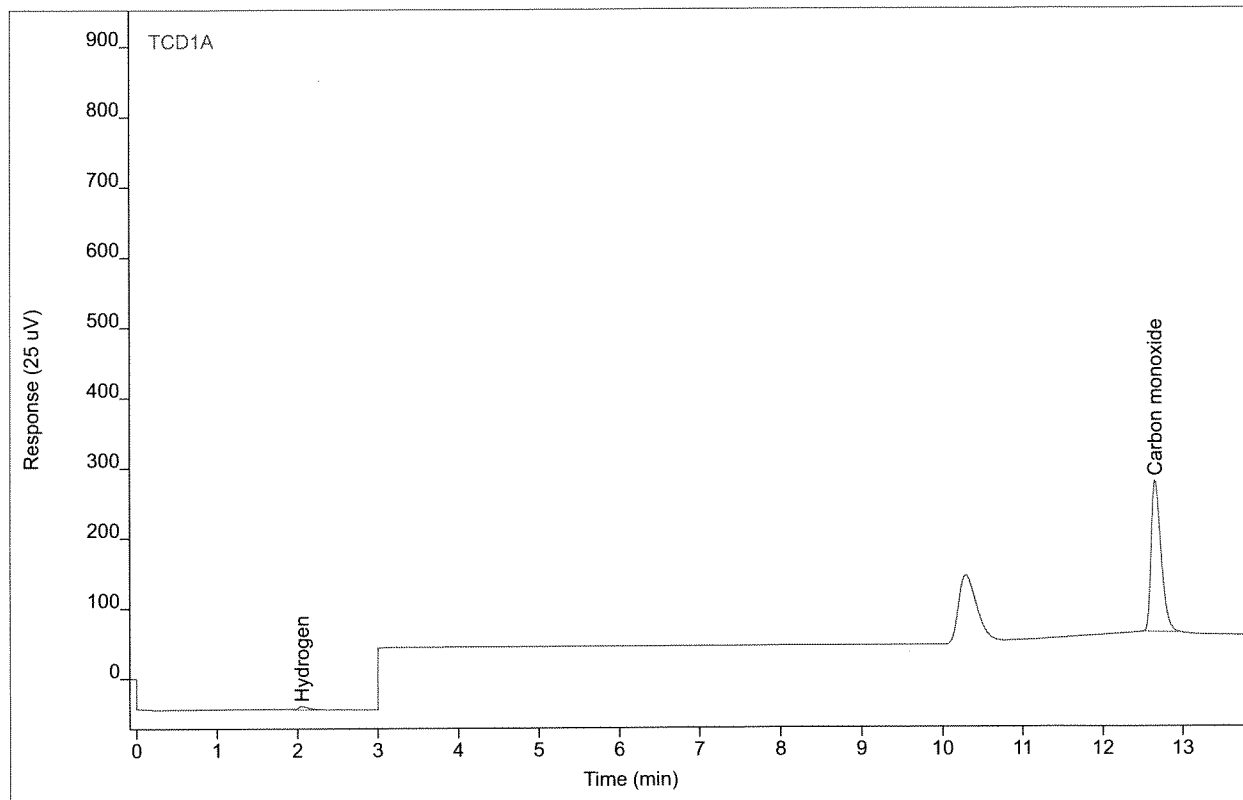
08:46:16 03/24/16 Nicholas Traversa II-Baseline
08:46:28 03/24/16 Nicholas Traversa II-Baseline
09:05:03 03/24/16 Nicholas Traversa II-Baseline

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG7 ENV(1=530,3=319.09)
Sequence Name BETTYP348 ver.1
Data File 009F1103.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/23/2016 5:35 PM
File Modified 3/24/2016 9:45 AM
Instrument
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 3 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 3/24/2016 9:43 AM
Printed 3/24/2016 9:56 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	BB	2.05	52.3935	5.77112	2.92263	1	2.92263	%
Nitrogen		(9.41)				1		
Carbon monoxide	MM	12.66	1847.04	216.057	3.48919	1	3.48919	%
Methane	MM	16.45	1267.68	154.655	2.80520	1	2.80520	%

Analyst Peak Integration Comments

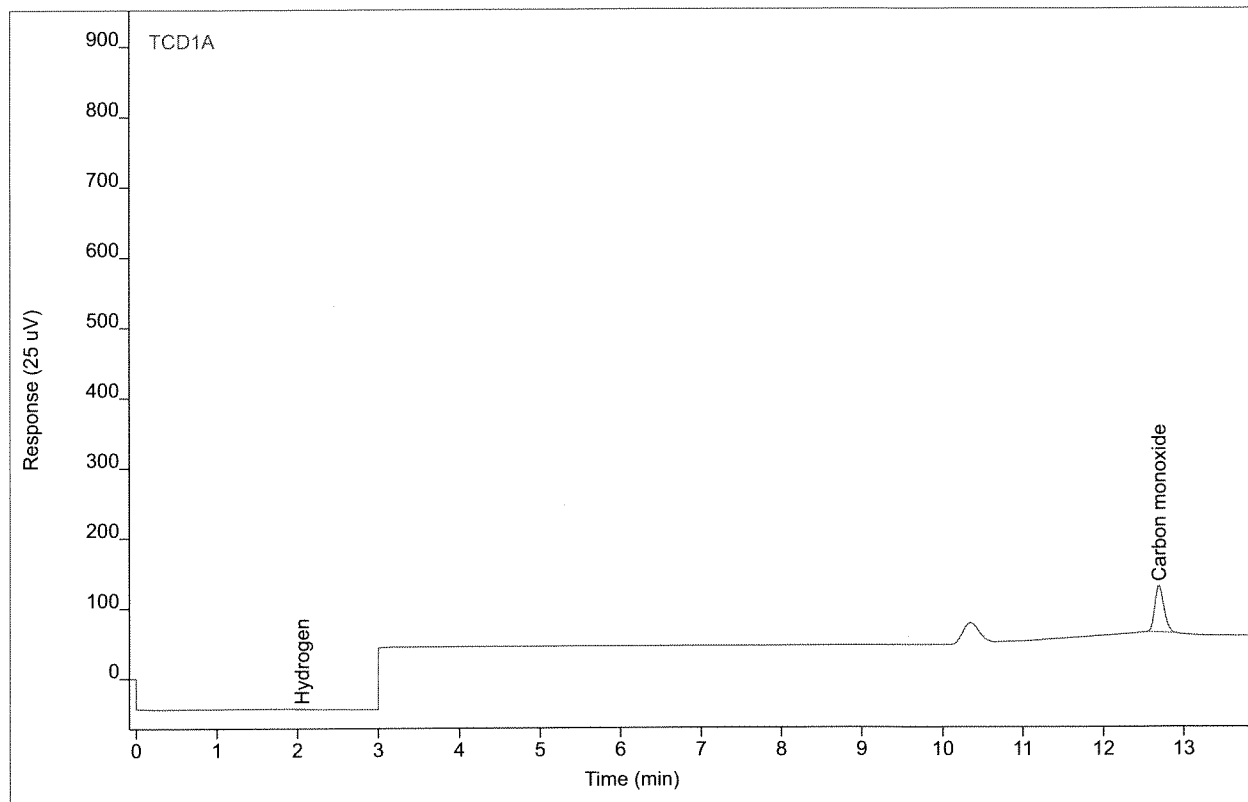
08:46:39 03/24/16 Nicholas Traversa II-Baseline
09:05:13 03/24/16 Nicholas Traversa II-Baseline

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG6 ENV(1=1271.99,3=159.55)
Sequence Name BETTYP348 ver.1
Data File 009F1201.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/23/2016 6:05 PM
File Modified 3/24/2016 9:45 AM
Instrument
Operator Nicholas Traversa

Sample Type
Vial Number
Injection Volume 250
Injection 1 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 3/24/2016 9:43 AM
Printed 3/24/2016 9:56 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	MM	2.06	14.7037	1.68924	0.82381	1	0.82381	%
Nitrogen		(9.41)				1		
Carbon monoxide	MM	12.69	527.447	66.4169	0.97706	1	0.97706	%
Methane	MM	16.48	380.129	47.3088	0.81355	1	0.81355	%

Analyst Peak Integration Comments

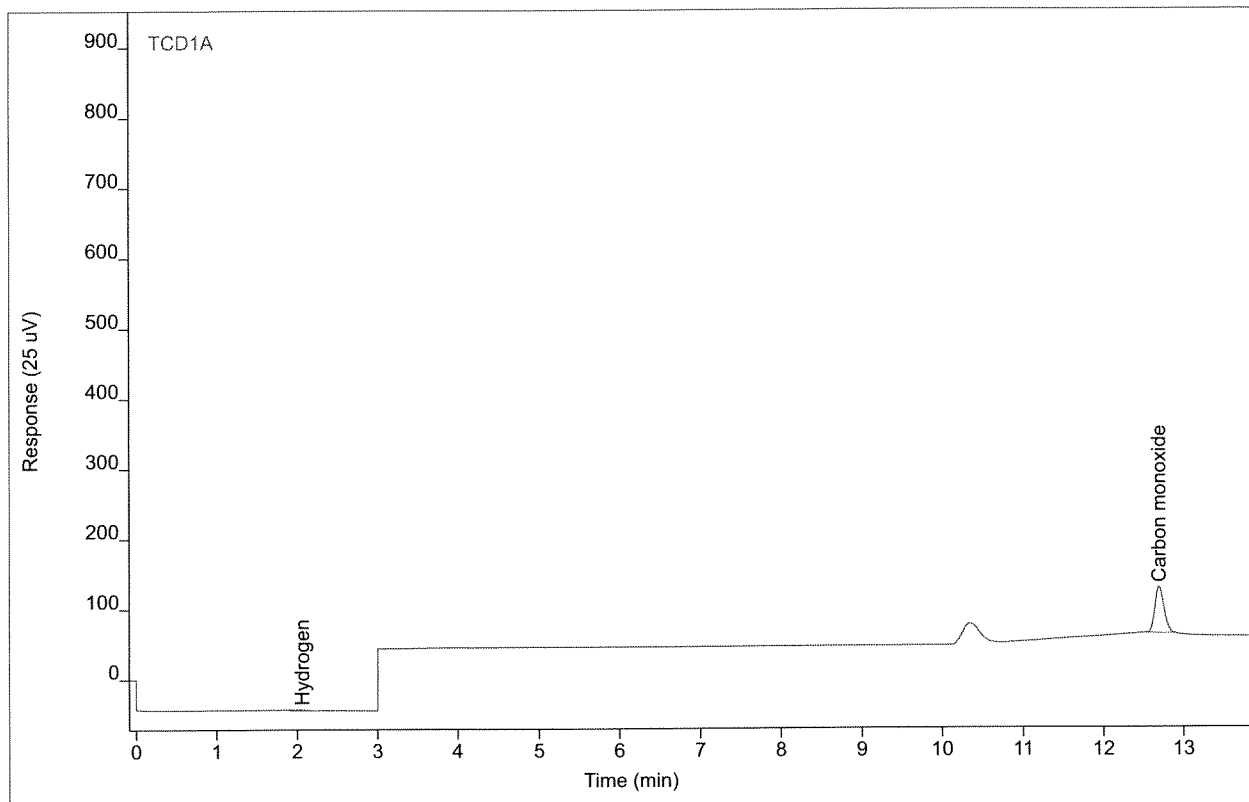
08:46:48 03/24/16 Nicholas Traversa II-Baseline
08:56:44 03/24/16 Nicholas Traversa II-Baseline
09:05:21 03/24/16 Nicholas Traversa II-Baseline

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG6 ENV(1=1271.99,3=159.55)
Sequence Name BETTYP348 ver.1
Data File 009F1202.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/23/2016 6:35 PM
File Modified 3/24/2016 9:45 AM
Instrument
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 2 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 3/24/2016 9:43 AM
Printed 3/24/2016 9:56 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	MM	2.06	14.6516	1.80771	0.82091	1	0.82091	%
Nitrogen		(9.41)				1		
Carbon monoxide	MM	12.69	525.484	65.7675	0.97332	1	0.97332	%
Methane	MM	16.48	368.696	46.9784	0.78789	1	0.78789	%

Analyst Peak Integration Comments

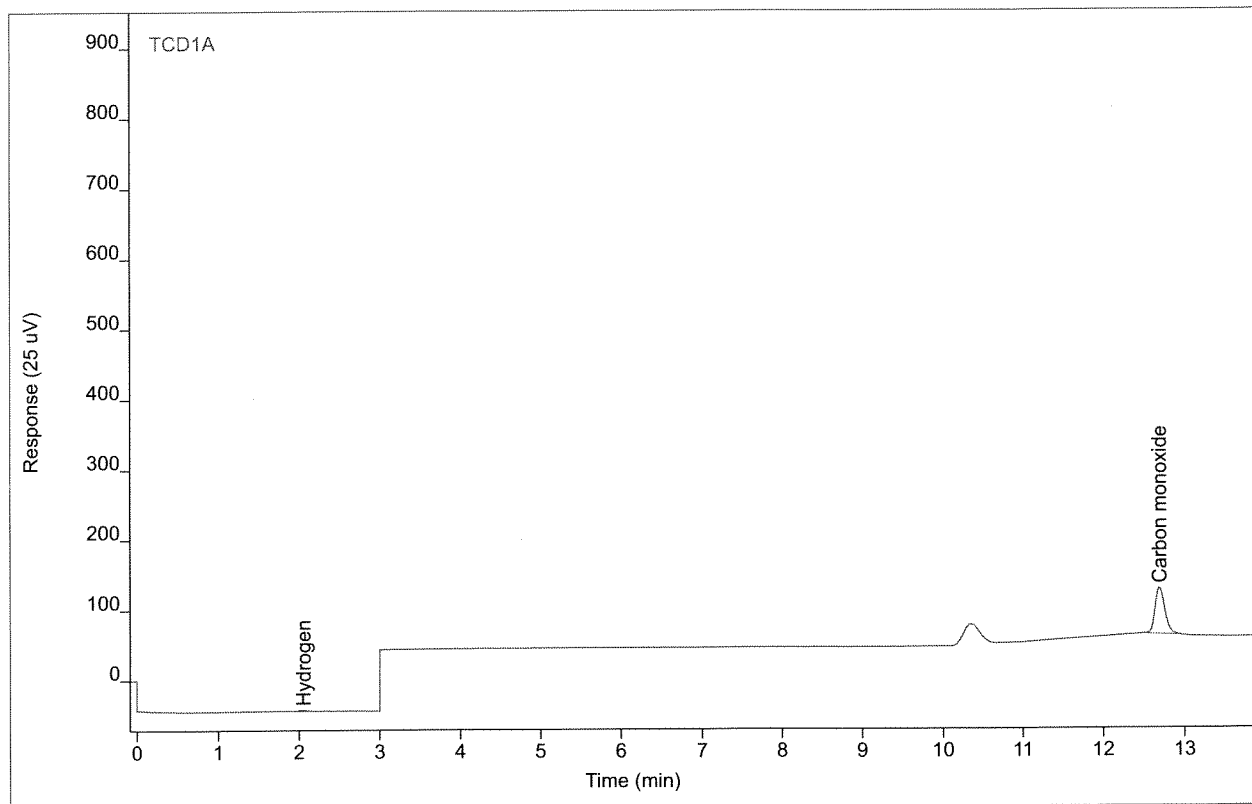
08:46:58 03/24/16 Nicholas Traversa II-Baseline
08:49:19 03/24/16 Nicholas Traversa II-FP
08:56:59 03/24/16 Nicholas Traversa II-Baseline
09:05:28 03/24/16 Nicholas Traversa II-Baseline

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG6 ENV(1=1271.99,3=159.55)
Sequence Name BETTYP348 ver.1
Data File 009F1203.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/23/2016 7:05 PM
File Modified 3/24/2016 9:45 AM
Instrument
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 3 of 3
Acquisition Method BETTYP017_CAL.M
Analysis Method BETTYP348_FGA_CRYO.M
Method Modified 3/24/2016 9:43 AM
Printed 3/24/2016 9:56 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	MM	2.06	14.5852	1.85799	0.81721	1	0.81721	%
Nitrogen		(9.41)				1		
Carbon monoxide	MM	12.69	543.881	66.0508	1.00834	1	1.00834	%
Methane	MM	16.48	374.812	47.6111	0.80162	1	0.80162	%

Analyst Peak Integration Comments

08:47:08 03/24/16 Nicholas Traversa II-Baseline
08:51:29 03/24/16 Nicholas Traversa II-Baseline
08:57:16 03/24/16 Nicholas Traversa II-Baseline
09:05:37 03/24/16 Nicholas Traversa II-Baseline

Issue Date: 12-08-2014

To:

Attn:

Praxair Order Number:
Customer Order Number:
Customer Reference
Number:

Product Lot Number: 1124002724A1
Product Part Number: ME 5.0RS-G

CERTIFICATE OF ANALYSIS

(Methane 99.999%, Research)

Cylinder Serial Number	Analytes	Specification	
RA071907	Methane	99.999	%
RA072283	Ethane	ND < 0.1	ppm
*RA072293	Nitrogen	ND < 0.1	ppm
RA072328	Oxygen	0.1	ppm
	Moisture	0.3	ppm
	Other Hydrocarbons	ND < 0.1	ppm

Cylinder Style: G
Cylinder Pressure @70°F (21°C): 2000 PSI
Cylinder Volume: 40 Cubic Feet

Valve Outlet Connection: 350 CGA
Filling Method: Pressure

Approved Signer: _____

Patrick Philpot

This analysis of the product described herein was prepared by Praxair Distribution using instruments whose calibration is certified using Praxair Reference Materials. Praxair Reference Materials are prepared either by weights traceable to the National Institute of Standards and Technology (NIST), Measurement Canada or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted

*Key to Analytical Principle:

A. Flame Ionization with Methanizer	F. Gas Chromatography with Helium Ionization Detector	K. Gas Chromatography with Ultrasonic Detector	P. Electrochemical
B. Gas Chromatography with Discharge Ionization Detector	G. Gas Chromatography with Methanizer Carbonizer	L. Gravimetric Methods	Q. Total Hydrocarbon Analyzer
C. Gas Chromatography with Electrolytic Conductivity Detector	H. Gas Chromatography with Photoionization Detector	M. Infrared – FTIR or NDIR	R. Wet Chemical
D. Gas Chromatography with Flame Ionization Detector	I. Gas Chromatography with Reduction Gas Analyzer	N. Mass Spectrometry – MS or GC/MS	S. Detector Tube
E. Gas Chromatography with Flame Photometric Detector	J. Gas Chromatography with Thermal Conductivity Detector	O. Paramagnetic	T. Odor

IMPORTANT

The information contained herein has been prepared at your request by personnel within Praxair Distribution. While we believe the information is accurate within the limits of the analytical methods employed and is complete to the extent of the specific analyses performed, we make no warranty or representation as to the suitability of the use of the information for any particular purpose. The information is offered with the understanding that any use of the information is at the sole discretion and risk of the user. In no event shall liability of Praxair Distribution arising out of the use of the information contained herein exceed the fee established for providing such information.

CUSTOMGAS SOLUTIONS



1750 East Club Boulevard
Durham, NC 27704
Phone: (919) 220-2570
Fax: (919) 220-4540

Certificate of Analysis

Customer:

Enthalpy Analytical, Inc.
800-1 Capitola Drive
Durham, NC 27713

Tel: (919) 595-1377

Cylinder Number: XC010510B

Cylinder Size/CGA: 150/590

Fill Pressure: 2015 PSIA

Gas Volume: 3700 liters

Date of Mfg: 02/04/14

Expiration Date: 02/04/16

Customer Number	Ship VIA	Job No.	Customer PO	Mixture Type
00127703NC	Pick up	011614-004	01151401	Gravimetric

Component	Nominal Concentration	Actual Concentration*	Mixture Type
Oxygen	10 %	10.01 % +/- 0.2 %	Gravimetric Master Gas
Carbon Dioxide	10 %	10.01 % +/- 0.2 %	
Helium	balance	balance	

NOTES: Blend Tolerance:

+/- 2 %

Analytical Tolerance:

+/- 2 %

Traceability:

NIST by weight set. NIST Traceability No MT5061.

Internal Standards by analysis

Reactive Mixtures:

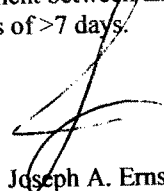
Analyzed twice with required agreement between analyses of 2%.

Required wait time between analyses of >7 days.

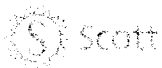
Caution:

Do not use below 150 PSIG.

Authorized Signature:


Joseph A. Ernst

*Every effort has been made to establish the actual concentration of the components using master gas blending technology however, Custom Gas Solutions shall have no liability in excess of the established charge for this material.

**AIR LIQUIDE**Air Liquide America
Specialty Gases LLC**CERTIFIED MASTER CLASS**
Single-Certified Calibration Standard

6141 EASTON ROAD, BLDG 1, PLUMSTEADVILLE, PA 18949-0310

Phone: 800-331-4953 Fax: 215-766-7226

CERTIFICATE OF ACCURACY: Certified Master Class Calibration Standard**Product Information**Document #: 55814398-001
Item No.: MC500418-P-44
P.O. No.: 06181401Cylinder Number: NKA197
Cylinder Size: 44
Certification Date: 30Jun2014
Expiration Date: 01Jul2017
Lot Number: PLU0288940**Customer**ENTHALPY ANALYTICAL, INC.
GREG TATE
800-1 CAPITOLA DRIVE
DURHAM, NC 27703
US**CERTIFIED CONCENTRATION****Component Name****Concentration
(Moles)****Accuracy
(+/-%)**

CARBON MONOXIDE	10.0	%	2
HYDROGEN	8.2	%	2
METHANE	8.0	%	2
NITROGEN	10.0	%	2
HELIUM		BALANCE	

TRACEABILITY**Traceable To**

Scott Reference Standard

APPROVED BY:

LAMONT SHIELDS

DATE:

7.3.14

SPECIFICATIONS

Component Name	Requested Concentration (Moles)		Certified Concentration (Moles)		Blend Tolerance Result (+/- %)	Certified Accuracy Result (+/- %)
CARBON MONOXIDE	10.	%	10.0	%	.0	2.00
HYDROGEN	8.	%	8.2	%	2.5	2.00
METHANE	8.	%	8.0	%	.0	2.00
NITROGEN	10.	%	10.0	%	.0	2.00
HELIUM		BAL		BAL		

TRACEABILITY

Traceable To

Scott Reference Standard

PHYSICAL PROPERTIES

Cylinder Size: 44

Pressure: 2015 PSIG
Expiration Date: 01Jul2017

Valve Connection: CGA 350

SPECIAL HANDLING INSTRUCTIONS

Do not use or store cylinder at or below the stated dew point temperature. Possible condensation of heavier components could result. In the event the cylinder has been exposed to temperatures at or below the dew point, place cylinder in heated area for 24 hours and then roll cylinder for 15 minutes to re-mix.

Use of calibration standards at or below dew point temperature may result in calibration error.

=====

6890 GC METHOD

=====

OVEN

Initial temp: -15 C (On)	Maximum temp: 250 C
Initial time: 10.00 min	Equilibration time: 0.50 min
Ramps:	
# Rate Final temp Final time	CRYO (N2)
1 30.00 220 4.00	Cryo: On
2 0 (Off)	Cryo fault: On
Post temp: 40 C	Cryo timeout: 40.00 min (On)
Post time: 0.00 min	Quick cryo cool: Off
Run time: 21.83 min	Ambient temp: 30 C

FRONT INLET (SPLIT/SPLITLESS)

Mode: Splitless
 Initial temp: 200 C (On)
 Pressure: 58.0 psi (On)
 Purge flow: 0.0 mL/min
 Purge time: 0.00 min
 Total flow: 12.3 mL/min
 Gas saver: Off
 Gas type: Helium

BACK INLET (SPLIT/SPLITLESS)

Mode: Split
 Initial temp: 200 C (On)
 Pressure: 9.0 psi (On)
 Split ratio: 5:1
 Split flow: 12.3 mL/min
 Total flow: 17.6 mL/min
 Gas saver: Off
 Gas type: Helium

COLUMN 1

Packed Column
 Model Number: 19808
 Description: Rt-ShinCarbon 2m x 1mm I
 Max temperature: 250 C
 Mode: constant pressure
 Pressure: 58.0 psi
 Inlet: Front Inlet
 Outlet: Front Detector
 Outlet pressure: ambient

COLUMN 2

Capillary Column
 Model Number: 10198
 Description: Rtx-1 30m x 0.32mm x 4um
 Max temperature: 250 C
 Nominal length: 30.0 m
 Nominal diameter: 320.00 um
 Nominal film thickness: 4.00 um
 Mode: constant flow
 Initial flow: 2.5 mL/min
 Nominal init pressure: 9.0 psi
 Average velocity: 35 cm/sec
 Inlet: Back Inlet
 Outlet: (other)
 Outlet pressure: ambient

FRONT DETECTOR (TCD)

Temperature: 275 C (On)
 Reference flow: 20.0 mL/min (On)
 Mode: Constant makeup flow
 Makeup flow: 10.0 mL/min (On)
 Makeup Gas Type: Helium
 Filament: On
 Negative polarity: On

BACK DETECTOR (FID)

Temperature: 250 C (On)
 Hydrogen flow: 60.0 mL/min (On)
 Air flow: 450.0 mL/min (On)
 Mode: Constant makeup flow
 Makeup flow: 40.0 mL/min (On)
 Makeup Gas Type: Nitrogen
 Flame: On
 Electrometer: On
 Lit offset: 2.0

SIGNAL 1

Data rate: 20 Hz
 Type: front detector
 Save Data: On

SIGNAL 2

Data rate: 20 Hz
 Type: back detector
 Save Data: On

THERMAL AUX 1

Use: Valve Box Heater
 Initial temp: 130 C (On)

VALVES

Valve 1 Gas Sampling
 Loop Volume: 0.250 mL

POST RUN

Post Time: 0.00 min

Modified on: 6/30/2014 at 5:46:14 PM
Load Time: 0.10 min
Inject Time: 0.50 min
Inlet: Front Inlet
Valve 2 Gas Sampling
Loop Volume: 0.250 mL
Load Time: 0.10 min
Inject Time: 0.50 min
Inlet: Front Inlet

TIME TABLE

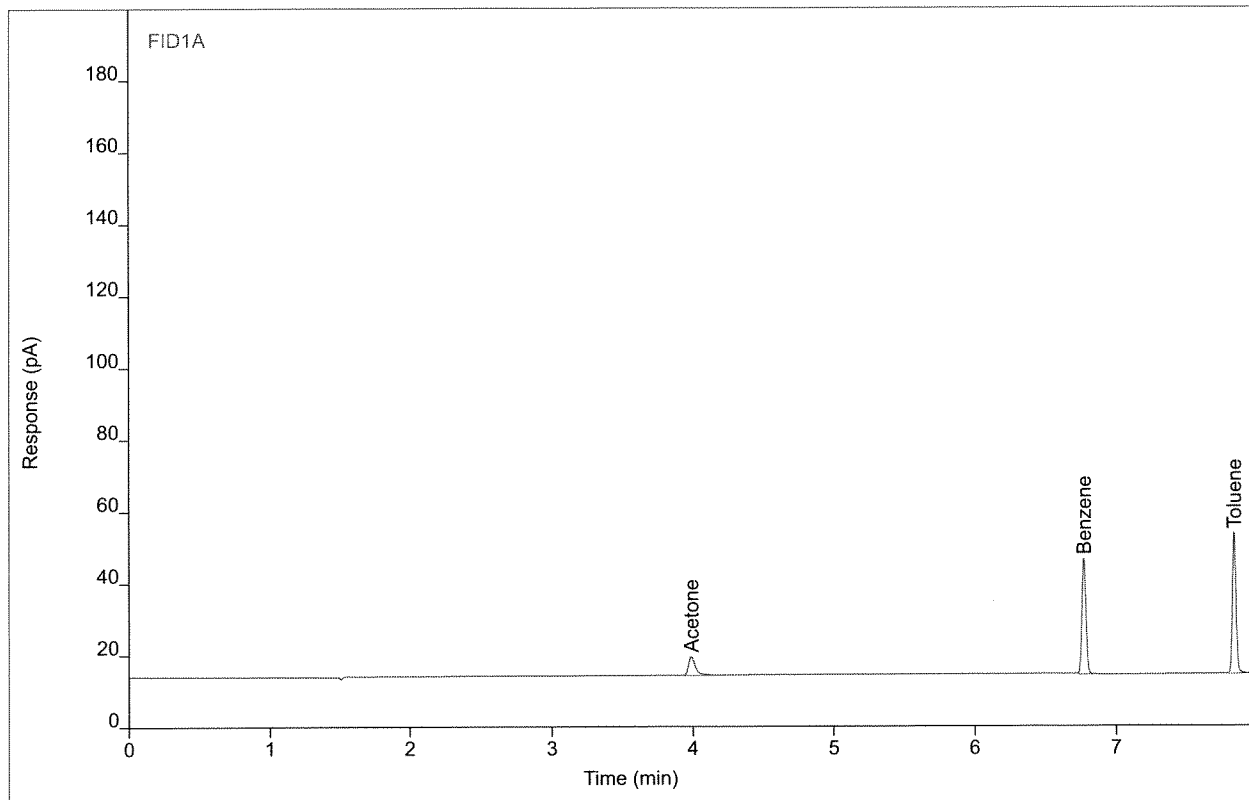
Time(min)	Parameter & Setpoint	
3.00	Front Detector Polarity:	Off

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp723 #B4 ENV(1=600,3=400)
Sequence Name EDITHP765 ver.1
Data File 002F1202.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/19/2016 8:25 AM
File Modified 10/20/2016 11:22 AM
Instrument
Operator Nicholas Traversa

Sample Type
Vial Number
Injection Volume
Injection
Acquisition Method
Analysis Method
Method Modified
Printed
Calibration
Vial 2
250
2 of 4
AQ_EDITHP503_HRVOC.M
EDITHP723F_BTEX.M
9/20/2016 8:20 AM
10/24/2016 9:40 AM



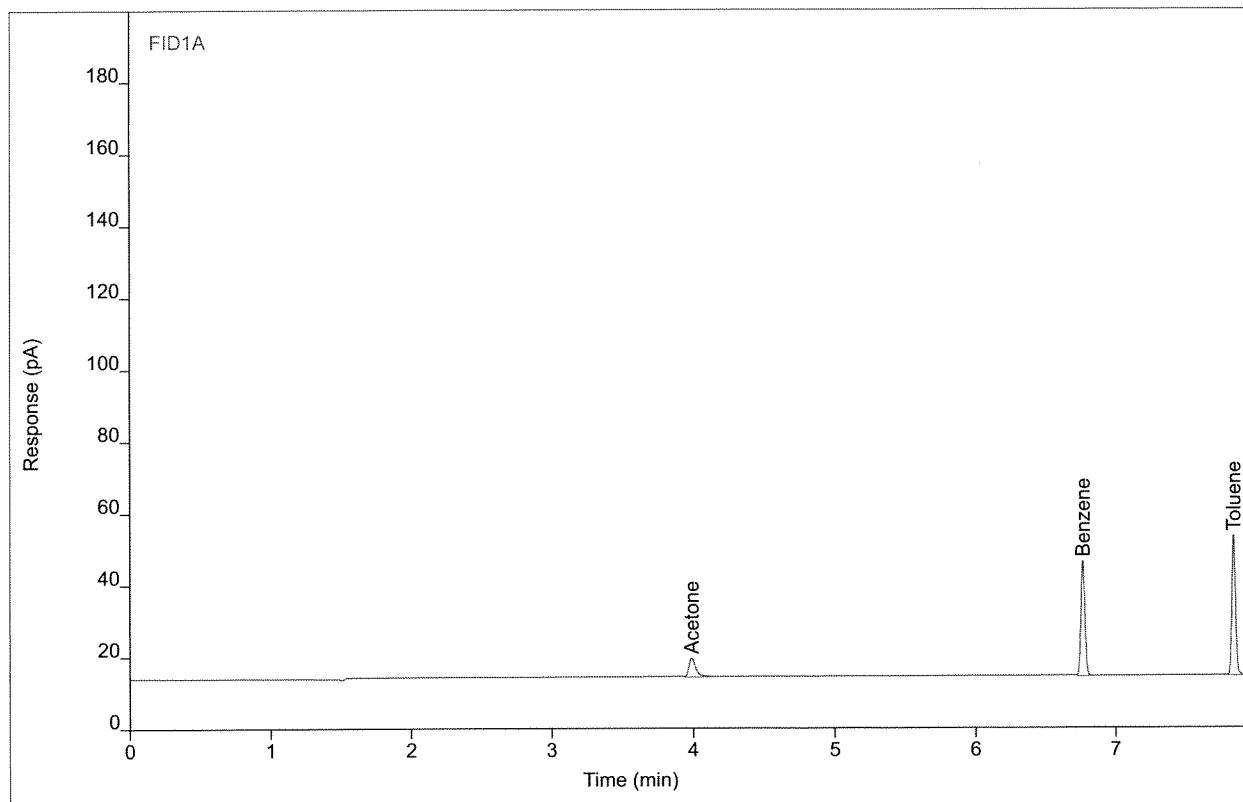
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
?	PB	1.54	0.16201	0.15068		1		
Acetone	BB	3.99	18.5108	5.33893	40.9970	1	40.9970	ppm
Benzene	BB	6.77	64.0959	32.2103	42.1621	1	42.1621	ppm
Toluene	BB	7.84	70.7523	39.1363	41.8756	1	41.8756	ppm
Ethylbenzene	BV	8.64	75.9126	40.1104	41.8109	1	41.8109	ppm
m-p-Xylenes	VB	8.71	75.7123	35.6680	41.7953	1	41.7953	ppm
o-Xylene	BB	8.93	73.5685	36.4433	41.8050	1	41.8050	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp723 #B4 ENV(1=600,3=400)
Sequence Name EDITHP765 ver.1
Data File 002F1203.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/19/2016 8:40 AM
File Modified 10/20/2016 11:22 AM
Instrument
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 2
Injection Volume 250
Injection 3 of 4
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP723F_BTEX.M
Method Modified 9/20/2016 8:20 AM
Printed 10/24/2016 9:40 AM



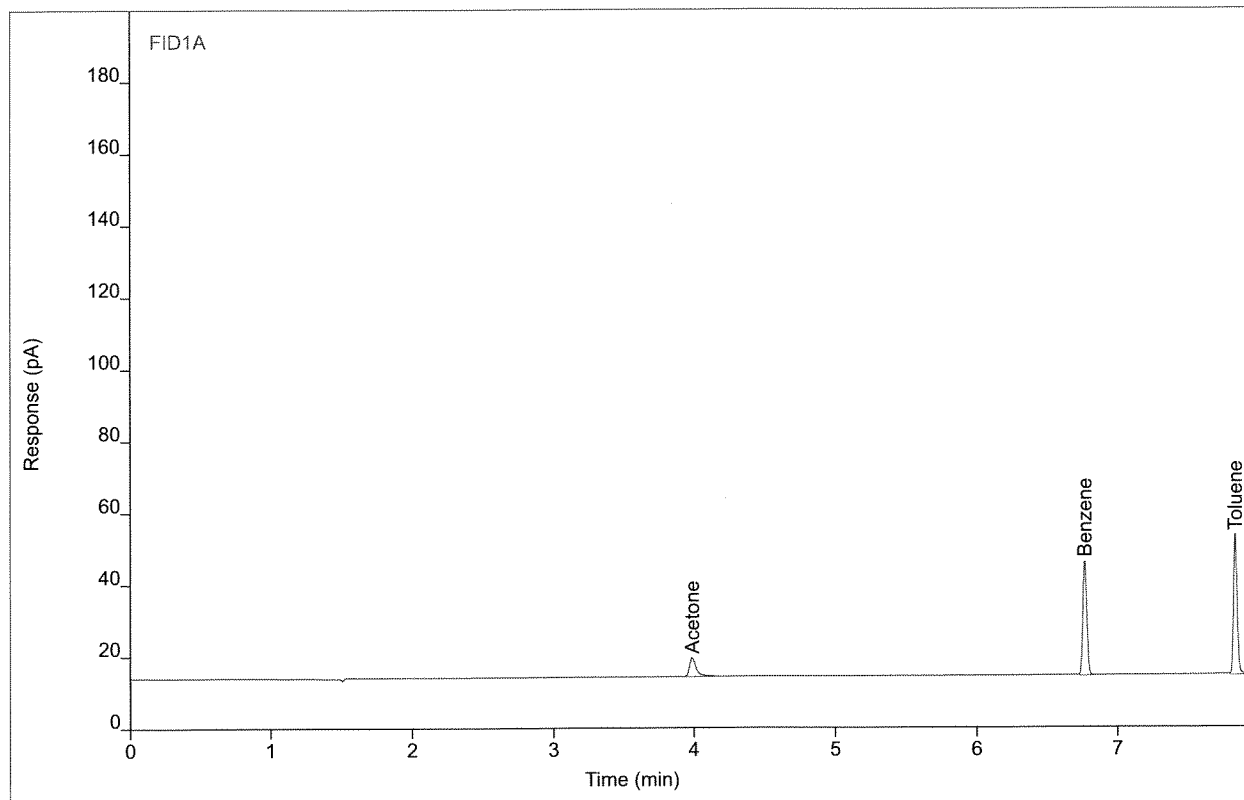
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
?	PB	1.54	0.22244	0.14220		1		
Acetone	BB	3.99	18.2188	5.28715	40.3535	1	40.3535	ppm
Benzene	BB	6.77	63.4722	32.0492	41.7527	1	41.7527	ppm
Toluene	BB	7.84	70.4302	38.9578	41.6859	1	41.6859	ppm
Ethylbenzene	BV	8.64	75.8065	40.0031	41.7529	1	41.7529	ppm
m-p-Xylenes	VB	8.71	75.8143	35.6875	41.8510	1	41.8510	ppm
o-Xylene	BB	8.93	73.5697	36.3984	41.8057	1	41.8057	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp723 #B4 ENV(1=600,3=400)
Sequence Name EDITHP765 ver.1
Data File 002F1204.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/19/2016 8:55 AM
File Modified 10/20/2016 11:22 AM
Instrument
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 2
Injection Volume 250
Injection 4 of 4
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP723F_BTEX.M
Method Modified 9/20/2016 8:20 AM
Printed 10/24/2016 9:40 AM



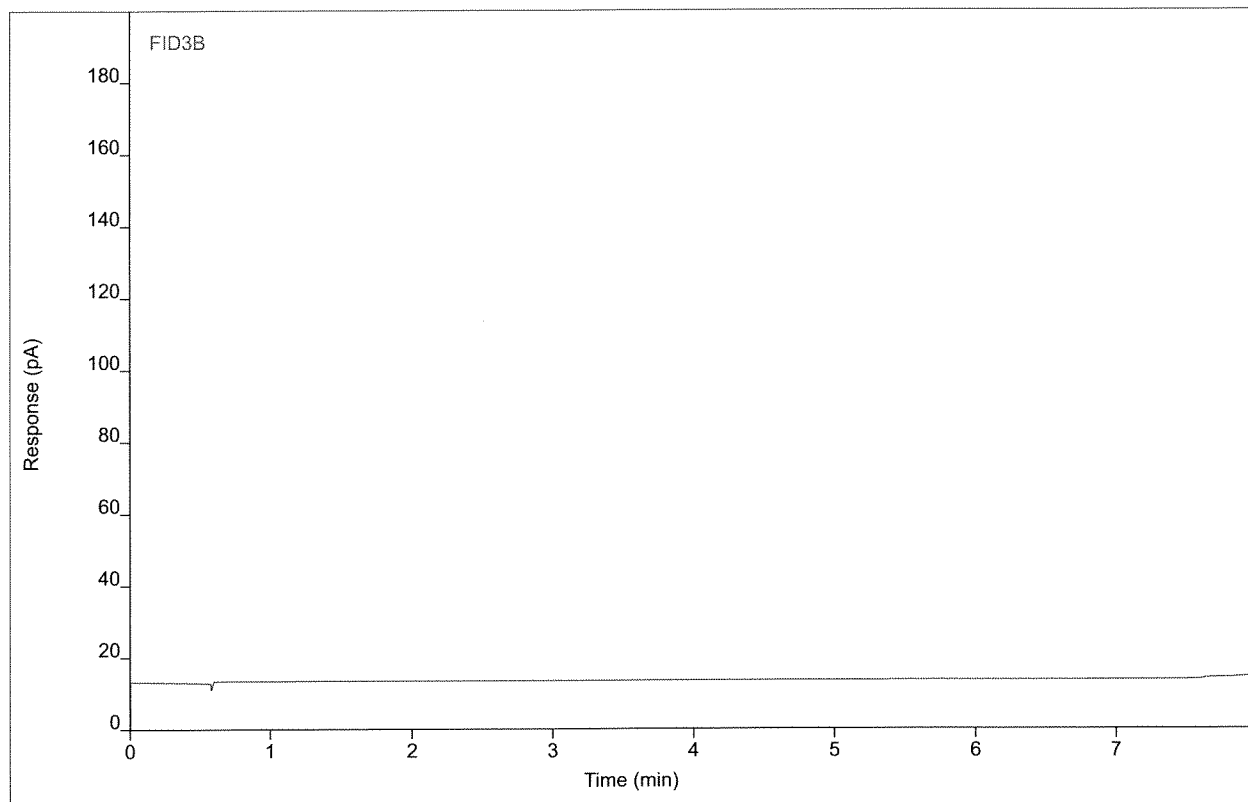
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?	PB	1.54	0.15574	0.12659		1		
Acetone	BB	3.99	18.2314	5.26371	40.3812	1	40.3812	ppm
Benzene	BB	6.77	63.3249	31.8426	41.6559	1	41.6559	ppm
Toluene	BB	7.84	70.2815	38.8824	41.5984	1	41.5984	ppm
Ethylbenzene	BV	8.64	75.7113	39.8752	41.7009	1	41.7009	ppm
m-p-Xylenes	VB	8.71	75.7267	35.7312	41.8031	1	41.8031	ppm
o-Xylene	BB	8.93	73.5625	36.5685	41.8017	1	41.8017	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Zero Air Blank #LB
Sequence Name EDITHP766 ver.4
Data File 032B1501.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/19/2016 7:40 PM
File Modified 10/20/2016 11:37 AM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 32
Injection Volume 250
Injection 1 of 3
Acquisition Method AQ_EDITHP274_HRVOC_XLONG.M
Analysis Method EDITHP636R_HRVOC_ACETYLENE.M
Method Modified 10/20/2016 11:24 AM
Printed 10/24/2016 9:41 AM



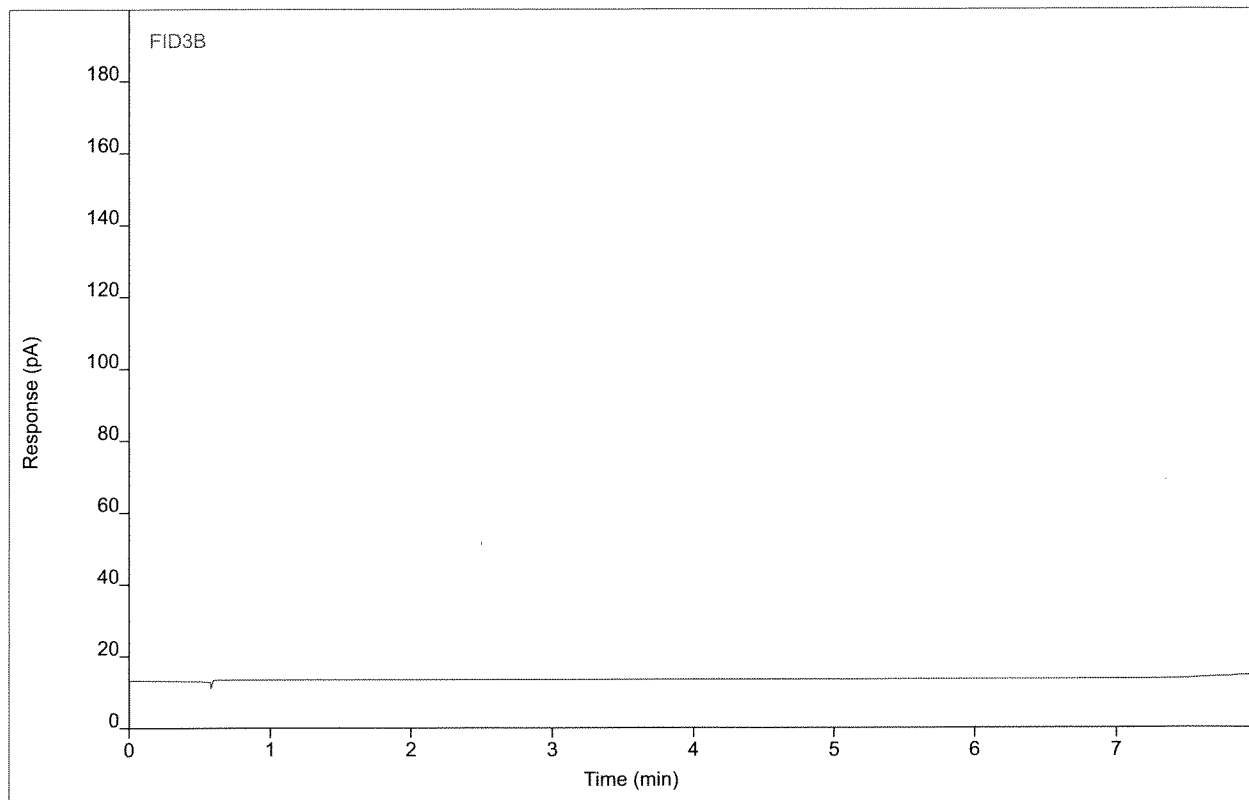
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Propylene		(4.91)				1		
?	BB	8.51	1.61669	1.71680		1		

Chromatogram Report

Enthalpy Analytical

Sample Name Zero Air Blank #LB
Sequence Name EDITHP766 ver.4
Data File 032B1502.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/19/2016 8:02 PM
File Modified 10/20/2016 11:37 AM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 32
Injection Volume 250
Injection 2 of 3
Acquisition Method AQ_EDITHP274_HRVOC_XLONG.M
Analysis Method EDITHP636R_HRVOC_ACETYLENE.M
Method Modified 10/20/2016 11:24 AM
Printed 10/24/2016 9:41 AM



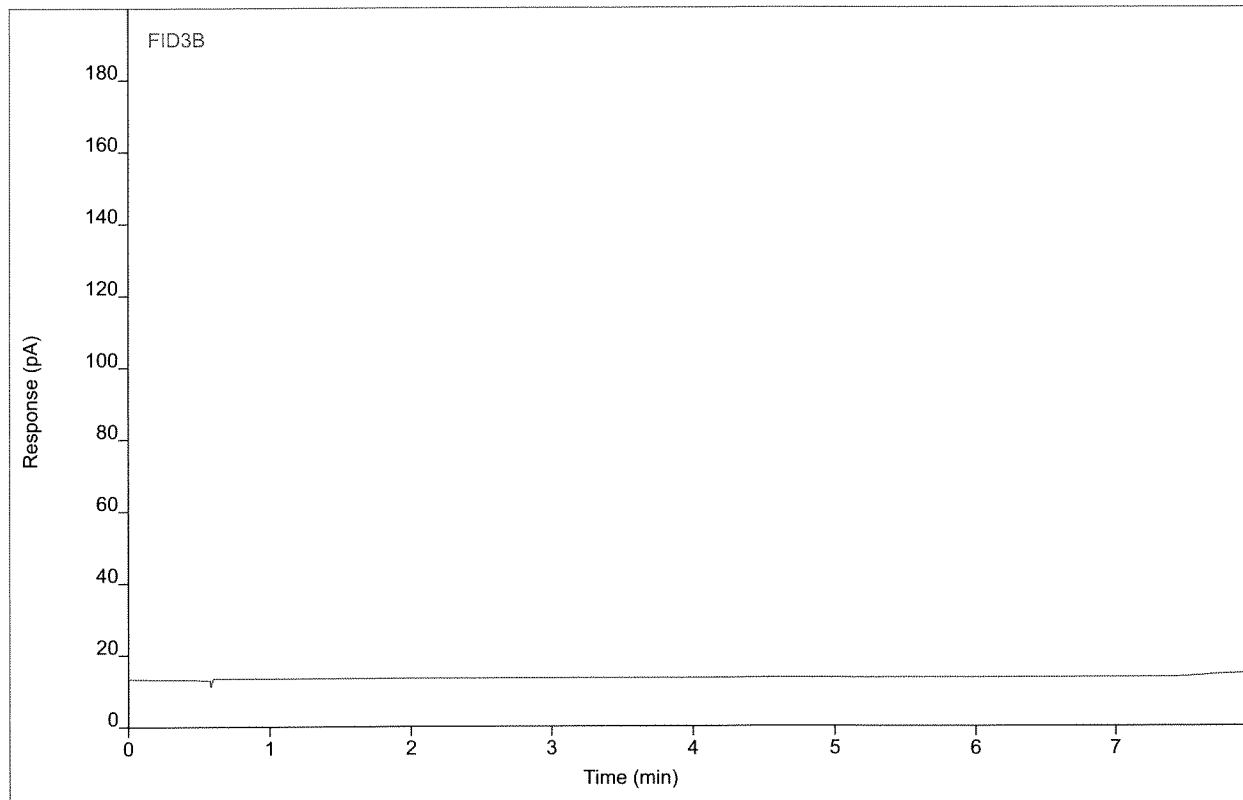
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Propylene		(4.91)				1		
?	BB	8.54	1.64033	1.72005		1		

Chromatogram Report

Enthalpy Analytical

Sample Name Zero Air Blank #LB
Sequence Name EDITHP766 ver.4
Data File 032B1503.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/19/2016 8:23 PM
File Modified 10/20/2016 11:37 AM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 32
Injection Volume 250
Injection 3 of 3
Acquisition Method AQ_EDITHP274_HRVOC_XLONG.M
Analysis Method EDITHP636R_HRVOC_ACETYLENE.M
Method Modified 10/20/2016 11:24 AM
Printed 10/24/2016 9:41 AM



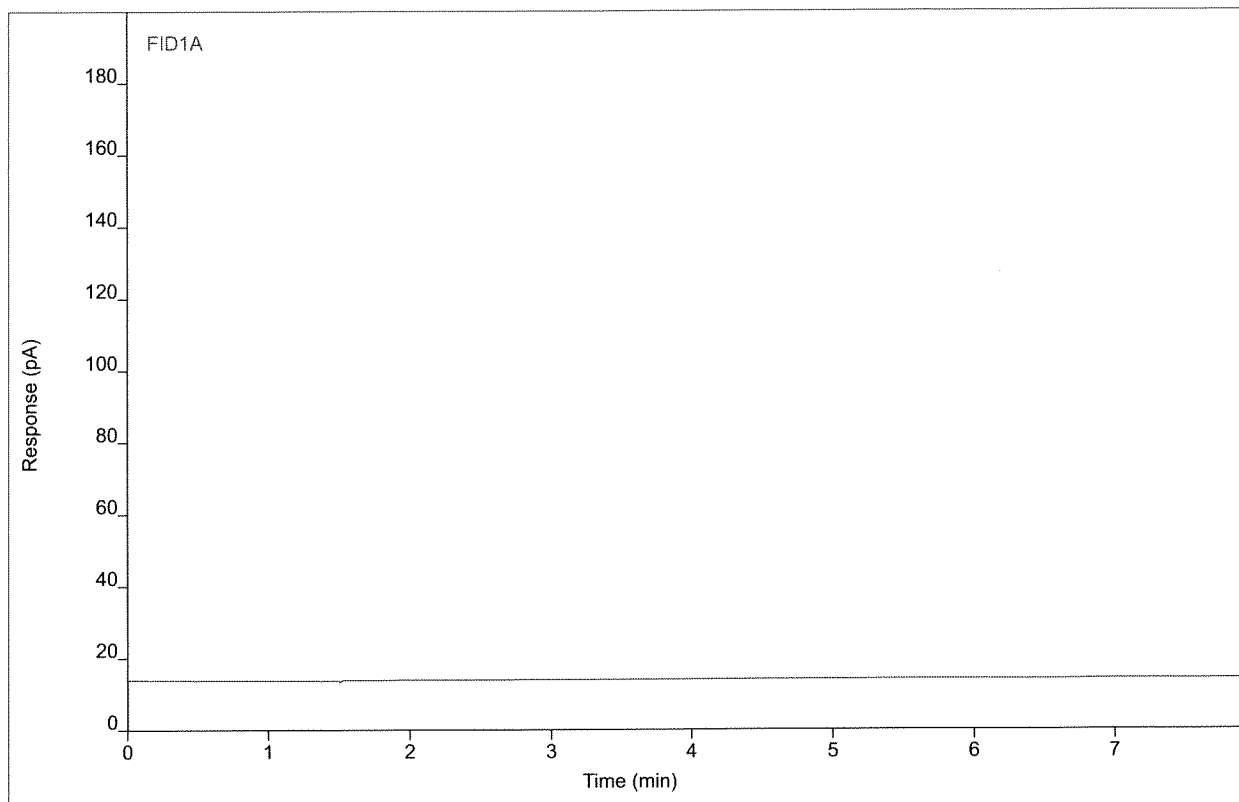
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Propylene		(4.91)				1		
?	BB	8.55	1.43680	1.55956		1		

Chromatogram Report

Sample Name Zero Air Blank #LB
Sequence Name EDITHP766 ver.4
Data File 016F1501.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/19/2016 7:40 PM
File Modified 10/20/2016 11:37 AM
Instrument
Operator Nicholas Traversa

Enthalpy Analytical

Sample Type Sample
Vial Number Vial 16
Injection Volume 250
Injection 1 of 3
Acquisition Method AQ_EDITHP274_HRVOC_XLONG.M
Analysis Method EDITHP730F_C1-C6_BTEX.M
Method Modified 10/14/2016 2:09 PM
Printed 10/24/2016 9:40 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane		(1.53)				1		
Ethane		(1.67)				1		
Propane		(1.99)				1		
Butane		(2.91)				1		
Pentane		(4.46)				1		
Hexane		(6.04)				1		
Benzene		(6.77)				1		

Analyst Peak Integration Comments

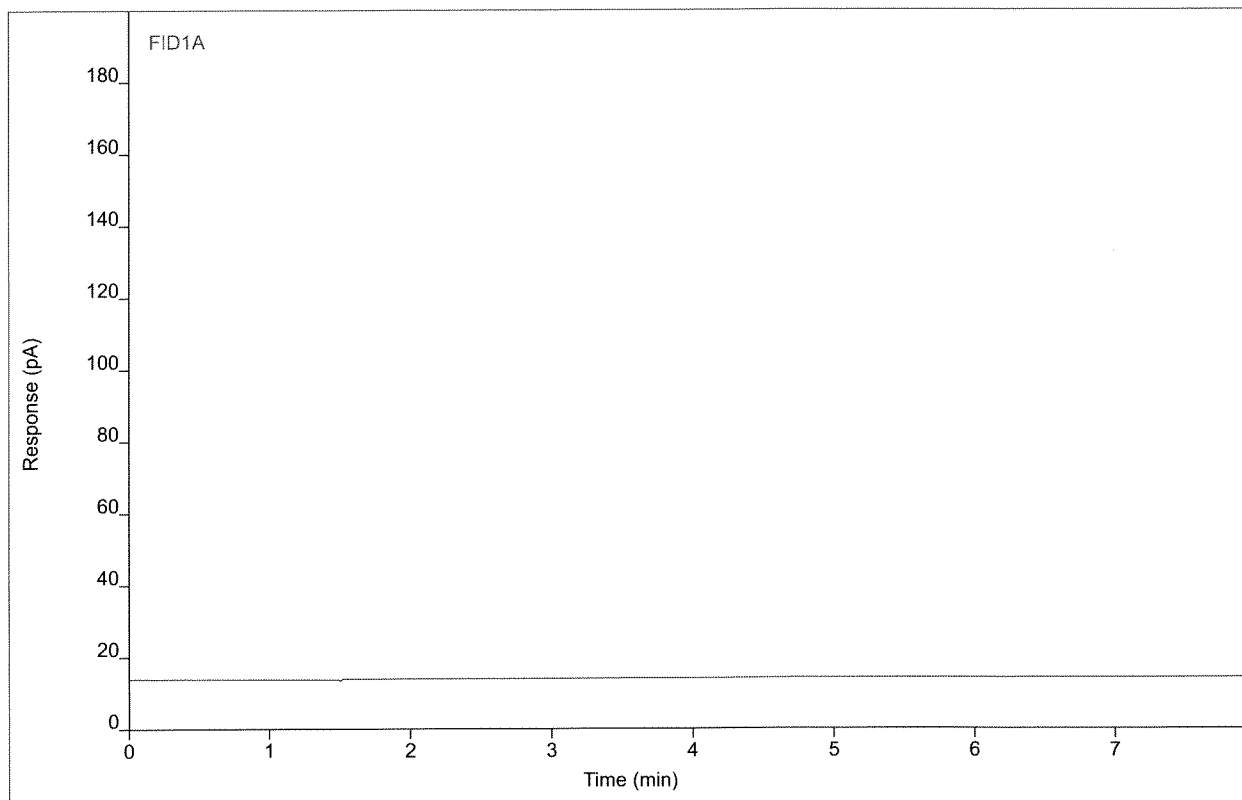
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Chromatogram Report

Sample Name Zero Air Blank #LB
Sequence Name EDITHP766 ver.4
Data File 016F1502.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/19/2016 8:02 PM
File Modified 10/20/2016 11:37 AM
Instrument
Operator Nicholas Traversa

Enthalpy Analytical

Sample Type Sample
Vial Number Vial 16
Injection Volume 250
Injection 2 of 3
Acquisition Method AQ_EDITHP274_HRVOC_XLONG.M
Analysis Method EDITHP730F_C1-C6_BTEX.M
Method Modified 10/14/2016 2:09 PM
Printed 10/24/2016 9:40 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane		(1.53)				1		
Ethane		(1.67)				1		
Propane		(1.99)				1		
Butane		(2.91)				1		
Pentane		(4.46)				1		
Hexane		(6.04)				1		
Benzene		(6.77)				1		

Analyst Peak Integration Comments

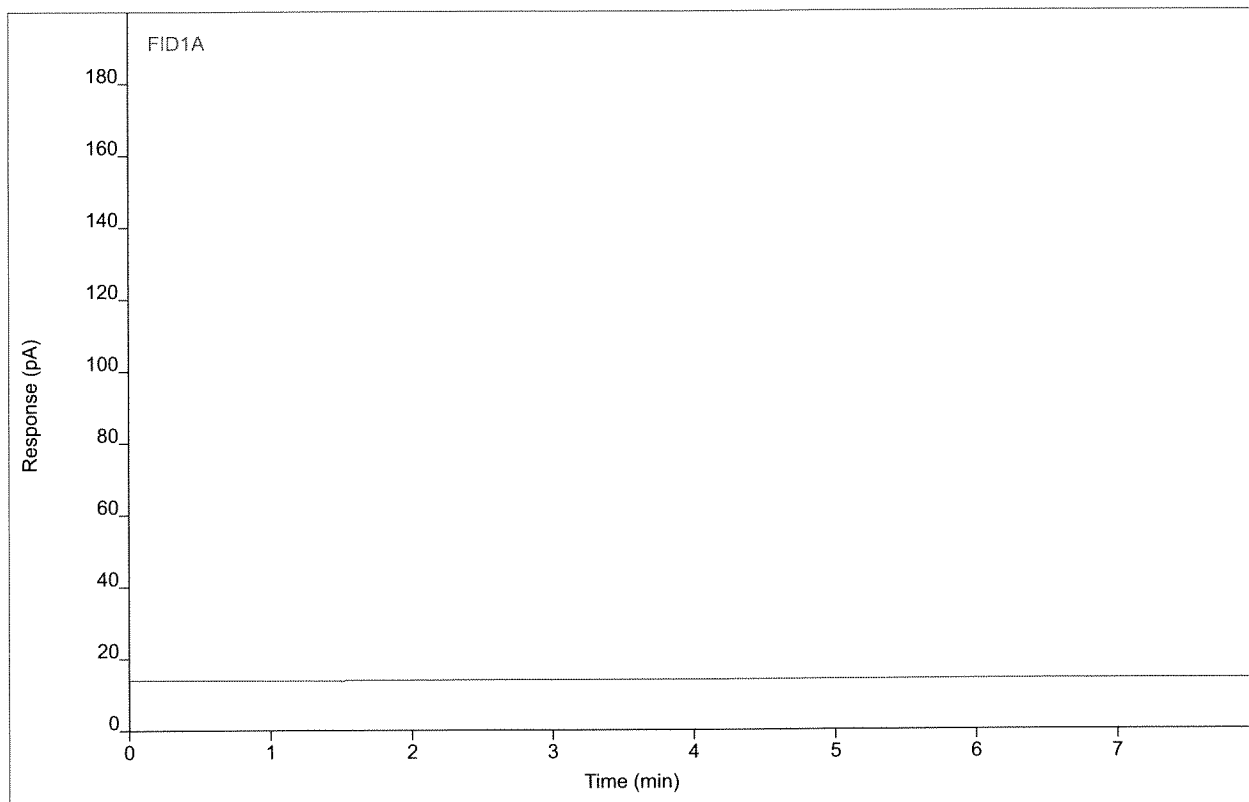
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Chromatogram Report

Enthalpy Analytical

Sample Name Zero Air Blank #LB
Sequence Name EDITHP766 ver.4
Data File 016F1503.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/19/2016 8:23 PM
File Modified 10/20/2016 11:37 AM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 16
Injection Volume 250
Injection 3 of 3
Acquisition Method AQ_EDITHP274_HRVOC_XLONG.M
Analysis Method EDITHP730F_C1-C6_BTEX.M
Method Modified 10/14/2016 2:09 PM
Printed 10/24/2016 9:40 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane		(1.53)				1		
Ethane		(1.67)				1		
Propane		(1.99)				1		
Butane		(2.91)				1		
Pentane		(4.46)				1		
Hexane		(6.04)				1		
Benzene		(6.77)				1		

Analyst Peak Integration Comments

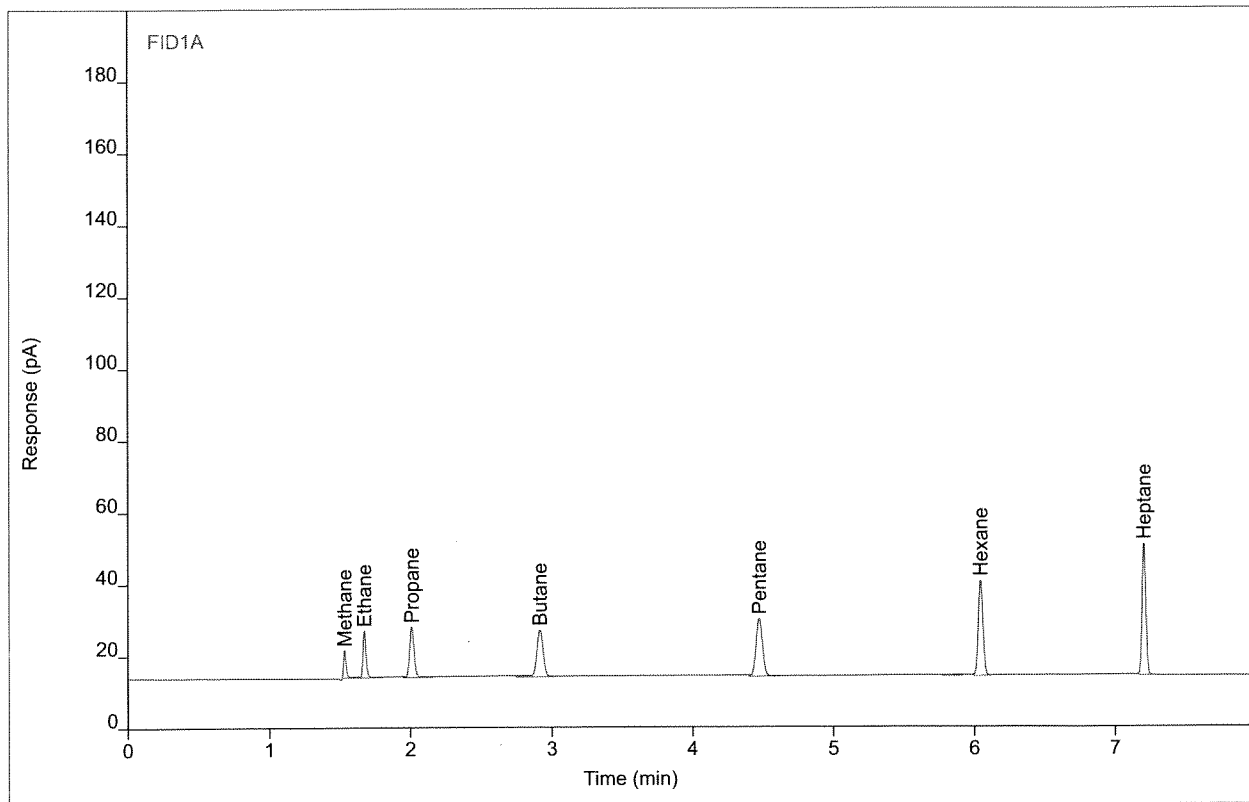
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Chromatogram Report

Enthalpy Analytical

Sample Name Edithp623 #C3 ENV(1=600,2=400)
Sequence Name EDITHP766 ver.4
Data File 002F1701.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/19/2016 9:03 PM
File Modified 10/20/2016 11:37 AM
Instrument
Operator Trevor Lott

Sample Type Calibration
Vial Number Vial 2
Injection Volume 250
Injection 1 of 3
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP730F_C1-C7.M
Method Modified 9/27/2016 9:43 AM
Printed 10/24/2016 9:40 AM



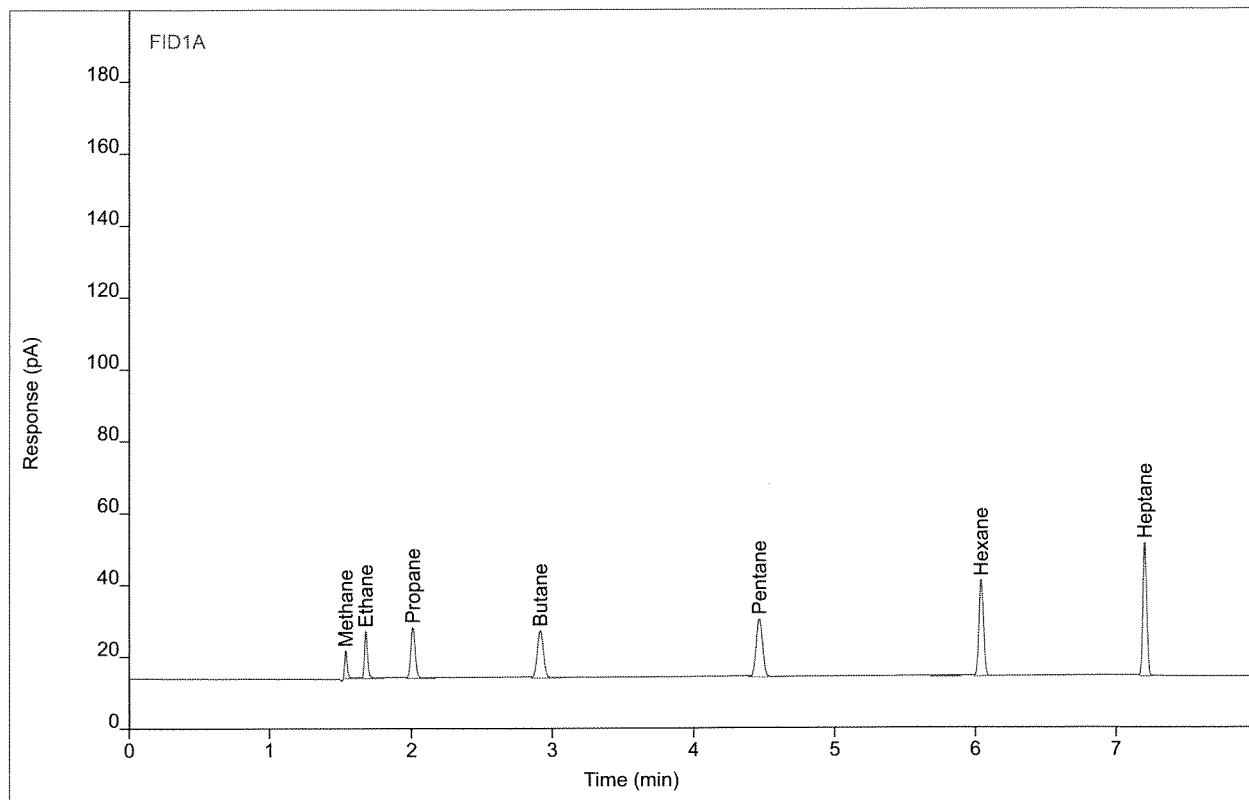
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.53	10.2845	7.61622	39.0144	1	39.0144	ppm
Ethane	PB	1.67	20.4364	13.0048	39.6188	1	39.6188	ppm
Propane	BB	2.01	30.6233	14.0577	39.5731	1	39.5731	ppm
Butane	BB	2.92	40.3247	13.0770	39.2264	1	39.2264	ppm
Pentane	BB	4.47	52.2242	16.0813	40.5991	1	40.5991	ppm
?	BB	5.83	0.49315	0.17516	0.63045	1	0.63045	ppm
Hexane	BB	6.04	61.3518	26.5375	40.0500	1	40.0500	ppm
Heptane	BB	7.21	70.2983	36.5975	39.4541	1	39.4541	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp623 #C3 ENV(1=600,2=400)
Sequence Name EDITHP766 ver.4
Data File 002F1702.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/19/2016 9:18 PM
File Modified 10/20/2016 11:37 AM
Instrument
Operator Trevor Lott

Sample Type
Vial Number
Injection Volume 250
Injection 2 of 3
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP730F_C1-C7.M
Method Modified 9/27/2016 9:43 AM
Printed 10/24/2016 9:40 AM



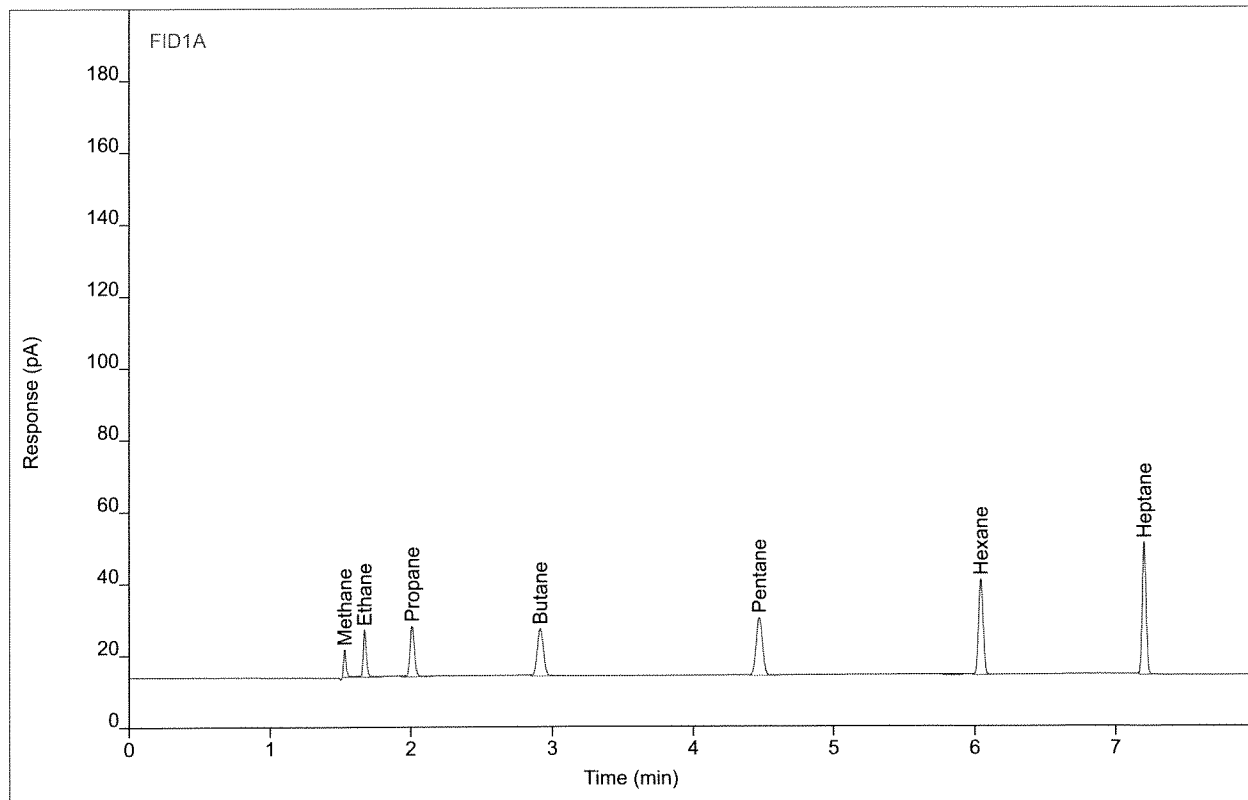
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.53	10.3878	7.66295	39.4026	1	39.4026	ppm
Ethane	BB	1.67	20.4800	13.0882	39.7033	1	39.7033	ppm
Propane	BB	2.01	30.8428	14.1462	39.8572	1	39.8572	ppm
Butane	BB	2.92	40.7530	13.2149	39.6441	1	39.6441	ppm
Pentane	BB	4.47	52.4461	16.2445	40.7725	1	40.7725	ppm
?	BB	5.83	0.49593	0.17443	0.63400	1	0.63400	ppm
Hexane	BB	6.04	61.7017	26.7260	40.2792	1	40.2792	ppm
Heptane	BB	7.21	70.7289	37.1593	39.6962	1	39.6962	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp623 #C3 ENV(1=600,2=400)
Sequence Name EDITHP766 ver.4
Data File 002F1703.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/19/2016 9:32 PM
File Modified 10/20/2016 11:37 AM
Instrument
Operator Trevor Lott

Sample Type Calibration
Vial Number Vial 2
Injection Volume 250
Injection 3 of 3
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP730F_C1-C7.M
Method Modified 9/27/2016 9:43 AM
Printed 10/24/2016 9:40 AM



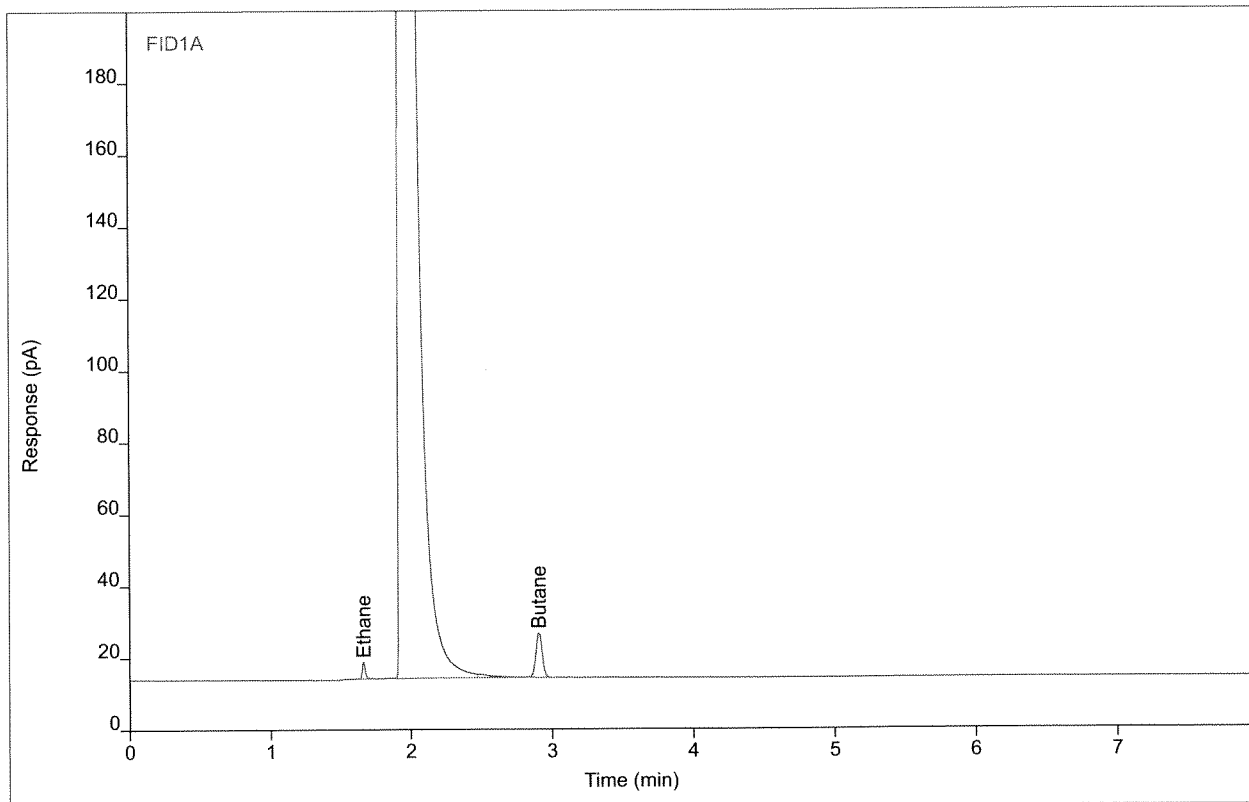
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.53	10.3993	7.66890	39.4458	1	39.4458	ppm
Ethane	PB	1.67	20.7113	13.0990	40.1519	1	40.1519	ppm
Propane	PB	2.01	30.8149	14.1534	39.8212	1	39.8212	ppm
Butane	BB	2.92	40.6584	13.2075	39.5518	1	39.5518	ppm
Pentane	BV	4.47	52.6868	16.2240	40.9605	1	40.9605	ppm
?	BB	5.83	0.49948	0.18073	0.63853	1	0.63853	ppm
Hexane	BB	6.04	61.5887	26.6231	40.2052	1	40.2052	ppm
Heptane	BB	7.21	70.6359	36.8160	39.6439	1	39.6439	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.U3-C1-Primary Can1368.Can
Sequence Name EDITHP766 ver.4
Data File 003F2101.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/20/2016 12:39 AM
File Modified 10/22/2016 12:48 PM
Instrument
Operator Trevor Lott

Sample Type Sample
Vial Number Vial 3
Injection Volume 250
Injection 1 of 3
Acquisition Method AQ_EDITHP274_HRVOC_XLONG.M
Analysis Method EDITHP730F_C1-C6_BENZENE.M
Method Modified 10/22/2016 12:20 PM
Printed 10/24/2016 9:40 AM



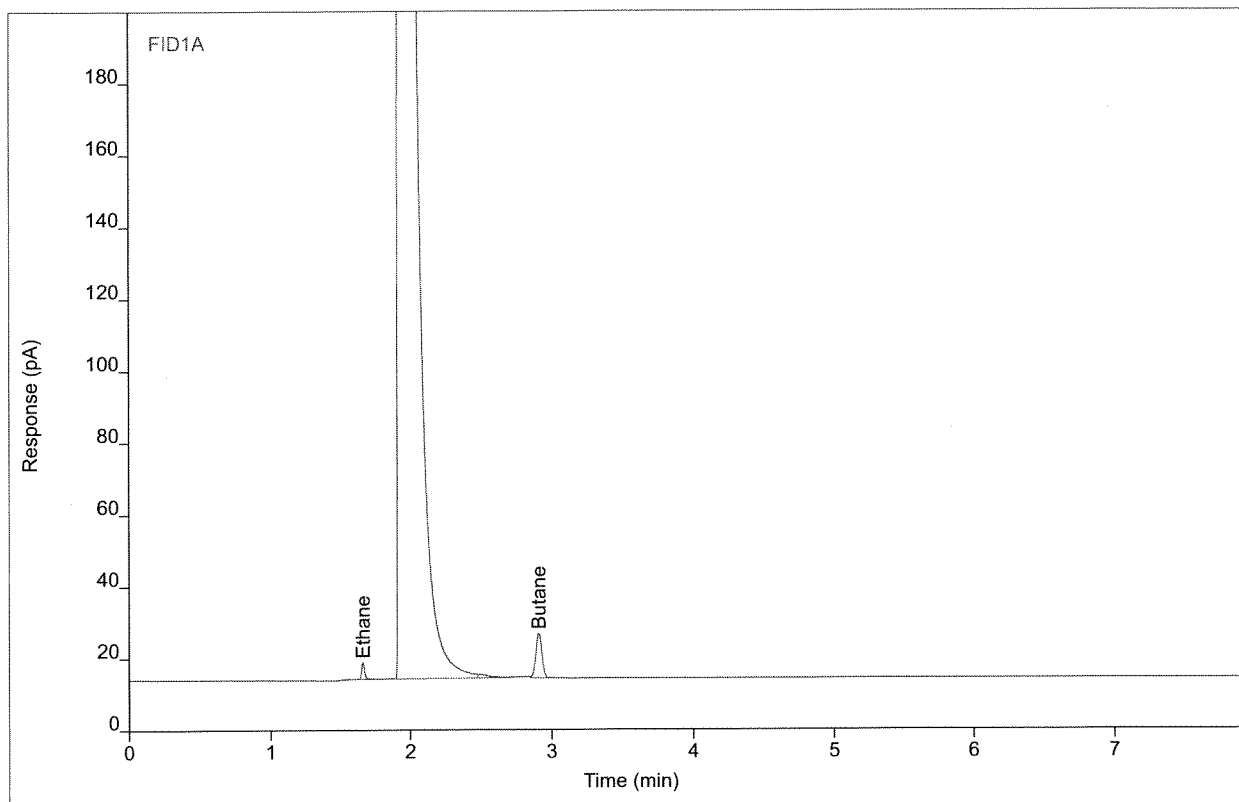
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
as Butane					5.88484	1	5.88484	
Methane		(1.53)				1		
Ethane	BB	1.66	7.01259	4.69056	13.5856	1	13.5856	ppm
?	BV	1.94	86740.4	36708.6	112267	1	112267	ppm
Propane		(1.99)				1		
?	VB	2.50	6.21785	0.99645	7.98554	1	7.98554	ppm
Butane	BB	2.91	38.2101	12.4176	37.1642	1	37.1642	ppm
Pentane		(4.46)				1		
Hexane		(6.04)				1		
Benzene		(6.77)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.U3-C1-Primary Can1368.Can
Sequence Name EDITHP766 ver.4
Data File 003F2102.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/20/2016 1:00 AM
File Modified 10/22/2016 12:48 PM
Instrument
Operator Trevor Lott

Sample Type Sample
Vial Number Vial 3
Injection Volume 250
Injection 2 of 3
Acquisition Method AQ_EDITHP274_HRVOC_XLONG.M
Analysis Method EDITHP730F_C1-C6_BENZENE.M
Method Modified 10/22/2016 12:20 PM
Printed 10/24/2016 9:40 AM



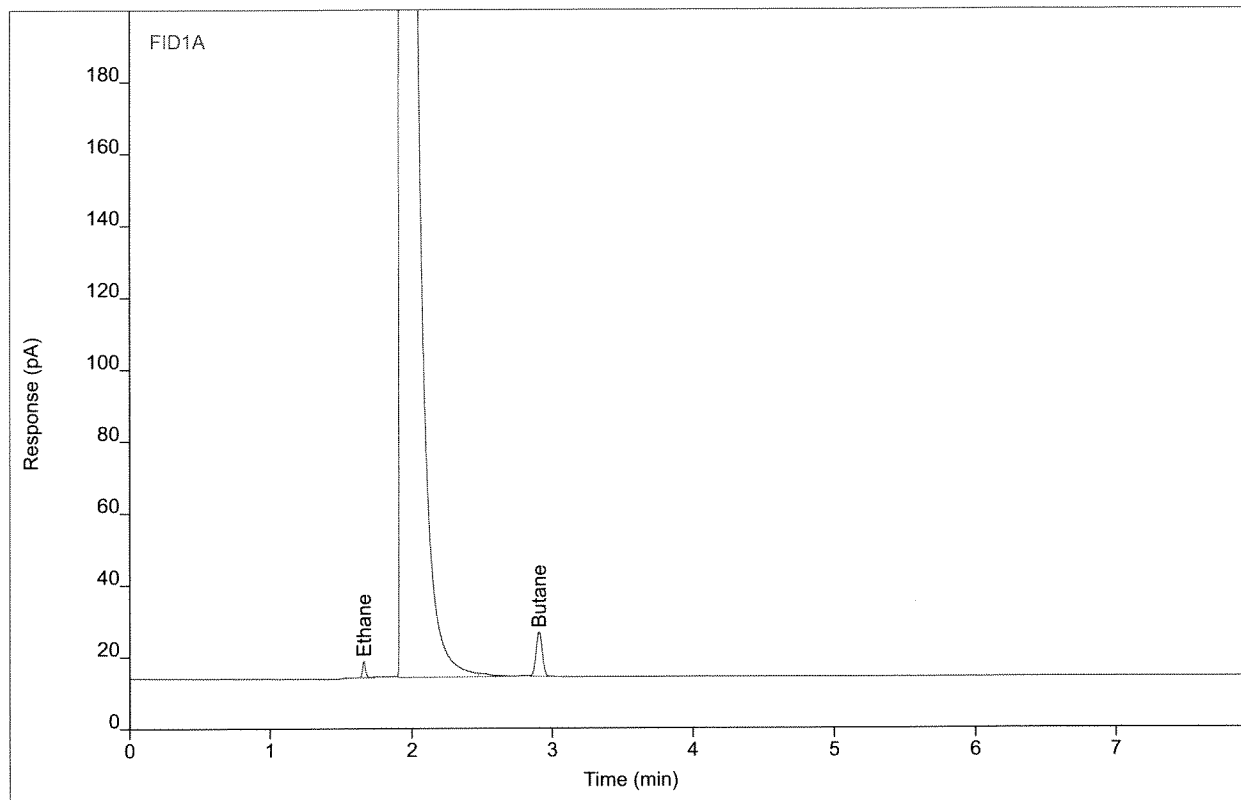
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
as Butane					5.76134	1	5.76134	
Methane		(1.53)				1		
Ethane	PB	1.66	7.02123	4.72197	13.6024	1	13.6024	ppm
?	BV	1.94	86827.3	36689.5	112379	1	112379	ppm
Propane		(1.99)				1		
?	VB	2.50	6.08736	0.99213	7.81665	1	7.81665	ppm
Butane	BB	2.91	38.3293	12.4404	37.2805	1	37.2805	ppm
Pentane		(4.46)				1		
Hexane		(6.04)				1		
Benzene		(6.77)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.U3-C1-Primary Can1368.Can
Sequence Name EDITHP766 ver.4
Data File 003F2103.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/20/2016 1:21 AM
File Modified 10/22/2016 12:48 PM
Instrument
Operator Trevor Lott

Sample Type Sample
Vial Number Vial 3
Injection Volume 250
Injection 3 of 3
Acquisition Method AQ_EDITHP274_HRVOC_XLONG.M
Analysis Method EDITHP730F_C1-C6_BENZENE.M
Method Modified 10/22/2016 12:20 PM
Printed 10/24/2016 9:40 AM



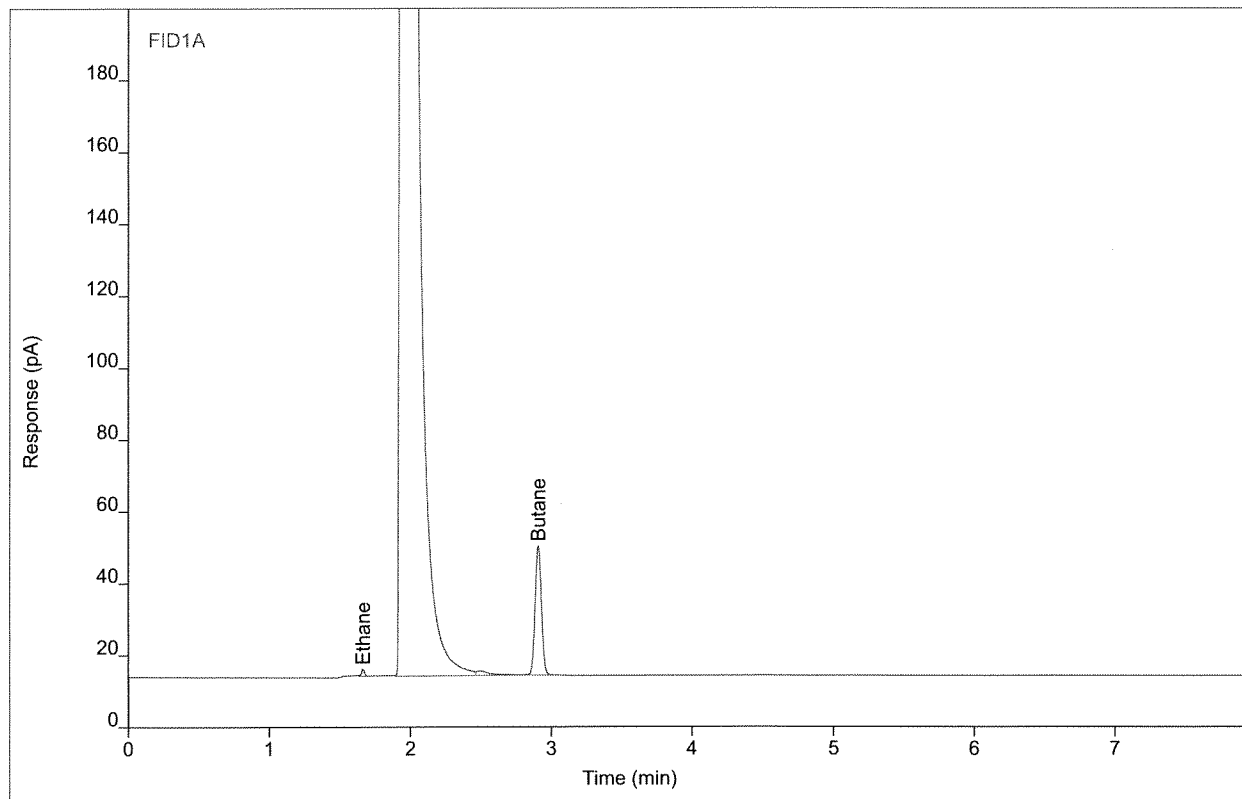
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
as Butane					6.05002	1	6.05002	
Methane		(1.53)				1		
Ethane	PB	1.66	6.99491	4.69880	13.5514	1	13.5514	ppm
?	BV	1.94	86757.1	36654.3	112288	1	112288	ppm
Propane		(1.99)				1		
?	VB	2.50	6.39237	1.00976	8.21142	1	8.21142	ppm
Butane	BB	2.91	38.2649	12.4407	37.2176	1	37.2176	ppm
Pentane		(4.46)				1		
Hexane		(6.04)				1		
Benzene		(6.77)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.U3-C2-Primary Can1321.Can
Sequence Name EDITHP766 ver.4
Data File 006F2201.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/20/2016 1:43 AM
File Modified 10/22/2016 1:32 PM
Instrument
Operator Trevor Lott

Sample Type Sample
Vial Number Vial 6
Injection Volume 250
Injection 1 of 3
Acquisition Method AQ_EDITHP274_HRVOC_XLONG.M
Analysis Method EDITHP730F_C1-C6_BENZENE.M
Method Modified 10/22/2016 12:20 PM
Printed 10/24/2016 9:40 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
as Butane					8.61779	1	8.61779	
Methane		(1.53)				1		
Ethane	BP	1.66	2.96852	2.06248	5.74287	1	5.74287	ppm
?	MF	1.94	84748.6	36134.1	109689	1	109689	ppm
Propane		(2.00)				1		
?	FM	2.51	9.10546	1.41282	11.7229	1	11.7229	ppm
Butane	MM	2.91	111.582	36.1487	108.718	1	108.718	ppm
Pentane		(4.46)				1		
Hexane		(6.04)				1		
Benzene		(6.77)				1		

Analyst Peak Integration Comments

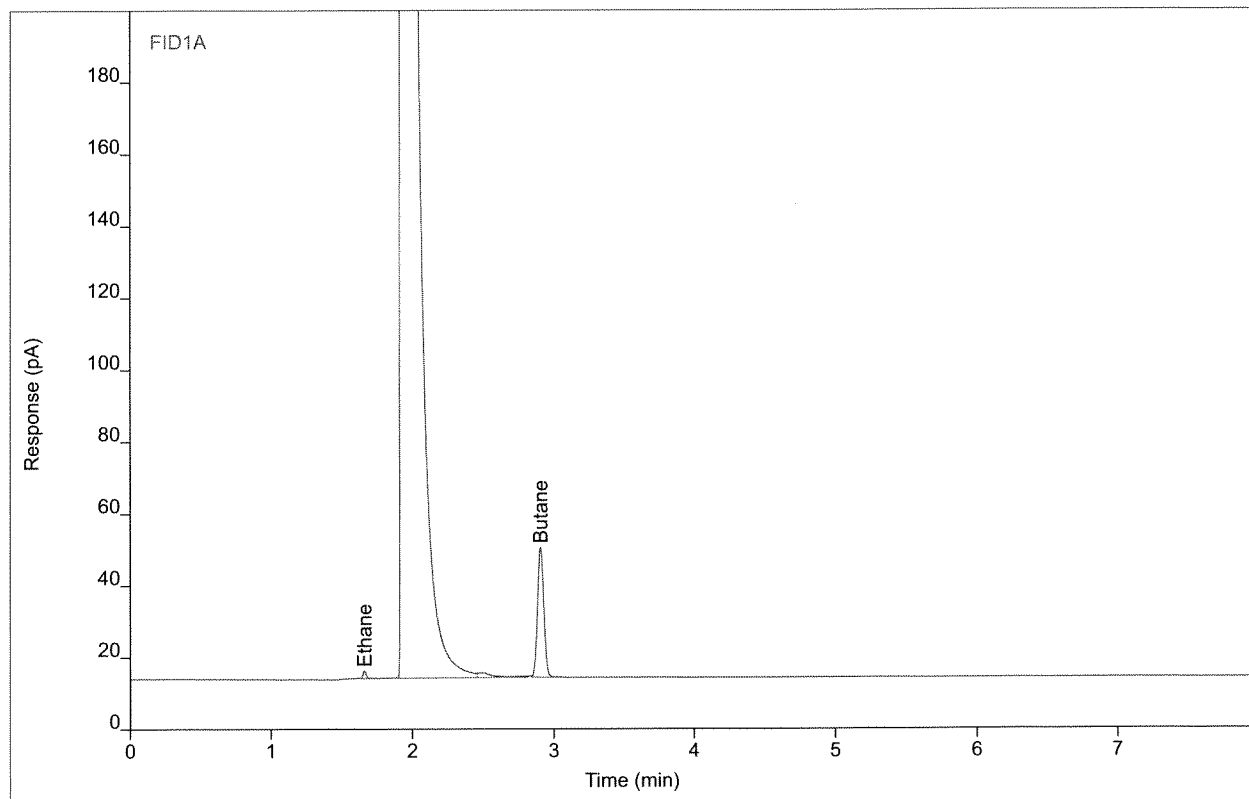
13:32:49 10/22/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.U3-C2-Primary Can1321.Can
Sequence Name EDITHP766 ver.4
Data File 006F2202.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/20/2016 2:04 AM
File Modified 10/22/2016 1:33 PM
Instrument
Operator Trevor Lott

Sample Type Sample
Vial Number Vial 6
Injection Volume 250
Injection 2 of 3
Acquisition Method AQ_EDITHP274_HRVOC_XLONG.M
Analysis Method EDITHP730F_C1-C6_BENZENE.M
Method Modified 10/22/2016 12:20 PM
Printed 10/24/2016 9:40 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
as Butane					8.58861	1	8.58861	
Methane		(1.53)				1		
Ethane	BB	1.66	3.11797	2.08008	6.03271	1	6.03271	ppm
?	MF	1.94	84868.6	36288.4	109844	1	109844	ppm
Propane		(2.00)				1		
?	FM	2.50	9.07462	1.40126	11.6830	1	11.6830	ppm
Butane	MM	2.91	111.306	36.1557	108.449	1	108.449	ppm
Pentane		(4.46)				1		
Hexane		(6.04)				1		
Benzene		(6.77)				1		

Analyst Peak Integration Comments

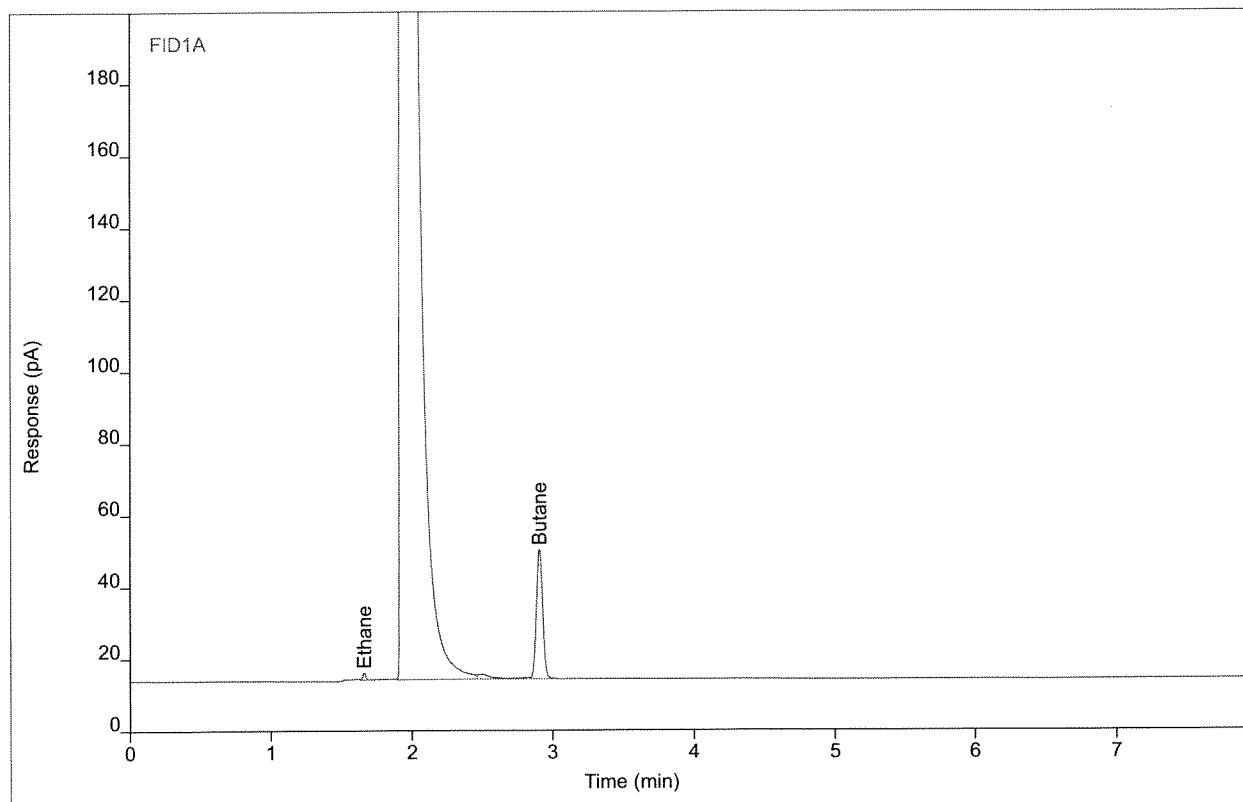
13:32:19 10/22/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.U3-C2-Primary Can1321.Can
Sequence Name EDITHP766 ver.4
Data File 006F2203.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/20/2016 2:25 AM
File Modified 10/22/2016 1:33 PM
Instrument
Operator Trevor Lott

Sample Type Sample
Vial Number Vial 6
Injection Volume 250
Injection 3 of 3
Acquisition Method AQ_EDITHP274_HRVOC_XLONG.M
Analysis Method EDITHP730F_C1-C6_BENZENE.M
Method Modified 10/22/2016 12:20 PM
Printed 10/24/2016 9:40 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
as Butane					8.69782	1	8.69782	
Methane		(1.53)				1		
Ethane	BB	1.66	3.12286	2.09090	6.04218	1	6.04218	ppm
?	MF	1.94	84829.9	36126.6	109794	1	109794	ppm
Propane		(2.00)				1		
?	FM	2.51	9.19001	1.41405	11.8324	1	11.8324	ppm
Butane	BB	2.91	111.798	36.0690	108.929	1	108.929	ppm
Pentane		(4.46)				1		
Hexane		(6.04)				1		
Benzene		(6.77)				1		

Analyst Peak Integration Comments

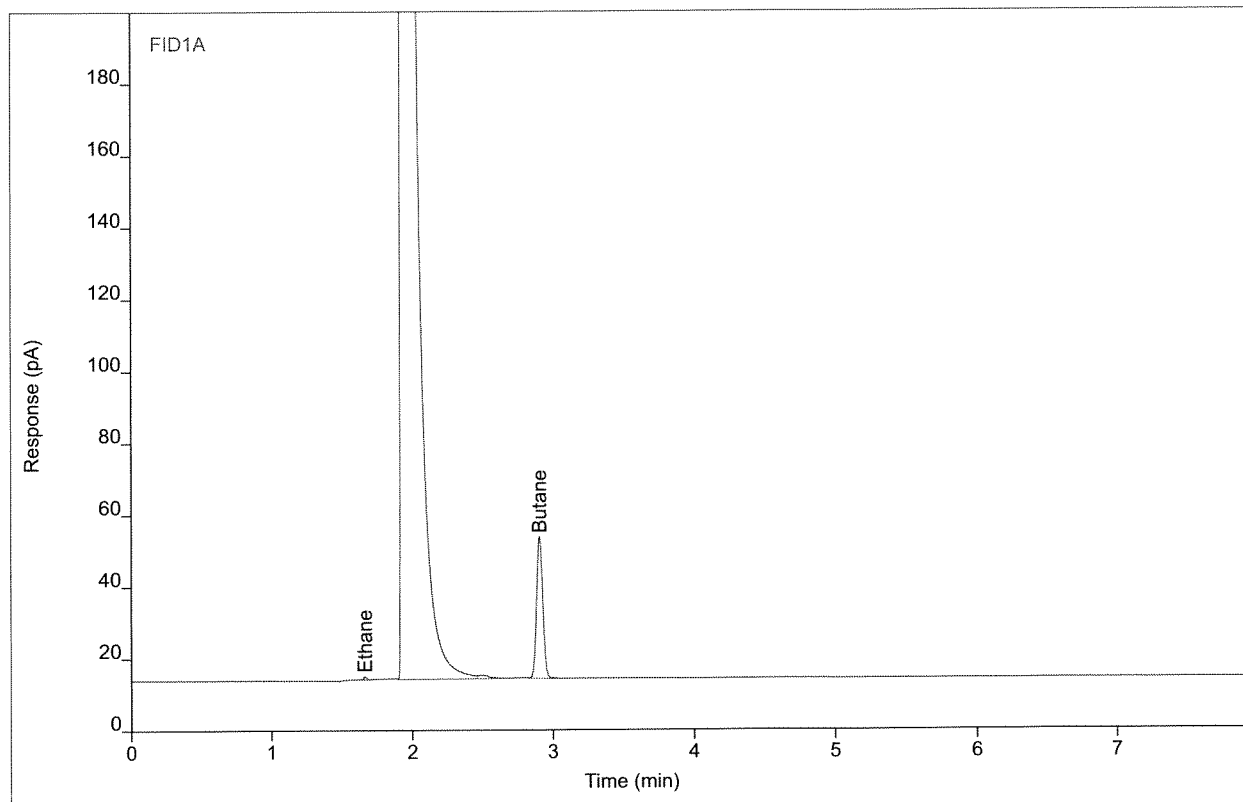
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Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.U3-C3-Primary Can1655.Can
Sequence Name EDITHP766 ver.4
Data File 007F2301.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/20/2016 2:46 AM
File Modified 10/22/2016 12:48 PM
Instrument
Operator Trevor Lott

Sample Type Sample
Vial Number Vial 7
Injection Volume 250
Injection 1 of 3
Acquisition Method AQ_EDITHP274_HRVOC_XLONG.M
Analysis Method EDITHP730F_C1-C6_BENZENE.M
Method Modified 10/22/2016 12:20 PM
Printed 10/24/2016 9:40 AM



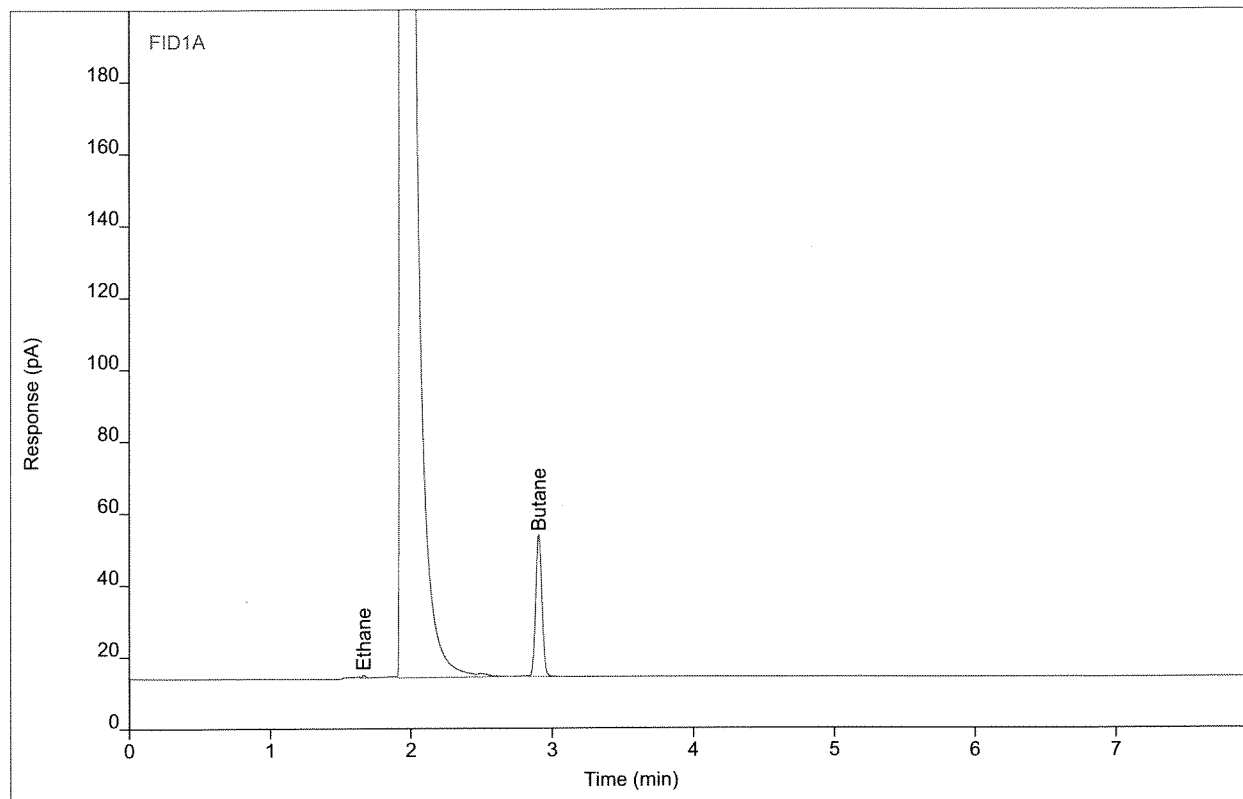
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
as Butane					6.01876	1	6.01876	
Methane		(1.53)				1		
Ethane	BB	1.66	1.36609	0.92086	2.64188	1	2.64188	ppm
?	BV	1.94	63658.7	28268.8	82392.4	1	82392.4	ppm
Propane		(1.99)				1		
?	VB	2.51	6.35935	1.20074	8.16867	1	8.16867	ppm
Butane	BB	2.91	121.550	39.4082	118.439	1	118.439	ppm
Pentane		(4.46)				1		
Hexane		(6.04)				1		
Benzene		(6.77)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.U3-C3-Primary Can1655.Can
Sequence Name EDITHP766 ver.4
Data File 007F2302.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/20/2016 3:07 AM
File Modified 10/22/2016 1:33 PM
Instrument
Operator Trevor Lott

Sample Type Sample
Vial Number Vial 7
Injection Volume 250
Injection 2 of 3
Acquisition Method AQ_EDITHP274_HRVOC_XLONG.M
Analysis Method EDITHP730F_C1-C6_BENZENE.M
Method Modified 10/22/2016 12:20 PM
Printed 10/24/2016 9:40 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
as Butane					6.13557	1	6.13557	
Methane		(1.53)				1		
Ethane	BP	1.66	1.29690	0.90837	2.50806	1	2.50806	ppm
?	MF	1.94	63635.0	28606.2	82361.7	1	82361.7	ppm
Propane		(2.00)				1		
?	FM	2.50	6.48277	1.18818	8.32842	1	8.32842	ppm
Butane	BB	2.91	121.603	39.3872	118.491	1	118.491	ppm
Pentane		(4.46)				1		
Hexane		(6.04)				1		
Benzene		(6.77)				1		

Analyst Peak Integration Comments

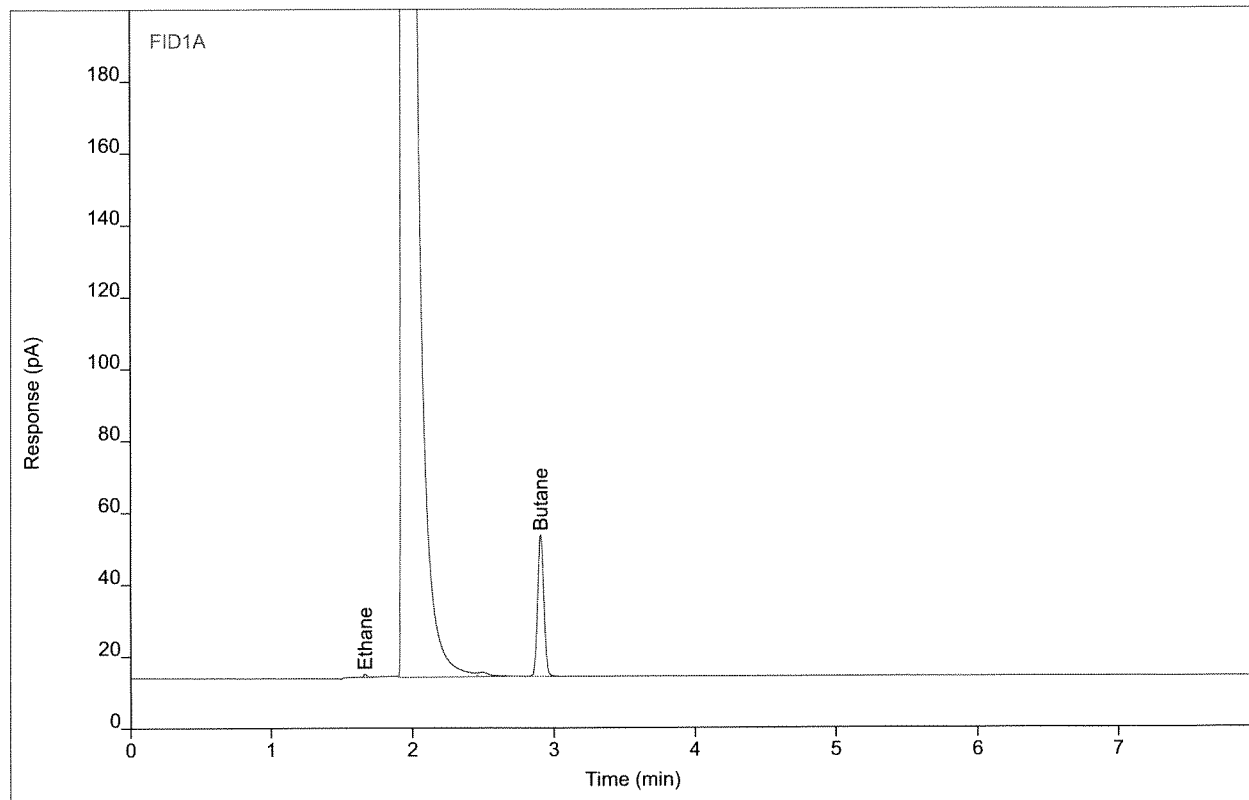
13:33:31 10/22/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.U3-C3-Primary Can1655.Can
Sequence Name EDITHP766 ver.4
Data File 007F2303.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/20/2016 3:29 AM
File Modified 10/22/2016 1:33 PM
Instrument
Operator Trevor Lott

Sample Type Sample
Vial Number Vial 7
Injection Volume 250
Injection 3 of 3
Acquisition Method AQ_EDITHP274_HRVOC_XLONG.M
Analysis Method EDITHP730F_C1-C6_BENZENE.M
Method Modified 10/22/2016 12:20 PM
Printed 10/24/2016 9:40 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
as Butane					6.50172	1	6.50172	
Methane		(1.53)				1		
Ethane	BP	1.66	1.31051	0.89983	2.53438	1	2.53438	ppm
?	MF	1.94	63601.4	28492.2	82318.1	1	82318.1	ppm
Propane		(2.00)				1		
?	FM	2.50	6.86963	1.20644	8.82913	1	8.82913	ppm
Butane	MM	2.91	121.568	39.4318	118.457	1	118.457	ppm
Pentane		(4.46)				1		
Hexane		(6.04)				1		
Benzene		(6.77)				1		

Analyst Peak Integration Comments

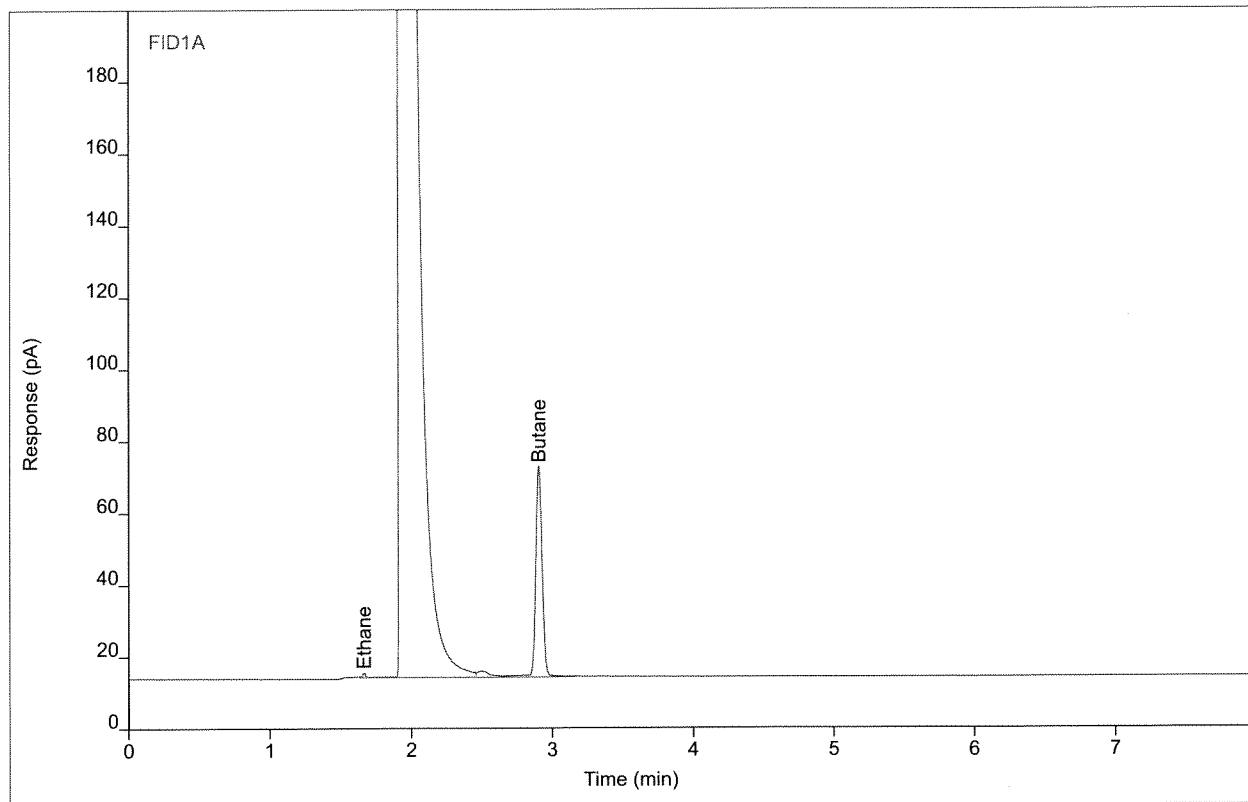
13:33:45 10/22/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.U3-C4-Primary Can1109.Can
Sequence Name EDITHP766 ver.4
Data File 008F2401.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/20/2016 3:50 AM
File Modified 10/22/2016 12:48 PM
Instrument
Operator Trevor Lott

Sample Type Sample
Vial Number Vial 8
Injection Volume 250
Injection 1 of 3
Acquisition Method AQ_EDITHP274_HRVOC_XLONG.M
Analysis Method EDITHP730F_C1-C6_BENZENE.M
Method Modified 10/22/2016 12:20 PM
Printed 10/24/2016 9:40 AM



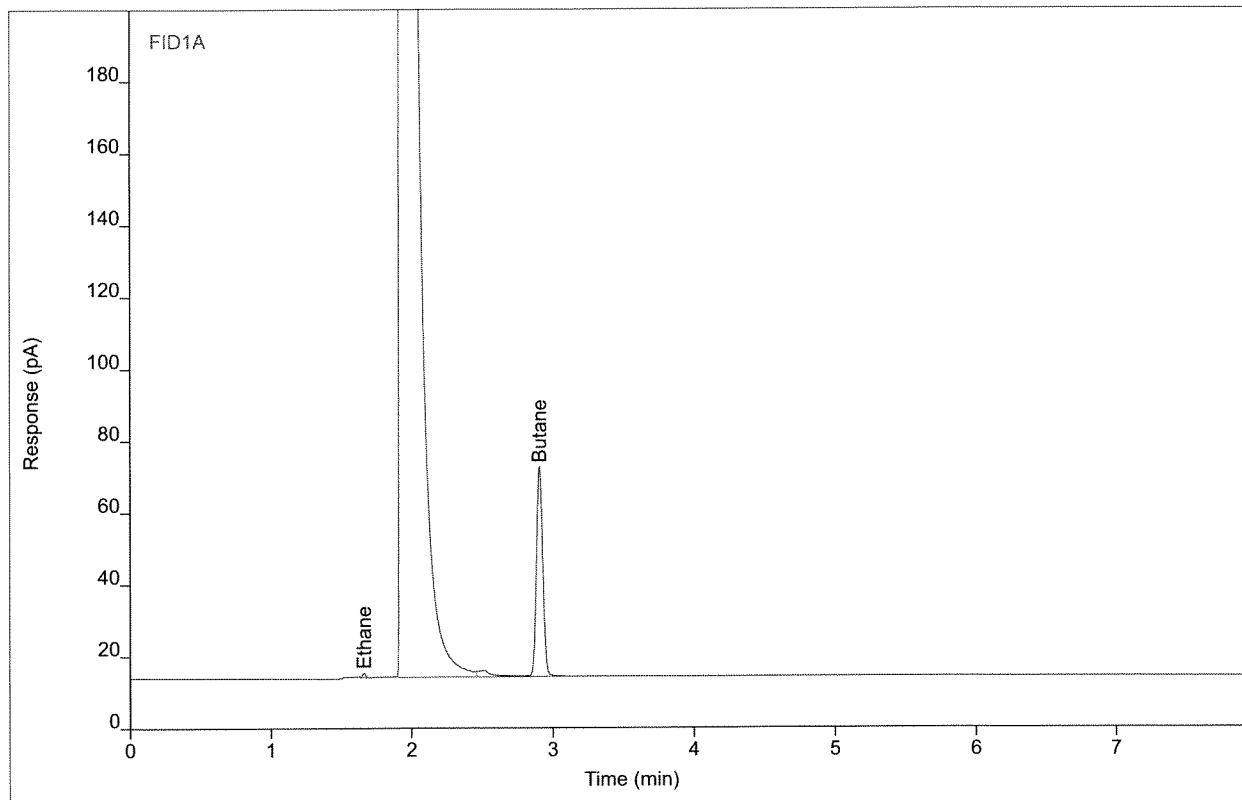
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
as Butane					12.8688	1	12.8688	
Methane		(1.53)				1		
Ethane	BP	1.66	1.93706	1.30850	3.74607	1	3.74607	ppm
?	VV	1.94	91751.0	38153.4	118752	1	118752	ppm
Propane		(1.99)				1		
?	VB	2.51	12.5523	1.86895	16.1842	1	16.1842	ppm
?	BV	2.78	1.04472	0.26461	1.33557	1	1.33557	ppm
Butane	VB	2.91	183.570	58.5961	178.923	1	178.923	ppm
Pentane		(4.46)				1		
Hexane		(6.04)				1		
Benzene		(6.77)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.U3-C4-Primary Can1109.Can
Sequence Name EDITHP766 ver.4
Data File 008F2402.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/20/2016 4:11 AM
File Modified 10/22/2016 12:48 PM
Instrument
Operator Trevor Lott

Sample Type Sample
Vial Number Vial 8
Injection Volume 250
Injection 2 of 3
Acquisition Method AQ_EDITHP274_HRVOC_XLONG.M
Analysis Method EDITHP730F_C1-C6_BENZENE.M
Method Modified 10/22/2016 12:20 PM
Printed 10/24/2016 9:40 AM



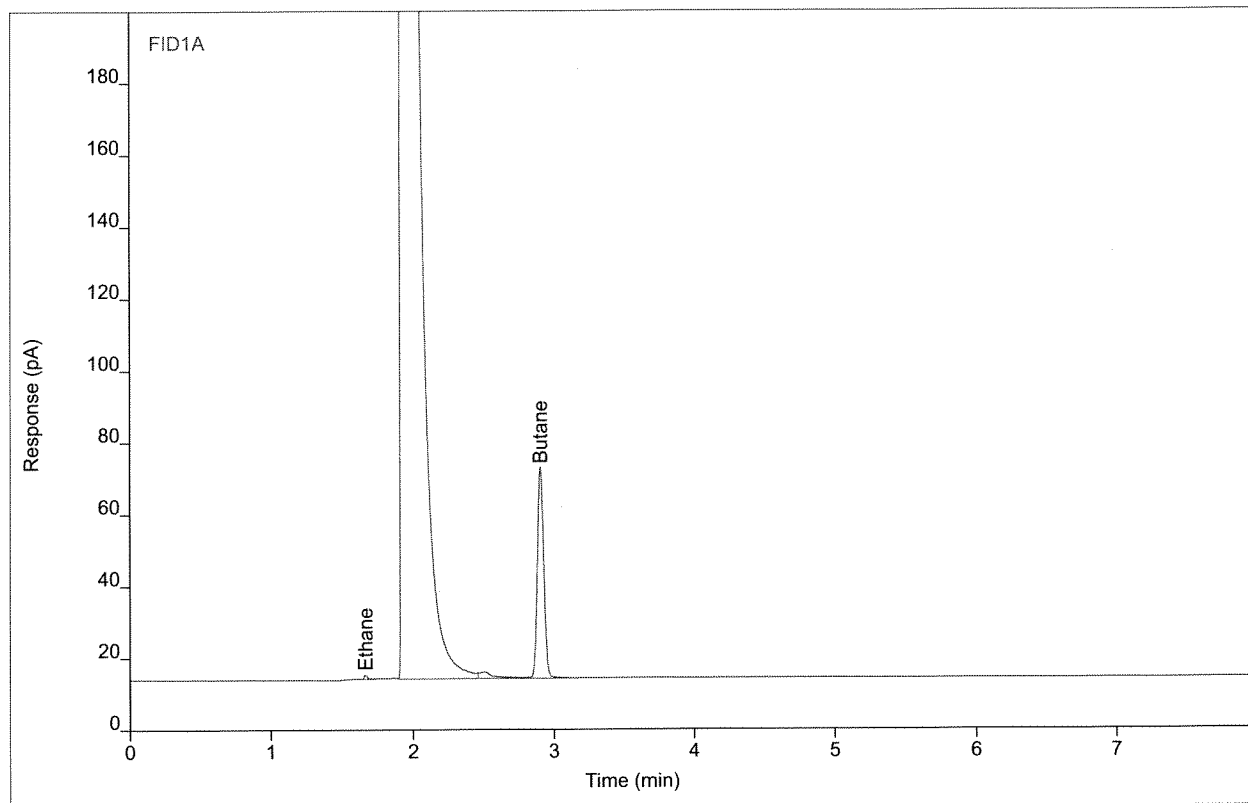
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
as Butane					12.4052	1	12.4052	
Methane		(1.53)				1		
Ethane	BB	1.66	1.94847	1.30405	3.76813	1	3.76813	ppm
?	BV	1.94	91574.4	38142.9	118523	1	118523	ppm
Propane		(1.99)				1		
?	VB	2.51	12.1825	1.84104	15.7054	1	15.7054	ppm
?	BV	2.78	0.92471	0.23227	1.18215	1	1.18215	ppm
Butane	VB	2.91	182.375	58.4350	177.757	1	177.757	ppm
Pentane		(4.46)				1		
Hexane		(6.04)				1		
Benzene		(6.77)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.U3-C4-Primary Can1109.Can
Sequence Name EDITHP766 ver.4
Data File 008F2403.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/20/2016 4:33 AM
File Modified 10/22/2016 12:49 PM
Instrument
Operator Trevor Lott

Sample Type Sample
Vial Number Vial 8
Injection Volume 250
Injection 3 of 3
Acquisition Method AQ_EDITHP274_HRVOC_XLONG.M
Analysis Method EDITHP730F_C1-C6_BENZENE.M
Method Modified 10/22/2016 12:20 PM
Printed 10/24/2016 9:40 AM



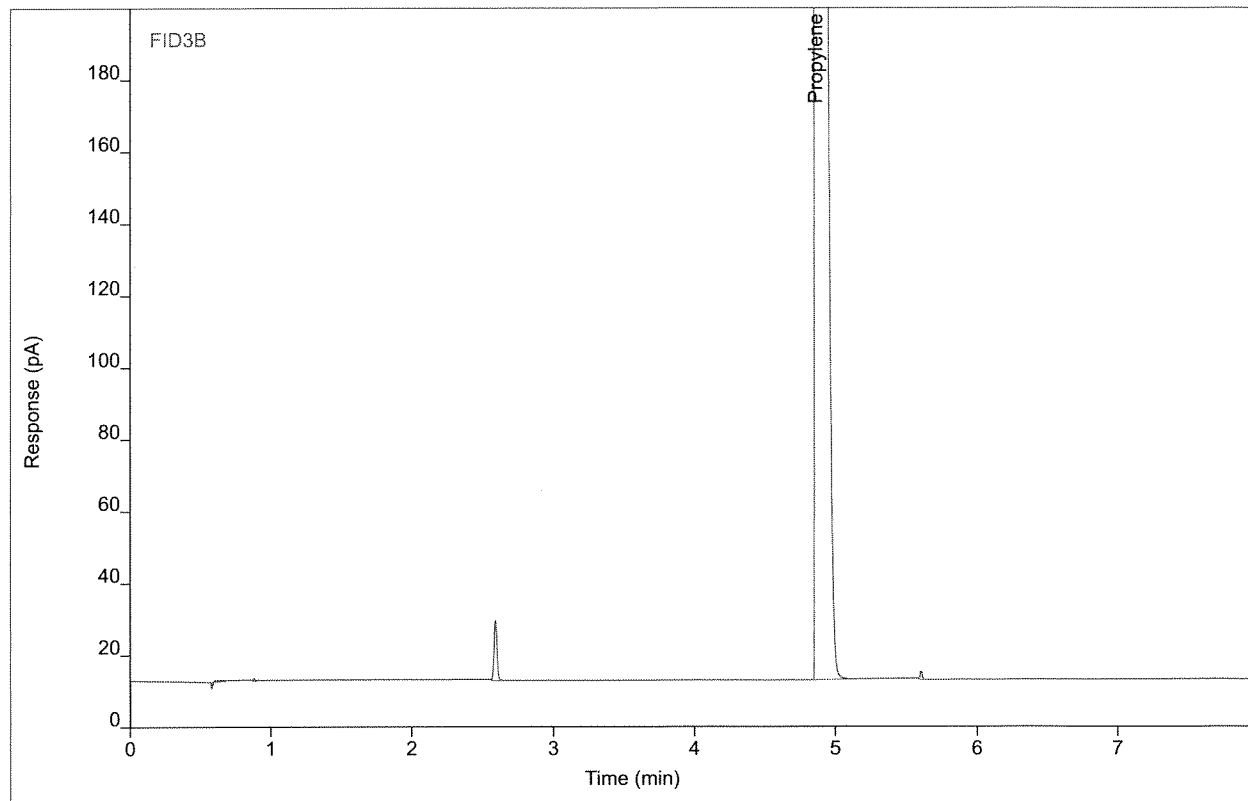
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
as Butane					12.9324	1	12.9324	
Methane		(1.53)				1		
Ethane	BB	1.66	1.92976	1.30199	3.73195	1	3.73195	ppm
?	BV	1.94	91828.7	38228.9	118852	1	118852	ppm
Propane		(1.99)				1		
?	VB	2.51	12.6257	1.86951	16.2790	1	16.2790	ppm
?	BV	2.78	1.03861	0.27303	1.32776	1	1.32776	ppm
Butane	VB	2.91	183.869	58.6735	179.214	1	179.214	ppm
Pentane		(4.46)				1		
Hexane		(6.04)				1		
Benzene		(6.77)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.U3-C1-Primary Can1368.Can
Sequence Name EDITHP768 ver.4
Data File 021B1601.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/21/2016 8:10 AM
File Modified 10/24/2016 8:58 AM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 21
Injection Volume 250
Injection 1 of 3
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP636R_HRVOC_ACETYLENE.M
Method Modified 10/22/2016 11:28 AM
Printed 10/24/2016 9:41 AM



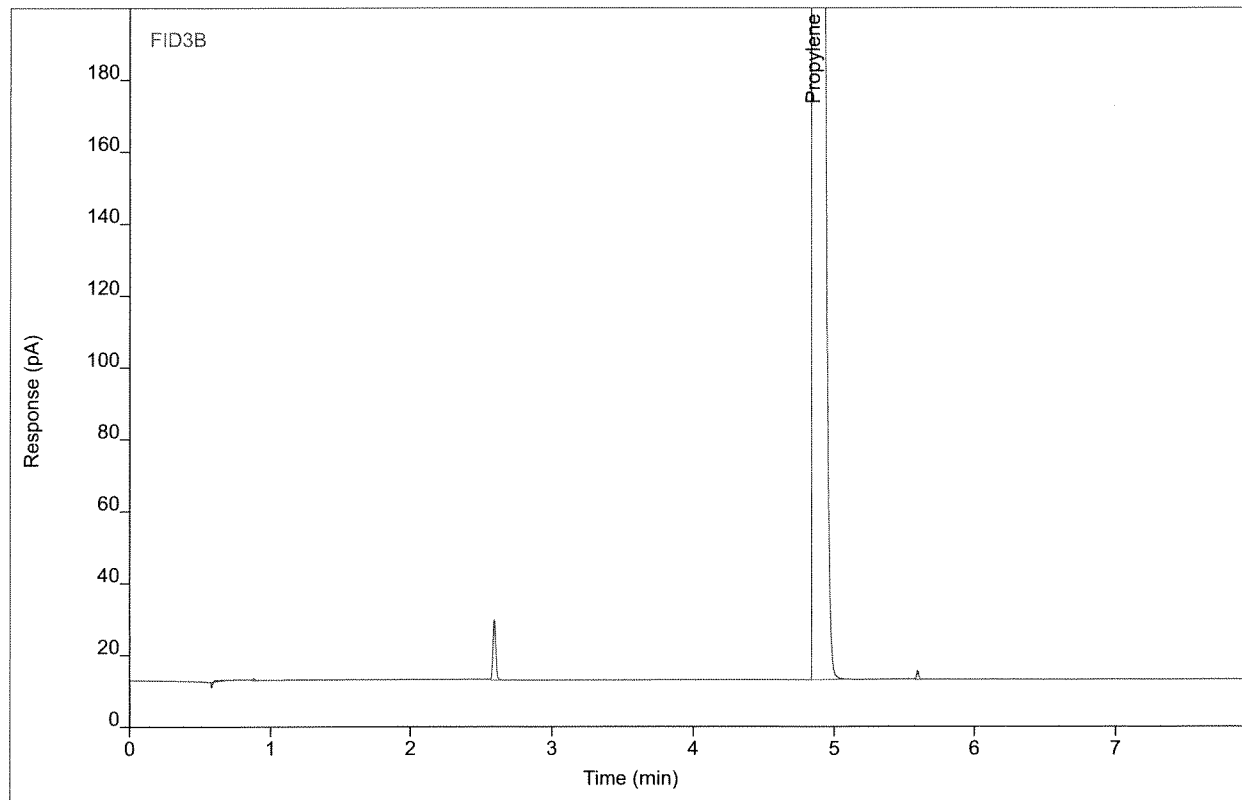
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
?	BB	0.61	0.23085	0.48659		31		
?	BB	0.88	0.46625	0.65638		31		
?	BB	2.59	24.3226	16.7225		31		
Propylene	BB S	4.87	5927.03	1712.77	3672.47	31	113846	ppm
?	BB	5.60	2.60778	2.51487		31		

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.U3-C1-Primary Can1368.Can
Sequence Name EDITHP768 ver.4
Data File 021B1602.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/21/2016 8:23 AM
File Modified 10/24/2016 8:58 AM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 21
Injection Volume 250
Injection 2 of 3
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP636R_HRVOC_ACETYLENE.M
Method Modified 10/22/2016 11:28 AM
Printed 10/24/2016 9:41 AM



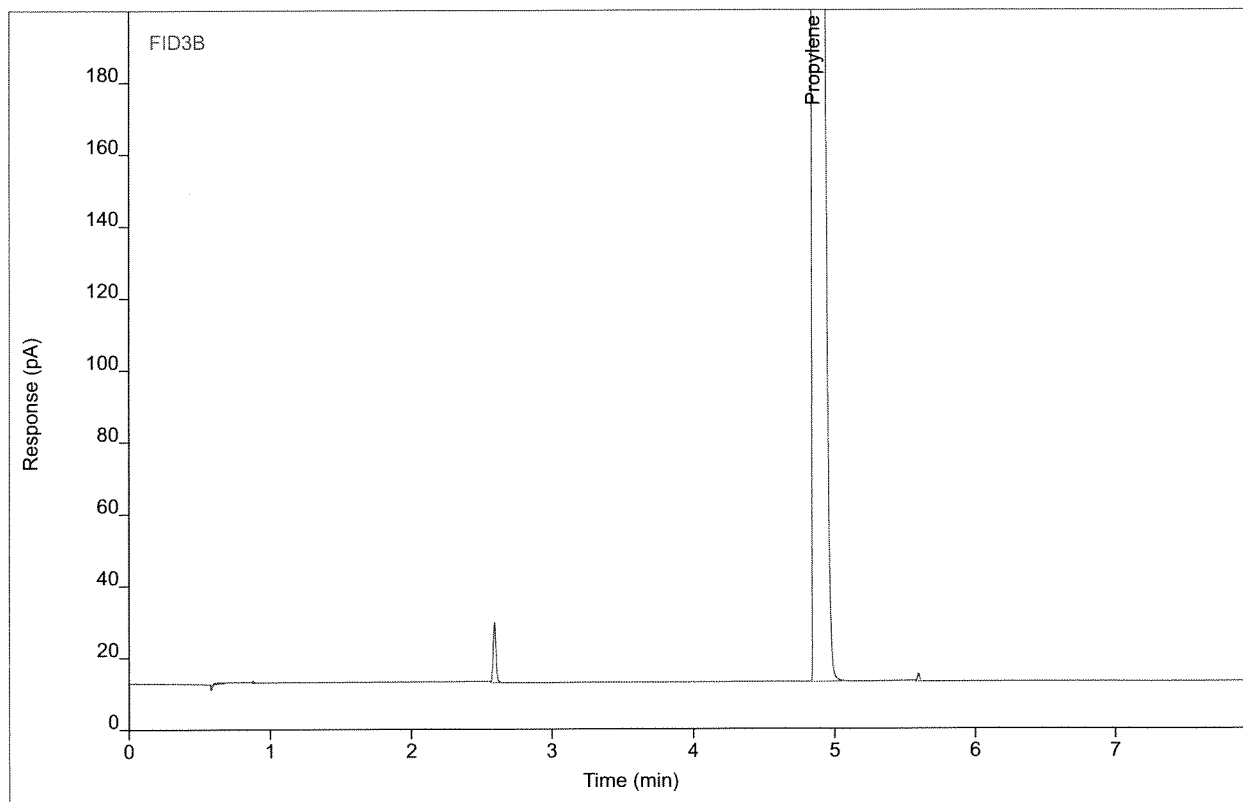
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
?	BB	0.61	0.26358	0.49501		31		
?	BB	0.88	0.47745	0.67761		31		
?	BB	2.59	24.2017	16.8479		31		
Propylene	BB S	4.85	5895.58	1776.04	3652.98	31	113242	ppm
?	BB	5.60	2.60989	2.54484		31		

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.U3-C1-Primary Can1368.Can
Sequence Name EDITHP768 ver.4
Data File 021B1603.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/21/2016 8:37 AM
File Modified 10/24/2016 8:58 AM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 21
Injection Volume 250
Injection 3 of 3
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP636R_HRVOC_ACETYLENE.M
Method Modified 10/22/2016 11:28 AM
Printed 10/24/2016 9:41 AM



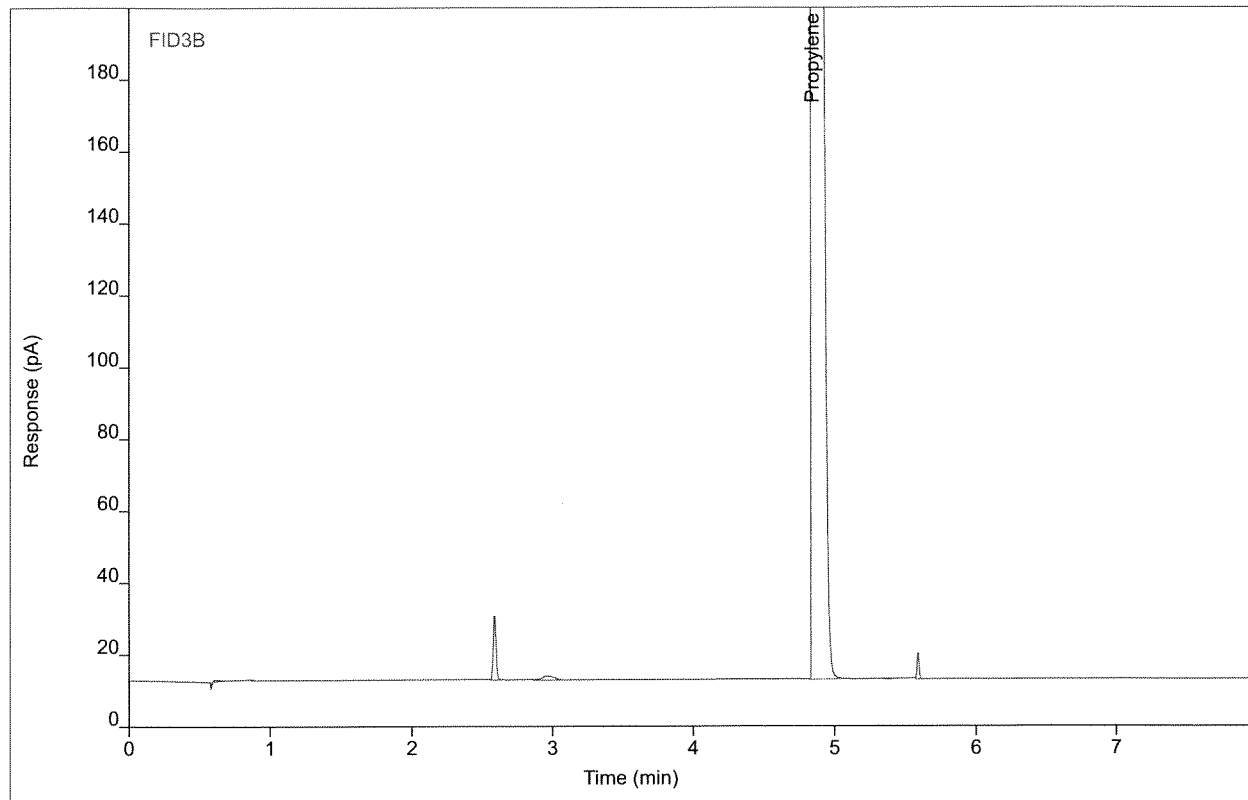
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
?	BB	0.61	0.27654	0.50404		31		
?	BB	0.88	0.46903	0.66946		31		
?	BB	2.59	24.0687	16.7027		31		
Propylene	BB S	4.85	5858.72	1730.30	3630.14	31	112534	ppm
?	BB	5.60	2.58176	2.46660		31		

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.U3-C2-Primary Can1321.Can
Sequence Name EDITHP768 ver.4
Data File 022B1801.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/21/2016 9:13 AM
File Modified 10/24/2016 8:58 AM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 22
Injection Volume 250
Injection 1 of 3
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP636R_HRVOC_ACETYLENE.M
Method Modified 10/22/2016 11:28 AM
Printed 10/24/2016 9:41 AM



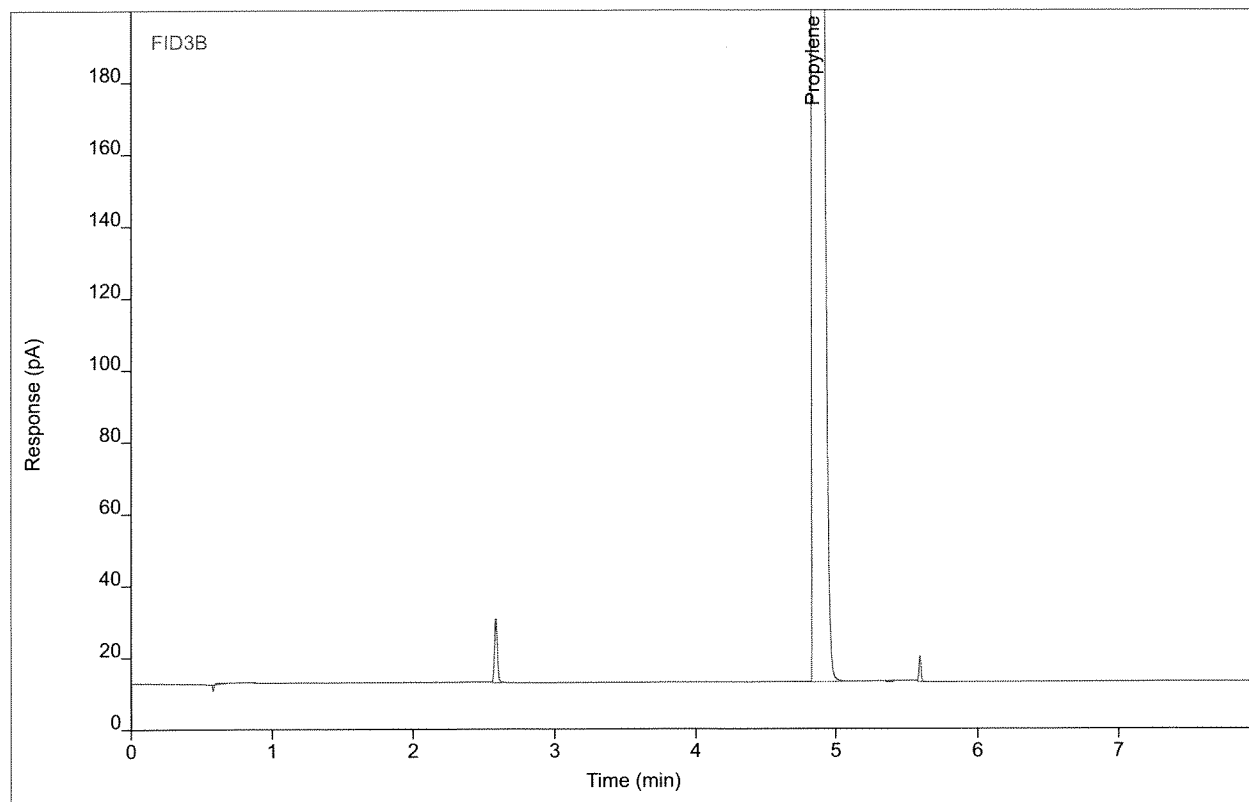
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
?	BB	0.61	0.29178	0.51339		31		
?	BB	0.88	0.21451	0.29355		31		
?	BB	2.58	25.8345	17.8823		31		
?	BB	2.97	7.35769	1.28010		31		
Propylene	BB S	4.84	5733.93	1774.95	3552.82	31	110137	ppm
?	BB	5.38	0.15559	0.14597		31		
?	BB	5.59	7.48591	7.20528		31		

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.U3-C2-Primary Can1321.Can
Sequence Name EDITHP768 ver.4
Data File 022B1802.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/21/2016 9:27 AM
File Modified 10/24/2016 8:58 AM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 22
Injection Volume 250
Injection 2 of 3
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP636R_HRVOC_ACETYLENE.M
Method Modified 10/22/2016 11:28 AM
Printed 10/24/2016 9:41 AM



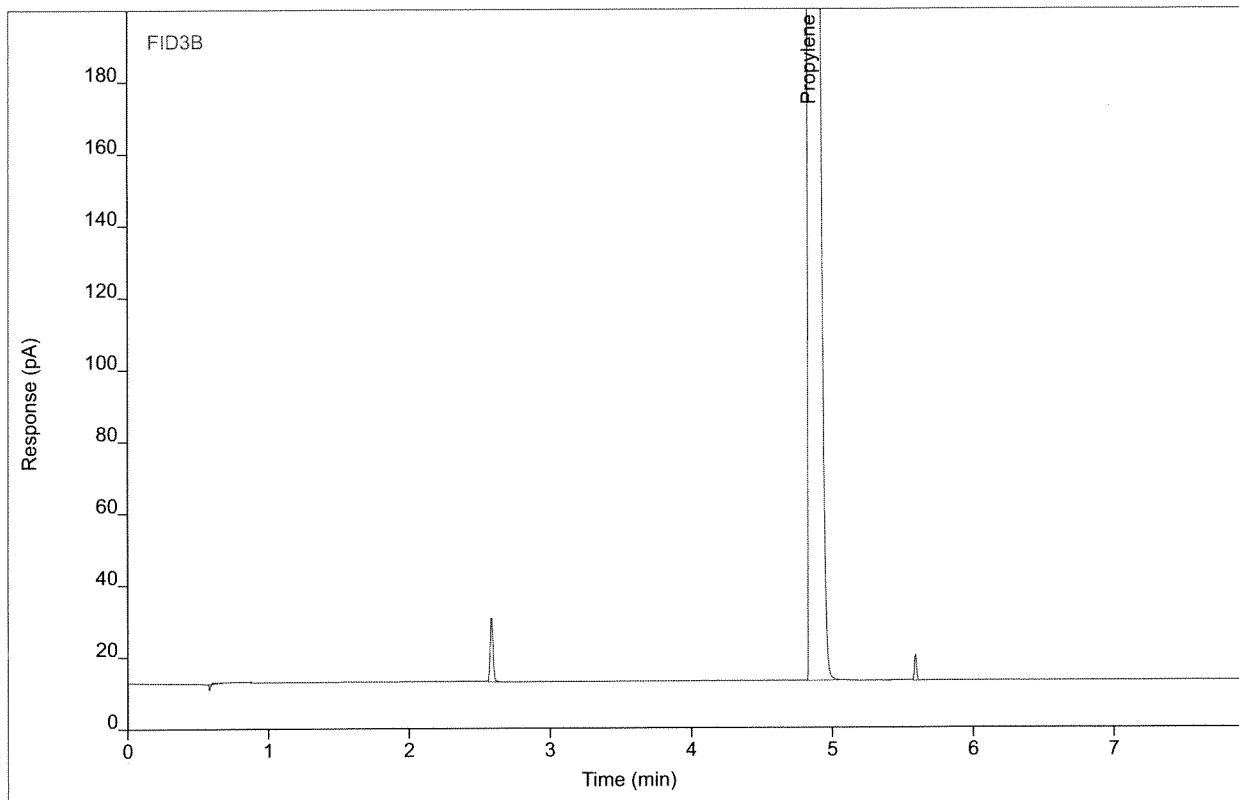
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
?	BB	0.61	0.30813	0.51967		31		
?	BB	0.88	0.20345	0.28957		31		
?	BB	2.59	25.7938	17.9311		31		
Propylene	BB S	4.84	5731.09	1717.02	3551.05	31	110083	ppm
?	BB	5.38	0.14812	0.12589		31		
?	BB	5.59	7.49967	7.18039		31		

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.U3-C2-Primary Can1321.Can
Sequence Name EDITHP768 ver.4
Data File 022B1803.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/21/2016 9:41 AM
File Modified 10/24/2016 8:58 AM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 22
Injection Volume 250
Injection 3 of 3
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP636R_HRVOC_ACETYLENE.M
Method Modified 10/22/2016 11:28 AM
Printed 10/24/2016 9:41 AM



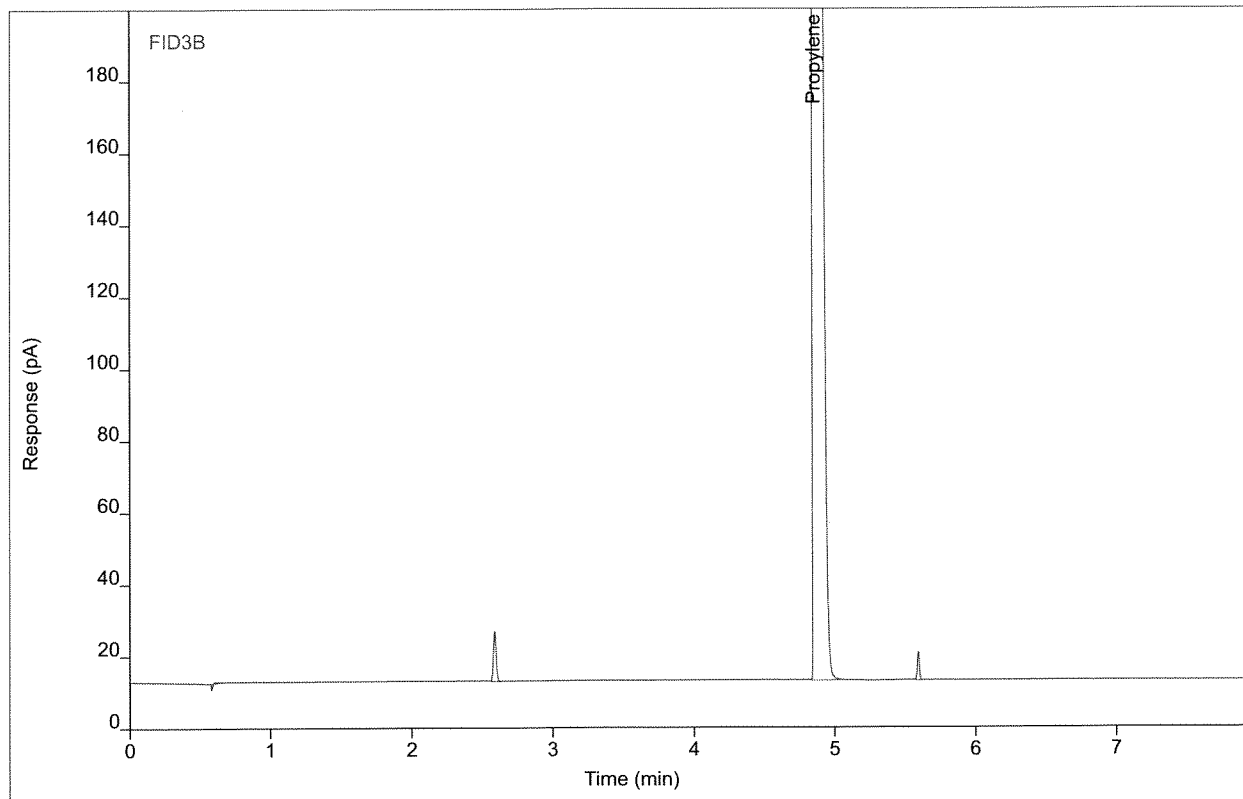
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
?	BB	0.61	0.27339	0.51039		31		
?	BB	0.88	0.20145	0.28847		31		
?	BB	2.59	25.7513	17.9808		31		
Propylene	BB S	4.84	5723.09	1777.55	3546.10	31	109929	ppm
?	BB	5.38	0.13932	0.12752		31		
?	BB	5.59	7.48380	7.10466		31		

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.U3-C3-Primary Can1655.Can
Sequence Name EDITHP768 ver.4
Data File 023B1901.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/21/2016 9:54 AM
File Modified 10/24/2016 8:58 AM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 23
Injection Volume 250
Injection 1 of 3
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP636R_HRVOC_ACETYLENE.M
Method Modified 10/22/2016 11:28 AM
Printed 10/24/2016 9:41 AM



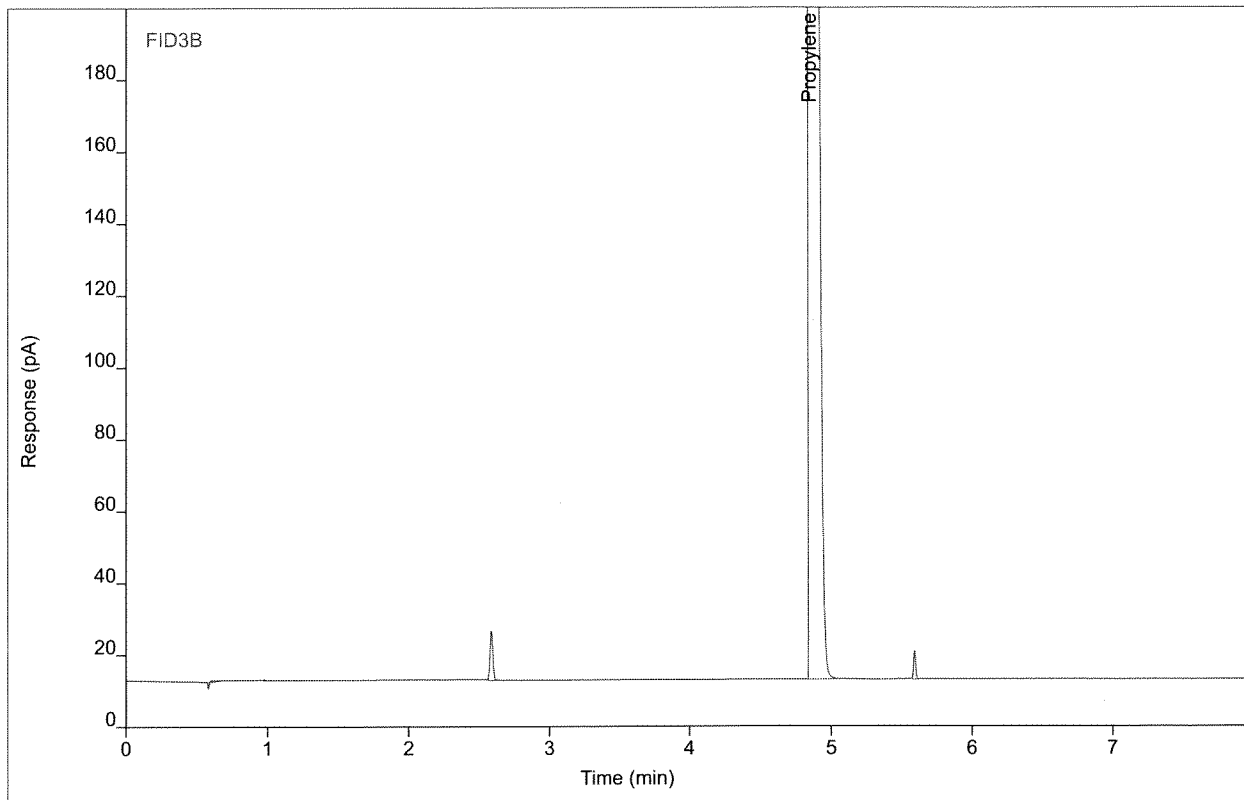
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
?	BB	0.61	0.30525	0.50784		31		
?	BB	2.59	19.8689	13.7894		31		
Propylene	BB S	4.85	4284.93	1456.67	2654.99	31	82304.8	ppm
?	BB	5.38	0.15472	0.13204		31		
?	BB	5.59	8.15478	7.74170		31		

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.U3-C3-Primary Can1655.Can
Sequence Name EDITHP768 ver.4
Data File 023B1902.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/21/2016 10:08 AM
File Modified 10/24/2016 8:58 AM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 23
Injection Volume 250
Injection 2 of 3
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP636R_HRVOC_ACETYLENE.M
Method Modified 10/22/2016 11:28 AM
Printed 10/24/2016 9:41 AM



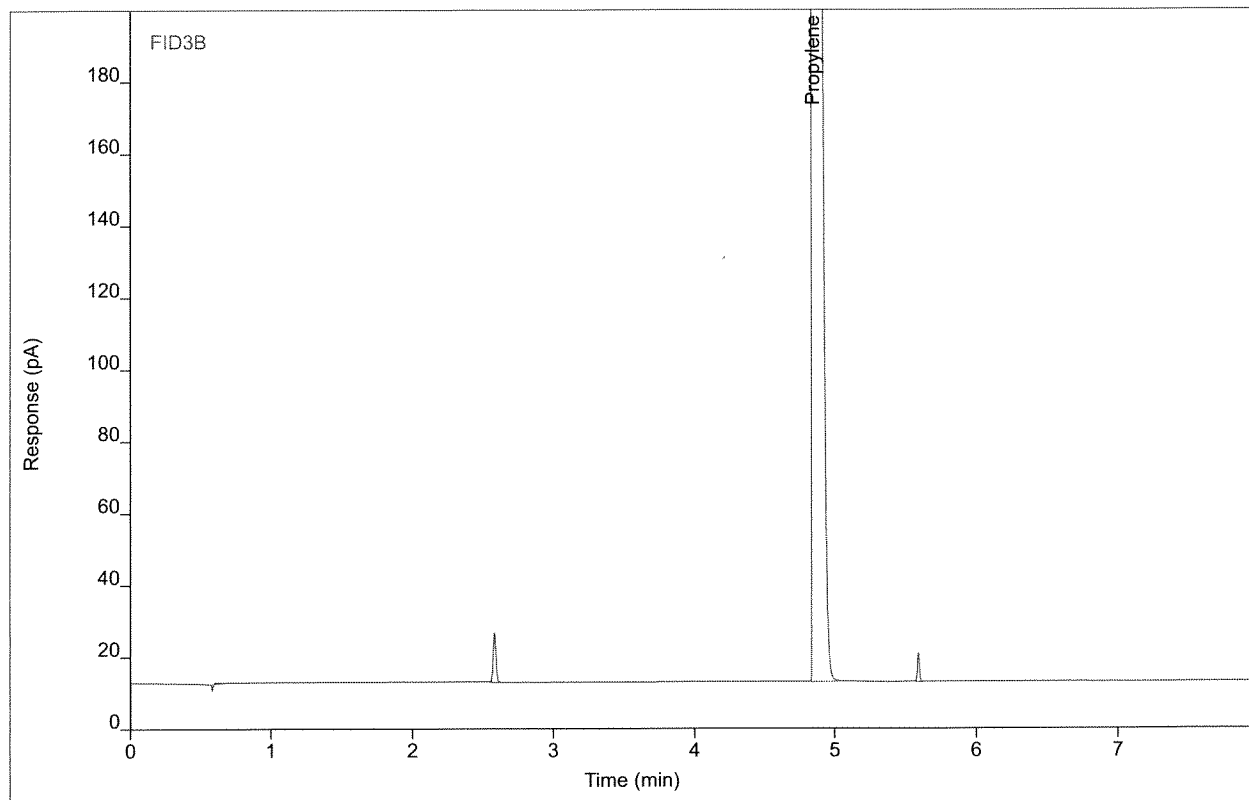
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
?	BB	0.61	0.55935	0.55591		31		
?	BB	2.59	19.8250	13.7811		31		
Propylene	BB S	4.85	4277.75	1416.39	2650.54	31	82166.8	ppm
?	BB	5.38	0.13324	0.13280		31		
?	BB	5.59	8.14491	7.67080		31		

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.U3-C3-Primary Can1655.Can
Sequence Name EDITHP768 ver.4
Data File 023B1903.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/21/2016 10:22 AM
File Modified 10/24/2016 8:59 AM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 23
Injection Volume 250
Injection 3 of 3
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP636R_HRVOC_ACETYLENE.M
Method Modified 10/22/2016 11:28 AM
Printed 10/24/2016 9:41 AM



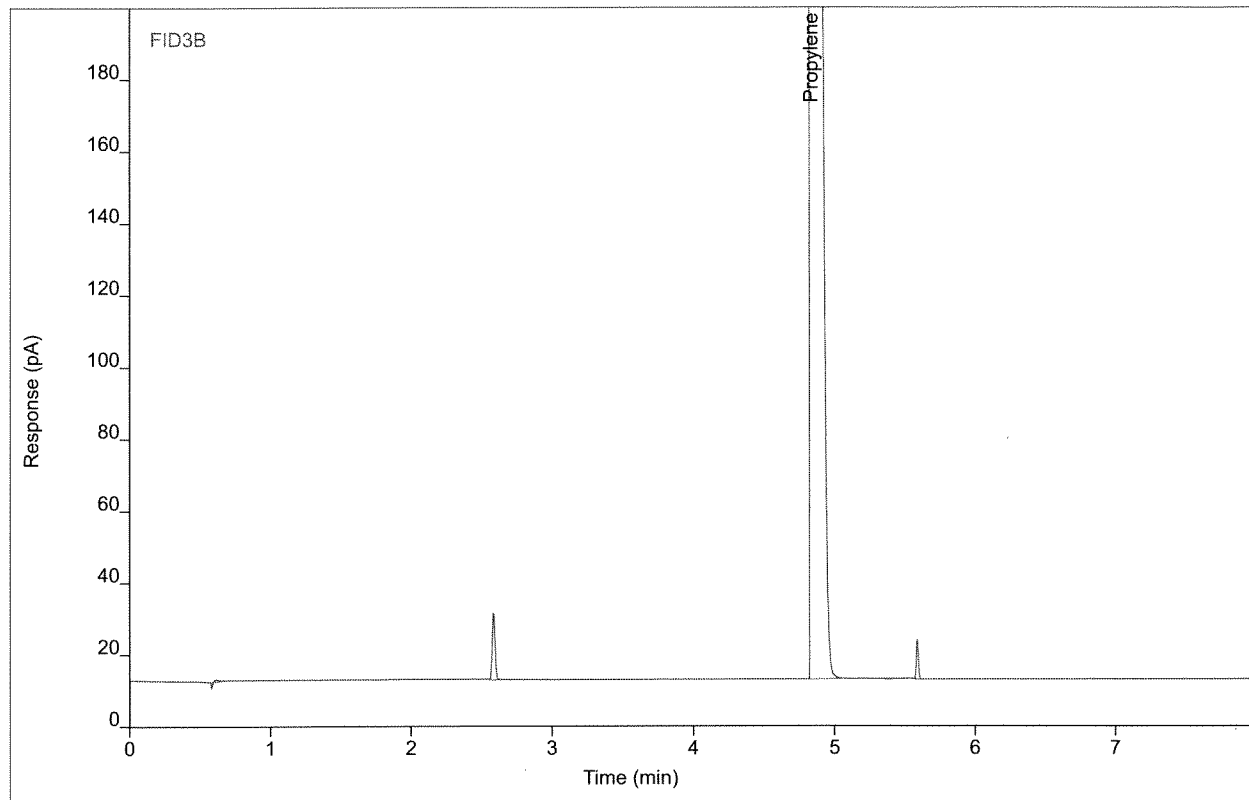
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
?	BB	0.61	0.27175	0.49792		31		
?	BB	2.59	19.8655	13.6916		31		
Propylene	BB S	4.85	4280.01	1485.31	2651.94	31	82210.1	ppm
?	BB	5.38	0.14501	0.13039		31		
?	BB	5.59	8.13609	7.80565		31		

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.U3-C4-Primary Can1109.Can
Sequence Name EDITHP768 ver.4
Data File 024B2001.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/21/2016 10:36 AM
File Modified 10/24/2016 8:59 AM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 24
Injection Volume 250
Injection 1 of 3
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP636R_HRVOC_ACETYLENE.M
Method Modified 10/22/2016 11:28 AM
Printed 10/24/2016 9:41 AM



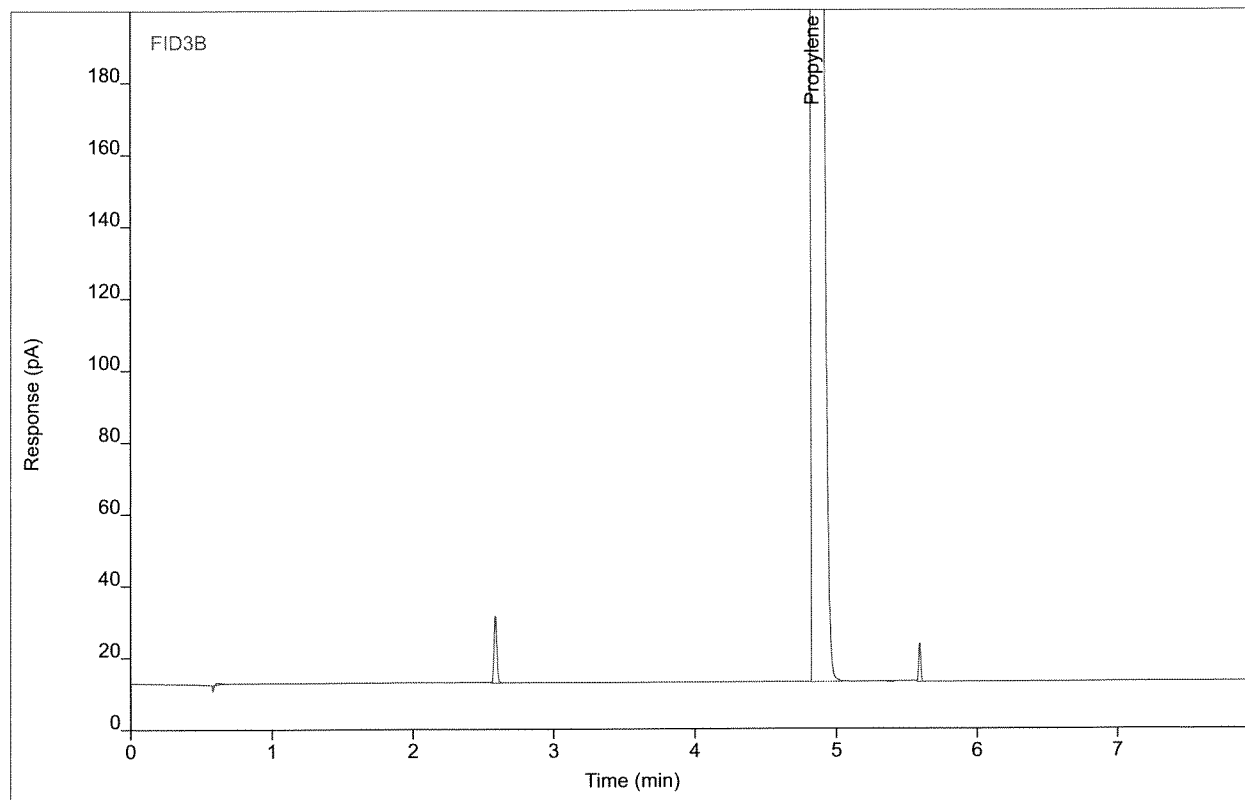
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
?	BB	0.61	0.31098	0.54782		31		
?	BB	0.88	0.11816	0.16611		31		
?	BB	2.58	26.8533	18.5209		31		
Propylene	BB S	4.84	5763.53	1776.98	3571.15	31	110706	ppm
?	BB	5.38	0.20114	0.17640		31		
?	BB	5.59	11.2956	10.8380		31		

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.U3-C4-Primary Can1109.Can
Sequence Name EDITHP768 ver.4
Data File 024B2002.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/21/2016 10:50 AM
File Modified 10/24/2016 8:59 AM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 24
Injection Volume 250
Injection 2 of 3
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP636R_HRVOC_ACETYLENE.M
Method Modified 10/22/2016 11:28 AM
Printed 10/24/2016 9:41 AM



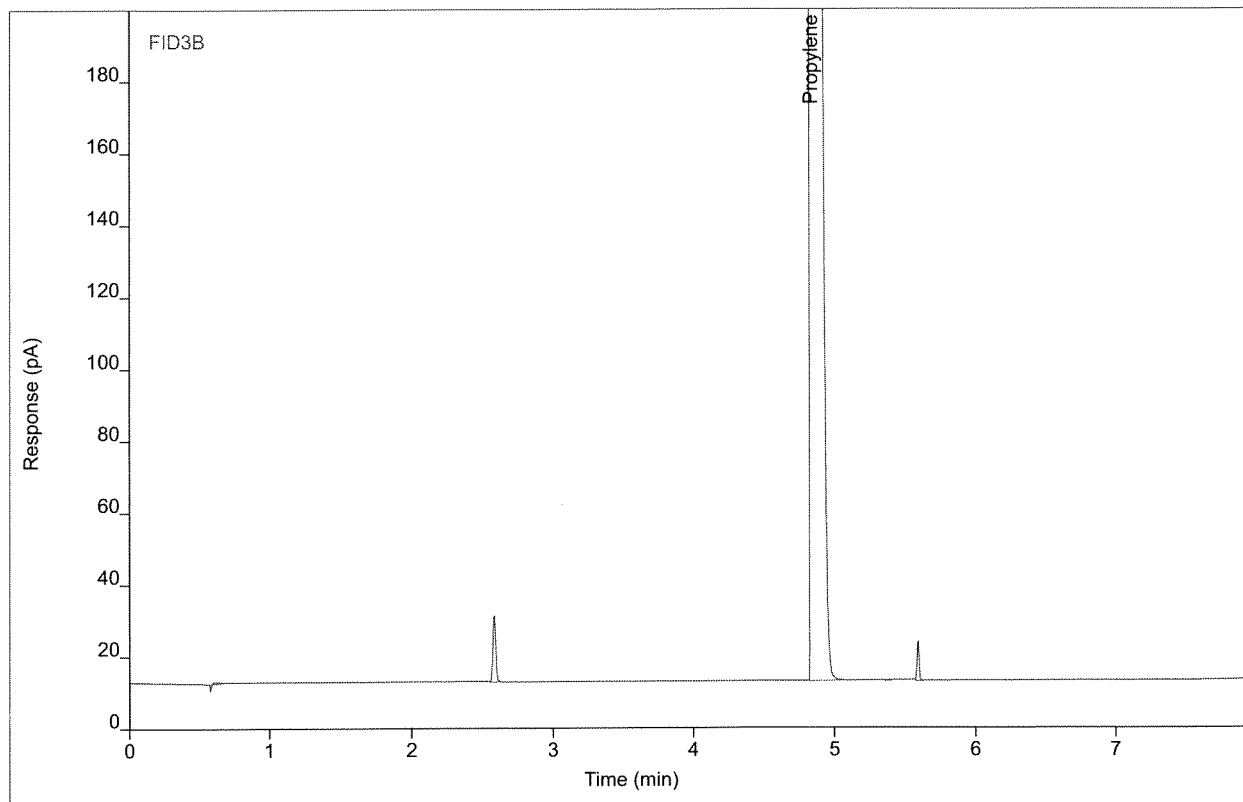
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
?	BB	0.61	0.31037	0.53385		31		
?	BB	0.88	0.11002	0.15736		31		
?	BB	2.58	26.8473	18.6179		31		
Propylene	BB S	4.84	5761.04	1727.30	3569.61	31	110658	ppm
?	BB	5.38	0.18234	0.16624		31		
?	BB	5.59	11.2817	10.7664		31		

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.U3-C4-Primary Can1109.Can
Sequence Name EDITHP768 ver.4
Data File 024B2003.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/21/2016 11:04 AM
File Modified 10/24/2016 8:59 AM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 24
Injection Volume 250
Injection 3 of 3
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP636R_HRVOC_ACETYLENE.M
Method Modified 10/22/2016 11:28 AM
Printed 10/24/2016 9:41 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
?	BB	0.61	0.29481	0.53838		31		
?	BB	0.88	0.13067	0.17241		31		
?	BB	2.58	26.8160	18.5558		31		
Propylene	BB S	4.84	5751.52	1723.62	3563.72	31	110475	ppm
?	BB	5.38	0.18680	0.16913		31		
?	BB	5.59	11.2720	10.7647		31		

Enthalpy Analytical

Company: METCO Environmental

Job No.: 0816-140 EPA Method 18-Type Canister Analysis

Client No.: 16-323

Sample Name	Filename #1	Filename #2	Filename #3	Analysis Method	Ret Time (min)	Ret Time (min)	Ret Time (min)	%dif RT	Conc #1 (ppm)	Conc #2 (ppm)	Conc #3 (ppm)	%dif conc	Avg Conc (ppm)	Standard Tag	% Tag
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Methane -- Calibration Standards, Laboratory Blanks and Controls

Zero Air Blank #LB	016F1501.D	016F1502.D	016F1503.D	EDITHP730F_C1-C6_BTEX.M	NA	NA	NA	NA	0.500	0.500	0.500	0.0	0.500	NA	NA
Edithp623 #C3 ENV(1=600,2=400)	002F1701.D	002F1702.D	002F1703.D	EDITHP730F_C1-C7.M	1.53	1.53	1.53	0.0	39.0	39.4	39.4	0.7	39.3	40.0	98.2
Edithp623 #C3 ENV(1=600,2=400)	002F2901.D	002F2902.D	002F2903.D	EDITHP730F_C1-C7.M	1.53	1.53	1.53	0.0	39.5	39.8	39.5	0.5	39.6	40.0	99.0
Edithp623 #C3 ENV(1=600,2=400)	002F1101.D	002F1102.D	002F1103.D	EDITHP730F_C1-C7.M	1.53	1.53	1.53	0.0	39.3	39.1	39.4	0.5	39.2	40.0	98.1
Edithp623 #C3 ENV(1=600,2=400)	002F1202.D	002F1203.D	002F1204.D	EDITHP730F_C1-C7.M	1.53	1.53	1.53	0.0	39.4	39.2	38.8	0.8	39.1	40.0	97.8

Ethane -- Calibration Standards, Laboratory Blanks and Controls

Zero Air Blank #LB	016F1501.D	016F1502.D	016F1503.D	EDITHP730F_C1-C6_BTEX.M	NA	NA	NA	NA	0.500	0.500	0.500	0.0	0.500	NA	NA
Edithp623 #C3 ENV(1=600,2=400)	002F1701.D	002F1702.D	002F1703.D	EDITHP730F_C1-C7.M	1.67	1.67	1.67	0.0	39.6	39.7	40.2	0.8	39.8	40.0	99.6
Edithp623 #C3 ENV(1=600,2=400)	002F2901.D	002F2902.D	002F2903.D	EDITHP730F_C1-C7.M	1.68	1.68	1.68	0.0	39.7	39.9	40.0	0.5	39.9	40.0	99.7
Edithp623 #C3 ENV(1=600,2=400)	002F1101.D	002F1102.D	002F1103.D	EDITHP730F_C1-C7.M	1.67	1.67	1.67	0.0	39.2	39.0	39.3	0.5	39.2	40.0	97.9
Edithp623 #C3 ENV(1=600,2=400)	002F1202.D	002F1203.D	002F1204.D	EDITHP730F_C1-C7.M	1.67	1.67	1.67	0.0	39.3	39.3	38.7	1.1	39.1	40.0	97.7

Propane -- Calibration Standards, Laboratory Blanks and Controls

Zero Air Blank #LB	016F1501.D	016F1502.D	016F1503.D	EDITHP730F_C1-C6_BTEX.M	NA	NA	NA	NA	0.500	0.500	0.500	0.0	0.500	NA	NA
Edithp623 #C3 ENV(1=600,2=400)	002F1701.D	002F1702.D	002F1703.D	EDITHP730F_C1-C7.M	2.01	2.01	2.01	0.0	39.6	39.9	39.8	0.4	39.8	40.0	99.4
Edithp623 #C3 ENV(1=600,2=400)	002F2901.D	002F2902.D	002F2903.D	EDITHP730F_C1-C7.M	2.01	2.01	2.01	0.0	40.8	40.9	41.0	0.3	40.9	40.0	102
Edithp623 #C3 ENV(1=600,2=400)	002F1101.D	002F1102.D	002F1103.D	EDITHP730F_C1-C7.M	2.01	2.01	2.01	0.0	41.0	41.0	40.7	0.5	40.9	40.0	102
Edithp623 #C3 ENV(1=600,2=400)	002F1202.D	002F1203.D	002F1204.D	EDITHP730F_C1-C7.M	2.01	2.01	2.01	0.0	39.6	39.4	39.0	0.8	39.3	40.0	98.4

Butane -- Calibration Standards, Laboratory Blanks and Controls

Zero Air Blank #LB	016F1501.D	016F1502.D	016F1503.D	EDITHP730F_C1-C6_BTEX.M	NA	NA	NA	NA	0.500	0.500	0.500	0.0	0.500	NA	NA
Edithp623 #C3 ENV(1=600,2=400)	002F1701.D	002F1702.D	002F1703.D	EDITHP730F_C1-C7.M	2.92	2.92	2.92	0.0	39.2	39.6	39.6	0.6	39.5	40.0	98.7
Edithp623 #C3 ENV(1=600,2=400)	002F2901.D	002F2902.D	002F2903.D	EDITHP730F_C1-C7.M	2.92	2.92	2.92	0.0	39.5	39.9	39.8	0.5	39.8	40.0	99.4
Edithp623 #C3 ENV(1=600,2=400)	002F1101.D	002F1102.D	002F1103.D	EDITHP730F_C1-C7.M	2.92	2.92	2.92	0.0	39.2	39.3	39.1	0.3	39.2	40.0	98.1
Edithp623 #C3 ENV(1=600,2=400)	002F1202.D	002F1203.D	002F1204.D	EDITHP730F_C1-C7.M	2.92	2.91	2.91	0.0	39.3	39.1	38.9	0.6	39.1	40.0	97.7

Enthalpy Analytical

Company: METCO Environmental

Job No.: 0816-140 EPA Method 18-Type Canister Analysis

Client No.: 16-323

Sample Name	Filename #1	Filename #2	Filename #3	Analysis Method	Ret Time (min)	Ret Time (min)	Ret Time (min)	%dif RT	Conc # 1 (ppm)	Conc # 2 (ppm)	Conc # 3 (ppm)	%dif conc	Avg Conc (ppm)	Standard Tag	% Tag
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Pentane -- Calibration Standards, Laboratory Blanks and Controls

Zero Air Blank #LB	016F1501.D	016F1502.D	016F1503.D	EDITHP730F_C1-C6_BTEX.M	NA	NA	NA	NA	0.515	0.515	0.515	0.0	0.515	NA	NA
Edithp623 #C3 ENV(1=600,2=400)	002F1701.D	002F1702.D	002F1703.D	EDITHP730F_C1-C7.M	4.47	4.47	4.47	0.0	40.6	40.8	41.0	0.4	40.8	41.2	99.0
Edithp623 #C3 ENV(1=600,2=400)	002F2901.D	002F2902.D	002F2903.D	EDITHP730F_C1-C7.M	4.47	4.47	4.47	0.0	40.7	41.2	41.1	0.8	41.0	41.2	99.5
Edithp623 #C3 ENV(1=600,2=400)	002F1101.D	002F1102.D	002F1103.D	EDITHP730F_C1-C7.M	4.47	4.47	4.47	0.0	39.3	39.4	39.3	0.2	39.3	41.2	95.5
Edithp623 #C3 ENV(1=600,2=400)	002F1202.D	002F1203.D	002F1204.D	EDITHP730F_C1-C7.M	4.47	4.47	4.47	0.0	39.5	39.2	39.0	0.6	39.2	41.2	95.2

Hexane -- Calibration Standards, Laboratory Blanks and Controls

Zero Air Blank #LB	016F1501.D	016F1502.D	016F1503.D	EDITHP730F_C1-C6_BTEX.M	NA	NA	NA	NA	0.505	0.505	0.505	0.0	0.505	NA	NA
Edithp623 #C3 ENV(1=600,2=400)	002F1701.D	002F1702.D	002F1703.D	EDITHP730F_C1-C7.M	6.04	6.04	6.04	0.0	40.1	40.3	40.2	0.3	40.2	40.4	99.5
Edithp623 #C3 ENV(1=600,2=400)	002F2901.D	002F2902.D	002F2903.D	EDITHP730F_C1-C7.M	6.05	6.04	6.04	0.0	40.1	40.6	40.5	0.7	40.4	40.4	99.9
Edithp623 #C3 ENV(1=600,2=400)	002F1101.D	002F1102.D	002F1103.D	EDITHP730F_C1-C7.M	6.04	6.04	6.04	0.0	39.4	39.5	39.5	0.1	39.5	40.4	97.7
Edithp623 #C3 ENV(1=600,2=400)	002F1202.D	002F1203.D	002F1204.D	EDITHP730F_C1-C7.M	6.04	6.04	6.04	0.0	39.7	39.4	39.2	0.6	39.4	40.4	97.6

Benzene -- Calibration Standards, Laboratory Blanks and Controls

Edithp723 #B4 ENV(1=600,3=400)	002F1202.D	002F1203.D	002F1204.D	EDITHP723F_BTEX.M	6.77	6.77	6.77	0.0	42.2	41.8	41.7	0.7	41.9	41.2	102
Zero Air Blank #LB	016F1501.D	016F1502.D	016F1503.D	EDITHP730F_C1-C6_BTEX.M	NA	NA	NA	NA	0.198	0.198	0.198	0.0	0.198	NA	NA
Edithp723 #B4 ENV(1=600,3=400)	002F3001.D	002F3002.D	002F3003.D	EDITHP723F_BTEX.M	6.77	6.77	6.77	0.0	40.7	41.2	41.5	1.1	41.1	41.2	99.7
Edithp723 #B4 ENV(1=600,3=400)	002F1201.D	002F1202.D	002F1203.D	EDITHP723F_BTEX.M	6.77	6.77	6.77	0.0	40.6	41.1	41.2	0.9	41.0	41.2	99.5
Edithp723 #B4 ENV(1=600,3=400)	002F1301.D	002F1302.D	002F1303.D	EDITHP723F_BTEX.M	6.77	6.77	6.77	0.0	40.2	40.6	40.5	0.5	40.4	41.2	98.2

Propylene -- Calibration Standards, Laboratory Blanks and Controls

Zero Air Blank #LB	032B1501.D	032B1502.D	032B1503.D	EDITHP636R_HRVOC_ACETYLENE.M	NA	NA	NA	NA	0.0788	0.0788	0.0788	0.0	0.0788	NA	NA
Edithp727 #HR4 ENV(1=600,4=400)	018B1801.D	018B1802.D	018B1803.D	EDITHP636R_HRVOC_ACETYLENE.M	4.96	4.96	4.96	0.0	41.6	41.6	41.6	0.1	41.6	42.0	99.1
Edithp727 #HR4 ENV(1=600,4=400)	018B2701.D	018B2702.D	018B2703.D	EDITHP636R_HRVOC_ACETYLENE.M	4.92	4.92	4.92	0.0	40.9	41.2	41.4	0.6	41.2	42.0	98.1
Edithp727 #HR4 ENV(1=600,4=400)	018B3401.D	018B3402.D	018B3403.D	EDITHP636R_HRVOC_ACETYLENE.M	4.93	4.93	4.93	0.0	41.4	41.4	41.4	0.1	41.4	42.0	98.6

=====
 Calibration Table
 =====

Calib. Data Modified : 6/20/2016 7:28:40 AM

Rel. Reference Window : 0.000 %
 Abs. Reference Window : 0.100 min
 Rel. Non-ref. Window : 0.000 %
 Abs. Non-ref. Window : 0.050 min
 Uncalibrated Peaks : not reported
 Partial Calibration : Yes, identified peaks are recalibrated
 Correct All Ret. Times: No, only for identified peaks

Curve Type : Linear
 Origin : Connected
 Weight : Quadratic (Amnt)

Recalibration Settings:
 Average Response : Average all calibrations
 Average Retention Time: Floating Average New 75%

Calibration Report Options :
 Printout of recalibrations within a sequence:
 Calibration Table after Recalibration
 Normal Report after Recalibration
 If the sequence is done with bracketing:
 Results of first cycle (ending previous bracket)

Signal 1: FID1 A, Front Signal

Signal 2: FID3 B, Back Signal

RetTime	Lvl	Amount	Area	Amt/Area	Ref Grp Name
[min] Sig		[ppm]			
1.539	2 61	7.88000e-1	8.54612e-1	9.22055e-1	Ethylene
	62	5.25000	5.68590	9.23337e-1	
	63	21.00000	23.10237	9.08998e-1	
	64	42.00000	46.61499	9.00998e-1	
	65	105.00000	116.96540	8.97701e-1	
	67	510.00000	564.24729	9.03859e-1	
	68	4080.00000	4554.87760	8.95743e-1	
	69	1.02000e4	1.20389e4	8.47255e-1	
4.998	2 61	7.88000e-1	1.31290	6.00199e-1	Propylene
	62	5.25000	8.19000	6.41026e-1	
	63	21.00000	33.00812	6.36207e-1	
	64	42.00000	66.38949	6.32630e-1	
	65	105.00000	165.51262	6.34393e-1	
	67	500.00000	814.33539	6.13998e-1	
	68	4000.00000	6564.97168	6.09294e-1	
	69	1.00000e4	1.73583e4	5.76094e-1	
5.720	2 51	2.50000	4.28081	5.84001e-1	Acetylene
	52	14.70000	20.47756	7.17859e-1	
	53	100.00000	140.85605	7.09945e-1	
6.622	2 61	7.88000e-1	2.15195	3.66179e-1	trans-2-Butene
	62	5.25000	11.71628	4.48094e-1	
	63	21.00000	46.43503	4.52245e-1	
	64	42.00000	92.73360	4.52910e-1	
	65	105.00000	230.82888	4.54882e-1	
	67	510.00000	1121.07910	4.54919e-1	
	68	4080.00000	9036.69857	4.51492e-1	
	69	1.02000e4	2.38373e4	4.27900e-1	

RetTime [min]	Lvl Sig	Amount [ppm]	Area	Amt/Area	Ref Grp Name
6.708	2 61	7.88000e-1	1.91162	4.12216e-1	1-Butene
	62	5.25000	11.77451	4.45878e-1	
	63	21.00000	47.22719	4.44659e-1	
	64	42.00000	94.88745	4.42630e-1	
	65	105.00000	236.50710	4.43961e-1	
	67	505.00000	1105.78699	4.56688e-1	
	68	4040.00000	8907.43783	4.53554e-1	
	69	1.01000e4	2.35305e4	4.29229e-1	Isobutylene
6.835	2 61	7.88000e-1	1.88521	4.17990e-1	
	62	5.25000	11.68515	4.49288e-1	
	63	21.00000	46.94934	4.47291e-1	
	64	42.00000	94.34099	4.45194e-1	
	65	105.00000	235.20055	4.46428e-1	
	67	505.00000	1096.11715	4.60717e-1	
	68	4040.00000	8828.43587	4.57612e-1	cis-2-Butene
	69	1.01000e4	2.33055e4	4.33375e-1	
6.926	2 61	7.88000e-1	2.06887	3.80884e-1	
	62	5.25000	12.02148	4.36718e-1	
	63	21.00000	48.01249	4.37386e-1	
	64	42.00000	96.26004	4.36318e-1	
	65	105.00000	239.90205	4.37679e-1	
	67	505.00000	1115.93323	4.52536e-1	1,3-Butadiene
	68	4040.00000	9005.32194	4.48624e-1	
	69	1.01000e4	2.37938e4	4.24481e-1	
7.455	2 61	7.88000e-1	2.06016	3.82494e-1	
	62	5.25000	11.43376	4.59167e-1	
	63	21.00000	45.59754	4.60551e-1	
	64	42.00000	91.28308	4.60107e-1	
	65	105.00000	227.57570	4.61385e-1	
	67	510.00000	1099.31571	4.63925e-1	
	68	4080.00000	8874.92741	4.59722e-1	
	69	1.02000e4	2.34517e4	4.34936e-1	

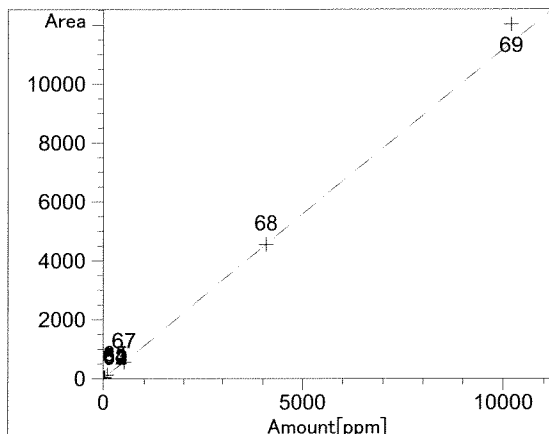
1 Warnings or Errors :

Warning : Cal. table open and changed while report was generated.

Peak Sum Table

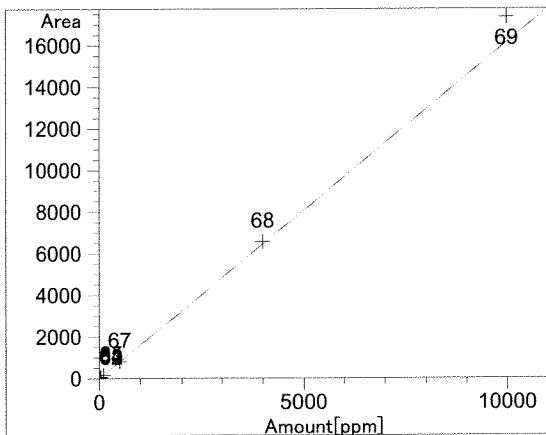
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Calibration Curves

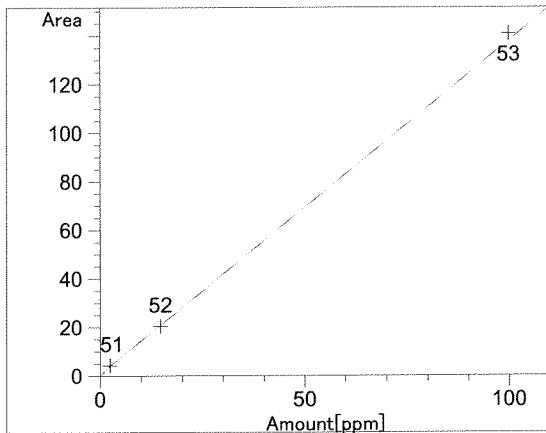


Ethylene at exp. RT: 1.539
FID3 B, Back Signal
Correlation: 0.99968
Residual Std. Dev.: 260.95056
Formula: $y = mx + b$
m: 1.11762
b: $-3.00977e-2$
x: Amount
y: Area
Calibration Level Weights:
Level 61 : 1
Level 62 : 0.022529
Level 63 : 0.001408
Level 64 : 0.000352
Level 65 : 0.000056
Level 67 : 2.38733e-006

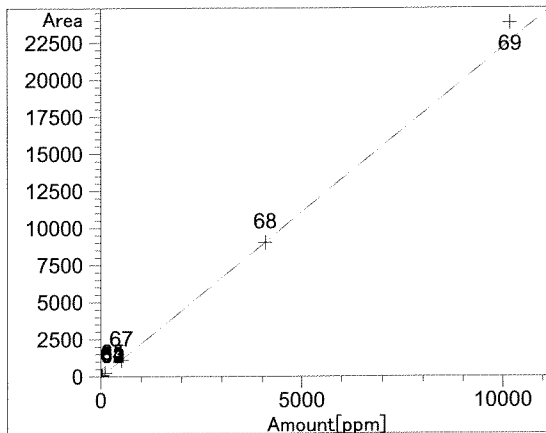
Level 68 : 3.7302e-008
Level 69 : 5.96832e-009



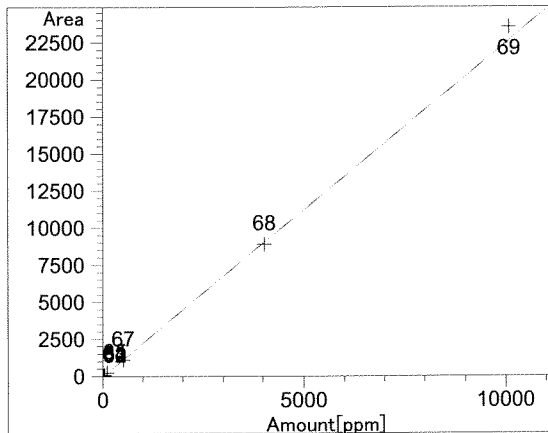
Propylene at exp. RT: 4.998
 FID3 B, Back Signal
 Correlation: 0.99930
 Residual Std. Dev.: 499.75049
 Formula: $y = mx + b$
 m: 1.61390
 b: 3.20598e-2
 x: Amount
 y: Area
 Calibration Level Weights:
 Level 61 : 1
 Level 62 : 0.022529
 Level 63 : 0.001408
 Level 64 : 0.000352
 Level 65 : 0.000056
 Level 67 : 2.48378e-006
 Level 68 : 3.8809e-008
 Level 69 : 6.20944e-009



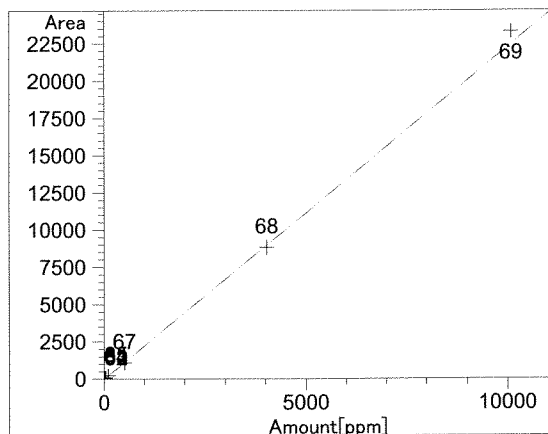
Acetylene at exp. RT: 5.720
 FID3 B, Back Signal
 Correlation: 0.99965
 Residual Std. Dev.: 3.00314
 Formula: $y = mx + b$
 m: 1.37055
 b: 8.41502e-1
 x: Amount
 y: Area
 Calibration Level Weights:
 Level 51 : 1
 Level 52 : 0.028923
 Level 53 : 0.000625



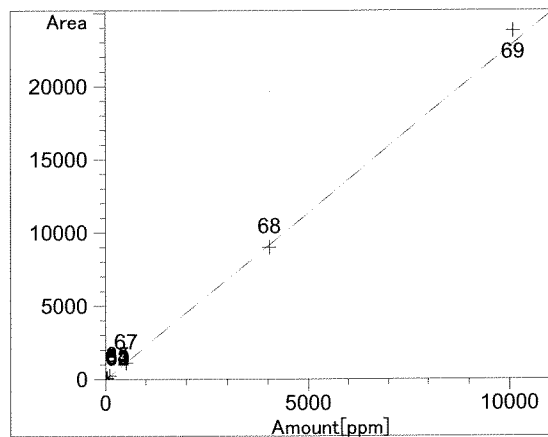
trans-2-Butene at exp. RT: 6.622
 FID3 B, Back Signal
 Correlation: 0.99969
 Residual Std. Dev.: 510.77884
 Formula: $y = mx + b$
 m: 2.21430
 b: 3.99133e-1
 x: Amount
 y: Area
 Calibration Level Weights:
 Level 61 : 1
 Level 62 : 0.022529
 Level 63 : 0.001408
 Level 64 : 0.000352
 Level 65 : 0.000056
 Level 67 : 2.38733e-006
 Level 68 : 3.7302e-008
 Level 69 : 5.96832e-009



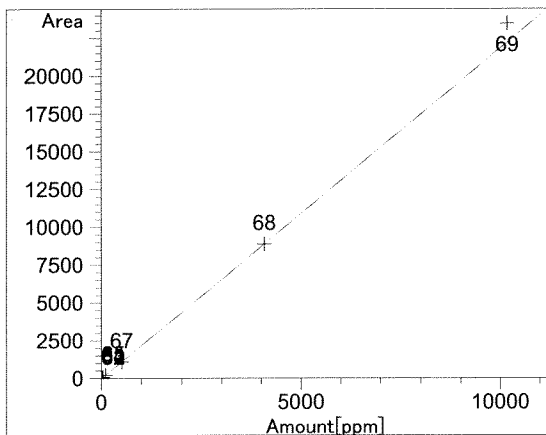
1-Butene at exp. RT: 6.708
 FID3 B, Back Signal
 Correlation: 0.99981
 Residual Std. Dev.: 368.03641
 Formula: $y = mx + b$
 m: 2.24176
 b: 1.42240e-1
 x: Amount
 y: Area
 Calibration Level Weights:
 Level 61 : 1
 Level 62 : 0.022529
 Level 63 : 0.001408
 Level 64 : 0.000352
 Level 65 : 0.000056
 Level 67 : 2.43484e-006
 Level 68 : 3.80443e-008
 Level 69 : 6.08709e-009



Isobutylene at exp. RT: 6.835
 FID3 B, Back Signal
 Correlation: 0.99981
 Residual Std. Dev.: 344.46345
 Formula: $y = mx + b$
 m: 2.22554
 b: 1.28996e-1
 x: Amount
 y: Area
 Calibration Level Weights:
 Level 61 : 1
 Level 62 : 0.022529
 Level 63 : 0.001408
 Level 64 : 0.000352
 Level 65 : 0.000056
 Level 67 : 2.43484e-006
 Level 68 : 3.80443e-008
 Level 69 : 6.08709e-009



cis-2-Butene at exp. RT: 6.926
 FID3 B, Back Signal
 Correlation: 0.99979
 Residual Std. Dev.: 368.22421
 Formula: $y = mx + b$
 m: 2.26790
 b: 2.78501e-1
 x: Amount
 y: Area
 Calibration Level Weights:
 Level 61 : 1
 Level 62 : 0.022529
 Level 63 : 0.001408
 Level 64 : 0.000352
 Level 65 : 0.000056
 Level 67 : 2.43484e-006
 Level 68 : 3.80443e-008
 Level 69 : 6.08709e-009



1,3-Butadiene at exp. RT: 7.455

FID3 B, Back Signal

Correlation: 0.99967

Residual Std. Dev.: 509.03190

Formula: $y = mx + b$

m: 2.17692

b: 3.36375e-1

x: Amount

y: Area

Calibration Level Weights:

Level 61 : 1

Level 62 : 0.022529

Level 63 : 0.001408

Level 64 : 0.000352

Level 65 : 0.000056

Level 67 : 2.38733e-006

Level 68 : 3.7302e-008

Level 69 : 5.96832e-009

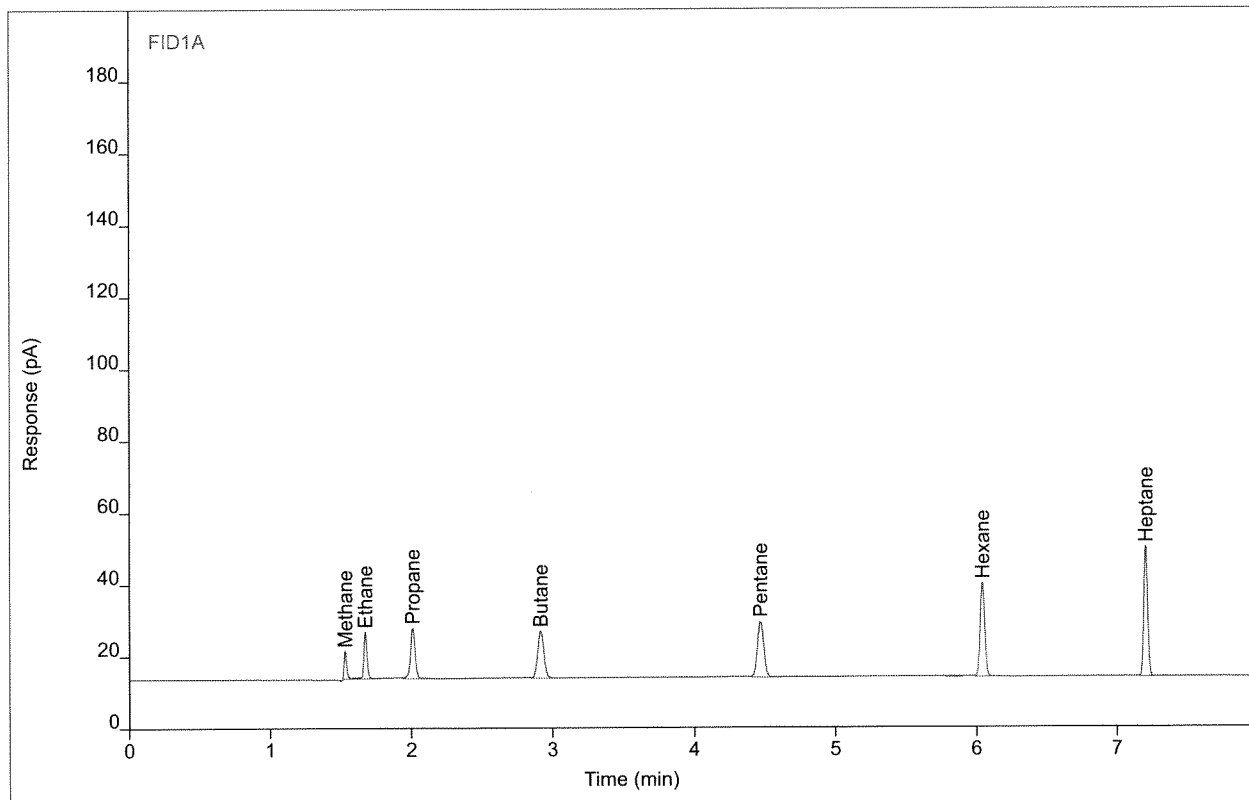
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Chromatogram Report

Enthalpy Analytical

Sample Name Edithp623 #C3 ENV(1=600,2=400)
Sequence Name EDITHP768 ver.4
Data File 002F1101.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/20/2016 5:30 PM
File Modified 10/24/2016 8:50 AM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 2
Injection Volume 250
Injection 1 of 3
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP730F_C1-C7.M
Method Modified 10/20/2016 5:00 PM
Printed 10/24/2016 9:41 AM



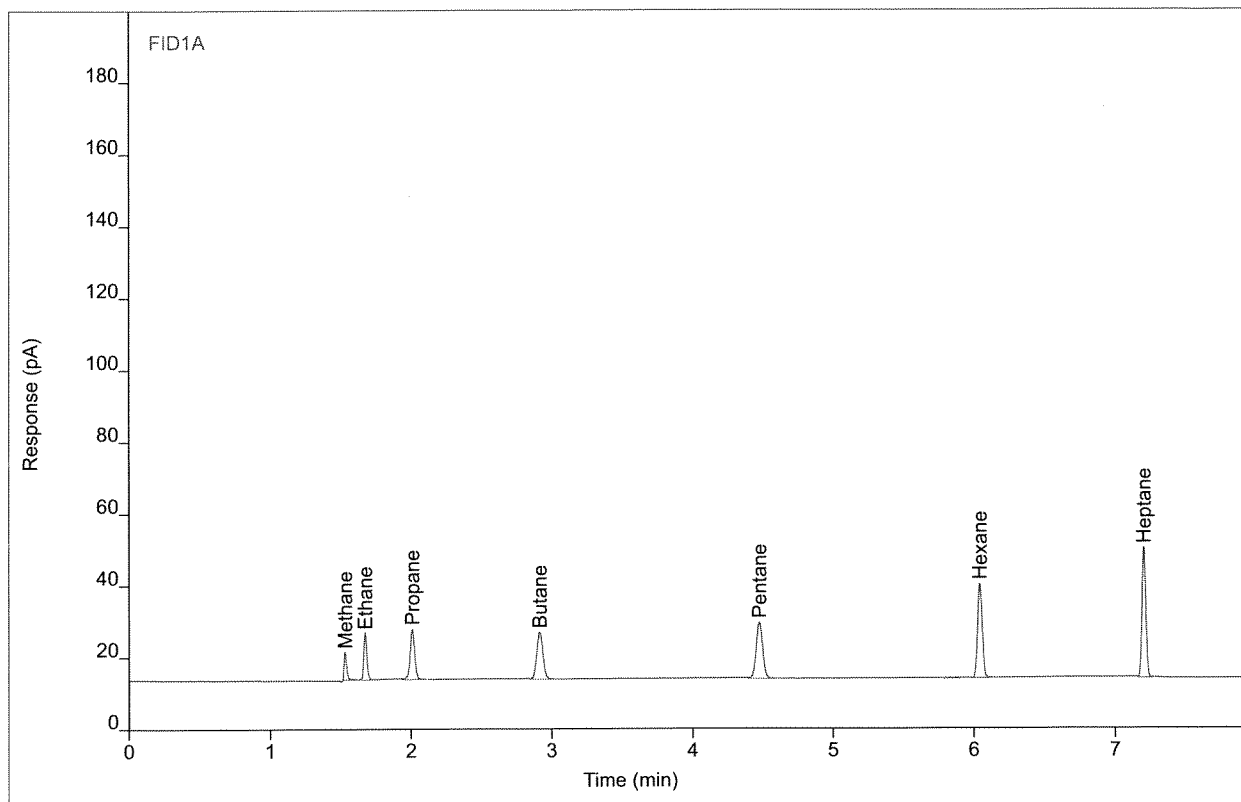
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PV	1.53	10.3592	7.64848	39.2951	1	39.2951	ppm
Ethane	VB	1.67	20.2086	12.9536	39.1770	1	39.1770	ppm
Propane	PB	2.01	31.7496	14.0266	41.0308	1	41.0308	ppm
Butane	BB	2.92	40.3289	13.0917	39.2305	1	39.2305	ppm
Pentane	BB	4.47	50.5257	15.6224	39.2724	1	39.2724	ppm
?	BB	5.83	0.46494	0.17746	0.59438	1	0.59438	ppm
Hexane	BB	6.04	60.4229	26.0943	39.4416	1	39.4416	ppm
Heptane	BB	7.21	69.2287	36.1012	38.8527	1	38.8527	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp623 #C3 ENV(1=600,2=400)
Sequence Name EDITHP768 ver.4
Data File 002F1102.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/20/2016 5:45 PM
File Modified 10/24/2016 8:50 AM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 2
Injection Volume 250
Injection 2 of 3
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP730F_C1-C7.M
Method Modified 10/20/2016 5:00 PM
Printed 10/24/2016 9:41 AM



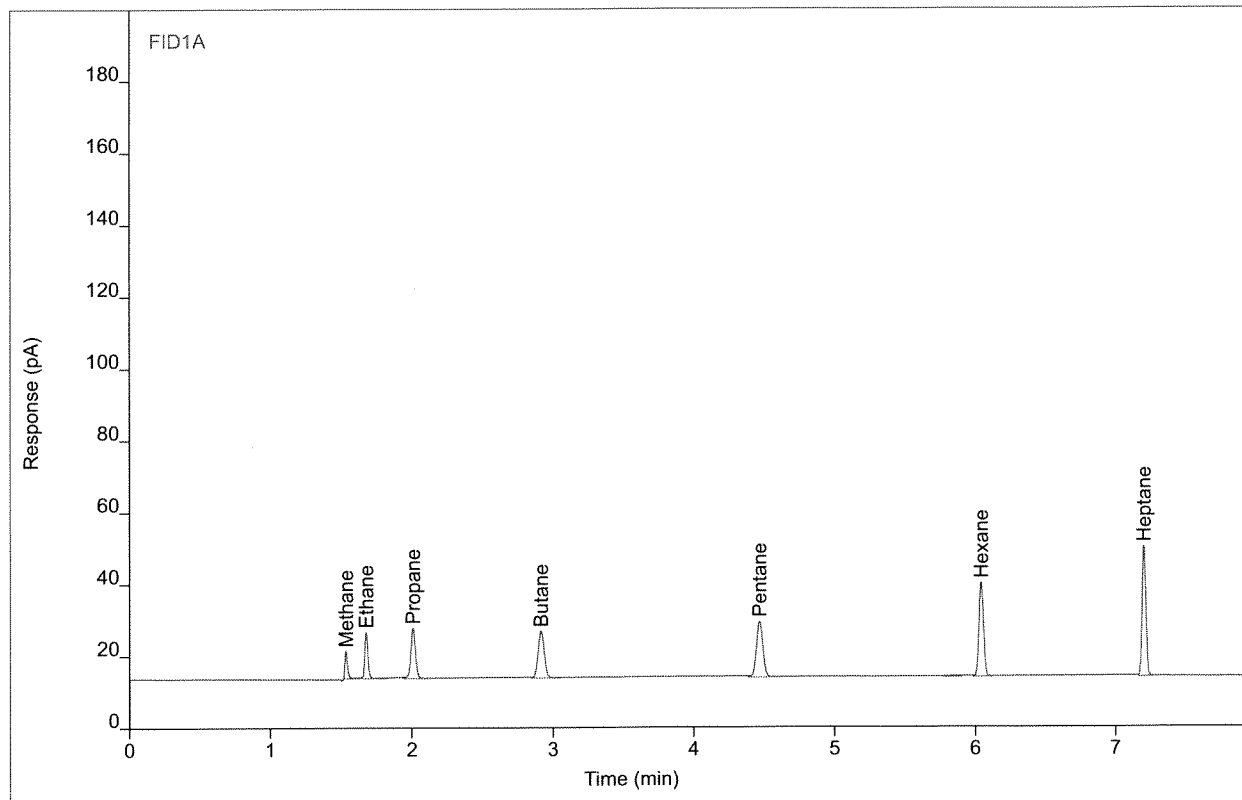
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.53	10.2983	7.66002	39.0664	1	39.0664	ppm
Ethane	BB	1.67	20.1049	12.9415	38.9759	1	38.9759	ppm
Propane	BB	2.01	31.7362	14.0591	41.0135	1	41.0135	ppm
Butane	BB	2.92	40.4468	13.1097	39.3455	1	39.3455	ppm
Pentane	BB	4.47	50.7186	15.6793	39.4230	1	39.4230	ppm
?	BB	5.83	0.45893	0.17387	0.58669	1	0.58669	ppm
Hexane	BB	6.04	60.5233	26.2064	39.5073	1	39.5073	ppm
Heptane	BB	7.21	69.4338	36.1625	38.9680	1	38.9680	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp623 #C3 ENV(1=600,2=400)
Sequence Name EDITHP768 ver.4
Data File 002F1103.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/20/2016 6:00 PM
File Modified 10/24/2016 8:50 AM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 2
Injection Volume 250
Injection 3 of 3
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP730F_C1-C7.M
Method Modified 10/20/2016 5:00 PM
Printed 10/24/2016 9:41 AM



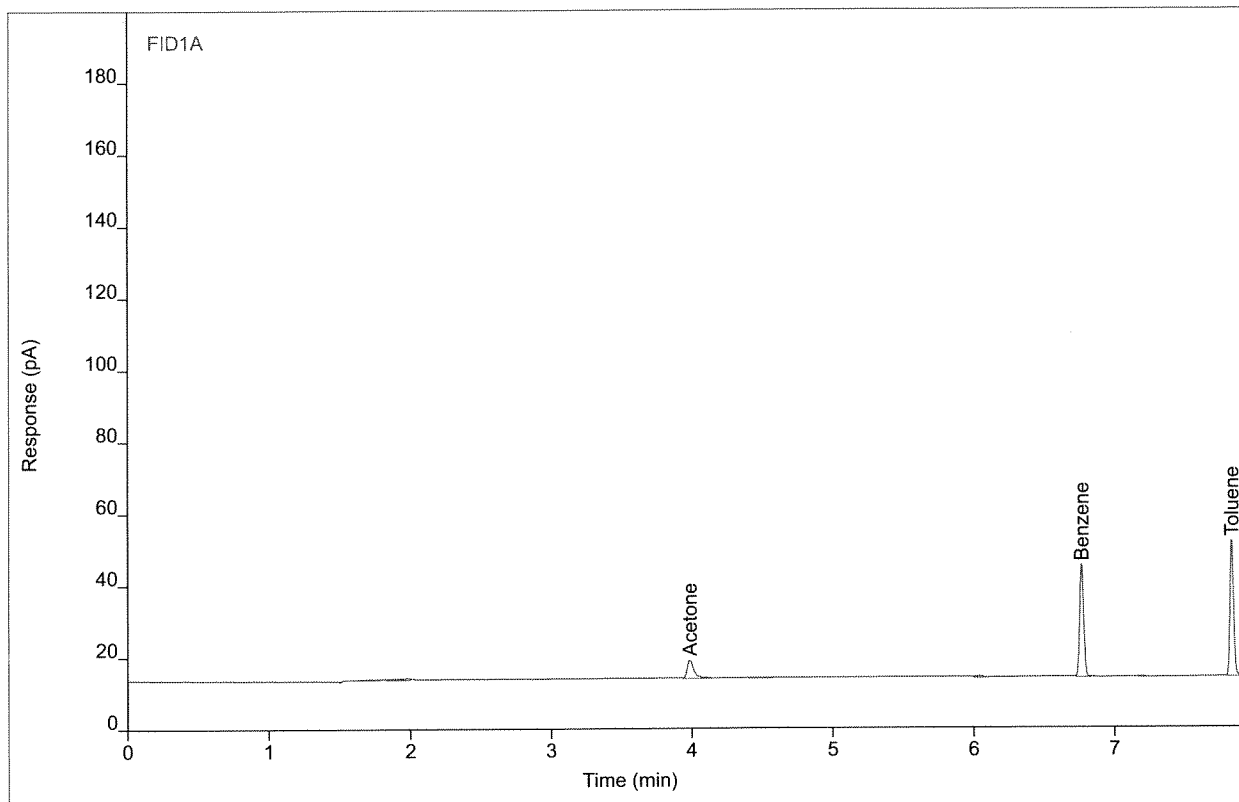
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.53	10.3820	7.63475	39.3810	1	39.3810	ppm
Ethane	BB	1.67	20.2771	12.9469	39.3098	1	39.3098	ppm
Propane	BB	2.01	31.5226	14.0303	40.7370	1	40.7370	ppm
Butane	BB	2.92	40.2395	13.0693	39.1433	1	39.1433	ppm
Pentane	BB	4.47	50.5428	15.5910	39.2857	1	39.2857	ppm
?	BB	5.83	0.45695	0.17583	0.58416	1	0.58416	ppm
Hexane	BB	6.04	60.5018	26.1551	39.4933	1	39.4933	ppm
Heptane	BB	7.21	69.4123	36.1408	38.9559	1	38.9559	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp723 #B4 ENV(1=600,3=400)
Sequence Name EDITHP768 ver.4
Data File 002F1201.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/20/2016 6:15 PM
File Modified 10/24/2016 8:51 AM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 2
Injection Volume 250
Injection 1 of 3
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP723F_BTEX.M
Method Modified 9/20/2016 8:20 AM
Printed 10/24/2016 9:41 AM



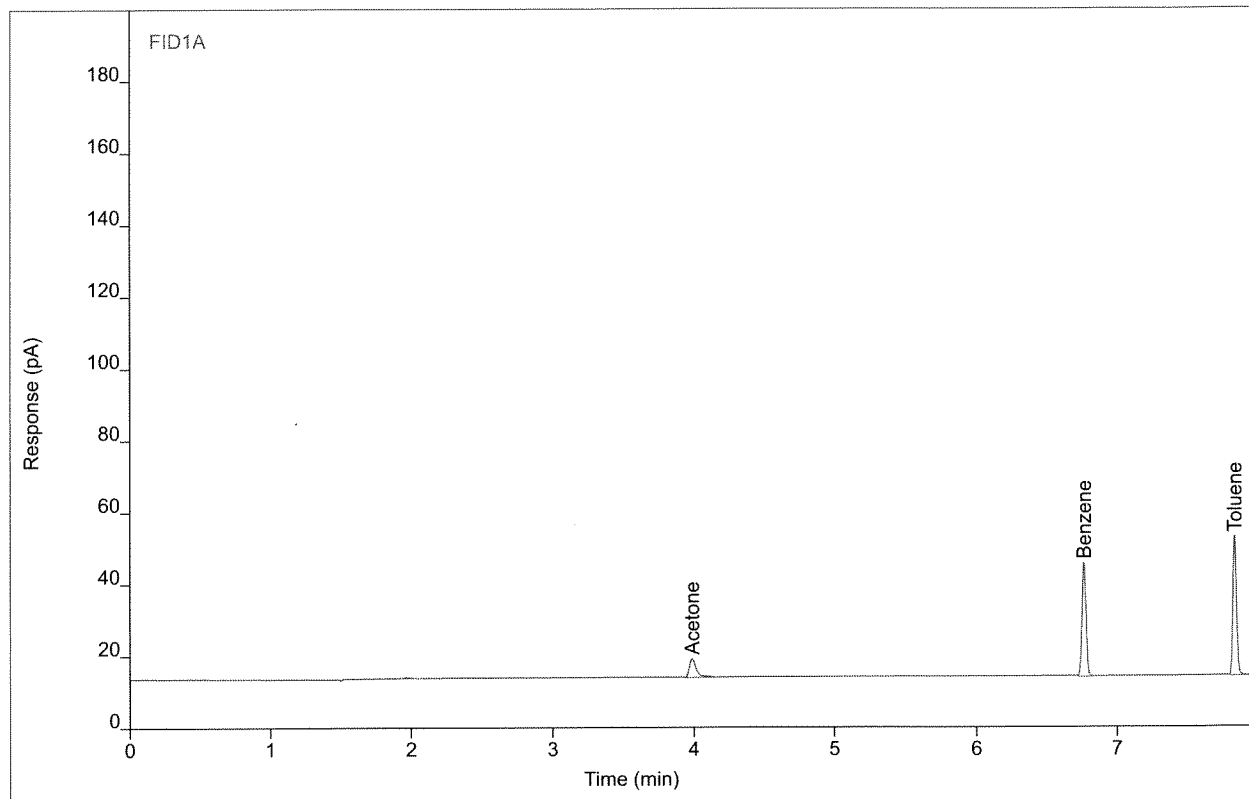
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
?	PB	1.68	0.73962	0.15038		1		
?	BV	1.97	1.41406	0.57670		1		
?	BB	2.92	0.49035	0.16010		1		
Acetone	BB	3.99	17.7936	5.17085	39.4167	1	39.4167	ppm
?	BB	4.47	0.75757	0.22064		1		
?	BB	6.04	1.33358	0.56902		1		
Benzene	BB	6.77	61.7206	31.1082	40.6029	1	40.6029	ppm
?	BB	7.21	0.59941	0.29721		1		
Toluene	BB	7.84	68.3027	37.7225	40.4333	1	40.4333	ppm
Ethylbenzene	BV	8.64	72.9575	38.5250	40.1954	1	40.1954	ppm
m-p-Xylenes	VB	8.71	72.0973	34.0039	39.8193	1	39.8193	ppm
o-Xylene	BB	8.93	70.2793	34.5547	39.9521	1	39.9521	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp723 #B4 ENV(1=600,3=400)
Sequence Name EDITHP768 ver.4
Data File 002F1202.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/20/2016 6:30 PM
File Modified 10/24/2016 8:51 AM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 2
Injection Volume 250
Injection 2 of 3
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP723F_BTEX.M
Method Modified 9/20/2016 8:20 AM
Printed 10/24/2016 9:41 AM



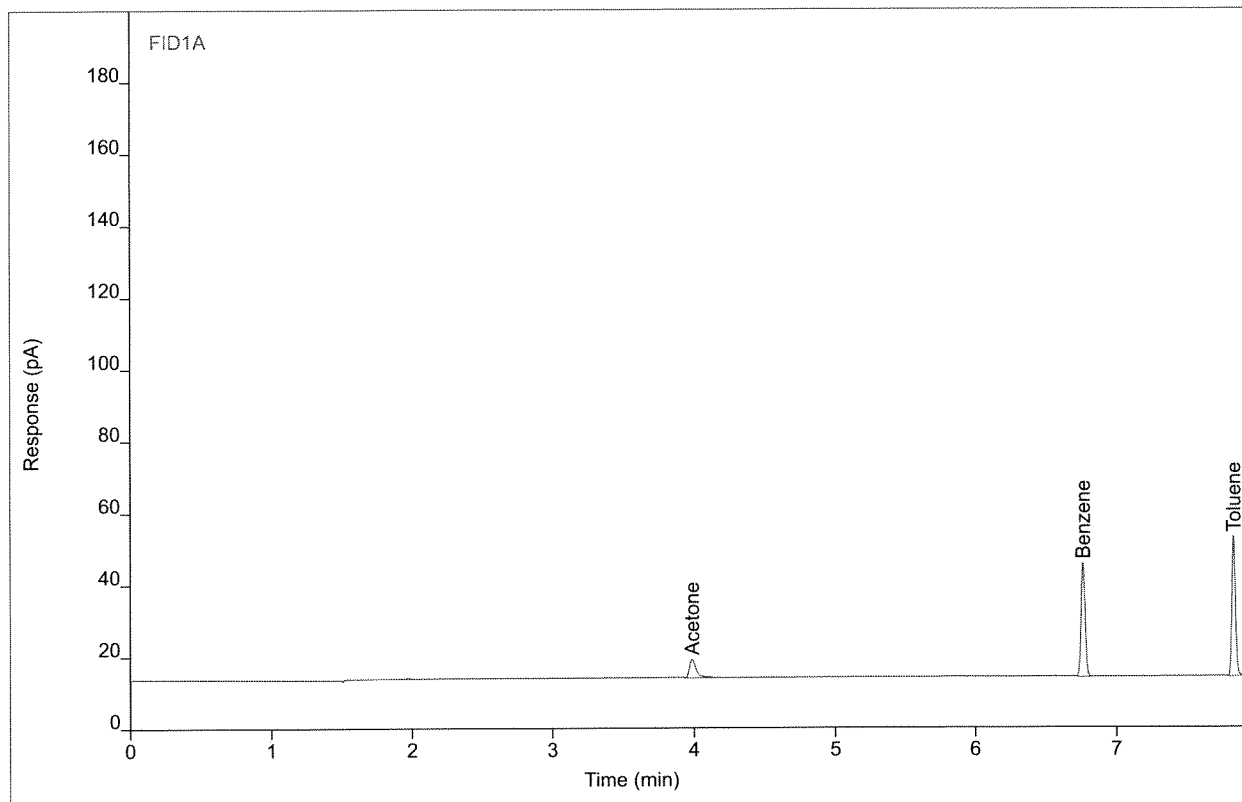
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
?	BB	1.97	1.13841	0.48249		1		
Acetone	BB	3.99	18.2005	5.25864	40.3132	1	40.3132	ppm
Benzene	BB	6.77	62.4969	31.5621	41.1125	1	41.1125	ppm
Toluene	BB	7.84	69.8439	38.7358	41.3407	1	41.3407	ppm
Ethylbenzene	BV	8.64	75.1928	39.7786	41.4174	1	41.4174	ppm
m-p-Xylenes	VB	8.71	74.8178	35.3384	41.3063	1	41.3063	ppm
o-Xylene	BB	8.93	72.7345	35.9121	41.3352	1	41.3352	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp723 #B4 ENV(1=600,3=400)
Sequence Name EDITHP768 ver.4
Data File 002F1203.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/20/2016 6:44 PM
File Modified 10/24/2016 8:51 AM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 2
Injection Volume 250
Injection 3 of 3
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP723F_BTEX.M
Method Modified 9/20/2016 8:20 AM
Printed 10/24/2016 9:41 AM



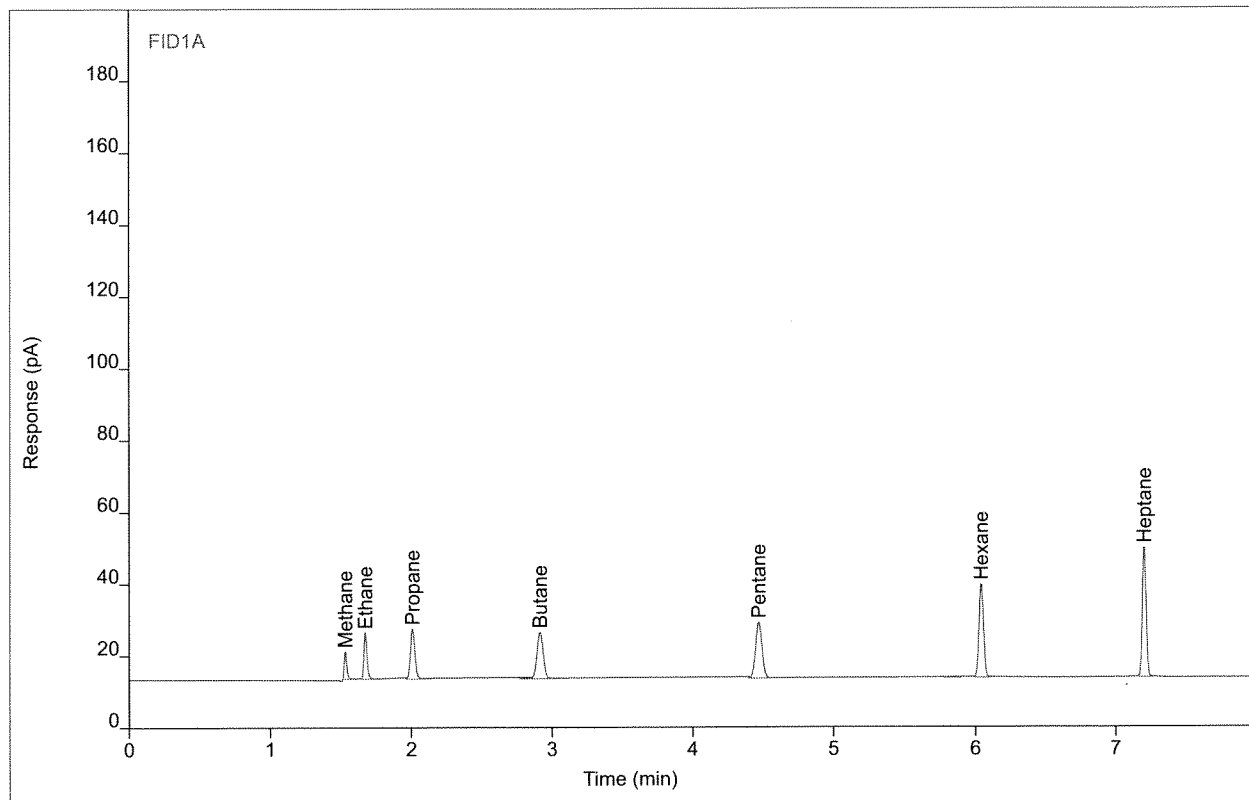
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
?	PB	1.97	1.50713	0.45646		1		
Acetone	BB	3.99	18.2504	5.26453	40.4231	1	40.4231	ppm
Benzene	BB	6.77	62.6487	31.6385	41.2121	1	41.2121	ppm
Toluene	BB	7.84	70.0885	38.9613	41.4847	1	41.4847	ppm
Ethylbenzene	BV	8.64	75.8377	40.0288	41.7700	1	41.7700	ppm
m-p-Xylenes	VB	8.71	75.7858	35.5744	41.8355	1	41.8355	ppm
o-Xylene	BB	8.93	73.5309	36.0523	41.7839	1	41.7839	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp623 #C3 ENV(1=600,2=400)
Sequence Name EDITHP768 ver.4
Data File 002F3202.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/21/2016 7:14 PM
File Modified 10/24/2016 8:53 AM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 2
Injection Volume 250
Injection 2 of 4
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP730F_C1-C7.M
Method Modified 10/20/2016 5:00 PM
Printed 10/24/2016 9:41 AM



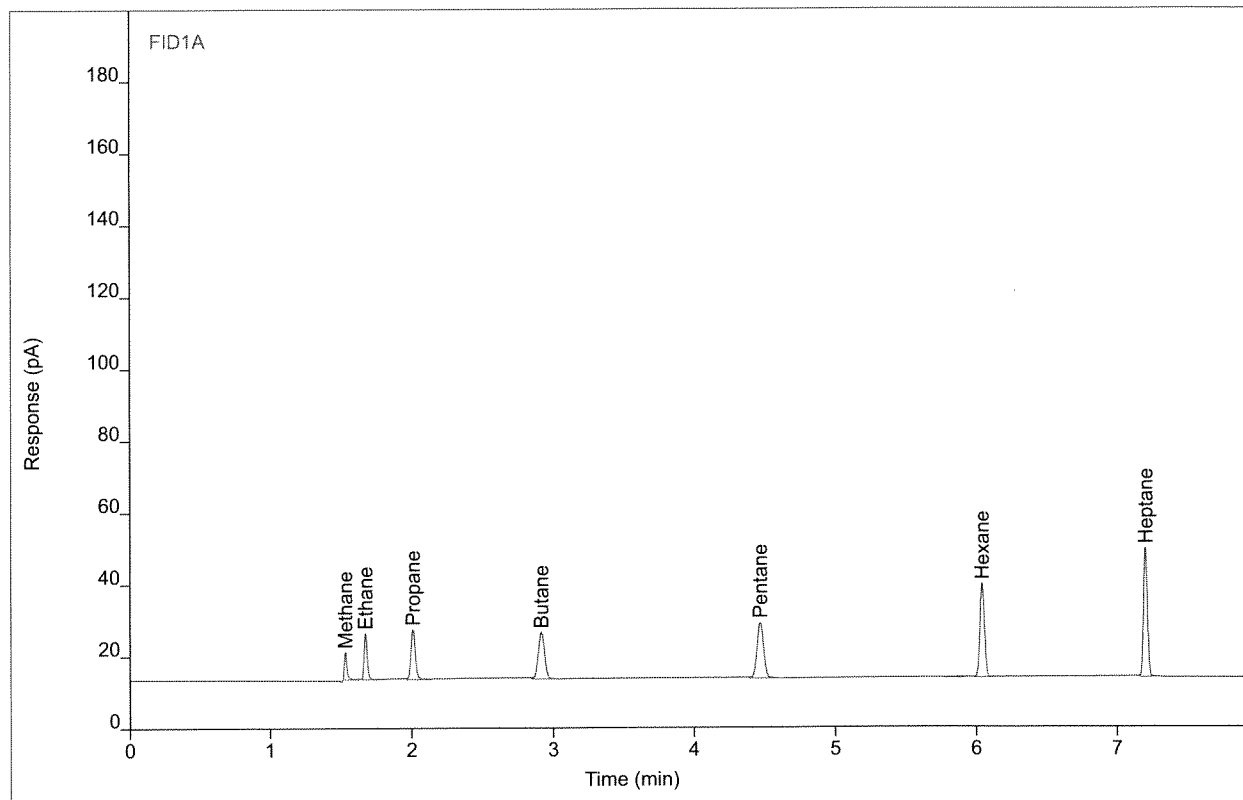
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.53	10.2351	7.60638	38.8288	1	38.8288	ppm
Ethane	BB	1.67	20.0576	12.8260	38.8841	1	38.8841	ppm
Propane	BB	2.01	30.2047	13.8749	39.0314	1	39.0314	ppm
Butane	BB	2.92	39.8764	12.9433	38.7893	1	38.7893	ppm
Pentane	BB	4.47	50.2402	15.5195	39.0493	1	39.0493	ppm
?	BB	5.83	0.47707	0.17626	0.60989	1	0.60989	ppm
Hexane	BB	6.04	60.0750	25.9653	39.2137	1	39.2137	ppm
Heptane	BB	7.21	69.0300	36.1032	38.7409	1	38.7409	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp623 #C3 ENV(1=600,2=400)
Sequence Name EDITHP768 ver.4
Data File 002F3203.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/21/2016 7:28 PM
File Modified 10/24/2016 8:53 AM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 2
Injection Volume 250
Injection 3 of 4
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP730F_C1-C7.M
Method Modified 10/20/2016 5:00 PM
Printed 10/24/2016 9:41 AM



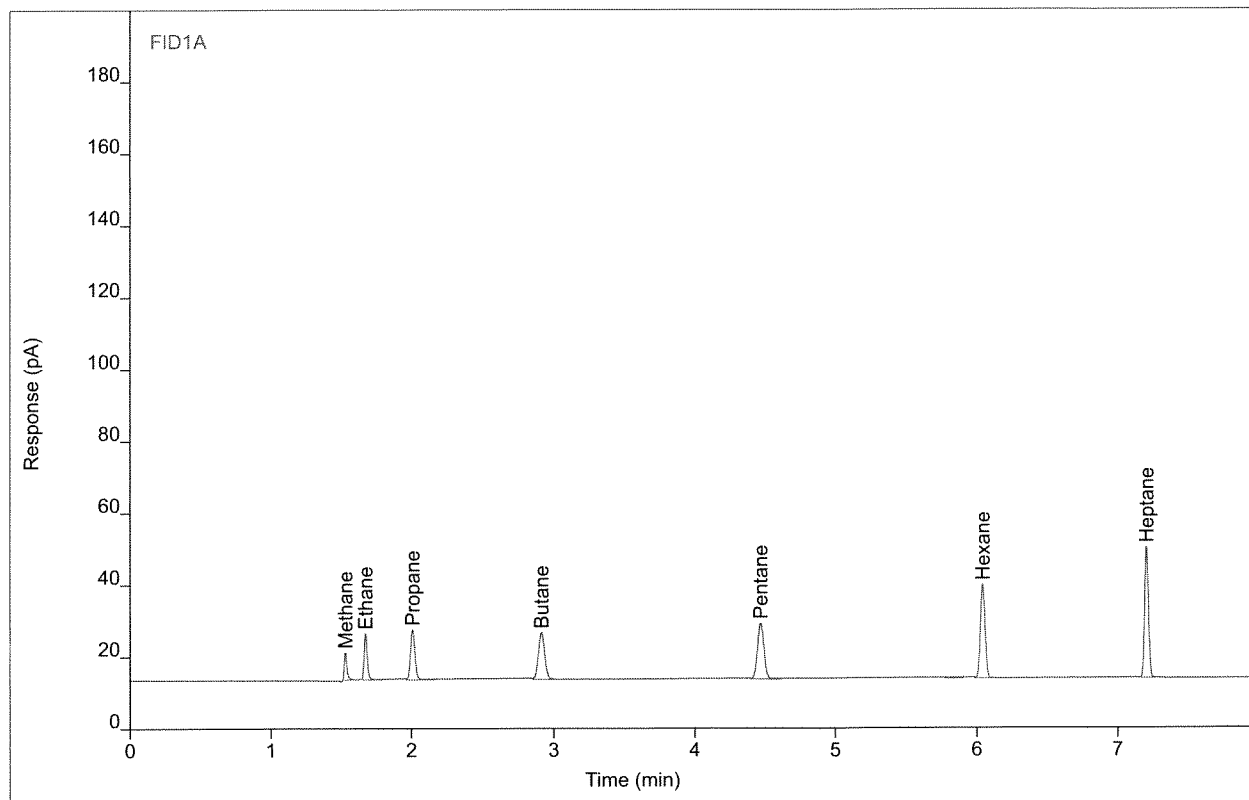
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.53	10.2372	7.58754	38.8366	1	38.8366	ppm
Ethane	BB	1.67	20.0090	12.8449	38.7899	1	38.7899	ppm
Propane	BB	2.01	30.2452	13.9072	39.0838	1	39.0838	ppm
Butane	BB	2.92	39.9947	12.9997	38.9046	1	38.9046	ppm
Pentane	BB	4.47	50.2841	15.5441	39.0837	1	39.0837	ppm
?	BB	5.83	0.45942	0.16556	0.58732	1	0.58732	ppm
Hexane	BB	6.04	60.2034	26.0364	39.2978	1	39.2978	ppm
Heptane	BB	7.21	69.1374	35.9522	38.8013	1	38.8013	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp623 #C3 ENV(1=600,2=400)
Sequence Name EDITHP768 ver.4
Data File 002F3204.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/21/2016 7:43 PM
File Modified 10/24/2016 8:53 AM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 2
Injection Volume 250
Injection 4 of 4
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP730F_C1-C7.M
Method Modified 10/20/2016 5:00 PM
Printed 10/24/2016 9:41 AM



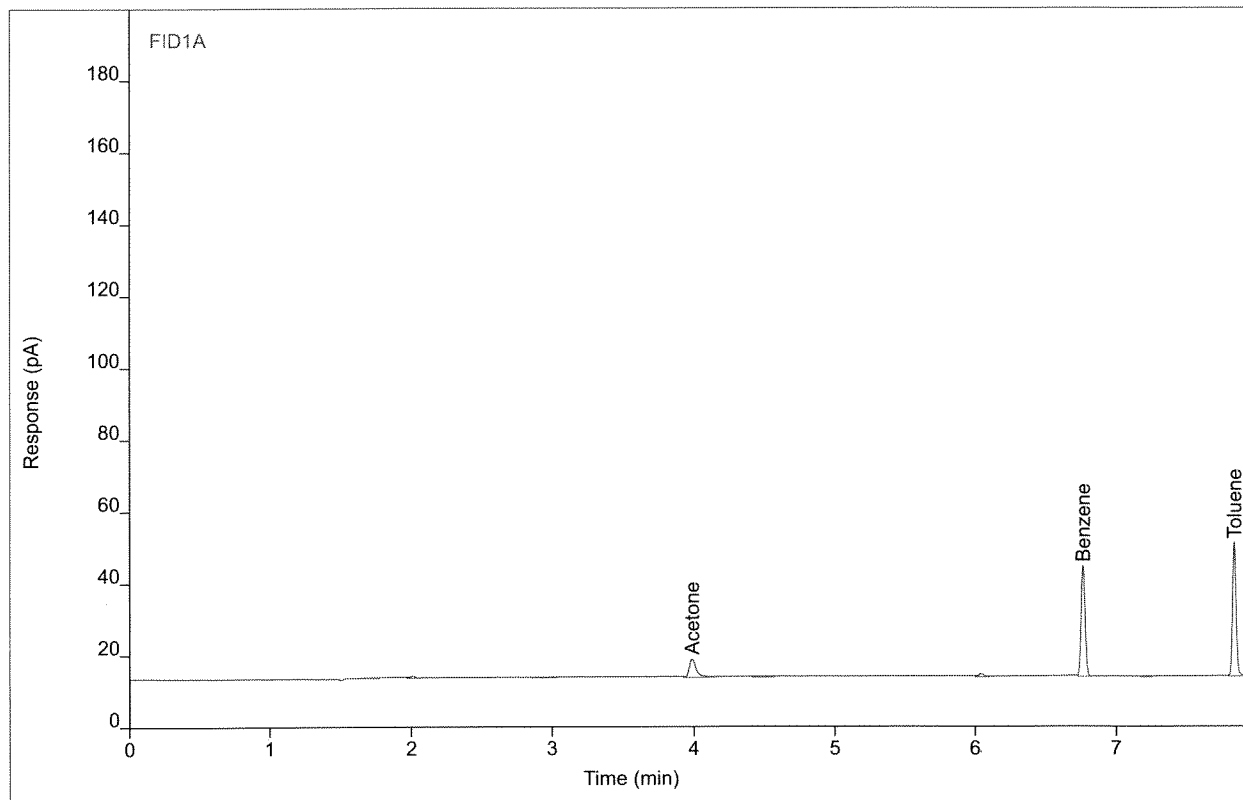
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.53	10.3154	7.61303	39.1306	1	39.1306	ppm
Ethane	BB	1.67	20.0923	12.9009	38.9514	1	38.9514	ppm
Propane	PB	2.01	30.3278	13.9347	39.1907	1	39.1907	ppm
Butane	BB	2.92	40.1991	13.0258	39.1039	1	39.1039	ppm
Pentane	BB	4.47	50.4222	15.5665	39.1915	1	39.1915	ppm
?	BB	5.83	0.46833	0.16793	0.59871	1	0.59871	ppm
Hexane	BB	6.04	60.3919	26.1029	39.4213	1	39.4213	ppm
Heptane	BB	7.21	69.3190	36.4510	38.9034	1	38.9034	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp723 #B4 ENV(1=600,3=400)
Sequence Name EDITHP768 ver.4
Data File 002F3301.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/21/2016 7:58 PM
File Modified 10/24/2016 8:53 AM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 2
Injection Volume 250
Injection 1 of 3
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP723F_BTEX.M
Method Modified 9/20/2016 8:20 AM
Printed 10/24/2016 9:41 AM



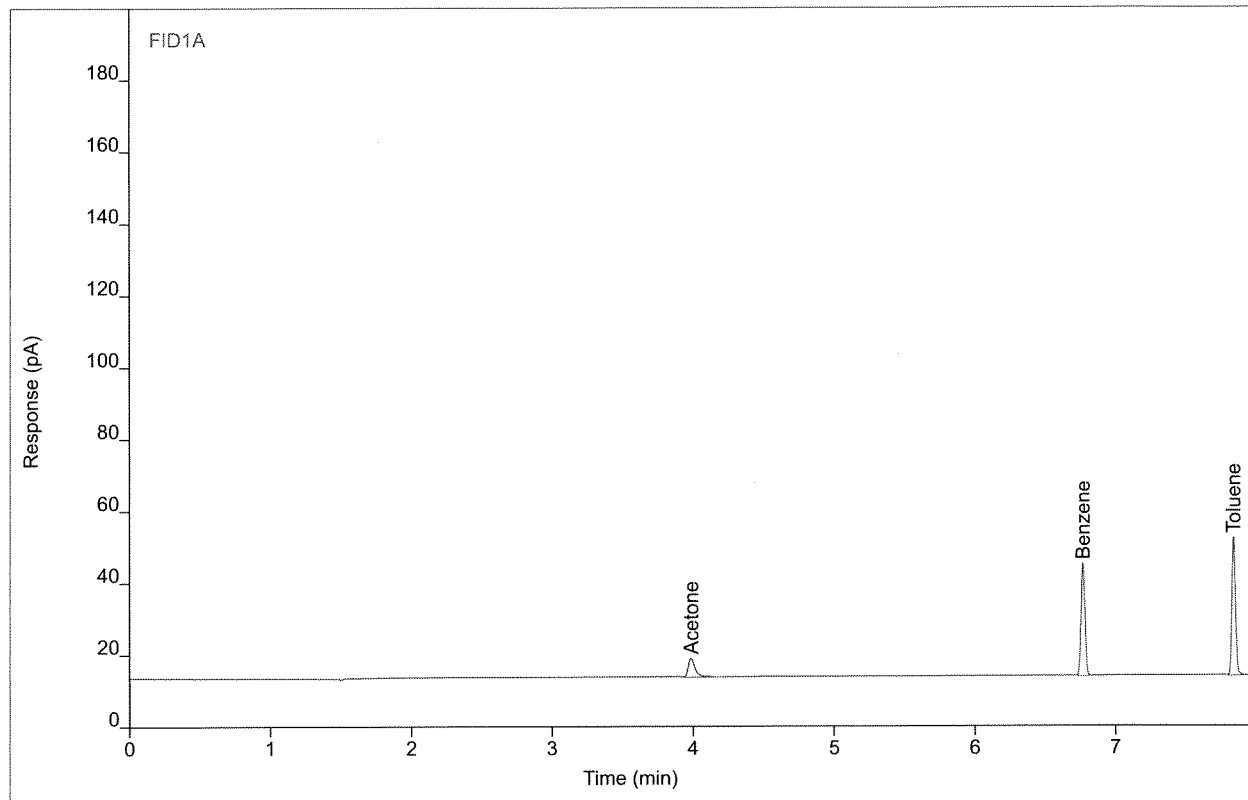
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
?	PB	1.67	0.52134	0.18828		1		
?	BB	2.01	1.36615	0.62318		1		
?	BB	2.92	0.85045	0.27337		1		
Acetone	BB	3.99	18.0033	5.20544	39.8787	1	39.8787	ppm
?	BB	4.47	1.20155	0.36000		1		
?	BB	6.04	2.16966	0.95284		1		
Benzene	BB	6.77	60.9767	30.7113	40.1146	1	40.1146	ppm
?	BB	7.21	0.70568	0.36354		1		
Toluene	BB	7.84	67.0148	37.1505	39.6749	1	39.6749	ppm
Ethylbenzene	BV	8.64	71.4046	37.6822	39.3463	1	39.3463	ppm
m-p-Xylenes	VB	8.71	70.2603	33.0633	38.8152	1	38.8152	ppm
o-Xylene	BB	8.93	68.9338	34.0851	39.1942	1	39.1942	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp723 #B4 ENV(1=600,3=400)
Sequence Name EDITHP768 ver.4
Data File 002F3302.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/21/2016 8:14 PM
File Modified 10/24/2016 8:53 AM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 2
Injection Volume 250
Injection 2 of 3
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP723F_BTEX.M
Method Modified 9/20/2016 8:20 AM
Printed 10/24/2016 9:41 AM



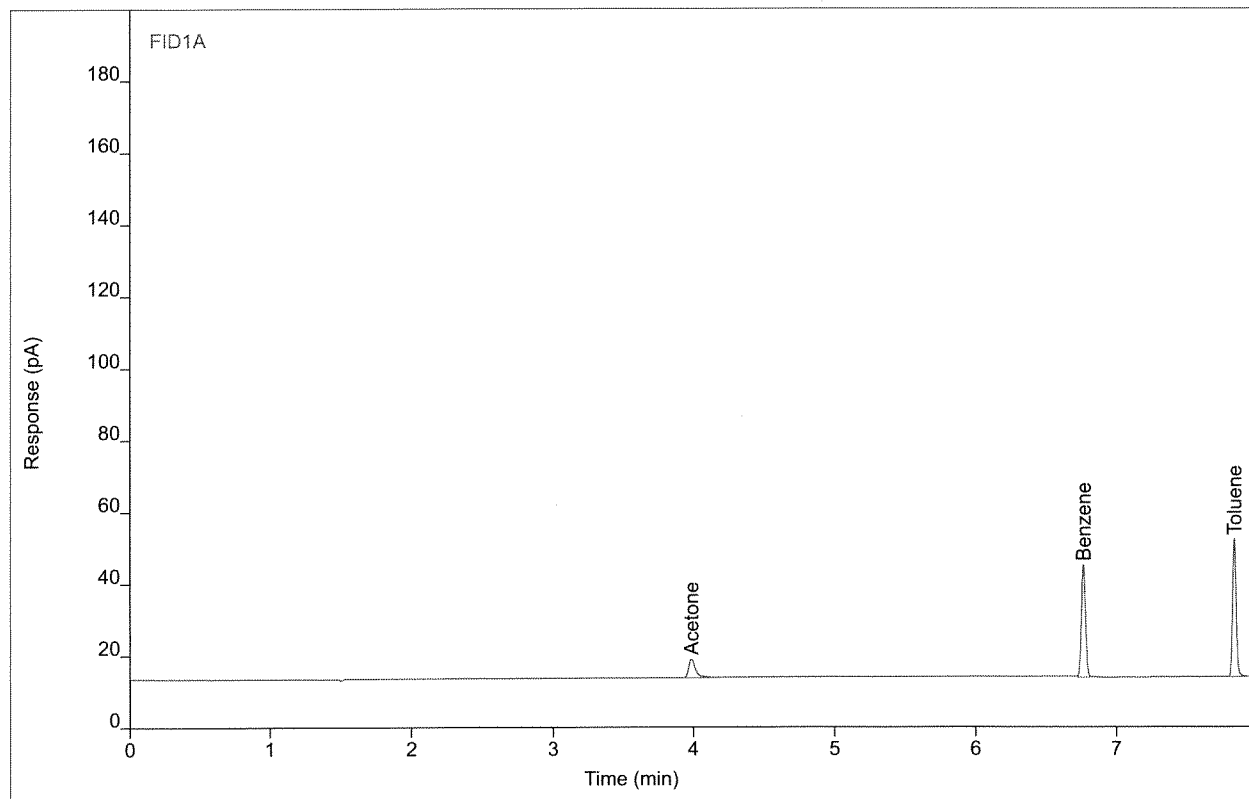
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
?	BB	2.01	0.32533	0.12396		1		
Acetone	BB	3.99	18.3232	5.28356	40.5835	1	40.5835	ppm
Benzene	BB	6.77	61.9644	31.3019	40.7629	1	40.7629	ppm
Toluene	BB	7.84	68.9674	38.4231	40.8246	1	40.8246	ppm
Ethylbenzene	BV	8.64	74.7321	39.3825	41.1655	1	41.1655	ppm
m-p-Xylenes	VB	8.71	74.5191	35.1577	41.1431	1	41.1431	ppm
o-Xylene	BB	8.93	72.6541	36.1342	41.2899	1	41.2899	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp723 #B4 ENV(1=600,3=400)
Sequence Name EDITHP768 ver.4
Data File 002F3303.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/21/2016 8:29 PM
File Modified 10/24/2016 8:53 AM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 2
Injection Volume 250
Injection 3 of 3
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP723F_BTEX.M
Method Modified 9/20/2016 8:20 AM
Printed 10/24/2016 9:41 AM



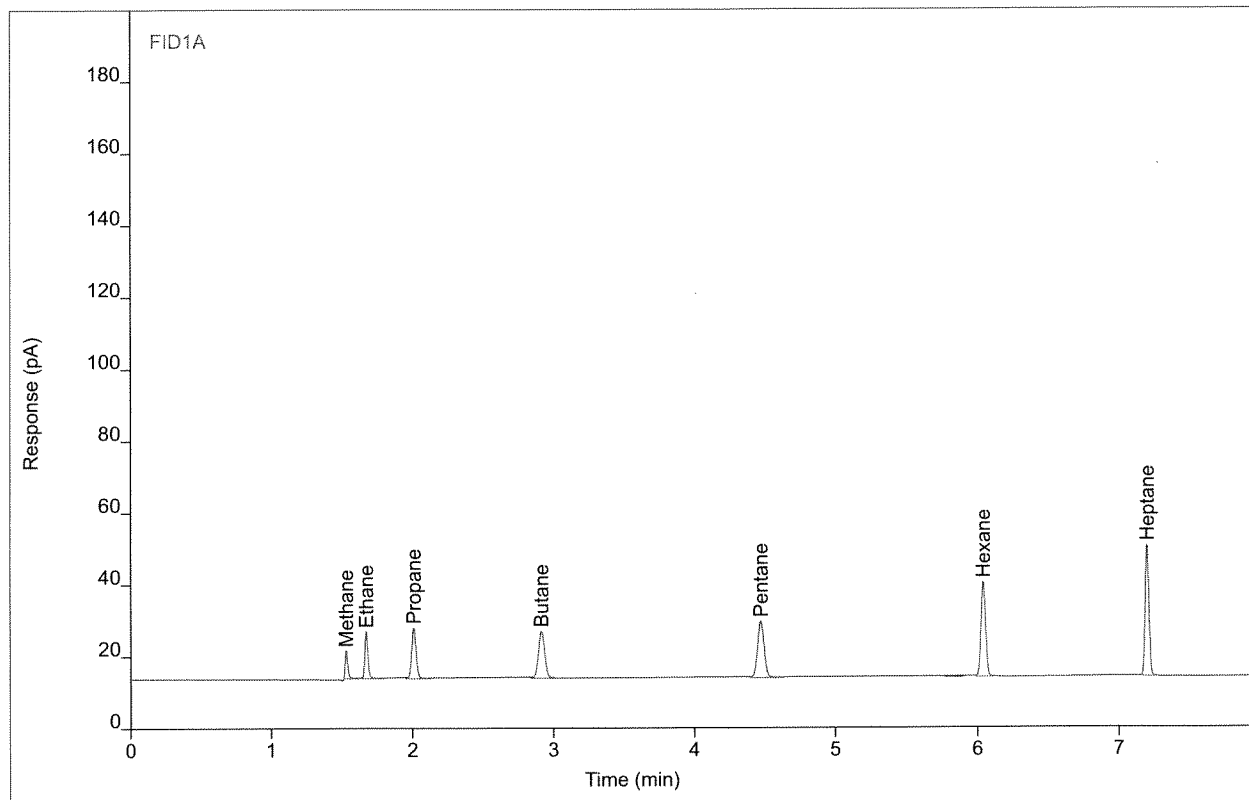
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetone	BB	3.99	18.0241	5.27700	39.9246	1	39.9246	ppm
Benzene	BB	6.77	61.8661	31.2597	40.6984	1	40.6984	ppm
Toluene	BB	7.84	69.2478	38.3432	40.9897	1	40.9897	ppm
Ethylbenzene	BV	8.64	75.3474	39.8314	41.5020	1	41.5020	ppm
m-p-Xylenes	VB	8.71	75.4059	35.4078	41.6278	1	41.6278	ppm
o-Xylene	BB	8.93	73.4740	36.3320	41.7518	1	41.7518	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp623 #C3 ENV(1=600,2=400)
Sequence Name EDITHP770 ver.7
Data File 002F1202.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/22/2016 11:52 AM
File Modified 10/24/2016 9:13 AM
Instrument
Operator Nicholas Traversa

Sample Type
Vial Number
Injection Volume 250
Injection 2 of 4
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP730F_C1-C7.M
Method Modified 10/20/2016 5:00 PM
Printed 10/24/2016 9:41 AM



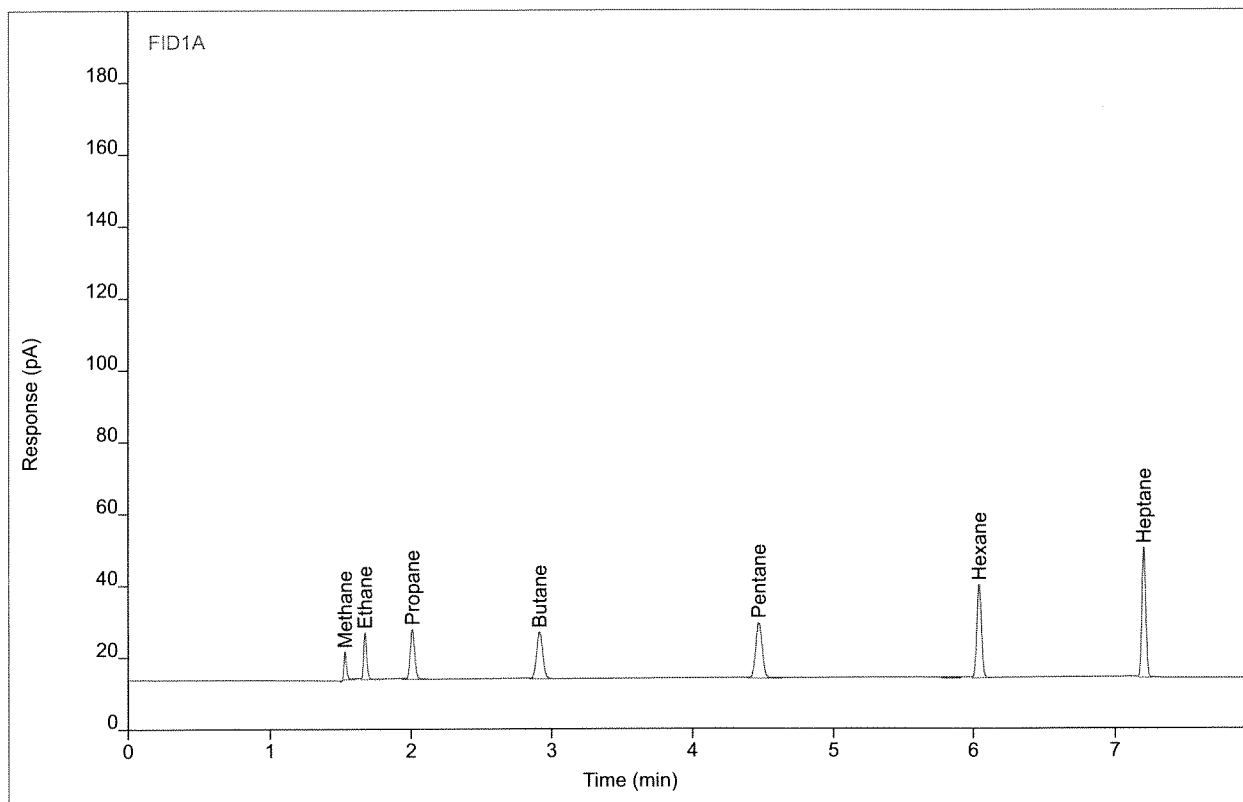
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.53	10.3755	7.67790	39.3563	1	39.3563	ppm
Ethane	BB	1.67	20.2692	12.9887	39.2946	1	39.2946	ppm
Propane	BB	2.01	30.6416	14.0536	39.5967	1	39.5967	ppm
Butane	BB	2.92	40.4459	13.0998	39.3446	1	39.3446	ppm
Pentane	BB	4.47	50.7742	15.6547	39.4665	1	39.4665	ppm
?	BB	5.83	0.49817	0.17473	0.63686	1	0.63686	ppm
Hexane	BB	6.04	60.7525	26.2932	39.6575	1	39.6575	ppm
Heptane	BB	7.21	69.8422	36.4352	39.1976	1	39.1976	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp623 #C3 ENV(1=600,2=400)
Sequence Name EDITHP770 ver.7
Data File 002F1203.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/22/2016 12:07 PM
File Modified 10/24/2016 9:13 AM
Instrument
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 2
Injection Volume 250
Injection 3 of 4
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP730F_C1-C7.M
Method Modified 10/20/2016 5:00 PM
Printed 10/24/2016 9:41 AM



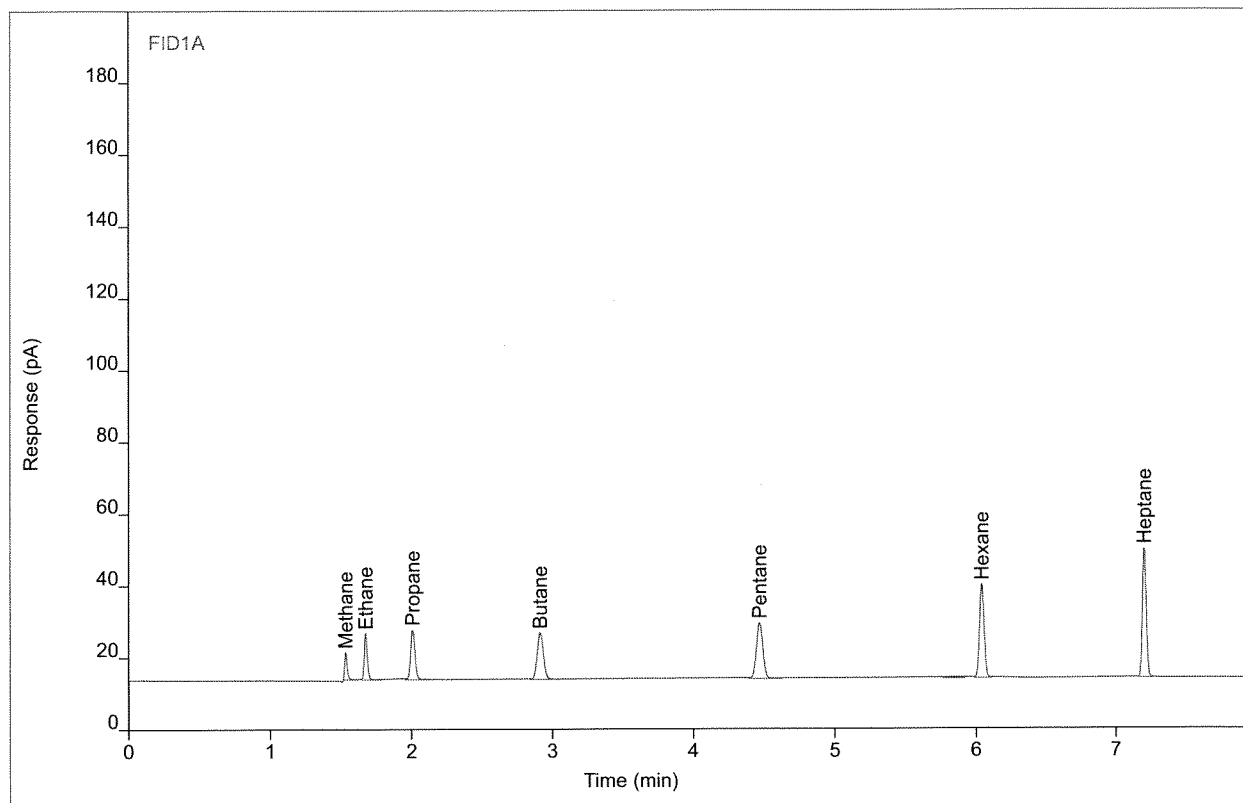
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.53	10.3272	7.65100	39.1748	1	39.1748	ppm
Ethane	BB	1.67	20.2739	12.9713	39.3036	1	39.3036	ppm
Propane	PB	2.01	30.4980	13.9647	39.4110	1	39.4110	ppm
Butane	BB	2.91	40.1801	13.0416	39.0854	1	39.0854	ppm
Pentane	BB	4.47	50.4230	15.5949	39.1921	1	39.1921	ppm
?	BB	5.83	0.51401	0.17962	0.65711	1	0.65711	ppm
Hexane	BB	6.04	60.3901	26.0181	39.4201	1	39.4201	ppm
Heptane	BB	7.21	69.4276	36.1761	38.9645	1	38.9645	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp623 #C3 ENV(1=600,2=400)
Sequence Name EDITHP770 ver.7
Data File 002F1204.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/22/2016 12:23 PM
File Modified 10/24/2016 9:13 AM
Instrument
Operator Nicholas Traversa

Sample Type
Vial Number
Injection Volume 250
Injection 4 of 4
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP730F_C1-C7.M
Method Modified 10/20/2016 5:00 PM
Printed 10/24/2016 9:41 AM



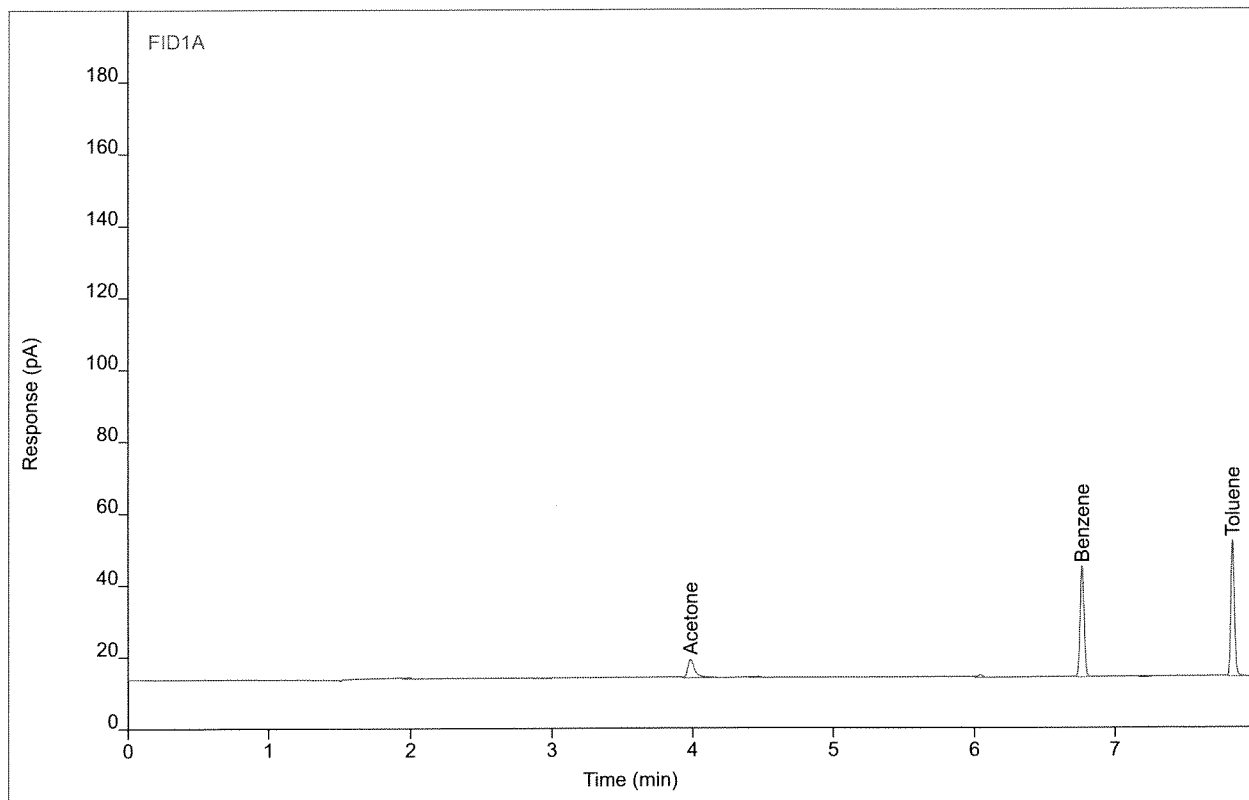
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.53	10.2203	7.58521	38.7729	1	38.7729	ppm
Ethane	BB	1.67	19.9462	12.9074	38.6681	1	38.6681	ppm
Propane	BB	2.01	30.1954	13.8858	39.0193	1	39.0193	ppm
Butane	BB	2.91	39.9414	12.9698	38.8527	1	38.8527	ppm
Pentane	BB	4.47	50.1976	15.5455	39.0161	1	39.0161	ppm
?	BB	5.83	0.50691	0.16434	0.64804	1	0.64804	ppm
Hexane	BB	6.04	60.0299	25.9574	39.1841	1	39.1841	ppm
Heptane	BB	7.21	69.0279	35.9277	38.7398	1	38.7398	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp723 #B4 ENV(1=600,3=400)
Sequence Name EDITHP770 ver.7
Data File 002F1301.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/22/2016 12:38 PM
File Modified 10/24/2016 9:14 AM
Instrument
Operator Nicholas Traversa

Sample Type
Vial Number
Injection Volume
Injection
Acquisition Method
Analysis Method
Method Modified
Printed
Calibration
Vial 2
250
1 of 3
AQ_EDITHP503_HRVOC.M
EDITHP723F_BTEX.M
9/20/2016 8:20 AM
10/24/2016 9:41 AM



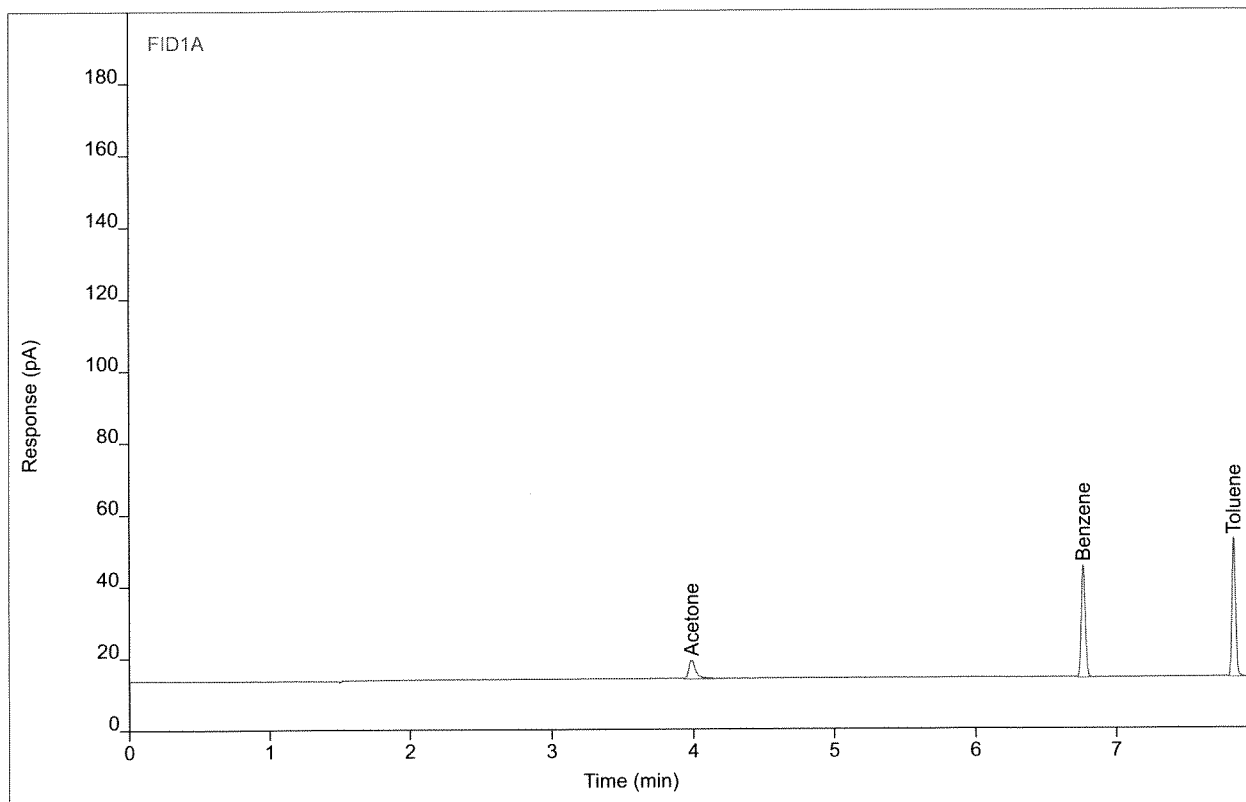
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
?	BB	0.05	0.61170	0.12539		1		
?	BP	1.67	0.19478	0.13377		1		
?	PB	2.01	1.03480	0.45182		1		
?	BB	2.91	0.66482	0.20975		1		
Acetone	BB	3.99	18.3568	5.24369	40.6576	1	40.6576	ppm
?	BB	4.47	0.99601	0.28533		1		
?	BB	6.04	1.73657	0.74813		1		
Benzene	BB	6.77	61.1425	30.7725	40.2234	1	40.2234	ppm
?	BB	7.21	0.60572	0.31442		1		
Toluene	BB	7.84	68.0597	37.7658	40.2902	1	40.2902	ppm
Ethylbenzene	BV	8.64	73.9144	39.1695	40.7185	1	40.7185	ppm
m-p-Xylenes	VB	8.71	73.5087	34.4704	40.5908	1	40.5908	ppm
o-Xylene	BB	8.93	72.0356	35.5094	40.9415	1	40.9415	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp723 #B4 ENV(1=600,3=400)
Sequence Name EDITHP770 ver.7
Data File 002F1302.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/22/2016 12:53 PM
File Modified 10/24/2016 9:14 AM
Instrument
Operator Nicholas Traversa

Sample Type
Vial Number
Injection Volume
Injection
Acquisition Method
Analysis Method
Method Modified
Printed
Calibration
Vial 2
250
2 of 3
AQ_EDITHP503_HRVOC.M
EDITHP723F_BTEX.M
9/20/2016 8:20 AM
10/24/2016 9:41 AM



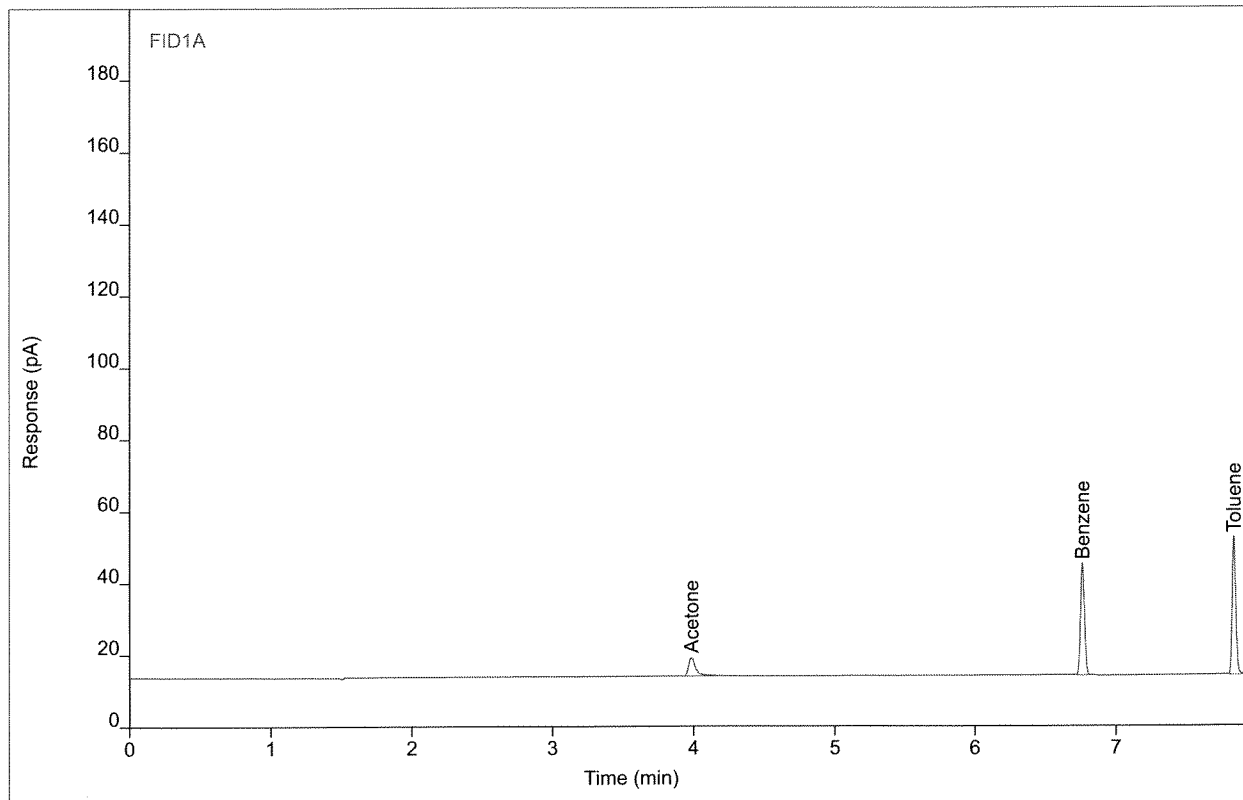
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
?	BB	2.01	0.29337	0.11146		1		
Acetone	BB	3.99	18.5310	5.27575	41.0414	1	41.0414	ppm
Benzene	BB	6.77	61.6914	31.1545	40.5837	1	40.5837	ppm
Toluene	BB	7.84	69.0160	38.4378	40.8532	1	40.8532	ppm
Ethylbenzene	BV	8.64	75.4139	40.0508	41.5383	1	41.5383	ppm
m-p-Xylenes	VB	8.71	75.3567	35.5424	41.6009	1	41.6009	ppm
o-Xylene	BB	8.93	73.6059	36.2945	41.8261	1	41.8261	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp723 #B4 ENV(1=600,3=400)
Sequence Name EDITHP770 ver.7
Data File 002F1303.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/22/2016 1:09 PM
File Modified 10/24/2016 9:14 AM
Instrument
Operator Nicholas Traversa

Sample Type
Vial Number
Injection Volume
Injection
Acquisition Method
Analysis Method
Method Modified
Printed
Calibration
Vial 2
250
3 of 3
AQ_EDITHP503_HRVOC.M
EDITHP723F_BTEX.M
9/20/2016 8:20 AM
10/24/2016 9:41 AM



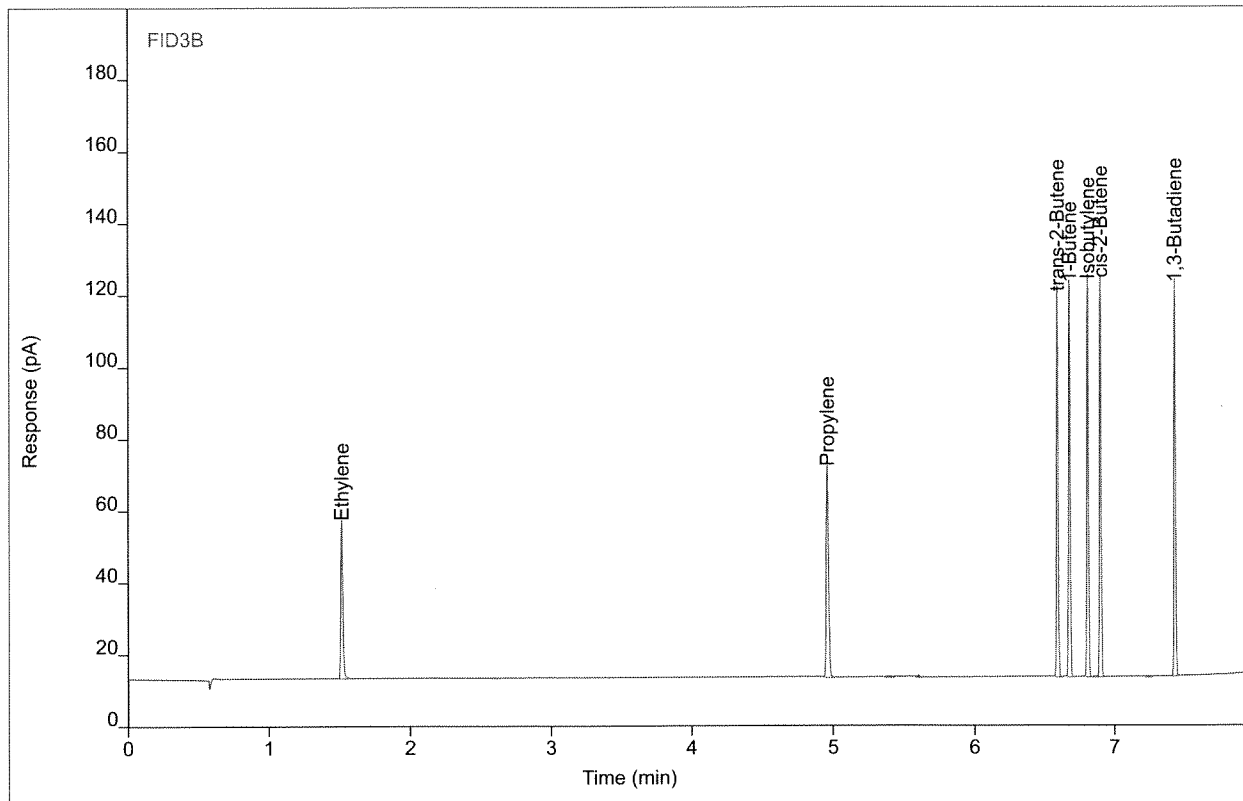
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetone	BB	3.99	18.5991	5.28585	41.1913	1	41.1913	ppm
Benzene	BB	6.77	61.5751	31.0867	40.5074	1	40.5074	ppm
Toluene	BB	7.84	69.1080	38.2892	40.9074	1	40.9074	ppm
Ethylbenzene	BV	8.64	75.4646	39.7799	41.5660	1	41.5660	ppm
m-p-Xylenes	VB	8.71	75.5319	35.7675	41.6967	1	41.6967	ppm
o-Xylene	BB	8.93	73.7020	36.2960	41.8803	1	41.8803	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp727 #HR4 ENV(1=600,4=400)
 Sequence Name EDITHP766 ver.4
 Data File 018B1801.D
 File Location GC/2016/Edith/Quarter 4
 Injection Date 10/19/2016 9:47 PM
 File Modified 10/22/2016 12:44 PM
 Instrument
 Operator Trevor Lott

Sample Type
 Vial Number Vial 18
 Injection Volume 250
 Injection 1 of 3
 Acquisition Method AQ_EDITHP503_HRVOC.M
 Analysis Method EDITHP636R_HRVOC_ACETYLENE.M
 Method Modified 10/20/2016 11:24 AM
 Printed 10/24/2016 9:41 AM



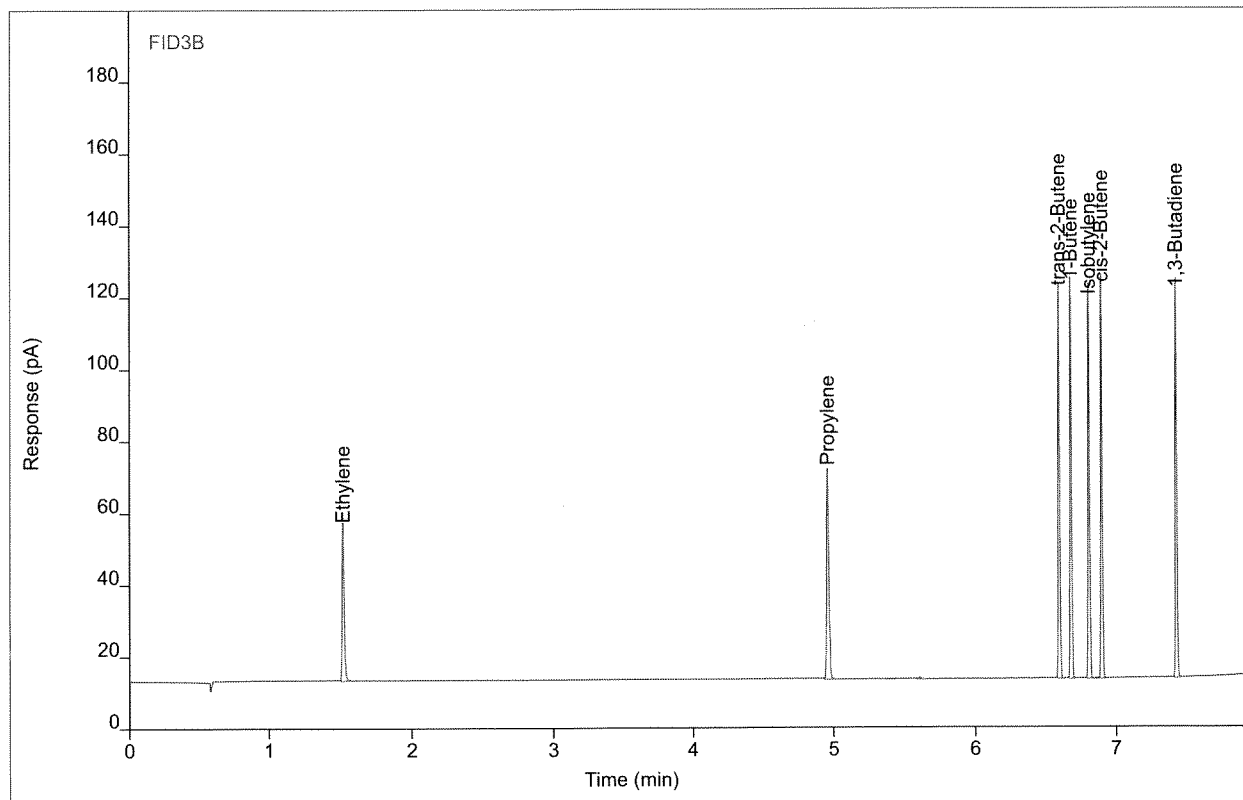
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
?	BB	0.88	0.14453	0.20205		1		
Ethylene	BB	1.52	44.6770	42.9806	40.0019	1	40.0019	ppm
?	BB	2.59	0.20042	0.13170		1		
Propylene	BB	4.96	67.1623	57.7441	41.5950	1	41.5950	ppm
?	BB	5.39	0.28112	0.25901		1		
?	BB	5.61	0.67661	0.66039		1		
trans-2-Butene	BB	6.59	88.5118	106.236	39.7926	1	39.7926	ppm
1-Butene	BB	6.68	89.7127	108.706	39.9555	1	39.9555	ppm
Isobutylene	BB	6.81	88.4964	109.617	39.7061	1	39.7061	ppm
?	BV	6.86	0.26156	0.26045		1		
cis-2-Butene	VB	6.90	89.5403	110.040	39.3587	1	39.3587	ppm
?	BB	7.24	0.27507	0.31794		1		
1,3-Butadiene	BB	7.43	86.6933	108.483	39.6693	1	39.6693	ppm
?	BB	8.03	154.208	55.6185		1		
?	BB	8.46	0.38004	0.39485		1		
?	BB	8.56	1.55317	1.60625		1		

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp727 #HR4 ENV(1=600,4=400)
 Sequence Name EDITHP766 ver.4
 Data File 018B1802.D
 File Location GC/2016/Edith/Quarter 4
 Injection Date 10/19/2016 10:02 PM
 File Modified 10/22/2016 12:44 PM
 Instrument
 Operator Trevor Lott

Sample Type
 Vial Number
 Injection Volume 250
 Injection 2 of 3
 Acquisition Method AQ_EDITHP503_HRVOC.M
 Analysis Method EDITHP636R_HRVOC_ACETYLENE.M
 Method Modified 10/20/2016 11:24 AM
 Printed 10/24/2016 9:41 AM



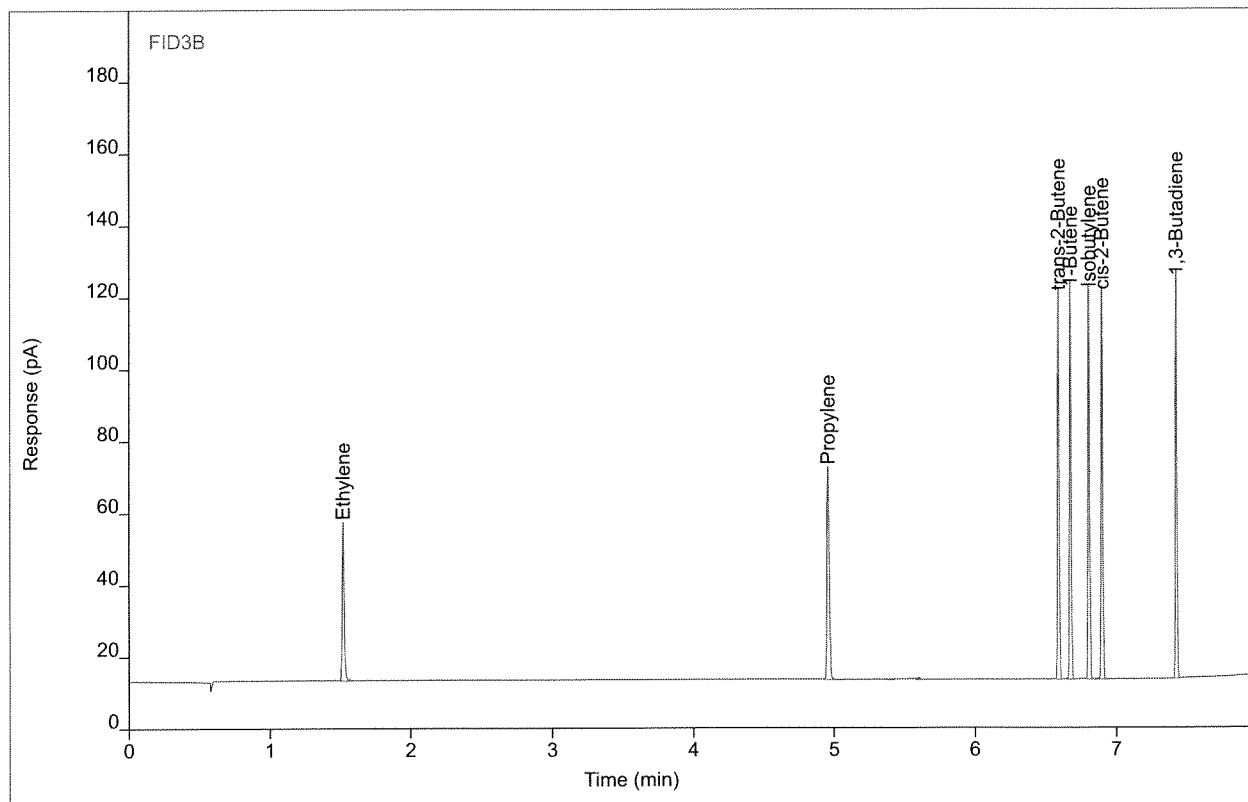
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene	BB	1.52	44.6932	42.8883	40.0164	1	40.0164	ppm
Propylene	BB	4.96	67.2318	58.4522	41.6380	1	41.6380	ppm
?	BB	5.39	0.28525	0.24958		1		
?	BB	5.61	0.56878	0.54785		1		
trans-2-Butene	BB	6.59	88.6336	108.227	39.8476	1	39.8476	ppm
1-Butene	BB	6.68	89.8192	109.807	40.0030	1	40.0030	ppm
Isobutylene	BB	6.81	88.5927	105.721	39.7494	1	39.7494	ppm
?	BV	6.86	0.26576	0.25394		1		
cis-2-Butene	VB	6.90	89.6238	109.161	39.3955	1	39.3955	ppm
1,3-Butadiene	BB	7.43	87.0101	107.452	39.8148	1	39.8148	ppm
?	BB	8.56	1.80213	1.64324		1		

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp727 #HR4 ENV(1=600,4=400)
Sequence Name EDITHP766 ver.4
Data File 018B1803.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/19/2016 10:17 PM
File Modified 10/22/2016 12:44 PM
Instrument
Operator Trevor Lott

Sample Type
Vial Number Vial 18
Injection Volume 250
Injection 3 of 3
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP636R_HRVOC_ACETYLENE.M
Method Modified 10/20/2016 11:24 AM
Printed 10/24/2016 9:41 AM



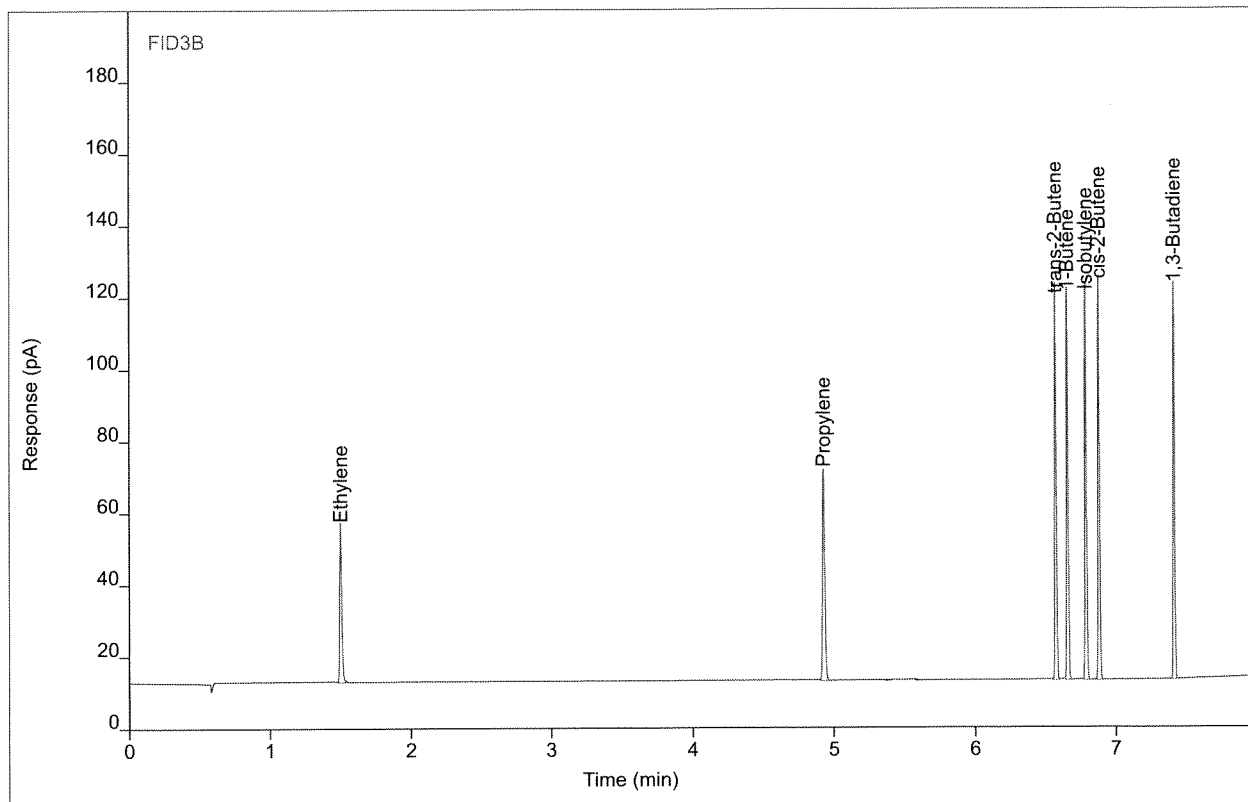
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene	BB	1.52	44.6733	43.6799	39.9986	1	39.9986	ppm
Propylene	BB	4.96	67.1501	58.7991	41.5874	1	41.5874	ppm
?	BB	5.39	0.29286	0.25827		1		
?	BB	5.61	0.52605	0.50358		1		
trans-2-Butene	BB	6.59	88.4987	107.142	39.7867	1	39.7867	ppm
1-Butene	BB	6.68	89.7629	108.144	39.9779	1	39.9779	ppm
Isobutylene	BB	6.81	88.4933	107.988	39.7047	1	39.7047	ppm
?	BV	6.86	0.26822	0.27867		1		
cis-2-Butene	VB	6.90	89.5372	107.303	39.3574	1	39.3574	ppm
1,3-Butadiene	BB	7.43	86.6429	110.870	39.6461	1	39.6461	ppm
?	BB	8.56	1.63396	1.64454		1		

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp727 #HR4 ENV(1=600,4=400)
Sequence Name EDITHP768 ver.4
Data File 018B3401.D
File Location GC/2016/Edith/Quarter 4
Injection Date 10/21/2016 8:44 PM
File Modified 10/24/2016 9:00 AM
Instrument
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 18
Injection Volume 250
Injection 1 of 3
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP636R_HRVOC_ACETYLENE.M
Method Modified 10/22/2016 11:28 AM
Printed 10/24/2016 9:41 AM



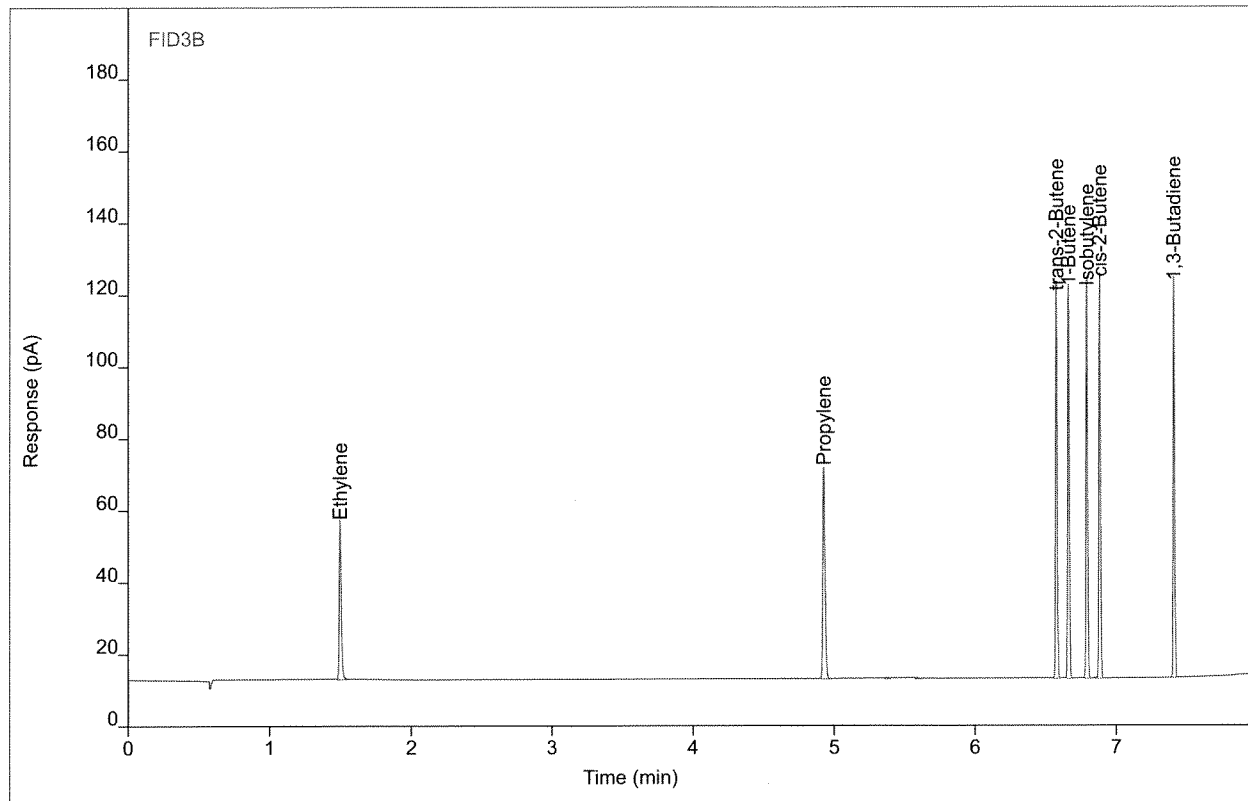
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene	BB	1.50	44.3420	43.4313	39.7022	1	39.7022	ppm
Propylene	BB	4.93	66.8103	58.4253	41.3769	1	41.3769	ppm
?	BB	5.38	0.27500	0.24717		1		
?	BB	5.59	0.48363	0.47119		1		
trans-2-Butene	BB	6.58	88.0287	106.395	39.5744	1	39.5744	ppm
1-Butene	BB	6.66	89.1918	107.237	39.7231	1	39.7231	ppm
Isobutylene	BB	6.79	87.9730	107.366	39.4710	1	39.4710	ppm
cis-2-Butene	BB	6.88	89.2532	110.528	39.2321	1	39.2321	ppm
1,3-Butadiene	BB	7.41	86.3821	109.253	39.5263	1	39.5263	ppm
?	BB	8.78	135.897	54.7599		1		

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp727 #HR4 ENV(1=600,4=400)
 Sequence Name EDITHP768 ver.4
 Data File 018B3402.D
 File Location GC/2016/Edith/Quarter 4
 Injection Date 10/21/2016 8:59 PM
 File Modified 10/24/2016 9:00 AM
 Instrument
 Operator Nicholas Traversa

Sample Type
 Vial Number
 Injection Volume 250
 Injection 2 of 3
 Acquisition Method AQ_EDITHP503_HRVOC.M
 Analysis Method EDITHP636R_HRVOC_ACETYLENE.M
 Method Modified 10/22/2016 11:28 AM
 Printed 10/24/2016 9:41 AM



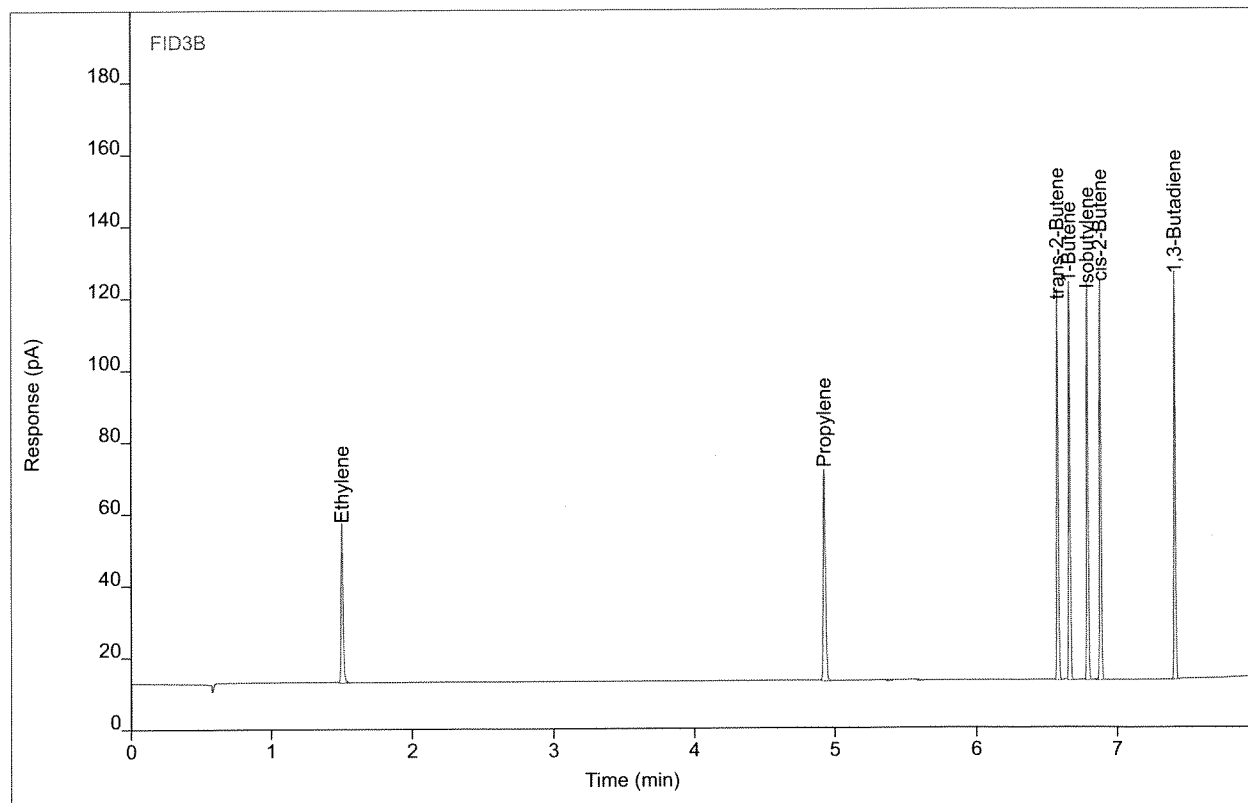
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene	BB	1.50	44.3801	43.3552	39.7362	1	39.7362	ppm
Propylene	BB	4.93	66.8643	58.3431	41.4103	1	41.4103	ppm
?	BB	5.38	0.27508	0.25232		1		
?	BB	5.60	0.47823	0.45469		1		
trans-2-Butene	BB	6.58	88.0988	106.854	39.6061	1	39.6061	ppm
1-Butene	BB	6.66	89.2507	108.179	39.7494	1	39.7494	ppm
Isobutylene	BB	6.79	87.9717	108.130	39.4704	1	39.4704	ppm
cis-2-Butene	BB	6.88	89.2928	110.701	39.2496	1	39.2496	ppm
1,3-Butadiene	BB	7.41	86.4284	109.365	39.5476	1	39.5476	ppm
?	BV	8.75	71.6349	21.7525		1		
?	VB	8.78	78.0496	20.5541		1		

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp727 #HR4 ENV(1=600,4=400)
 Sequence Name EDITHP768 ver.4
 Data File 018B3403.D
 File Location GC/2016/Edith/Quarter 4
 Injection Date 10/21/2016 9:14 PM
 File Modified 10/24/2016 9:01 AM
 Instrument
 Operator Nicholas Traversa

Sample Type
 Vial Number Vial 18
 Injection Volume 250
 Injection 3 of 3
 Acquisition Method AQ_EDITHP503_HRVOC.M
 Analysis Method EDITHP636R_HRVOC_ACETYLENE.M
 Method Modified 10/22/2016 11:28 AM
 Printed 10/24/2016 9:41 AM



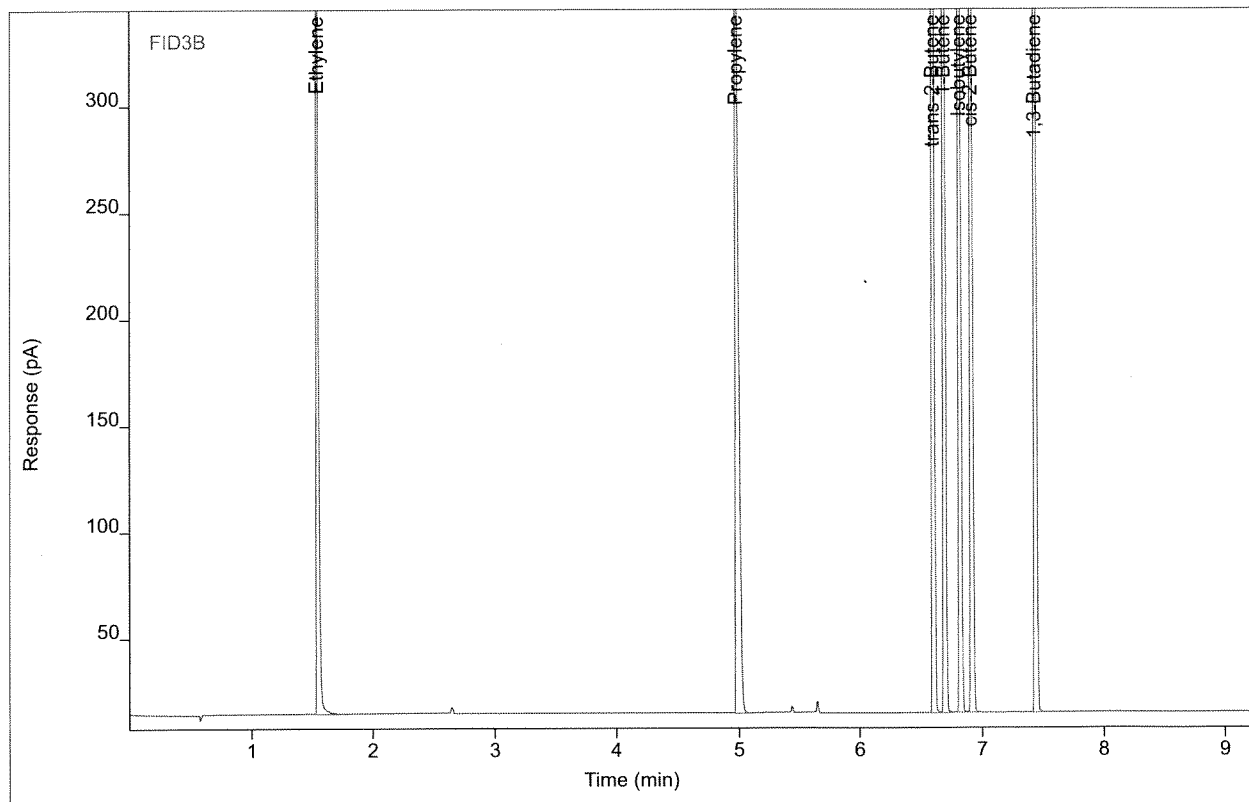
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene	BB	1.50	44.4759	43.4198	39.8220	1	39.8220	ppm
Propylene	BB	4.93	66.9087	58.3422	41.4378	1	41.4378	ppm
?	BB	5.38	0.27728	0.25003		1		
?	BB	5.60	0.48094	0.46381		1		
trans-2-Butene	BB	6.58	88.1767	104.734	39.6413	1	39.6413	ppm
1-Butene	BB	6.66	89.2862	109.432	39.7652	1	39.7652	ppm
Isobutylene	BB	6.79	88.0899	107.693	39.5235	1	39.5235	ppm
cis-2-Butene	BB	6.88	89.3562	109.825	39.2775	1	39.2775	ppm
1,3-Butadiene	BB	7.41	86.5275	111.670	39.5931	1	39.5931	ppm
?	BB	8.75	153.954	22.4345		1		

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp275 #HR7 ENV(1=1900,3=112.58)
 Sequence Name EDITHP636A ver.2
 Data File 018B0102.D
 File Location GC/2016/Edith/Quarter 2
 Injection Date 6/14/2016 1:28 PM
 File Modified 6/20/2016 12:39 PM
 Instrument
 Operator Nicholas Traversa

Sample Type
 Vial Number
 Injection Volume 250
 Injection 2 of 4
 Acquisition Method AQ_EDITHP503_HRVOC.M
 Analysis Method EDITHP636R_HRVOC_ACETYLENE.M
 Method Modified 6/18/2016 1:45 PM
 Printed 6/20/2016 12:42 PM



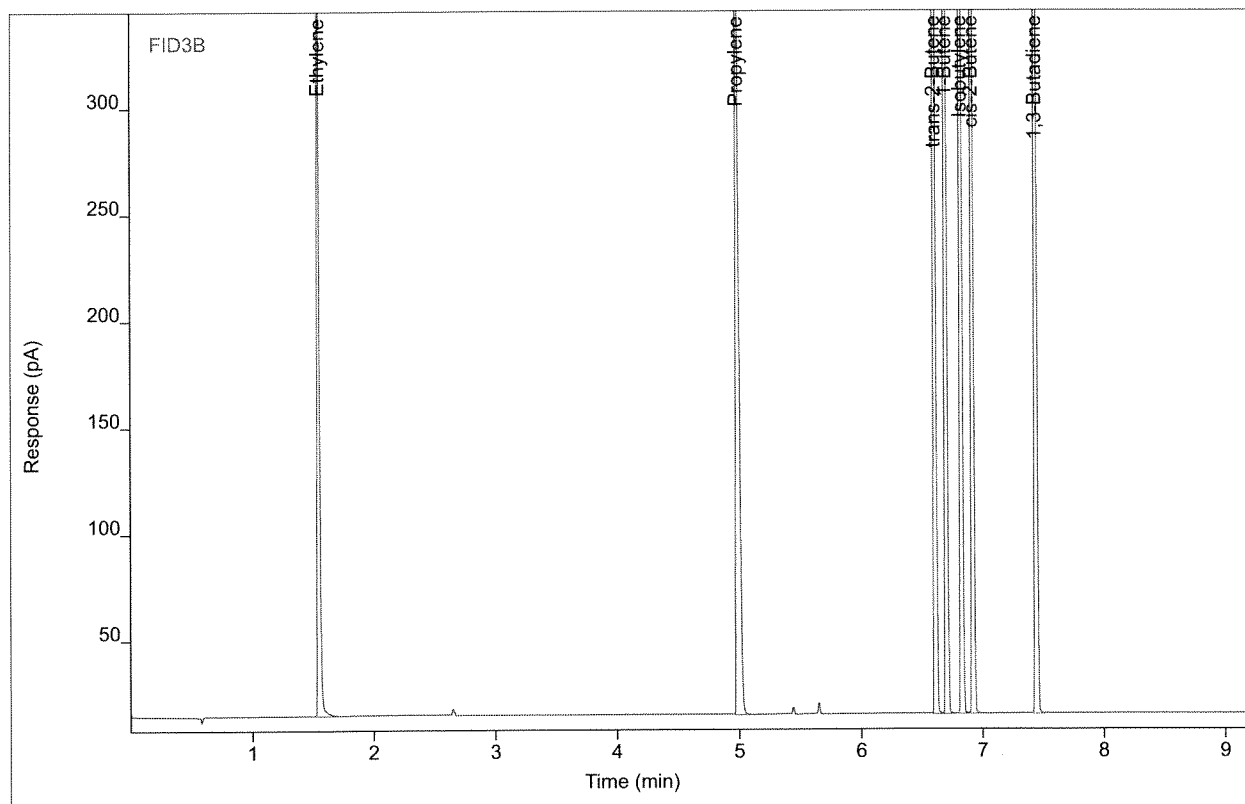
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene	BB	1.54	566.814	507.220	507.187	1	507.187	ppm
Propylene	BB	4.98	817.869	501.006	506.745	1	506.745	ppm
Acetylene		(5.72)				1		
trans-2-Butene	BV	6.60	1126.09	1039.53	508.374	1	508.374	ppm
1-Butene	VB	6.69	1110.61	1021.29	495.357	1	495.357	ppm
Isobutylene	BB	6.82	1100.95	947.356	494.631	1	494.631	ppm
cis-2-Butene	BB	6.91	1120.89	964.910	494.119	1	494.119	ppm
1,3-Butadiene	BB	7.44	1104.15	983.501	507.053	1	507.053	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp275 #HR7 ENV(1=1900,3=112.58)
Sequence Name EDITHP636A ver.2
Data File 018B0103.D
File Location GC/2016/Edith/Quarter 2
Injection Date 6/14/2016 1:43 PM
File Modified 6/20/2016 12:40 PM
Instrument
Operator Nicholas Traversa

Sample Type
Vial Number
Injection Volume 250
Injection 3 of 4
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP636R_HRVOC_ACETYLENE.M
Method Modified 6/18/2016 1:45 PM
Printed 6/20/2016 12:42 PM



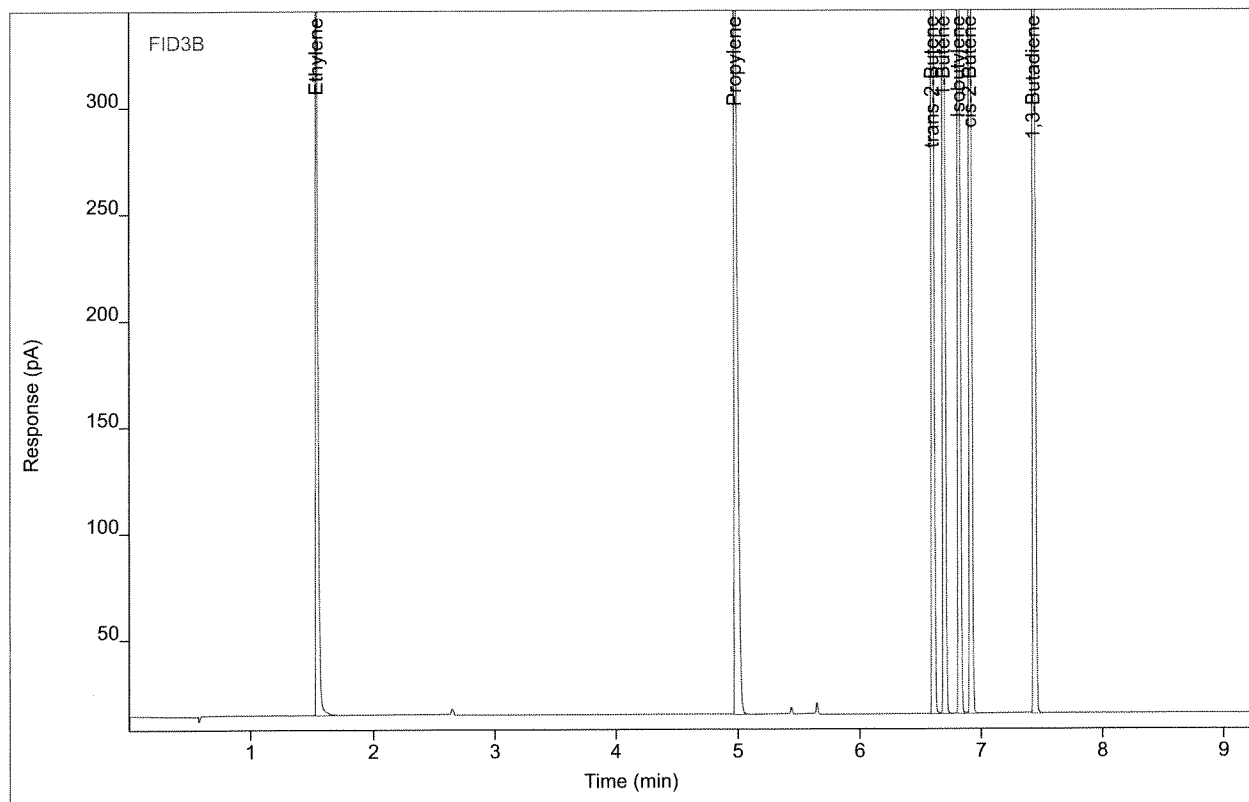
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene	BB	1.54	563.861	510.961	504.545	1	504.545	ppm
Propylene	BB	4.98	814.017	498.341	504.358	1	504.358	ppm
Acetylene		(5.72)				1		
trans-2-Butene	BV	6.60	1120.55	1047.16	505.871	1	505.871	ppm
1-Butene	VB	6.69	1105.45	1016.25	493.056	1	493.056	ppm
isobutylene	BB	6.82	1095.70	945.396	492.274	1	492.274	ppm
cis-2-Butene	BB	6.91	1115.46	983.941	491.722	1	491.722	ppm
1,3-Butadiene	BB	7.44	1098.96	909.815	504.668	1	504.668	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp275 #HR7 ENV(1=1900,3=112.58)
Sequence Name EDITHP636A ver.2
Data File 018B0104.D
File Location GC/2016/Edith/Quarter 2
Injection Date 6/14/2016 1:57 PM
File Modified 6/18/2016 2:02 PM
Instrument
Operator Nicholas Traversa

Sample Type
Vial Number Vial 18
Injection Volume 250
Injection 4 of 4
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP636R_HRVOC_ACETYLENE.M
Method Modified 6/18/2016 1:45 PM
Printed 6/20/2016 12:42 PM



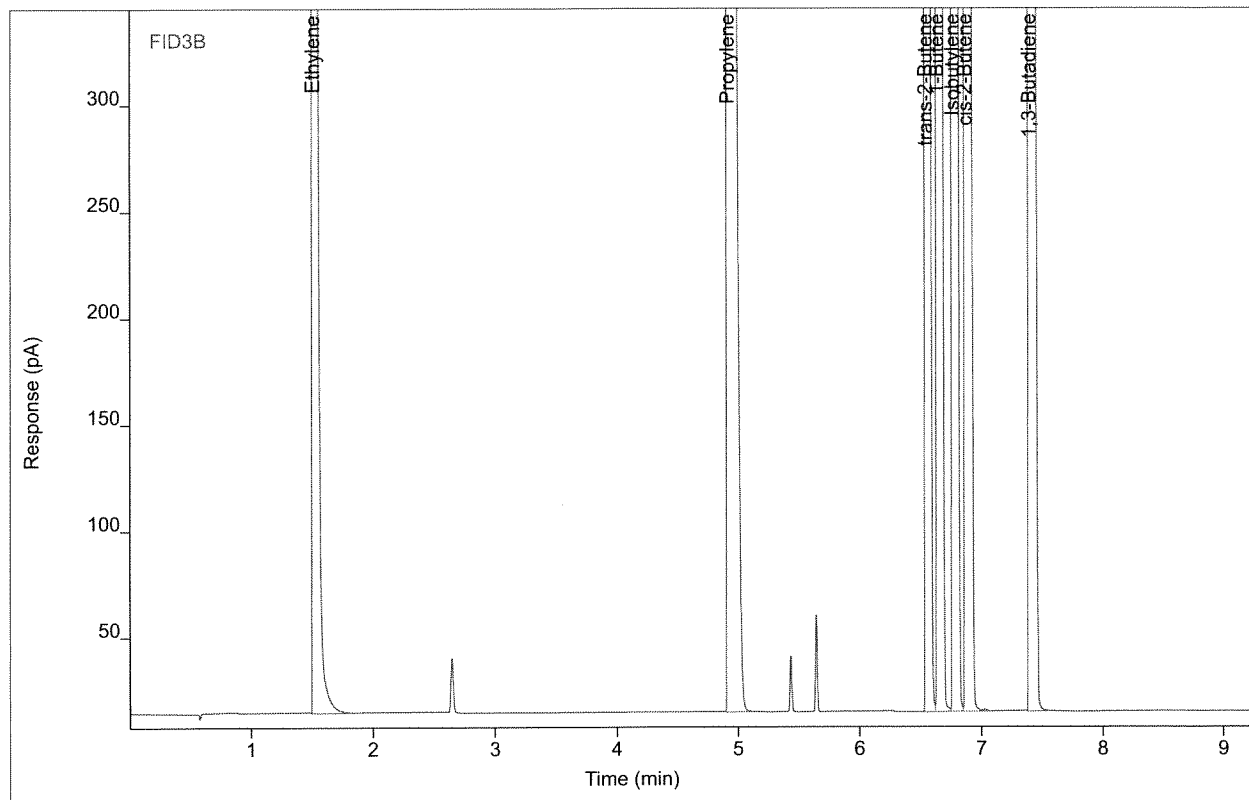
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene	BB	1.54	562.067	510.689	502.939	1	502.939	ppm
Propylene	BB	4.98	811.120	503.895	502.563	1	502.563	ppm
Acetylene		(5.88)				1		
trans-2-Butene	BV	6.60	1116.60	1054.58	504.088	1	504.088	ppm
1-Butene	VB	6.69	1101.29	1027.52	491.200	1	491.200	ppm
Isobutylene	BB	6.82	1091.70	970.355	490.476	1	490.476	ppm
cis-2-Butene	BB	6.91	1111.45	974.585	489.955	1	489.955	ppm
1,3-Butadiene	BB	7.44	1094.84	897.957	502.775	1	502.775	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp275 #HR8 ENV(1=600,3=450.33)
Sequence Name EDITHP636A ver.2
Data File 018B0202.D
File Location GC/2016/Edith/Quarter 2
Injection Date 6/14/2016 2:27 PM
File Modified 6/18/2016 2:03 PM
Instrument
Operator Nicholas Traversa

Sample Type
Vial Number
Injection Volume 250
Injection 2 of 4
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP636R_HRVOC_ACETYLENE.M
Method Modified 6/18/2016 1:45 PM
Printed 6/20/2016 12:42 PM



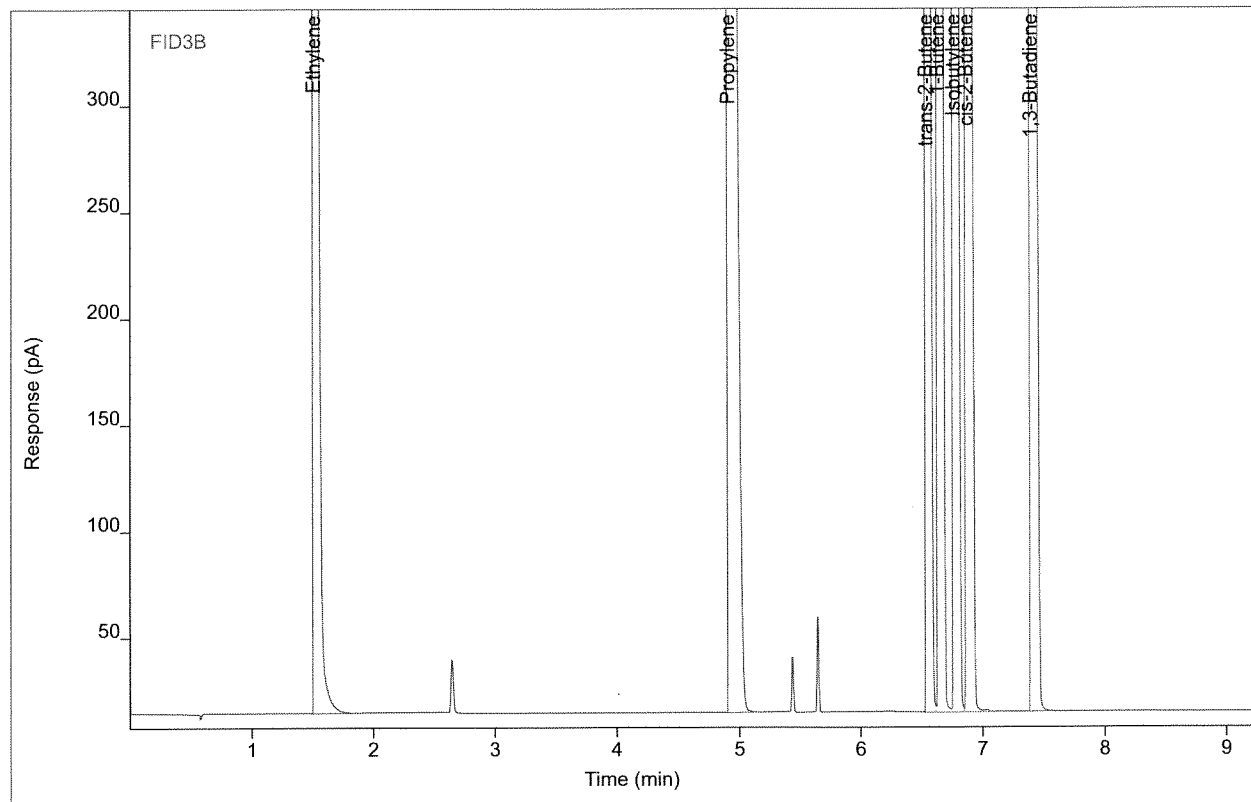
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene	BB S	1.51	4525.60	2303.04	4049.34	1	4049.34	ppm
Propylene	BB S	4.91	6522.17	1936.66	4041.22	1	4041.22	ppm
Acetylene		(5.88)				1		
trans-2-Butene	BV S	6.54	8977.22	4543.06	4054.03	1	4054.03	ppm
1-Butene	VV S	6.64	8849.64	4194.31	3947.57	1	3947.57	ppm
Isobutylene	VV S	6.76	8771.07	4158.43	3941.05	1	3941.05	ppm
cis-2-Butene	VB S	6.87	8946.02	4222.77	3944.50	1	3944.50	ppm
1,3-Butadiene	BB S	7.39	8816.32	3780.83	4049.75	1	4049.75	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp275 #HR8 ENV(1=600,3=450.33)
Sequence Name EDITHP636A ver.2
Data File 018B0203.D
File Location GC/2016/Edith/Quarter 2
Injection Date 6/14/2016 2:42 PM
File Modified 6/18/2016 2:03 PM
Instrument
Operator Nicholas Traversa

Sample Type
Vial Number
Injection Volume 250
Injection 3 of 4
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP636R_HRVOC_ACETYLENE.M
Method Modified 6/18/2016 1:45 PM
Printed 6/20/2016 12:42 PM



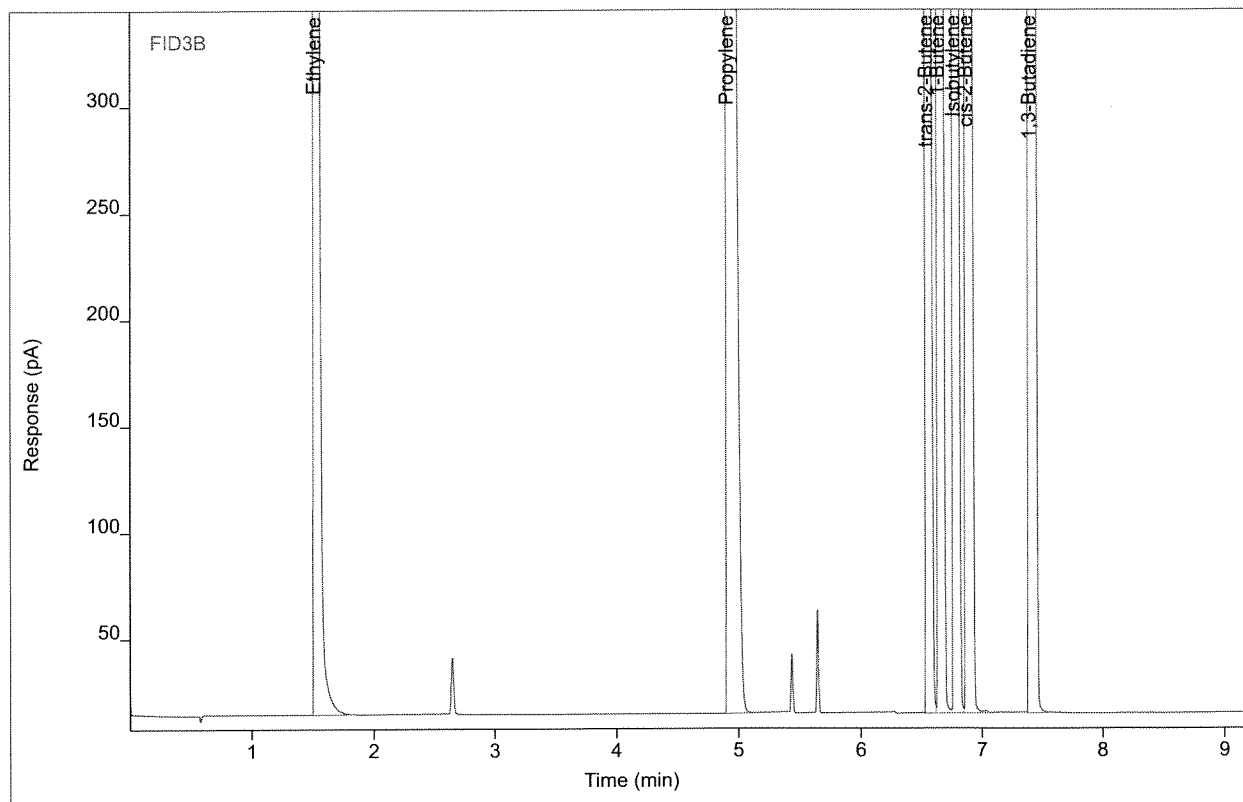
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene	BB S	1.51	4420.09	2244.54	3954.93	1	3954.93	ppm
Propylene	BB S	4.91	6372.36	1970.55	3948.40	1	3948.40	ppm
Acetylene		(5.88)				1		
trans-2-Butene	BV S	6.54	8772.26	4661.97	3961.46	1	3961.46	ppm
1-Butene	VV S	6.64	8646.16	4306.00	3856.80	1	3856.80	ppm
Isobutylene	VV S	6.77	8569.64	4134.07	3850.54	1	3850.54	ppm
cis-2-Butene	VB S	6.87	8741.30	3936.29	3854.23	1	3854.23	ppm
1,3-Butadiene	BB S	7.39	8614.85	3866.47	3957.20	1	3957.20	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp275 #HR8 ENV(1=600,3=450.33)
 Sequence Name EDITHP636A ver.2
 Data File 018B0204.D
 File Location GC/2016/Edith/Quarter 2
 Injection Date 6/14/2016 2:57 PM
 File Modified 6/18/2016 2:03 PM
 Instrument
 Operator Nicholas Traversa

Sample Type
 Vial Number
 Injection Volume 250
 Injection 4 of 4
 Acquisition Method AQ_EDITHP503_HRVOC.M
 Analysis Method EDITHP636R_HRVOC_ACETYLENE.M
 Method Modified 6/18/2016 1:45 PM
 Printed 6/20/2016 12:42 PM



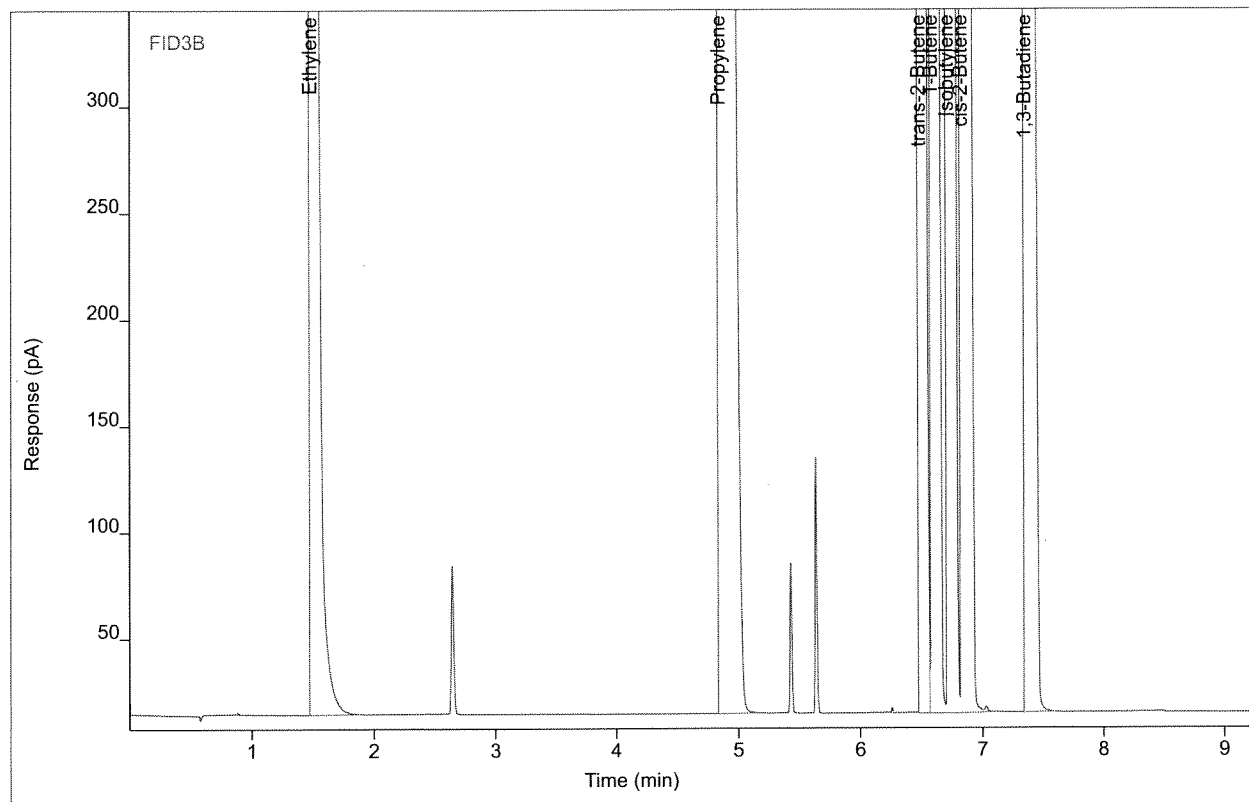
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene	BB S	1.51	4718.94	2399.66	4222.33	1	4222.33	ppm
Propylene	BB S	4.91	6800.39	2025.61	4213.61	1	4213.61	ppm
Acetylene		(5.88)				1		
trans-2-Butene	BV S	6.54	9360.62	4891.33	4227.17	1	4227.17	ppm
1-Butene	VV S	6.64	9226.51	4464.21	4115.69	1	4115.69	ppm
Isobutylene	VV S	6.76	9144.59	4390.99	4108.88	1	4108.88	ppm
cis-2-Butene	VB S	6.87	9328.65	4257.48	4113.21	1	4113.21	ppm
1,3-Butadiene	BB S	7.39	9193.62	3861.73	4223.07	1	4223.07	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp275 #HR9 ENV(1=0,3=450)
Sequence Name EDITHP636A ver.2
Data File 018B0302.D
File Location GC/2016/Edith/Quarter 2
Injection Date 6/14/2016 3:26 PM
File Modified 6/18/2016 2:04 PM
Instrument
Operator Nicholas Traversa

Sample Type
Vial Number
Injection Volume 250
Injection 2 of 4
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP636R_HRVOC_ACETYLENE.M
Method Modified 6/18/2016 1:45 PM
Printed 6/20/2016 12:42 PM



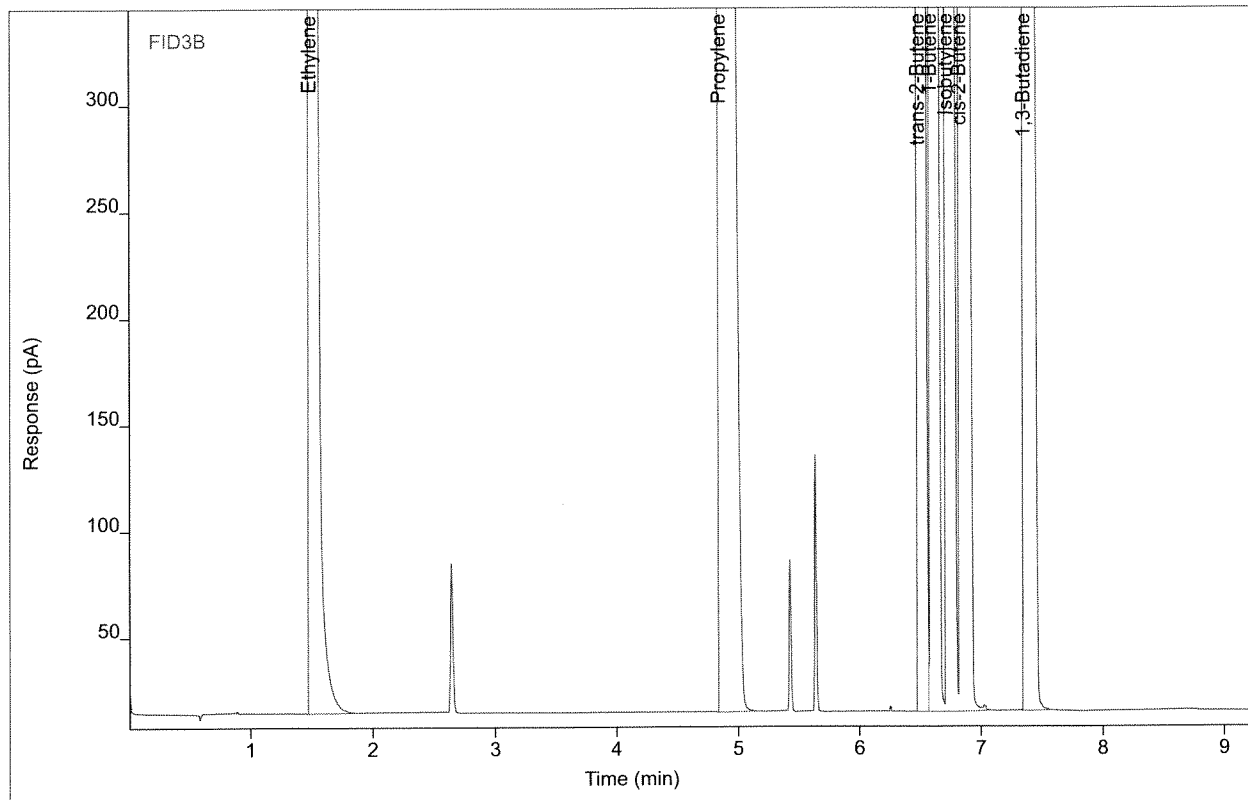
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene	BB S	1.48	12025.7	4425.06	10760.1	1	10760.1	ppm
Propylene	BB S	4.85	17338.4	3427.25	10743.2	1	10743.2	ppm
Acetylene		(5.88)				1		
trans-2-Butene	BV S	6.48	23809.6	9499.90	10752.5	1	10752.5	ppm
1-Butene	VV S	6.58	23502.4	8013.58	10483.8	1	10483.8	ppm
Isobutylene	VV S	6.71	23277.9	8332.80	10459.4	1	10459.4	ppm
cis-2-Butene	VB S	6.83	23764.5	7509.92	10478.5	1	10478.5	ppm
1,3-Butadiene	BB S	7.35	23424.1	6989.11	10760.0	1	10760.0	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp275 #HR9 ENV(1=0,3=450)
Sequence Name EDITHP636A ver.2
Data File 018B0303.D
File Location GC/2016/Edith/Quarter 2
Injection Date 6/14/2016 3:41 PM
File Modified 6/18/2016 2:04 PM
Instrument
Operator Nicholas Traversa

Sample Type
Vial Number
Injection Volume 250
Injection 3 of 4
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP636R_HRVOC_ACETYLENE.M
Method Modified 6/18/2016 1:45 PM
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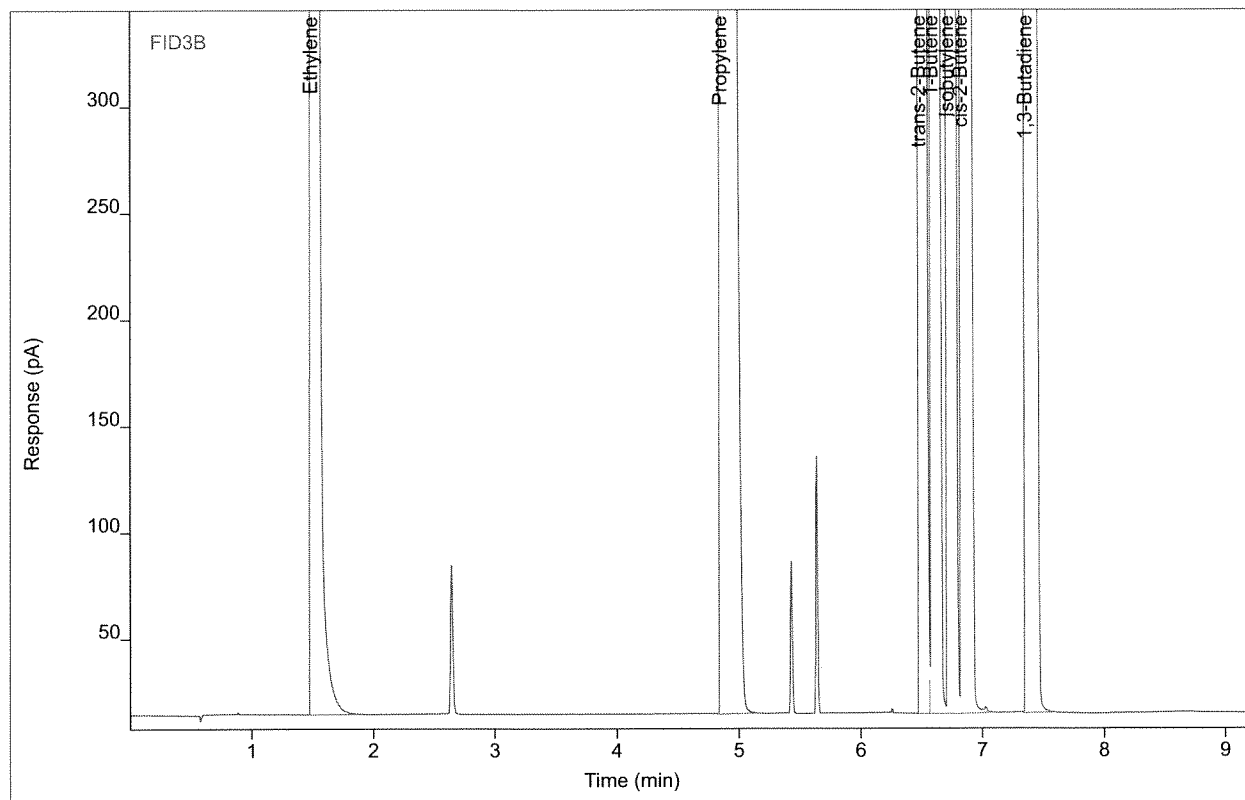
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene	BB S	1.48	12058.9	4415.83	10789.8	1	10789.8	ppm
Propylene	BB S	4.85	17386.9	3455.34	10773.2	1	10773.2	ppm
Acetylene		(5.88)				1		
trans-2-Butene	BV S	6.48	23876.4	9297.13	10782.7	1	10782.7	ppm
1-Butene	VV S	6.58	23568.6	8566.53	10513.4	1	10513.4	ppm
Isobutylene	VV S	6.71	23344.1	8308.04	10489.2	1	10489.2	ppm
cis-2-Butene	VB S	6.83	23833.7	7428.50	10509.0	1	10509.0	ppm
1,3-Butadiene	BB S	7.35	23490.1	7103.66	10790.3	1	10790.3	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp275 #HR9 ENV(1=0,3=450)
Sequence Name EDITHP636A ver.2
Data File 018B0304.D
File Location GC/2016/Edith/Quarter 2
Injection Date 6/14/2016 3:56 PM
File Modified 6/18/2016 2:04 PM
Instrument
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 18
Injection Volume 250
Injection 4 of 4
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP636R_HRVOC_ACETYLENE.M
Method Modified 6/18/2016 1:45 PM
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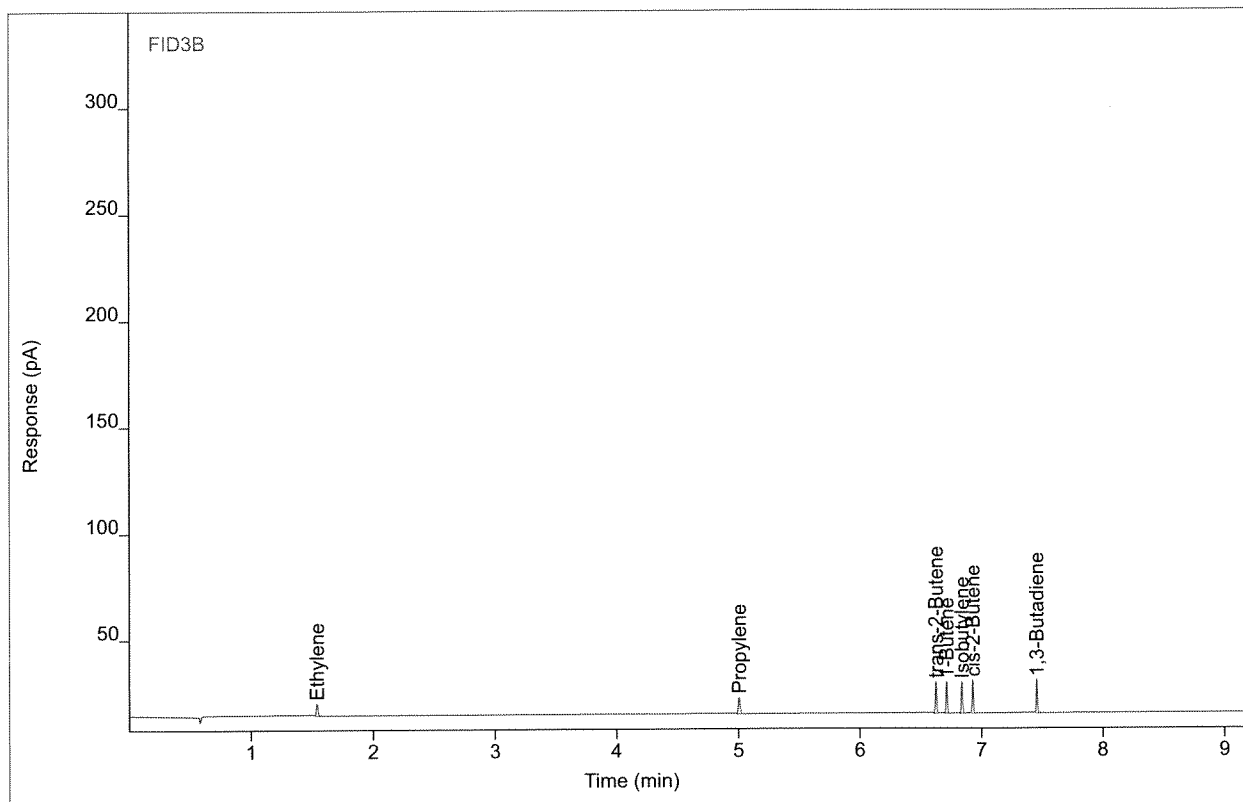
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene	BB S	1.48	12032.1	4403.56	10765.8	1	10765.8	ppm
Propylene	BB S	4.85	17349.4	3415.35	10750.0	1	10750.0	ppm
Acetylene		(5.88)				1		
trans-2-Butene	BV S	6.48	23826.0	9311.06	10759.9	1	10759.9	ppm
1-Butene	VV S	6.58	23520.6	8397.03	10492.0	1	10492.0	ppm
Isobutylene	VV S	6.71	23294.4	8259.98	10466.8	1	10466.8	ppm
cis-2-Butene	VB S	6.83	23783.1	7618.35	10486.7	1	10486.7	ppm
1,3-Butadiene	BB S	7.35	23441.0	7153.82	10767.8	1	10767.8	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp275 #HR2 ENV(1=1900,3=100)
 Sequence Name EDITHP636A ver.2
 Data File 018B0602.D
 File Location GC/2016/Edith/Quarter 2
 Injection Date 6/14/2016 8:10 PM
 File Modified 6/18/2016 2:01 PM
 Instrument
 Operator Daniel Clayton

Sample Type Calibration
 Vial Number Vial 18
 Injection Volume 250
 Injection 2 of 4
 Acquisition Method AQ_EDITHP503_HRVOC.M
 Analysis Method EDITHP636R_HRVOC_ACETYLENE.M
 Method Modified 6/18/2016 1:45 PM
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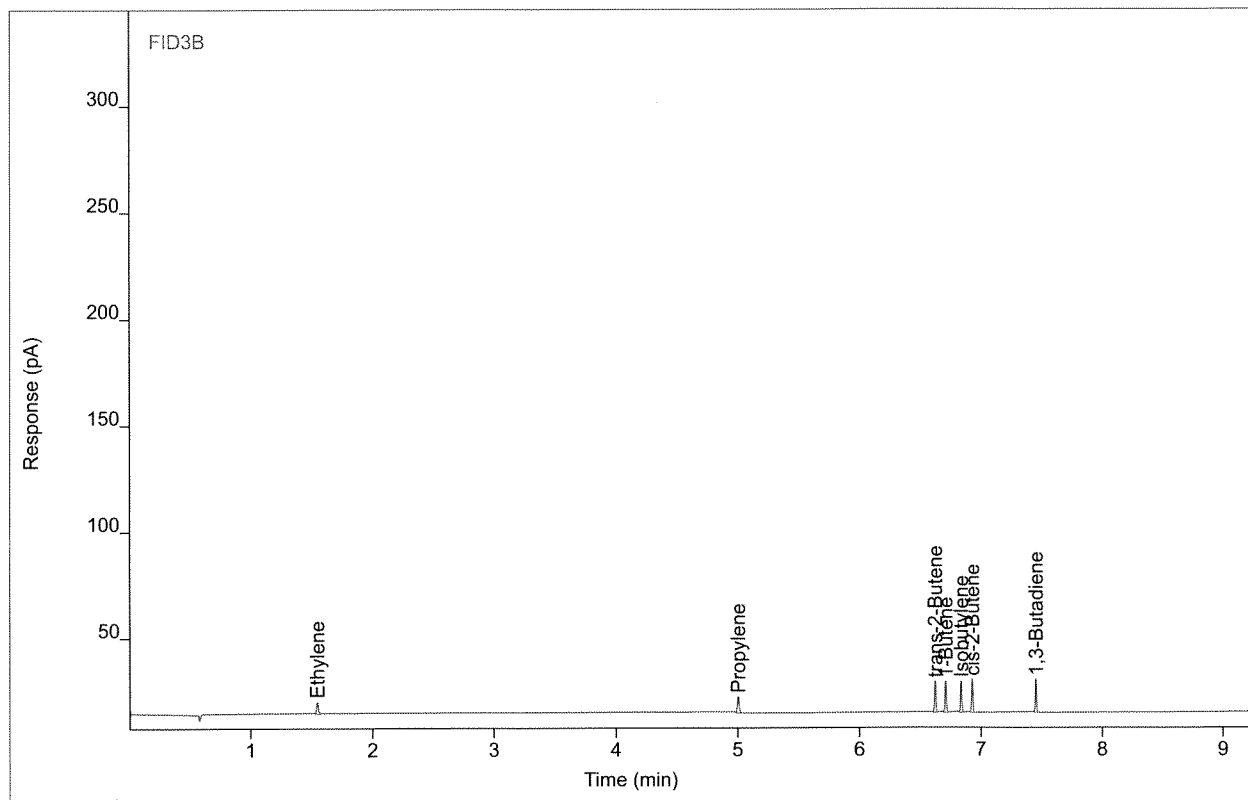
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene	BB	1.54	5.69758	5.57737	5.12487	1	5.12487	ppm
Propylene	BB	5.01	8.20078	7.62527	5.06147	1	5.06147	ppm
Acetylene		(5.88)				1		
trans-2-Butene	BB	6.62	11.7455	14.6572	5.12413	1	5.12413	ppm
1-Butene	BB	6.71	11.7905	14.5367	5.19602	1	5.19602	ppm
Isobutylene	BB	6.84	11.7008	14.4297	5.19954	1	5.19954	ppm
cis-2-Butene	BB	6.93	12.0353	15.3363	5.18400	1	5.18400	ppm
1,3-Butadiene	BB	7.46	11.4325	15.3228	5.09715	1	5.09715	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp275 #HR2 ENV(1=1900,3=100)
Sequence Name EDITHP636A ver.2
Data File 018B0603.D
File Location GC/2016/Edith/Quarter 2
Injection Date 6/14/2016 8:29 PM
File Modified 6/18/2016 2:01 PM
Instrument
Operator Daniel Clayton

Sample Type Calibration
Vial Number Vial 18
Injection Volume 250
Injection 3 of 4
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP636R_HRVOC_ACETYLENE.M
Method Modified 6/18/2016 1:45 PM
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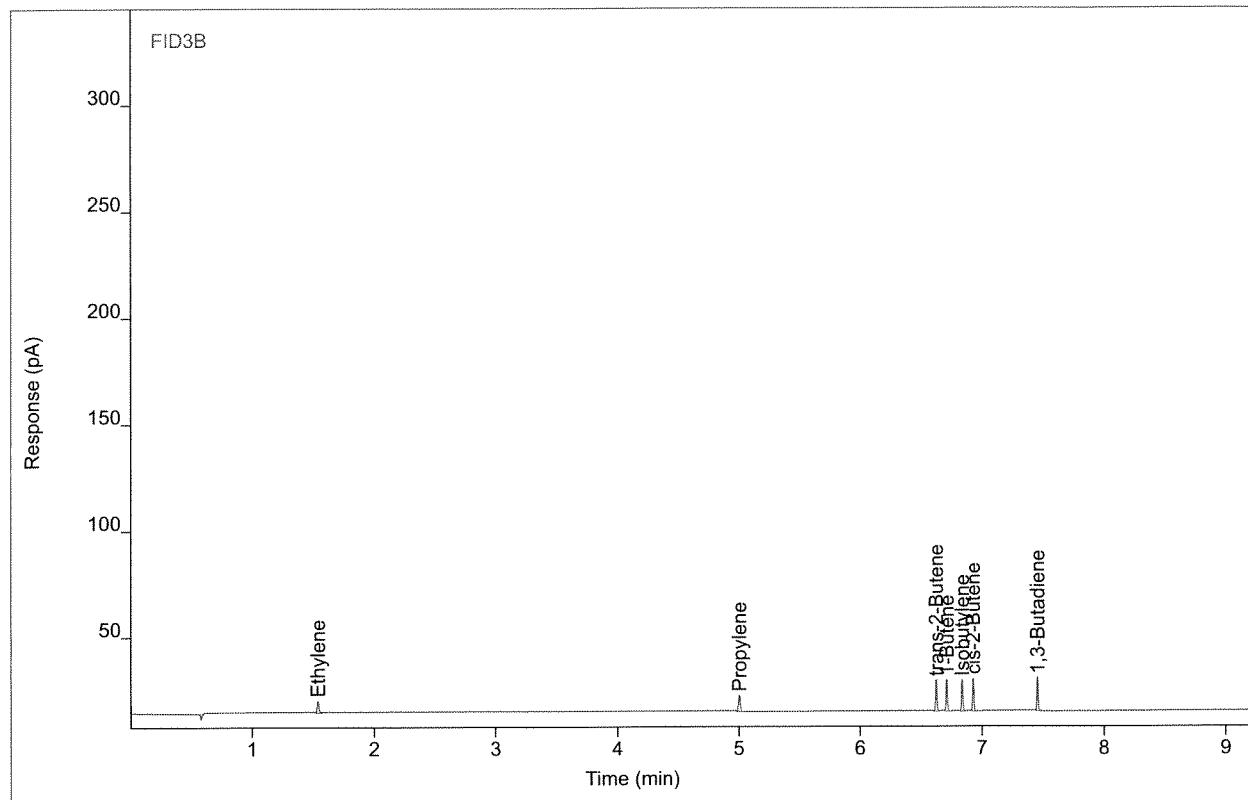
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene	BB	1.54	5.67462	5.57006	5.10433	1	5.10433	ppm
Propylene	BB	5.01	8.16713	7.62202	5.04062	1	5.04062	ppm
Acetylene		(5.88)				1		
trans-2-Butene	BB	6.62	11.6926	14.5175	5.10024	1	5.10024	ppm
1-Butene	BB	6.71	11.7604	14.3318	5.18260	1	5.18260	ppm
Isobutylene	BB	6.84	11.6704	14.5697	5.18590	1	5.18590	ppm
cis-2-Butene	BB	6.93	12.0081	15.3134	5.17202	1	5.17202	ppm
1,3-Butadiene	BB	7.46	11.4433	15.4363	5.10213	1	5.10213	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp275 #HR2 ENV(1=1900,3=100)
Sequence Name EDITHP636A ver.2
Data File 018B0604.D
File Location GC/2016/Edith/Quarter 2
Injection Date 6/14/2016 8:47 PM
File Modified 6/18/2016 2:01 PM
Instrument
Operator Daniel Clayton

Sample Type Calibration
Vial Number Vial 18
Injection Volume 250
Injection 4 of 4
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP636R_HRVOC_ACETYLENE.M
Method Modified 6/18/2016 1:45 PM
Printed 6/20/2016 12:42 PM



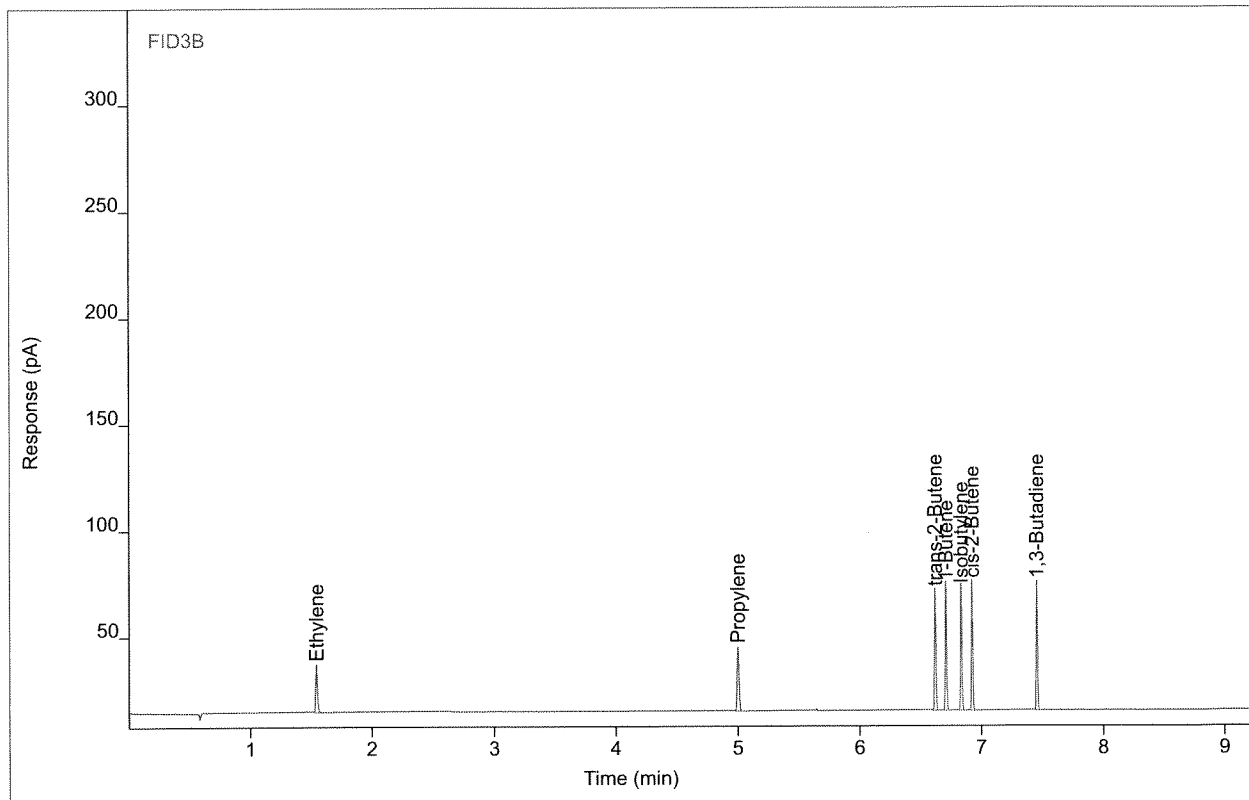
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene	BB	1.54	5.68550	5.58076	5.11406	1	5.11406	ppm
Propylene	BB	5.00	8.20208	7.62388	5.06228	1	5.06228	ppm
Acetylene		(5.88)				1		
trans-2-Butene	BB	6.62	11.7108	14.6139	5.10846	1	5.10846	ppm
1-Butene	BB	6.71	11.7727	14.7668	5.18810	1	5.18810	ppm
Isobutylene	BB	6.84	11.6843	14.4920	5.19214	1	5.19214	ppm
cis-2-Butene	BB	6.93	12.0210	15.3219	5.17768	1	5.17768	ppm
1,3-Butadiene	BB	7.46	11.4255	15.4333	5.09395	1	5.09395	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp275 #HR3 ENV(1=800,3=200)
Sequence Name EDITHP636A ver.2
Data File 018B0702.D
File Location GC/2016/Edith/Quarter 2
Injection Date 6/14/2016 9:23 PM
File Modified 6/18/2016 2:01 PM
Instrument
Operator Daniel Clayton

Sample Type Calibration
Vial Number Vial 18
Injection Volume 250
Injection 2 of 4
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP636R_HRVOC_ACETYLENE.M
Method Modified 6/18/2016 1:45 PM
Printed 6/20/2016 12:42 PM



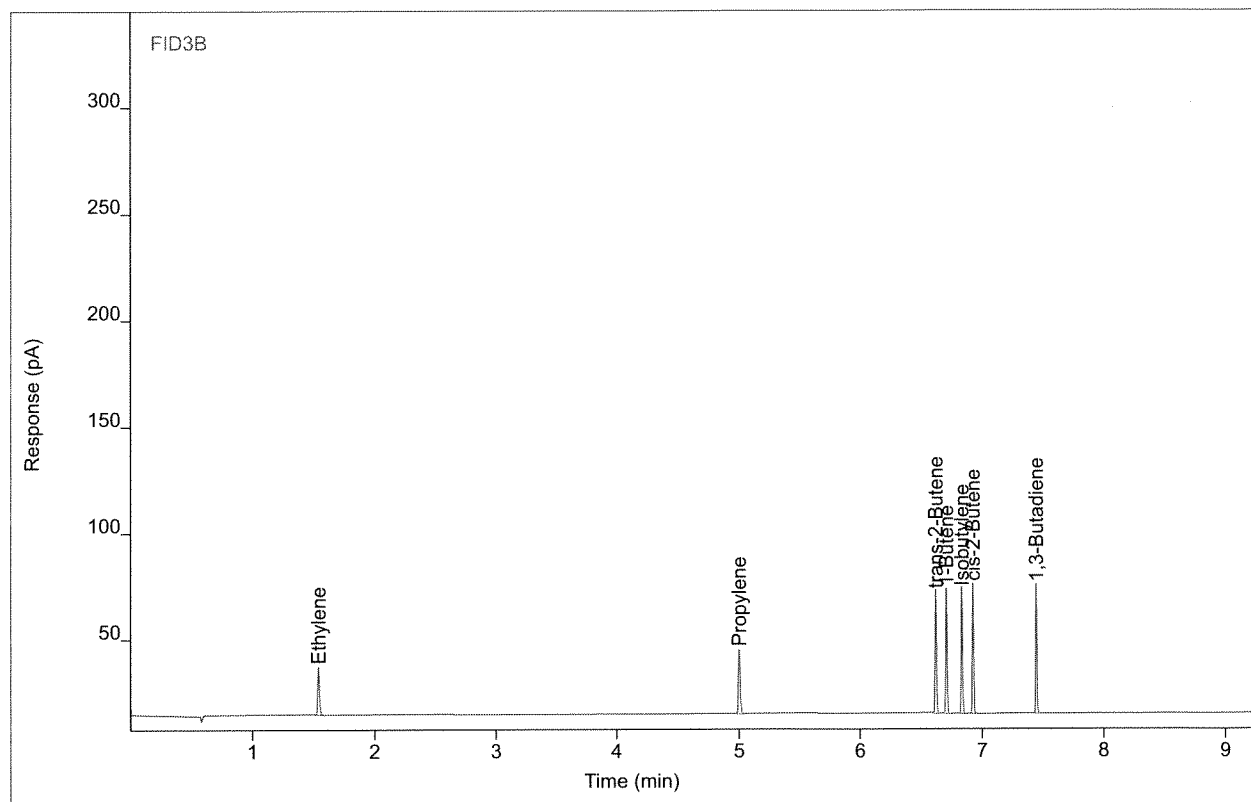
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene	BB	1.54	23.0633	22.2201	20.6630	1	20.6630	ppm
Propylene	BB	5.00	32.9642	30.1687	20.4053	1	20.4053	ppm
Acetylene		(5.88)				1		
trans-2-Butene	BB	6.62	46.3935	56.6129	20.7715	1	20.7715	ppm
1-Butene	BB	6.71	47.1661	58.9531	20.9763	1	20.9763	ppm
Isobutylene	BB	6.83	46.8829	57.7868	21.0079	1	21.0079	ppm
cis-2-Butene	BB	6.93	47.9532	60.4493	21.0215	1	21.0215	ppm
1,3-Butadiene	BB	7.45	45.5398	60.0292	20.7648	1	20.7648	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp275 #HR3 ENV(1=800,3=200)
 Sequence Name EDITHP636A ver.2
 Data File 018B0703.D
 File Location GC/2016/Edith/Quarter 2
 Injection Date 6/14/2016 9:42 PM
 File Modified 6/18/2016 2:01 PM
 Instrument
 Operator Daniel Clayton

Sample Type Calibration
 Vial Number Vial 18
 Injection Volume 250
 Injection 3 of 4
 Acquisition Method AQ_EDITHP503_HRVOC.M
 Analysis Method EDITHP636R_HRVOC_ACETYLENE.M
 Method Modified 6/18/2016 1:45 PM
 Printed 6/20/2016 12:42 PM



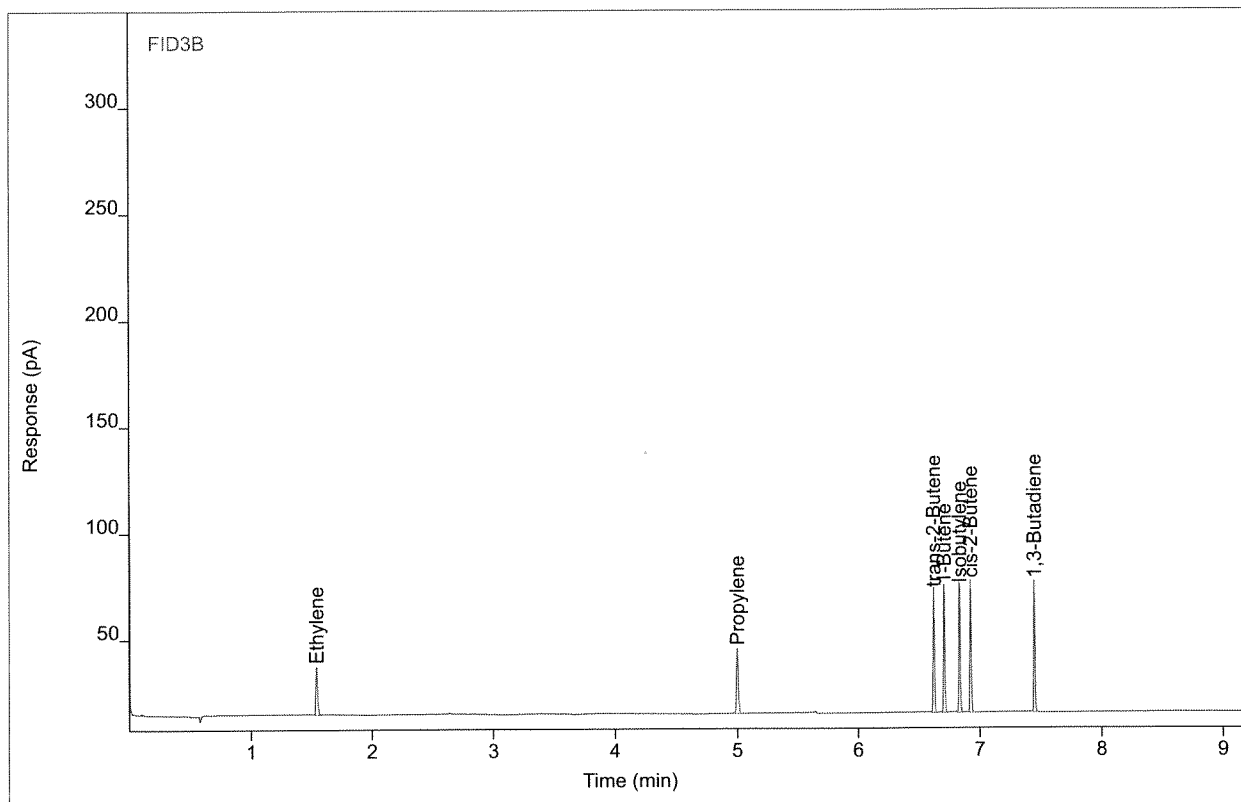
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene	BB	1.54	22.9854	22.2120	20.5932	1	20.5932	ppm
Propylene	BB	5.00	32.8974	30.0102	20.3639	1	20.3639	ppm
Acetylene		(5.88)				1		
trans-2-Butene	BB	6.62	46.2321	57.0290	20.6987	1	20.6987	ppm
1-Butene	BB	6.71	47.0407	58.0988	20.9204	1	20.9204	ppm
Isobutylene	BB	6.83	46.7923	58.0898	20.9672	1	20.9672	ppm
cis-2-Butene	BB	6.93	47.8336	60.4251	20.9687	1	20.9687	ppm
1,3-Butadiene	BB	7.45	45.4293	59.9705	20.7141	1	20.7141	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp275 #HR3 ENV(1=800,3=200)
Sequence Name EDITHP636A ver.2
Data File 018B0704.D
File Location GC/2016/Edith/Quarter 2
Injection Date 6/14/2016 10:00 PM
File Modified 6/18/2016 2:01 PM
Instrument
Operator Daniel Clayton

Sample Type Calibration
Vial Number Vial 18
Injection Volume 250
Injection 4 of 4
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP636R_HRVOC_ACETYLENE.M
Method Modified 6/18/2016 1:45 PM
Printed 6/20/2016 12:42 PM



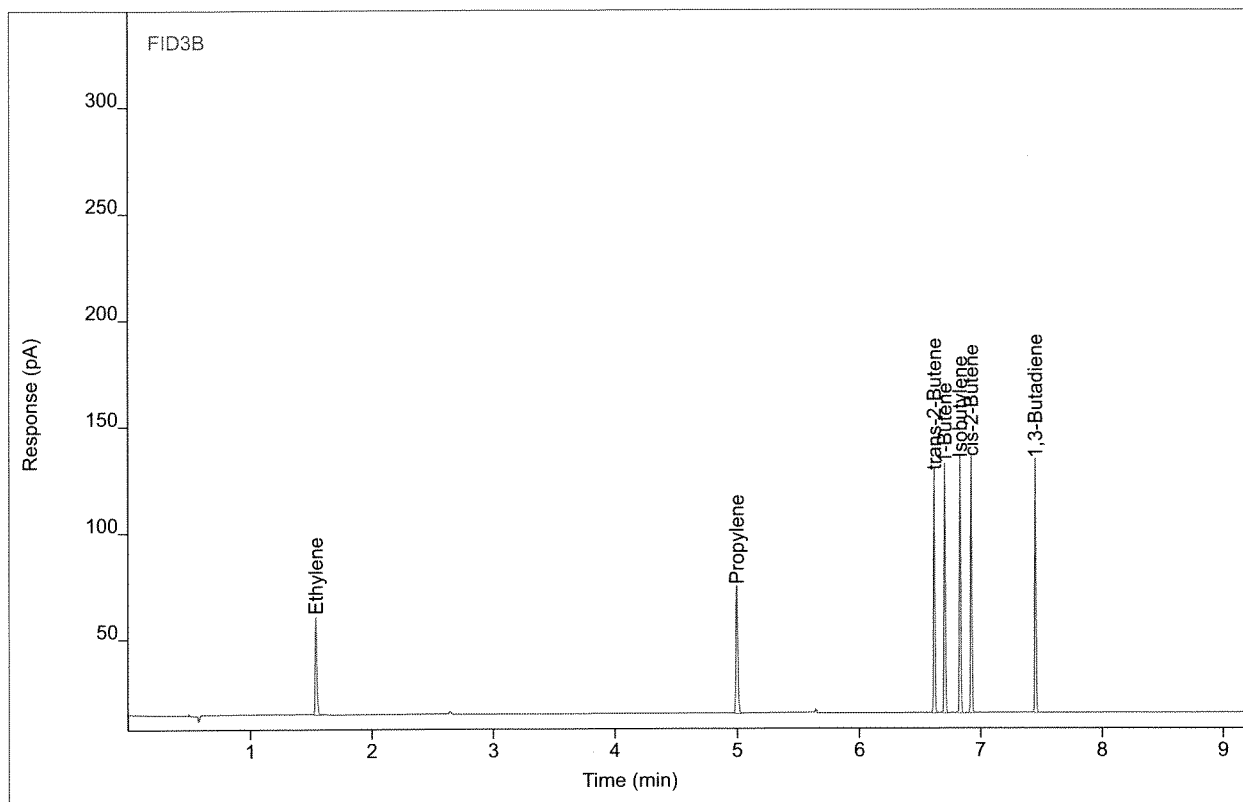
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene	BB	1.54	23.2584	22.2529	20.8375	1	20.8375	ppm
Propylene	BB	5.00	33.1627	30.2256	20.5283	1	20.5283	ppm
Acetylene		(5.88)				1		
trans-2-Butene	BB	6.62	46.6794	57.1132	20.9007	1	20.9007	ppm
1-Butene	BB	6.71	47.4747	58.4549	21.1140	1	21.1140	ppm
Isobutylene	BB	6.83	47.1729	58.9185	21.1382	1	21.1382	ppm
cis-2-Butene	BB	6.93	48.2507	61.4240	21.1527	1	21.1527	ppm
1,3-Butadiene	BB	7.45	45.8235	60.9581	20.8952	1	20.8952	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp275 #HR4 ENV(1=600,3=400)
 Sequence Name EDITHP636A ver.2
 Data File 018B0802.D
 File Location GC/2016/Edith/Quarter 2
 Injection Date 6/14/2016 10:37 PM
 File Modified 6/18/2016 2:01 PM
 Instrument
 Operator Daniel Clayton

Sample Type Calibration
 Vial Number Vial 18
 Injection Volume 250
 Injection 2 of 4
 Acquisition Method AQ_EDITHP503_HRVOC.M
 Analysis Method EDITHP636R_HRVOC_ACETYLENE.M
 Method Modified 6/18/2016 1:45 PM
 Printed 6/20/2016 12:42 PM



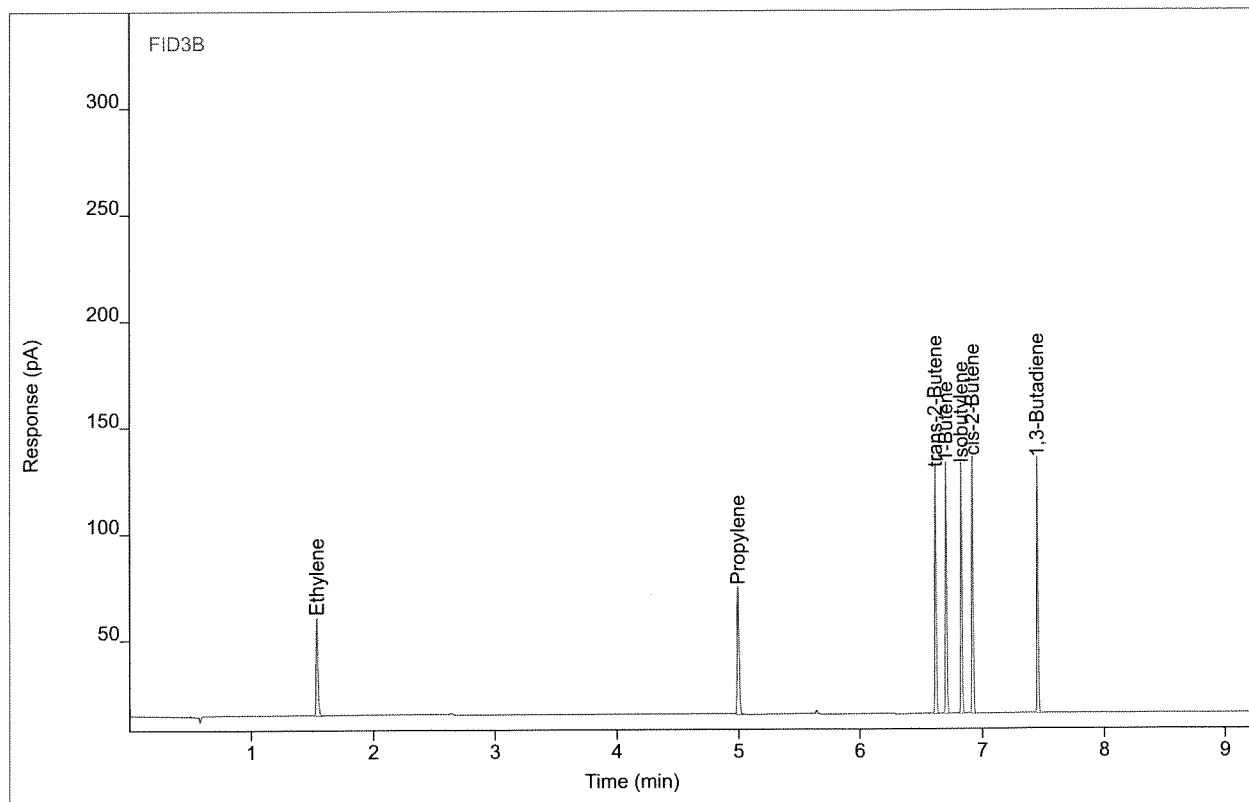
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene	BB	1.54	46.6197	45.3384	41.7402	1	41.7402	ppm
Propylene	BB	5.00	66.4049	58.9615	41.1257	1	41.1257	ppm
Acetylene		(5.88)				1		
trans-2-Butene	BB	6.62	92.7487	112.383	41.7060	1	41.7060	ppm
1-Butene	BB	6.71	94.8785	115.369	42.2598	1	42.2598	ppm
Isobutylene	BB	6.83	94.3405	118.049	42.3320	1	42.3320	ppm
cis-2-Butene	BB	6.92	96.3313	118.690	42.3531	1	42.3531	ppm
1,3-Butadiene	BB	7.45	91.2671	117.786	41.7703	1	41.7703	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp275 #HR4 ENV(1=600,3=400)
Sequence Name EDITHP636A ver.2
Data File 018B0803.D
File Location GC/2016/Edith/Quarter 2
Injection Date 6/14/2016 10:55 PM
File Modified 6/18/2016 2:01 PM
Instrument
Operator Daniel Clayton

Sample Type
Vial Number Vial 18
Injection Volume 250
Injection 3 of 4
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP636R_HRVOC_ACETYLENE.M
Method Modified 6/18/2016 1:45 PM
Printed 6/20/2016 12:42 PM



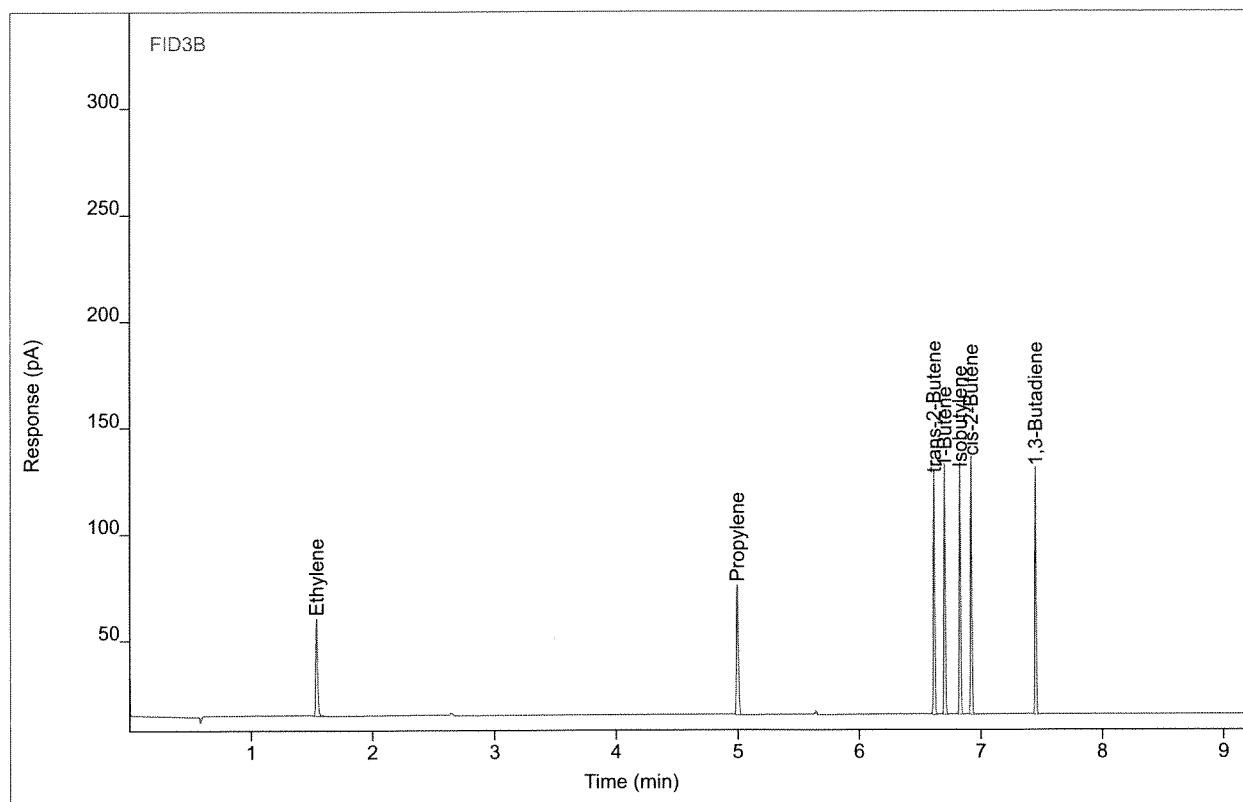
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene	BB	1.54	46.5759	45.3391	41.7010	1	41.7010	ppm
Propylene	BB	5.00	66.3584	59.1452	41.0969	1	41.0969	ppm
Acetylene		(5.88)				1		
trans-2-Butene	BB	6.62	92.7097	113.992	41.6884	1	41.6884	ppm
1-Butene	BB	6.71	94.8483	116.294	42.2463	1	42.2463	ppm
Isobutylene	BB	6.83	94.3284	115.764	42.3266	1	42.3266	ppm
cis-2-Butene	BB	6.92	96.2306	119.341	42.3087	1	42.3087	ppm
1,3-Butadiene	BB	7.45	91.2871	118.186	41.7795	1	41.7795	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp275 #HR4 ENV(1=600,3=400)
Sequence Name EDITHP636A ver.2
Data File 018B0804.D
File Location GC/2016/Edith/Quarter 2
Injection Date 6/14/2016 11:13 PM
File Modified 6/18/2016 2:01 PM
Instrument
Operator Daniel Clayton

Sample Type Calibration
Vial Number Vial 18
Injection Volume 250
Injection 4 of 4
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP636R_HRVOC_ACETYLENE.M
Method Modified 6/18/2016 1:45 PM
Printed 6/20/2016 12:42 PM



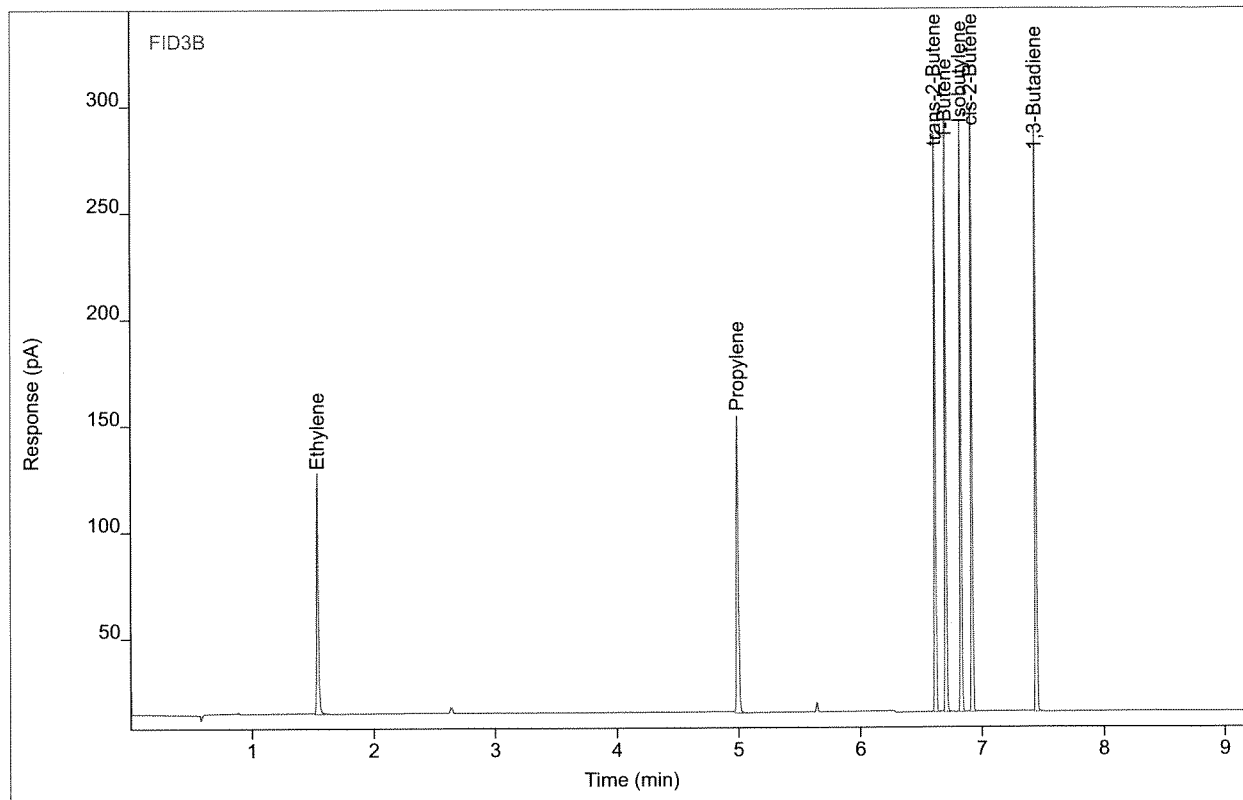
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene	BB	1.54	46.6494	45.3364	41.7668	1	41.7668	ppm
Propylene	BB	5.00	66.4052	60.6968	41.1258	1	41.1258	ppm
Acetylene		(5.88)				1		
trans-2-Butene	BB	6.62	92.7424	111.868	41.7032	1	41.7032	ppm
1-Butene	BB	6.70	94.9355	114.304	42.2852	1	42.2852	ppm
Isobutylene	BB	6.83	94.3541	114.164	42.3382	1	42.3382	ppm
cis-2-Butene	BB	6.92	96.2183	119.687	42.3033	1	42.3033	ppm
1,3-Butadiene	BB	7.45	91.2950	114.859	41.7832	1	41.7832	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp275 #HR5 ENV(1=0,3=450)
Sequence Name EDITHP636A ver.2
Data File 018B0902.D
File Location GC/2016/Edith/Quarter 2
Injection Date 6/14/2016 11:50 PM
File Modified 6/18/2016 2:02 PM
Instrument
Operator Daniel Clayton

Sample Type
Vial Number
Injection Volume
Injection
Acquisition Method
Analysis Method
Method Modified
Printed
Calibration
Vial 18
250
2 of 4
AQ_EDITHP503_HRVOC.M
EDITHP636R_HRVOC_ACETYLENE.M
6/18/2016 1:45 PM
6/20/2016 12:42 PM



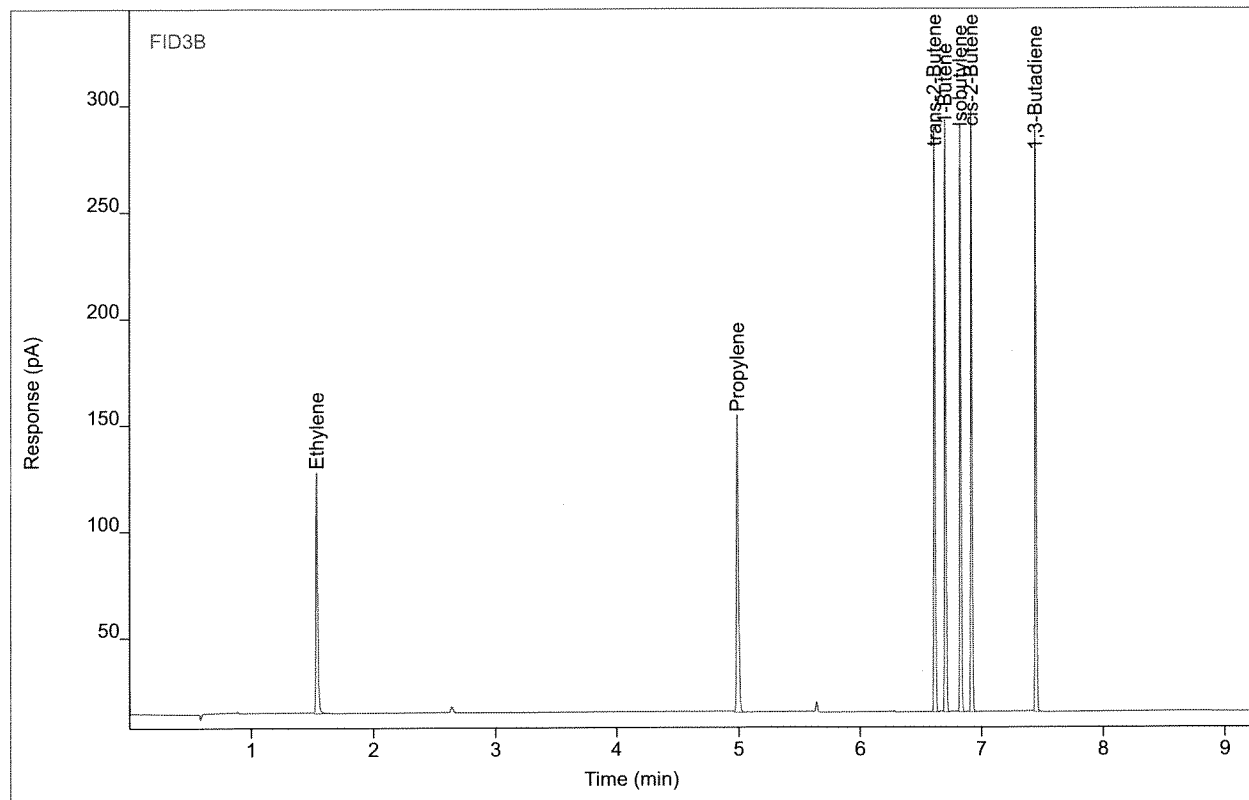
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene	BB	1.54	116.783	113.010	104.520	1	104.520	ppm
Propylene	BB	4.99	165.388	140.029	102.457	1	102.457	ppm
Acetylene		(5.88)				1		
trans-2-Butene	BB	6.61	230.643	269.377	103.981	1	103.981	ppm
1-Butene	BB	6.70	236.294	266.717	105.342	1	105.342	ppm
Isobutylene	BB	6.83	235.009	274.514	105.539	1	105.539	ppm
cis-2-Butene	BB	6.92	239.628	278.662	105.538	1	105.538	ppm
1,3-Butadiene	BB	7.44	227.405	261.484	104.307	1	104.307	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp275 #HR5 ENV(1=0,3=450)
Sequence Name EDITHP636A ver.2
Data File 018B0903.D
File Location GC/2016/Edith/Quarter 2
Injection Date 6/15/2016 12:08 AM
File Modified 6/18/2016 2:02 PM
Instrument
Operator Daniel Clayton

Sample Type
Vial Number
Injection Volume
Injection
Acquisition Method
Analysis Method
Method Modified
Printed
Calibration
Vial 18
250
3 of 4
AQ_EDITHP503_HRVOC.M
EDITHP636R_HRVOC_ACETYLENE.M
6/18/2016 1:45 PM
6/20/2016 12:42 PM



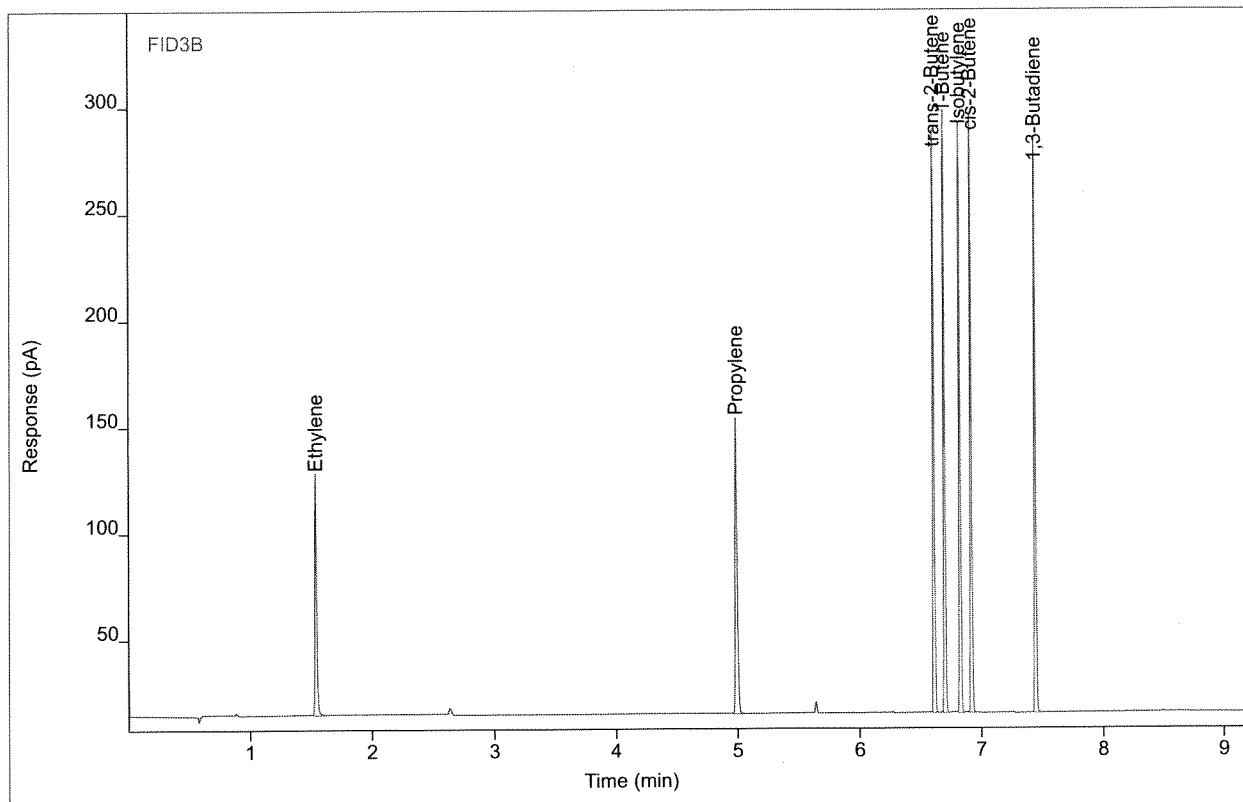
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene	BB	1.54	117.053	112.930	104.761	1	104.761	ppm
Propylene	BB	4.99	165.583	139.290	102.578	1	102.578	ppm
Acetylene		(5.88)				1		
trans-2-Butene	BB	6.61	230.867	271.801	104.082	1	104.082	ppm
1-Butene	BB	6.70	236.587	274.239	105.473	1	105.473	ppm
Isobutylene	BB	6.83	235.278	272.883	105.660	1	105.660	ppm
cis-2-Butene	BB	6.92	239.994	276.146	105.699	1	105.699	ppm
1,3-Butadiene	BB	7.44	227.612	261.860	104.402	1	104.402	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp275 #HR5 ENV(1=0,3=450)
Sequence Name EDITHP636A ver.2
Data File 018B0904.D
File Location GC/2016/Edith/Quarter 2
Injection Date 6/15/2016 12:27 AM
File Modified 6/18/2016 2:02 PM
Instrument
Operator Daniel Clayton

Sample Type
Vial Number
Injection Volume 250
Injection 4 of 4
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP636R_HRVOC_ACETYLENE.M
Method Modified 6/18/2016 1:45 PM
Printed 6/20/2016 12:42 PM



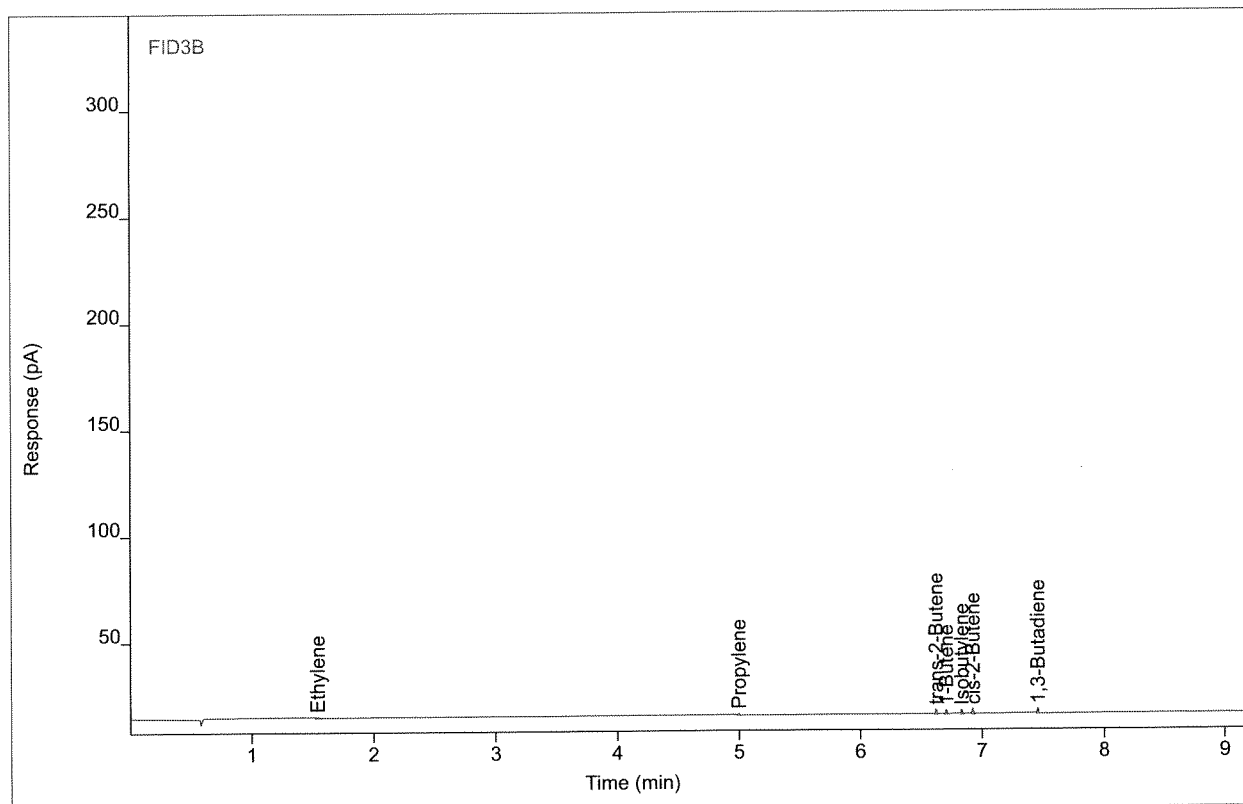
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene	BB	1.54	117.060	112.880	104.767	1	104.767	ppm
Propylene	BB	4.99	165.567	138.450	102.568	1	102.568	ppm
Acetylene		(5.88)				1		
trans-2-Butene	BB	6.61	230.976	270.871	104.131	1	104.131	ppm
1-Butene	BB	6.70	236.640	279.926	105.497	1	105.497	ppm
Isobutylene	BB	6.83	235.314	274.432	105.676	1	105.676	ppm
cis-2-Butene	BB	6.92	240.084	271.692	105.739	1	105.739	ppm
1,3-Butadiene	BB	7.44	227.710	256.965	104.447	1	104.447	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp275 #HR1 ENV(1=3970,3=30)
 Sequence Name EDITHP636A ver.2
 Data File 018B1002.D
 File Location GC/2016/Edith/Quarter 2
 Injection Date 6/15/2016 1:03 AM
 File Modified 6/18/2016 2:02 PM
 Instrument
 Operator Daniel Clayton

Sample Type Calibration
 Vial Number Vial 18
 Injection Volume 250
 Injection 2 of 4
 Acquisition Method AQ_EDITHP503_HRVOC.M
 Analysis Method EDITHP636R_HRVOC_ACETYLENE.M
 Method Modified 6/18/2016 1:45 PM
 Printed 6/20/2016 12:42 PM



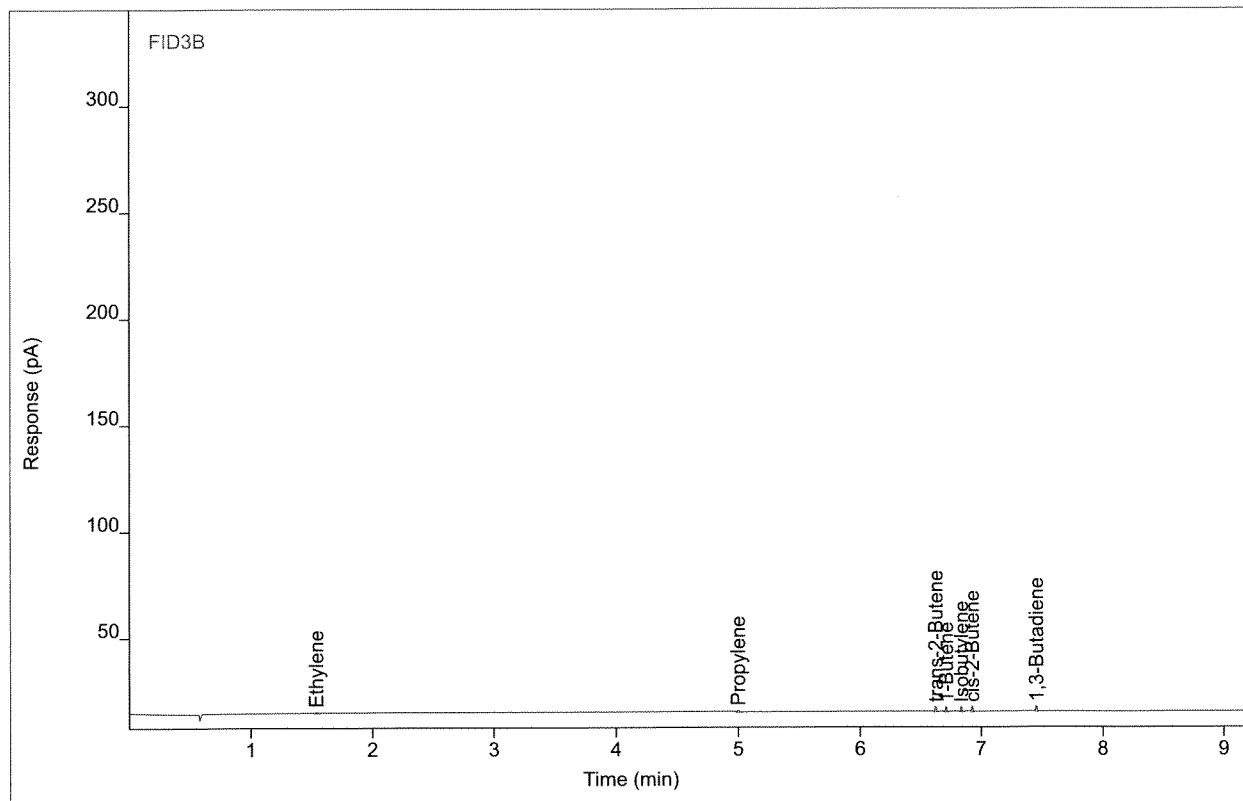
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene	BB	1.54	0.82010	0.80351	0.75975	1	0.75975	ppm
Propylene	BB	5.00	1.25702	1.16023	0.75972	1	0.75972	ppm
Acetylene		(5.88)				1		
trans-2-Butene	BB	6.62	2.09469	2.64147	0.76988	1	0.76988	ppm
1-Butene	BB	6.71	1.83853	2.30722	0.75901	1	0.75901	ppm
Isobutylene	BB	6.83	1.81467	2.31893	0.75952	1	0.75952	ppm
cis-2-Butene	BB	6.93	1.99164	2.59737	0.75978	1	0.75978	ppm
1,3-Butadiene	BB	7.45	2.00275	2.66259	0.76917	1	0.76917	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp275 #HR1 ENV(1=3970,3=30)
Sequence Name EDITHP636A ver.2
Data File 018B1003.D
File Location GC/2016/Edith/Quarter 2
Injection Date 6/15/2016 1:22 AM
File Modified 6/18/2016 2:02 PM
Instrument
Operator Daniel Clayton

Sample Type
Vial Number
Injection Volume 250
Injection 3 of 4
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP636R_HRVOC_ACETYLENE.M
Method Modified 6/18/2016 1:45 PM
Printed 6/20/2016 12:42 PM



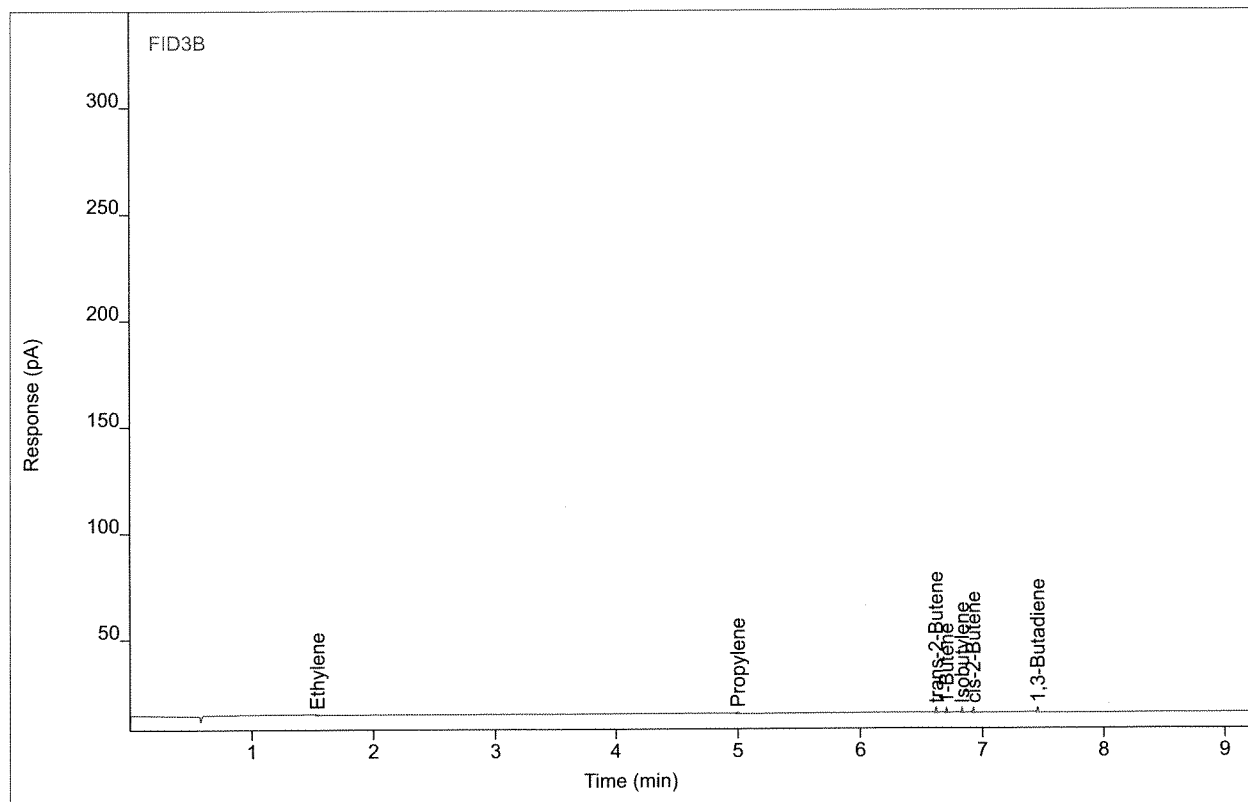
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene	BB	1.54	0.86936	0.86928	0.80480	1	0.80480	ppm
Propylene	BB	5.00	1.34554	1.26210	0.81385	1	0.81385	ppm
Acetylene		(5.88)				1		
trans-2-Butene	BB	6.62	2.22453	2.77879	0.82437	1	0.82437	ppm
1-Butene	BB	6.71	1.96349	2.46295	0.81242	1	0.81242	ppm
Isobutylene	BB	6.83	1.93405	2.48647	0.81106	1	0.81106	ppm
cis-2-Butene	BB	6.93	2.12883	2.72863	0.81588	1	0.81588	ppm
1,3-Butadiene	BB	7.45	2.11779	2.77556	0.81832	1	0.81832	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp275 #HR1 ENV(1=3970,3=30)
Sequence Name EDITHP636A ver.2
Data File 018B1004.D
File Location GC/2016/Edith/Quarter 2
Injection Date 6/15/2016 1:36 AM
File Modified 6/18/2016 2:02 PM
Instrument
Operator Daniel Clayton

Sample Type Calibration
Vial Number Vial 18
Injection Volume 250
Injection 4 of 4
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP636R_HRVOC_ACETYLENE.M
Method Modified 6/18/2016 1:45 PM
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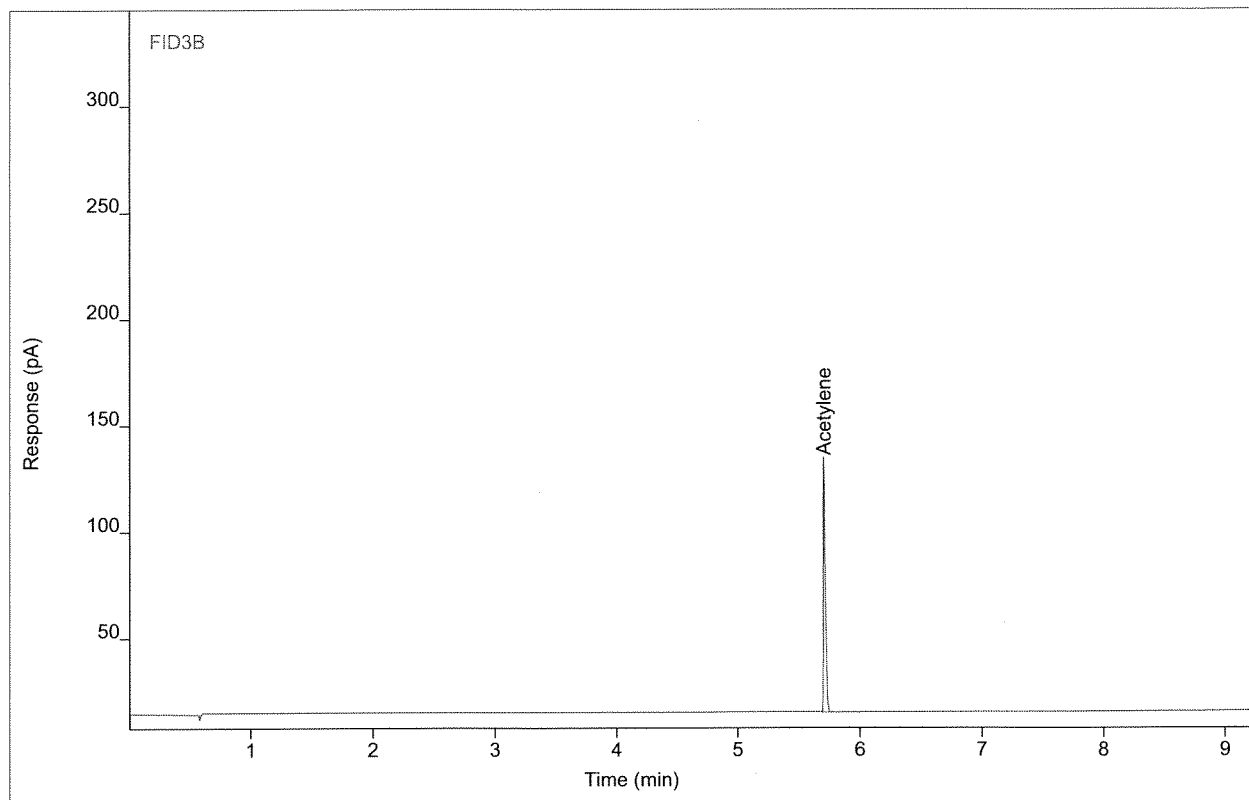
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Ethylene	BB	1.54	0.87437	0.86602	0.80928	1	0.80928	ppm
Propylene	BB	5.00	1.33614	1.24088	0.80803	1	0.80803	ppm
Acetylene		(5.88)				1		
trans-2-Butene	BB	6.62	2.13665	2.71241	0.78530	1	0.78530	ppm
1-Butene	BB	6.71	1.93285	2.42619	0.79875	1	0.79875	ppm
Isobutylene	BB	6.84	1.90692	2.47592	0.79887	1	0.79887	ppm
cis-2-Butene	BB	6.93	2.08615	2.68398	0.79706	1	0.79706	ppm
1,3-Butadiene	BB	7.45	2.05994	2.72314	0.79175	1	0.79175	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp639 #A3 ENV(1=600,4=400)
Sequence Name EDITHP640 ver.1
Data File 018B2202.D
File Location GC/2016/Edith/Quarter 2
Injection Date 6/18/2016 7:08 PM
File Modified 6/20/2016 8:13 AM
Instrument
Operator Justin Guenzler

Sample Type
Vial Number
Injection Volume
Injection
Acquisition Method
Analysis Method
Method Modified
Printed
Calibration
Vial 18
250
2 of 4
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EDITHP636R_HRVOC_ACETYLENE.M
6/20/2016 7:28 AM
6/20/2016 12:44 PM



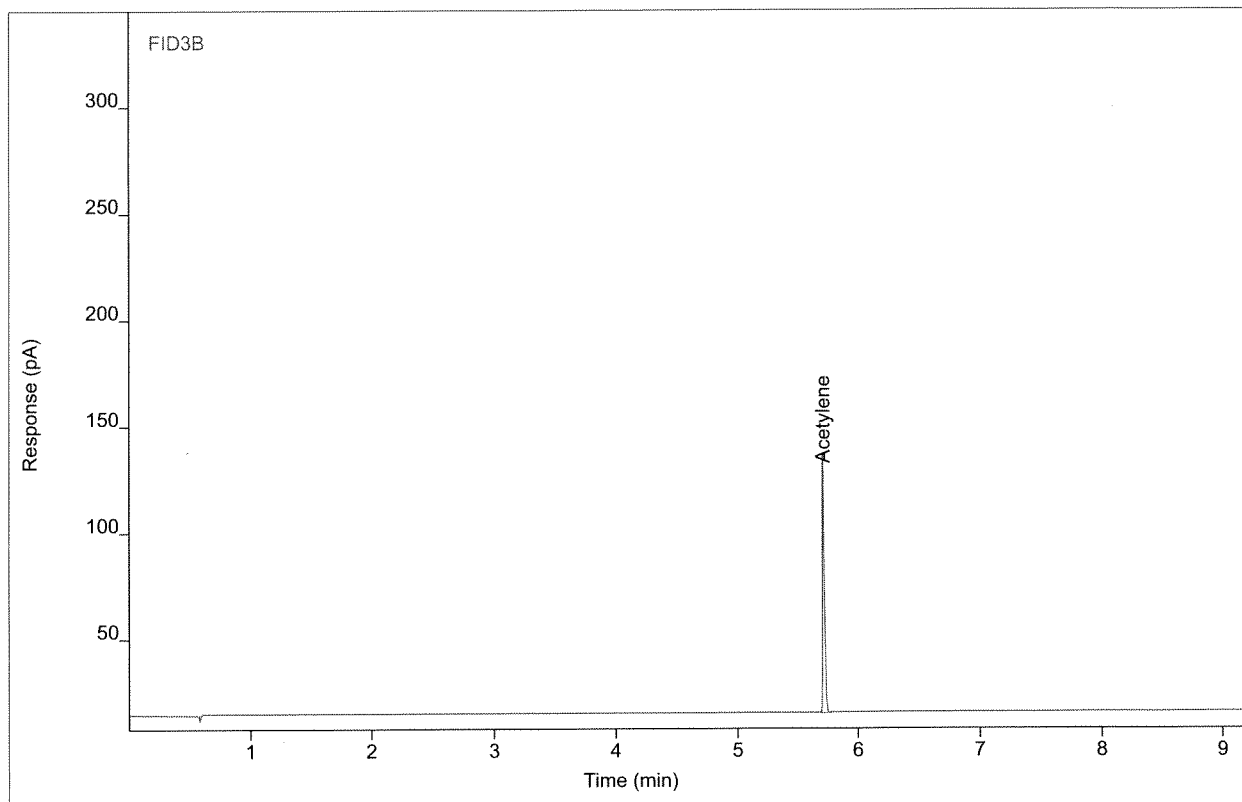
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetylene	MM	5.71	141.107	118.891	102.342	1	102.342	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp639 #A3 ENV(1=600,4=400)
Sequence Name EDITHP640 ver.1
Data File 018B2203.D
File Location GC/2016/Edith/Quarter 2
Injection Date 6/18/2016 7:23 PM
File Modified 6/20/2016 8:13 AM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 18
Injection Volume 250
Injection 3 of 4
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP636R_HRVOC_ACETYLENE.M
Method Modified 6/20/2016 7:28 AM
Printed 6/20/2016 12:44 PM



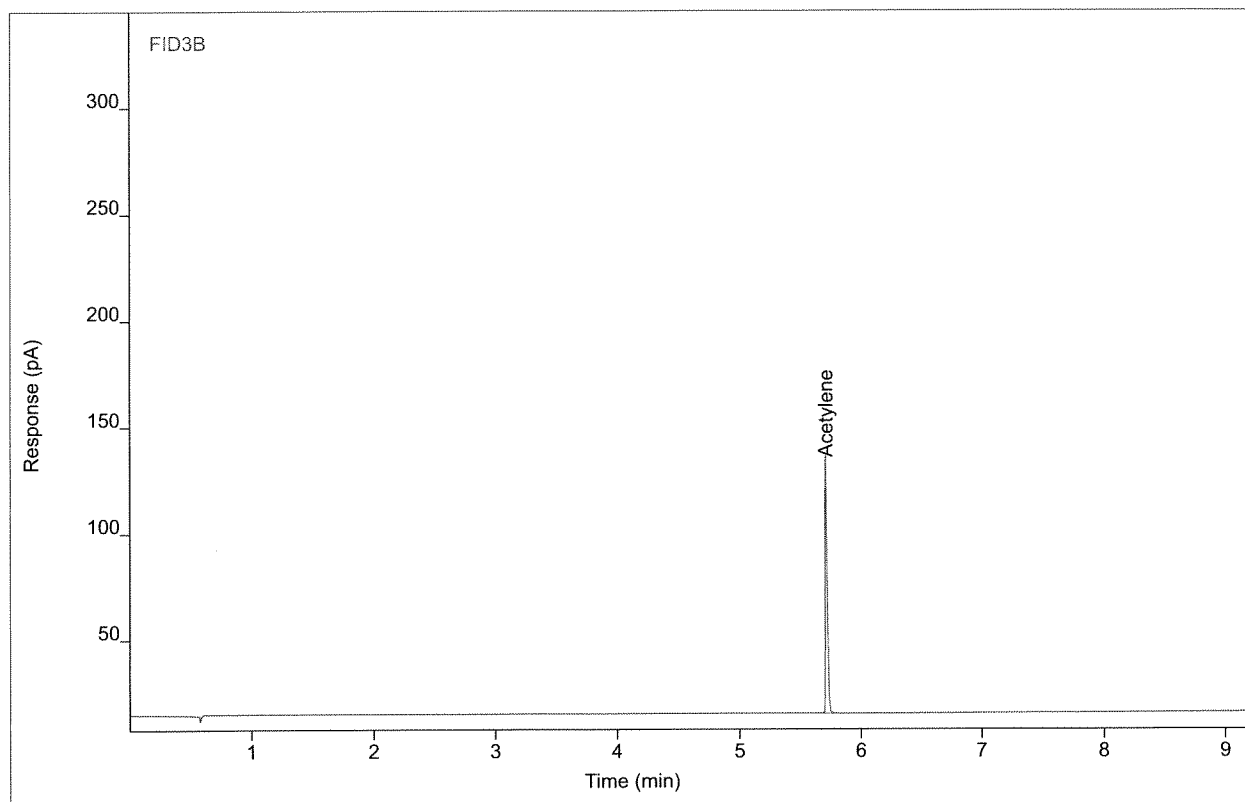
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetylene	BB	5.71	140.636	115.398	101.999	1	101.999	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp639 #A3 ENV(1=600,4=400)
Sequence Name EDITHP640 ver.1
Data File 018B2204.D
File Location GC/2016/Edith/Quarter 2
Injection Date 6/18/2016 7:39 PM
File Modified 6/20/2016 8:13 AM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 18
Injection Volume 250
Injection 4 of 4
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP636R_HRVOC_ACETYLENE.M
Method Modified 6/20/2016 7:28 AM
Printed 6/20/2016 12:44 PM



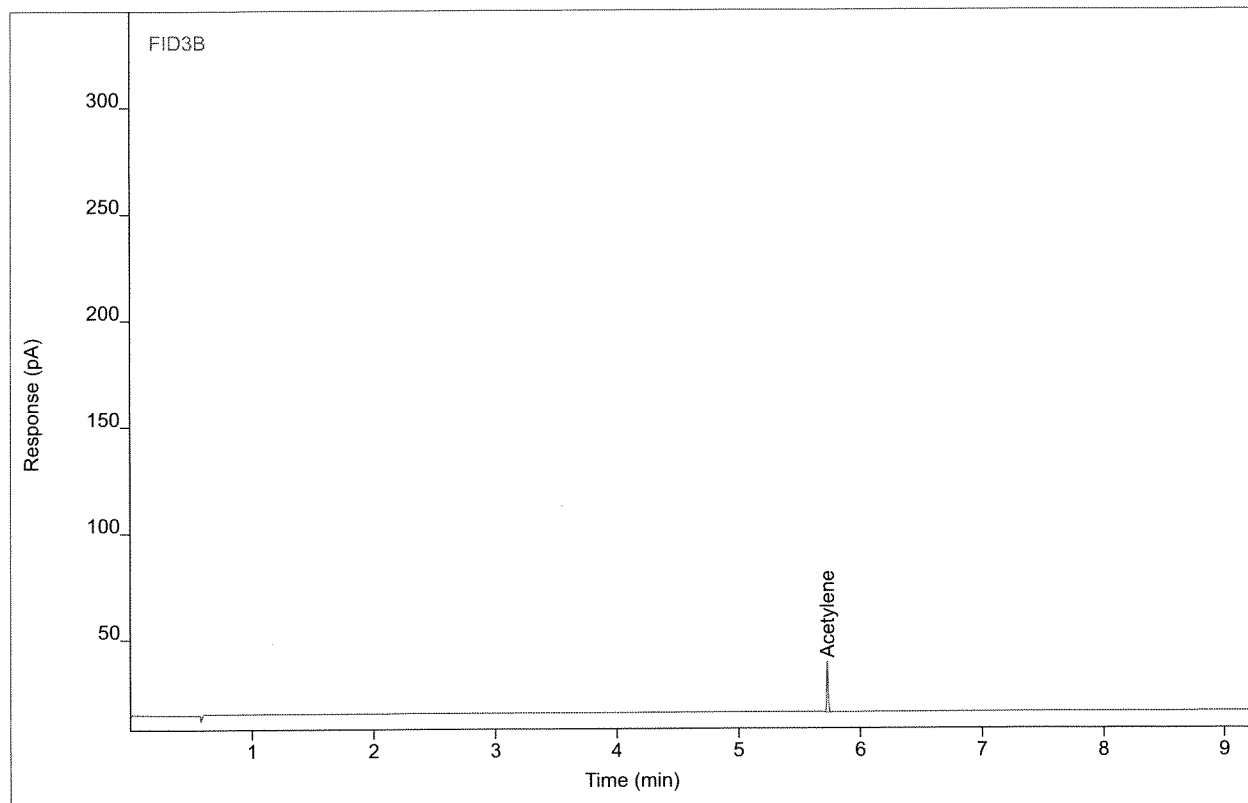
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetylene	BB	5.71	140.825	118.529	102.136	1	102.136	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp639 #A2 ENV(1=800,4=50)
Sequence Name EDITHP640 ver.1
Data File 018B2302.D
File Location GC/2016/Edith/Quarter 2
Injection Date 6/18/2016 8:09 PM
File Modified 6/20/2016 8:13 AM
Instrument
Operator Justin Guenzler

Sample Type
Vial Number
Injection Volume
Injection
Acquisition Method
Analysis Method
Method Modified
Printed
Calibration
Vial 18
250
2 of 4
AQ_EDITHP503_HRVOC.M
EDITHP636R_HRVOC_ACETYLENE.M
6/20/2016 7:28 AM
6/20/2016 12:44 PM



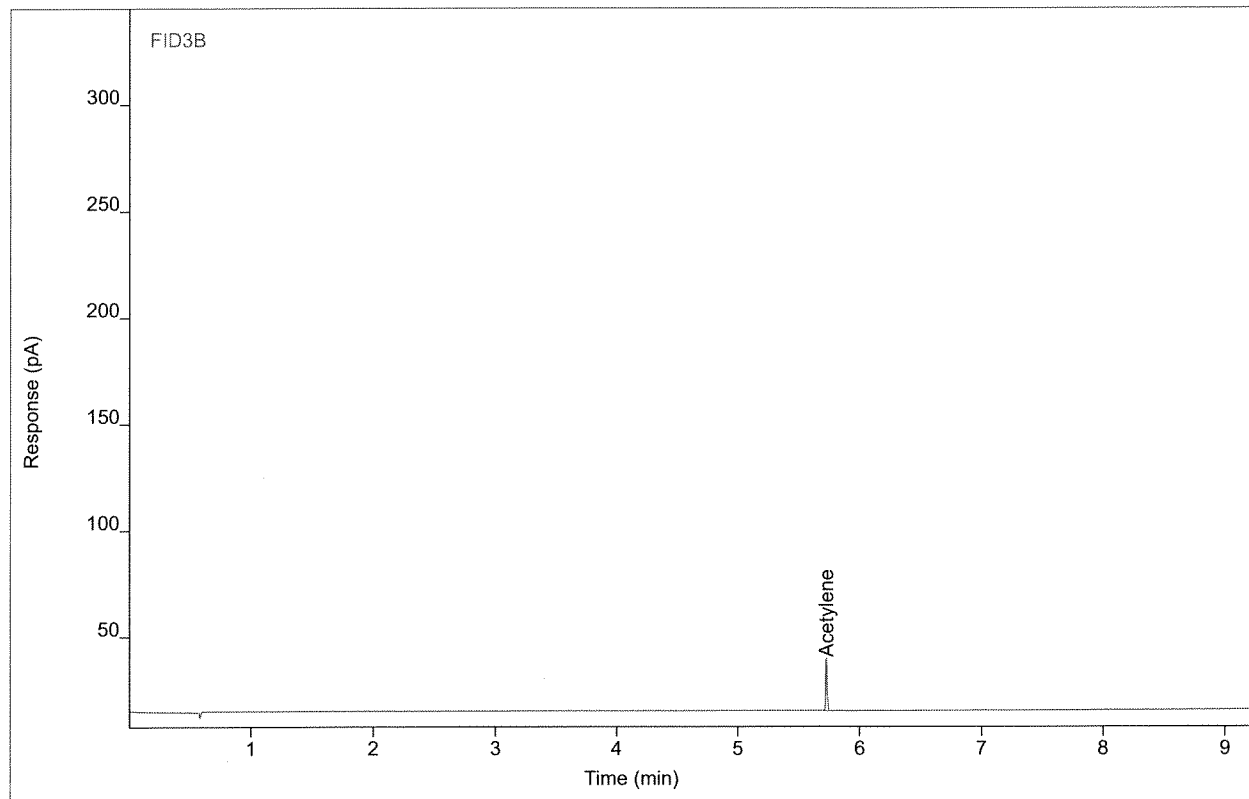
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetylene	BB	5.73	20.5041	23.7057	14.3465	1	14.3465	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp639 #A2 ENV(1=800,4=50)
Sequence Name EDITHP640 ver.1
Data File 018B2303.D
File Location GC/2016/Edith/Quarter 2
Injection Date 6/18/2016 8:24 PM
File Modified 6/20/2016 8:13 AM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 18
Injection Volume 250
Injection 3 of 4
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP636R_HRVOC_ACETYLENE.M
Method Modified 6/20/2016 7:28 AM
Printed 6/20/2016 12:44 PM



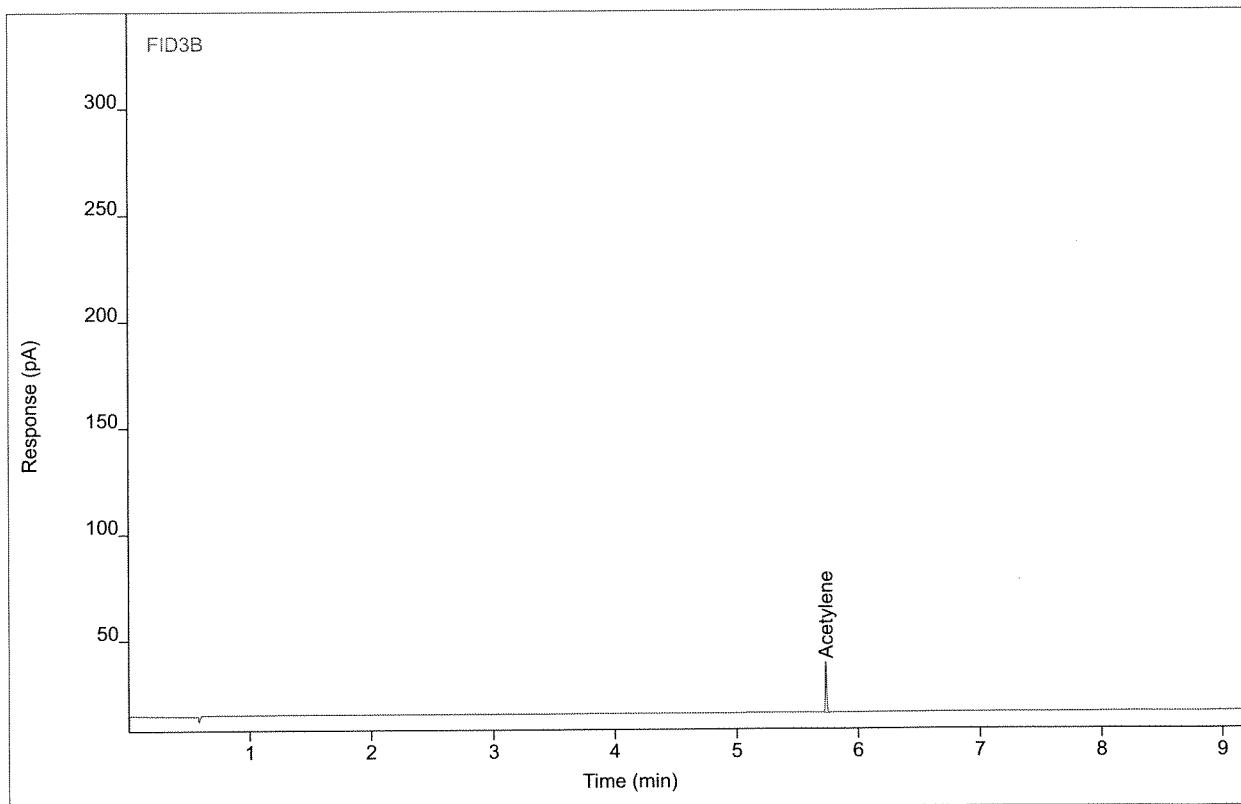
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetylene	BB	5.73	20.4522	23.4486	14.3086	1	14.3086	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp639 #A2 ENV(1=800,4=50)
Sequence Name EDITHP640 ver.1
Data File 018B2304.D
File Location GC/2016/Edith/Quarter 2
Injection Date 6/18/2016 8:39 PM
File Modified 6/20/2016 8:13 AM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 18
Injection Volume 250
Injection 4 of 4
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP636R_HRVOC_ACETYLENE.M
Method Modified 6/20/2016 7:28 AM
Printed 6/20/2016 12:44 PM



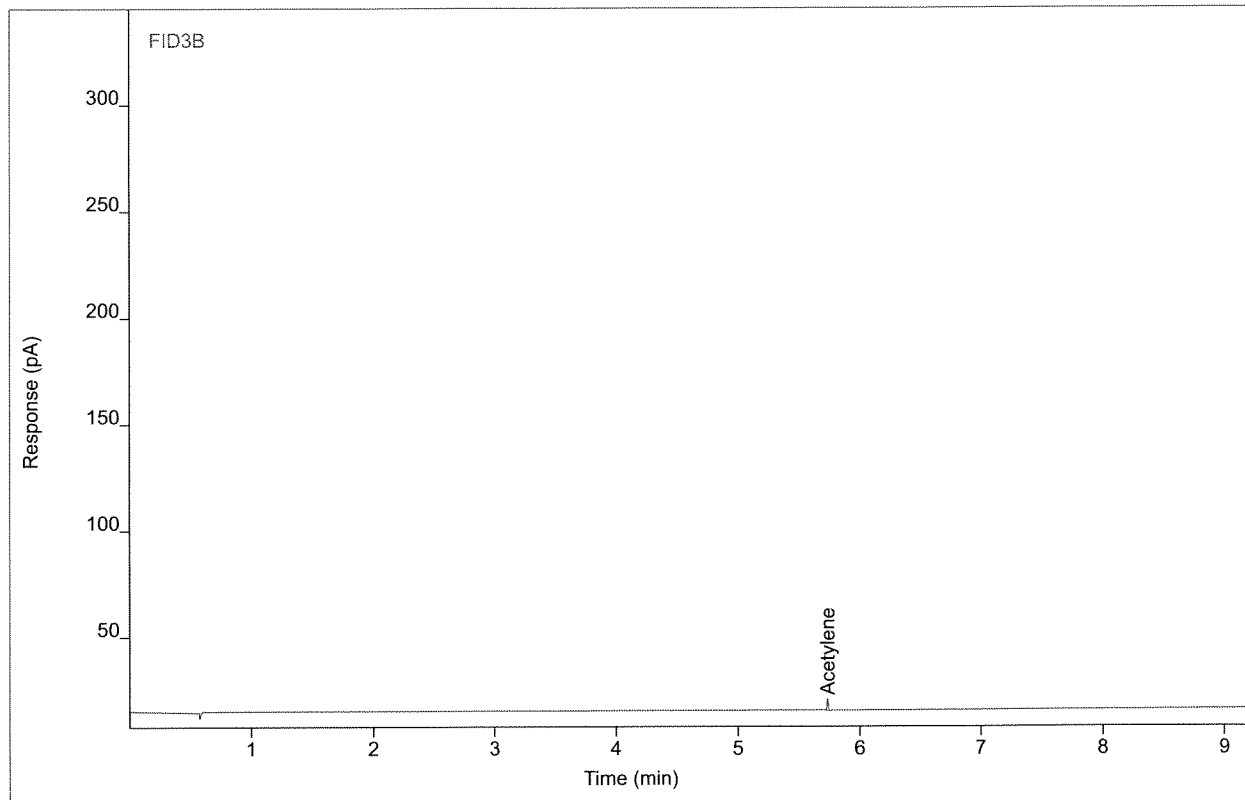
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetylene	BB	5.73	20.4764	23.5949	14.3263	1	14.3263	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp639 #A1 ENV(1=4950,4=50)
Sequence Name EDITHP640 ver.1
Data File 018B2402.D
File Location GC/2016/Edith/Quarter 2
Injection Date 6/18/2016 9:10 PM
File Modified 6/20/2016 8:13 AM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 18
Injection Volume 250
Injection 2 of 8
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP636R_HRVOC_ACETYLENE.M
Method Modified 6/20/2016 7:28 AM
Printed 6/20/2016 12:44 PM



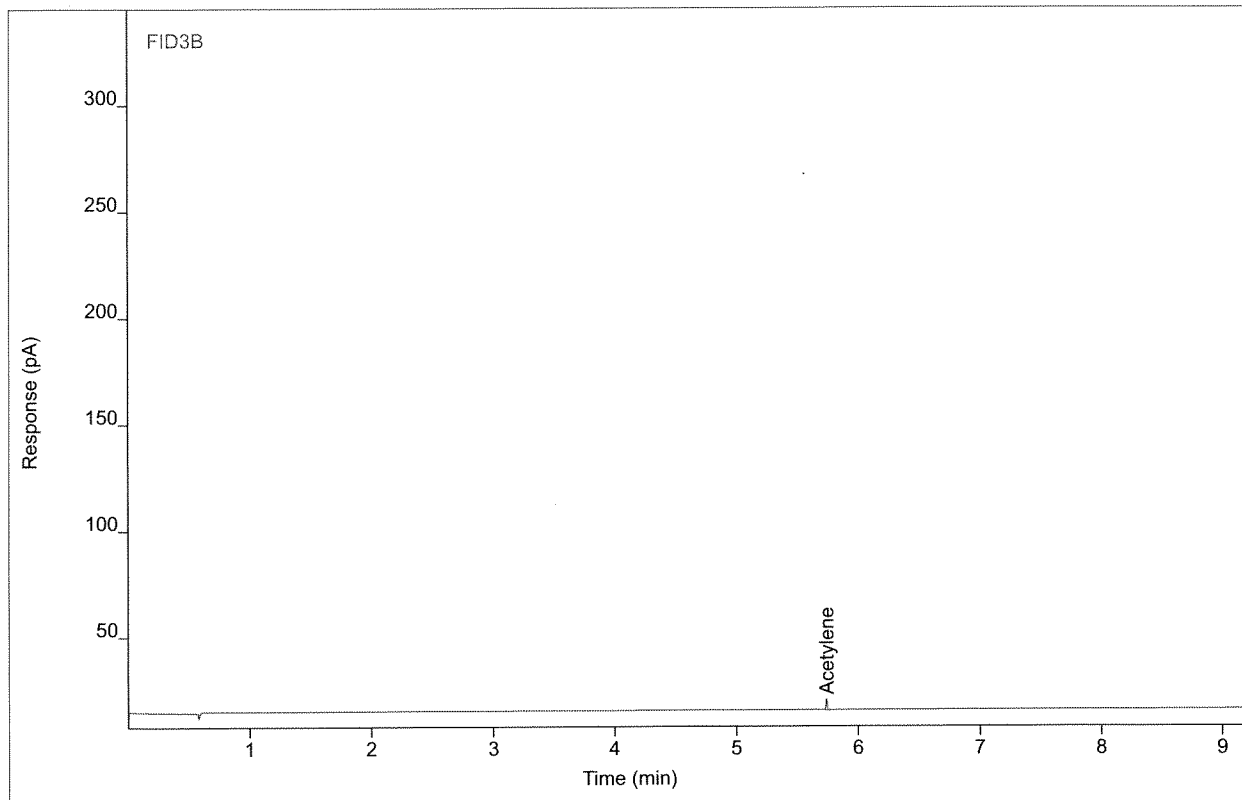
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetylene	BB	5.74	4.27677	5.40421	2.50648	1	2.50648	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp639 #A1 ENV(1=4950,4=50)
Sequence Name EDITHP640 ver.1
Data File 018B2403.D
File Location GC/2016/Edith/Quarter 2
Injection Date 6/18/2016 9:25 PM
File Modified 6/20/2016 8:13 AM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 18
Injection Volume 250
Injection 3 of 8
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP636R_HRVOC_ACETYLENE.M
Method Modified 6/20/2016 7:28 AM
Printed 6/20/2016 12:44 PM



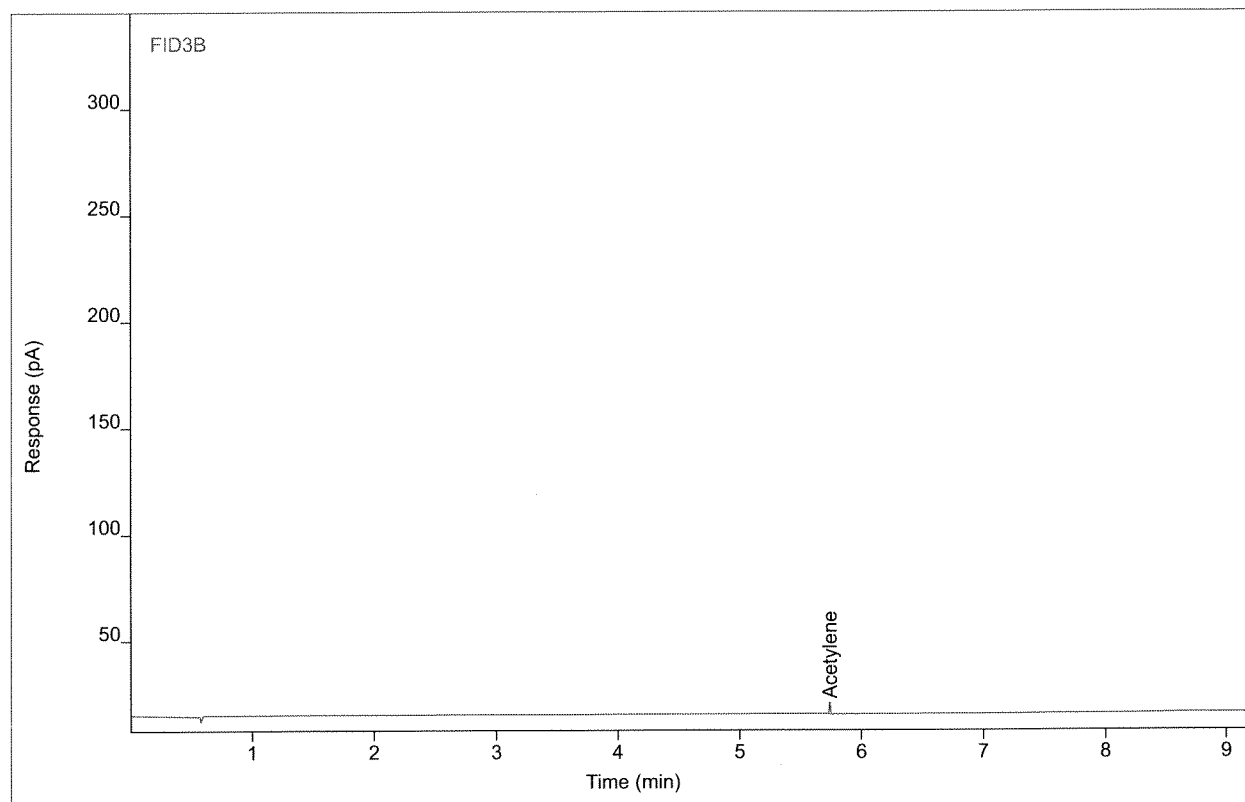
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetylene	BB	5.74	4.28925	5.44600	2.51559	1	2.51559	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp639 #A1 ENV(1=4950,4=50)
Sequence Name EDITHP640 ver.1
Data File 018B2404.D
File Location GC/2016/Edith/Quarter 2
Injection Date 6/18/2016 9:40 PM
File Modified 6/20/2016 8:13 AM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 18
Injection Volume 250
Injection 4 of 8
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP636R_HRVOC_ACETYLENE.M
Method Modified 6/20/2016 7:28 AM
Printed 6/20/2016 12:44 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetylene	BB	5.74	4.27643	5.46769	2.50623	1	2.50623	ppm

CERTIFICATE OF ANALYSIS

Grade of Product: CERTIFIED STANDARD-SPEC

Part Number:	X02NI99C15AC3D1	Reference Number:	141-124546359-1
Cylinder Number:	CC151066	Cylinder Volume:	144.4 CF
Laboratory:	ASG - Conley Stryker - OH	Cylinder Pressure:	2015 PSIG
Analysis Date:	Mar 23, 2016	Valve Outlet:	350
Lot Number:	141-124546359-1		

Expiration Date: Mar 23, 2019

Product composition verified by direct comparison to calibration standards traceable to N.I.S.T. weights and/or N.I.S.T. Gas Mixture reference materials.

ANALYTICAL RESULTS

Component	Req Conc	Actual Concentration (Mole %)	Analytical Uncertainty
ACETYLENE	250.0 PPM	250.0 PPM	+/- 2%
NITROGEN	Balance		



Rebecca J. England
Approved for Release

THE LINDE GROUP

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SHIPPED TO: Enthalpy Analytical Inc.
800 Capitola Dr. Ste 1
Durham, NC 27713-4385

PAGE: 1 of 1

CERTIFICATE OF ANALYSIS

Sales#: 112821990
Production#: 1337396
Certification Date: May-06-2015
P.O.# : 02031504
Blend Type: CERTIFIED
Material#: 24086389
Traceability: NIST by weight
Expiration Date: May-06-2017
Do NOT use under: 150 psig

Cylinder Size: 2A (8" X 47.5")
Cylinder # : CC-126673
Cylinder Pressure: 2000 psig
Cylinder Valve: CGA 350 / Steel
Cylinder Volume: 29.5 Liter
Cylinder Material: Aluminum
Gas Volume: 4000 Liters
Blend Tolerance: 5% Relative
Analytical Accuracy: 2% Relative

COMPONENT	CAS NUMBER	REQUESTED CONC	CERTIFIED CONC
Ethylene	74-85-1	100 ppm	105 ppm
Propylene	115-07-1	100 ppm	105 ppm
1-Butene	106-98-9	100 ppm	105 ppm
Isobutylene	115-11-7	100 ppm	105 ppm
1,3-Butadiene	106-99-0	100 ppm	105 ppm
Trans-2-Butene	624-64-6	100 ppm	105 ppm
Cis-2-Butene	590-18-1	100 ppm	105 ppm
Nitrogen	7727-37-9	Balance	Balance

ANALYST:


Lou Lorenzetti

DATE: May-06-2015

THE LINDE GROUP

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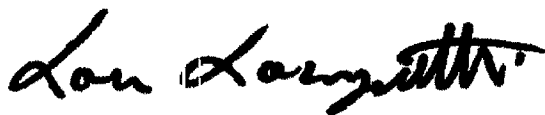
SHIPPED TO: Enthalpy Analytical Inc.
800 Capitola Dr., Ste 1
Durham, NC 27713-4385

PAGE: 1 of 1

CERTIFICATE OF ANALYSIS

Sales#:	112822034	Cylinder Size:	2 (9" X 51")
Production#:	1337733	Cylinder #:	9851414
Certification Date:	May-20-2015	Cylinder Pressure:	900 psig
P.O.#:	02051501	Cylinder Valve:	CGA 350 / Steel
Blend Type:	CERTIFIED	Cylinder Volume:	44 Liter
Material#:	24095118	Cylinder Material:	Steel
Traceability:	NIST by weight	Gas Volume:	2694 Liters
Expiration Date:	May-20-2017	Blend Tolerance:	5% Relative
Do NOT use under:	150 psig	Analytical Accuracy:	2% Relative

COMPONENT	CAS NUMBER	REQUESTED CONC	CERTIFIED CONC
Ethylene	74-85-1	1.00 %	1.02 %
Propylene	115-07-1	1.00 %	1.00 %
1-Butene	106-98-9	1.00 %	1.01 %
Isobutylene	115-11-7	1.00 %	1.01 %
1,3-Butadiene	106-99-0	1.00 %	1.02 %
Trans-2-Butene	624-64-6	1.00 %	1.02 %
Cis-2-Butene	590-18-1	1.00 %	1.01 %
Nitrogen	7727-37-9	Balance	Balance



ANALYST: _____
Lou Lorenzetti

DATE: May-20-2015

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Agilent 7890A

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Oven
 Equilibration Time 0.3 min
 Max Temperature 200 degrees C
 Slow Fan Disabled
 Oven Program On

35 °C for 2.2 min
 #1 then 15 °C/min to 70 °C for 0.07 min
 #2 then 30 °C/min to 180 °C for 8 min
 Run Time 16.27 min

Sample Overlap
 Sample overlap is not enabled

Front SS Inlet H2
 Mode Split
 Heater On 200 °C
 Pressure On 5.1931 psi
 Total Flow On 15.6 mL/min
 Septum Purge Flow On 3 mL/min
 Gas Saver Off
 Split Ratio 5 :1
 Split Flow 10.5 mL/min

Back SS Inlet H2
 Mode Split
 Heater On 200 °C
 Pressure On 14.935 psi
 Total Flow On 25.632 mL/min
 Septum Purge Flow On 3 mL/min
 Gas Saver Off
 Split Ratio 2 :1
 Split Flow 15.088 mL/min

Column #1
 Restek 10198Rtx-1 S/N 806941
 280 °C: 30 m x 320 µm x 4 µm
 In: Front SS Inlet H2
 Out: Front Detector FID

(Initial) 35 °C
 Pressure 5.1931 psi
 Flow 2.1 mL/min
 Average Velocity 39.91 cm/sec
 Holdup Time 1.2528 min
 Flow Program On
 2.1 mL/min for 0 min
 Run Time 16.27 min

Column #2
 Restek 19757Rt-Alumina BOND/Na2SO4
 200 °C: 30 m x 320 µm x 5 µm
 In: Back SS Inlet H2
 Out: Back Detector FID

(Initial) 35 °C
 Pressure 14.935 psi
 Flow 7.5439 mL/min
 Average Velocity 110 cm/sec
 Holdup Time 0.45455 min
 Flow Program On

E-341

Run Time 16.27 min

Front Detector FID
Heater On 300 °C
H2 Flow On 50 mL/min
Air Flow On 450 mL/min
Makeup Flow On 35 mL/min
Const Col + Makeup Off
Flame On
Electrometer On

Back Detector FID
Heater On 200 °C
H2 Flow On 50 mL/min
Air Flow On 450 mL/min
Makeup Flow On 35 mL/min
Const Col + Makeup Off
Flame On
Electrometer On

Valve 1
Gas Sampling Valve Unknown
GSV Loop Volume 0.25 mL
Load Time 1.5 min
Inject Time 0.5 min

Valve 2
Gas Sampling Valve Unknown
GSV Loop Volume 0.25 mL
Load Time 1.5 min
Inject Time 0.5 min

Valve Box
Heater On 150 °C

Signals
Signal #1: Front Signal Save On
20 Hz

Signal #2: Test Plot Save Off
50 Hz

Signal #3: Back Signal Save On
20 Hz

Signal #4: Test Plot Save Off
50 Hz

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Agilent 7890A

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Oven
 Equilibration Time 0.3 min
 Max Temperature 200 degrees C
 Slow Fan Disabled
 Oven Program On
 35 °C for 2.2 min
 then 15 °C/min to 70 °C for 0.07 min
 Run Time 4.6033 min

Sample Overlap
 Sample overlap is not enabled

Front SS Inlet H2
 Mode Split
 Heater On 200 °C
 Pressure On 5.1931 psi
 Total Flow On 15.6 mL/min
 Septum Purge Flow On 3 mL/min
 Gas Saver Off
 Split Ratio 5 :1
 Split Flow 10.5 mL/min

Back SS Inlet H2
 Mode Split
 Heater On 200 °C
 Pressure On 14.935 psi
 Total Flow On 25.632 mL/min
 Septum Purge Flow On 3 mL/min
 Gas Saver Off
 Split Ratio 2 :1
 Split Flow 15.088 mL/min

Column #1
 Restek 10198Rtx-1 S/N 806941
 280 °C: 30 m x 320 µm x 4 µm
 In: Front SS Inlet H2
 Out: Front Detector FID

(Initial) 35 °C
 Pressure 5.1931 psi
 Flow 2.1 mL/min
 Average Velocity 39.91 cm/sec
 Holdup Time 1.2528 min
 Flow Program On
 2.1 mL/min for 0 min
 Run Time 4.6033 min

Column #2
 Restek 19757Rt-Alumina BOND/Na2SO4
 200 °C: 30 m x 320 µm x 5 µm
 In: Back SS Inlet H2
 Out: Back Detector FID

(Initial) 35 °C
 Pressure 14.935 psi
 Flow 7.5439 mL/min
 Average Velocity 110 cm/sec
 Holdup Time 0.45455 min
 Flow Program On
 7.5439 mL/min for 0 min

Run Time

4.6033 min

Front Detector FID

Heater	On	300 °C
H2 Flow	On	50 mL/min
Air Flow	On	450 mL/min
Makeup Flow	On	35 mL/min
Const Col + Makeup	Off	
Flame	On	
Electrometer	On	

Back Detector FID

Heater	On	200 °C
H2 Flow	On	50 mL/min
Air Flow	On	450 mL/min
Makeup Flow	On	35 mL/min
Const Col + Makeup	Off	
Flame	On	
Electrometer	On	

Valve 1

Gas Sampling Valve	Unknown
GSV Loop Volume	0.25 mL
Load Time	1.5 min
Inject Time	0.5 min

Valve 2

Gas Sampling Valve	Unknown
GSV Loop Volume	0.25 mL
Load Time	1.5 min
Inject Time	0.5 min

Valve Box

Heater	On	150 °C
--------	----	--------

Signals

Signal #1: Front Signal	Save On
	20 Hz

Signal #2: Test Plot	Save Off
	50 Hz

Signal #3: Back Signal	Save On
	20 Hz

Signal #4: Test Plot	Save Off
	50 Hz

=====

Agilent 7890A

=====

Oven

Equilibration Time 0.3 min

Max Temperature 200 degrees C

Slow Fan Disabled

Oven Program On

35 °C for 2.2 min

#1 then 15 °C/min to 70 °C for 0.07 min

#2 then 30 °C/min to 180 °C for 1 min

Run Time 9.27 min

Sample Overlap

Sample overlap is not enabled

Front SS Inlet H2

Mode Split

Heater On 200 °C

Pressure On 5.1931 psi

Total Flow On 15.6 mL/min

Septum Purge Flow On 3 mL/min

Gas Saver Off

Split Ratio 5 :1

Split Flow 10.5 mL/min

Back SS Inlet H2

Mode Split

Heater On 200 °C

Pressure On 14.935 psi

Total Flow On 25.632 mL/min

Septum Purge Flow On 3 mL/min

Gas Saver Off

Split Ratio 2 :1

Split Flow 15.088 mL/min

Column #1

Restek 10198Rtx-1 S/N 806941

280 °C: 30 m x 320 µm x 4 µm

In: Front SS Inlet H2

Out: Front Detector FID

(Initial) 35 °C

Pressure 5.1931 psi

Flow 2.1 mL/min

Average Velocity 39.91 cm/sec

Holdup Time 1.2528 min

Flow Program On

2.1 mL/min for 0 min

Run Time 9.27 min

Column #2

Restek 19757Rt-Alumina BOND/Na2SO4

200 °C: 30 m x 320 µm x 5 µm

In: Back SS Inlet H2

Out: Back Detector FID

(Initial) 35 °C

Pressure 14.935 psi

Flow 7.5439 mL/min

Average Velocity 110 cm/sec

Holdup Time 0.45455 min

Flow Program On

E-345

7.5439 mL/min for 0 min

Run Time 9.27 min

Front Detector FID

Heater	On	300 °C
H2 Flow	On	50 mL/min
Air Flow	On	450 mL/min
Makeup Flow	On	35 mL/min
Const Col + Makeup	Off	
Flame	On	
Electrometer	On	

Back Detector FID

Heater	On	200 °C
H2 Flow	On	50 mL/min
Air Flow	On	450 mL/min
Makeup Flow	On	35 mL/min
Const Col + Makeup	Off	
Flame	On	
Electrometer	On	

Valve 1

Gas Sampling Valve	Off
GSV Loop Volume	0.25 mL
Load Time	1.5 min
Inject Time	0.5 min

Valve 2

Gas Sampling Valve	Off
GSV Loop Volume	0.25 mL
Load Time	1.5 min
Inject Time	0.5 min

Valve Box

Heater	On	150 °C
--------	----	--------

Signals

Signal #1: Front Signal	Save On
	20 Hz

Signal #2: Test Plot	Save Off
	50 Hz

Signal #3: Back Signal	Save On
	20 Hz

Signal #4: Test Plot	Save Off
	50 Hz

=====
 Calibration Table
 =====

Calib. Data Modified : Wednesday, September 14, 2016 8:15:10 AM

Rel. Reference Window : 0.000 %
 Abs. Reference Window : 0.100 min
 Rel. Non-ref. Window : 0.000 %
 Abs. Non-ref. Window : 0.050 min
 Uncalibrated Peaks : Separately calculated (see below)
 Partial Calibration : Yes, identified peaks are recalibrated
 Correct All Ret. Times: No, only for identified peaks

Curve Type : Linear
 Origin : Connected
 Weight : Quadratic (Amnt)

Recalibration Settings:
 Average Response : Average all calibrations
 Average Retention Time: Floating Average New 75%

Calibration Report Options :
 Printout of recalibrations within a sequence:
 Calibration Table after Recalibration
 Normal Report after Recalibration
 If the sequence is done with bracketing:
 Results of first cycle (ending previous bracket)

Signal 1: FID1 A, Front Signal
 Uncalibrated Peaks : compound name not specified
 Signal 2: FID3 B, Back Signal
 Uncalibrated Peaks : not reported

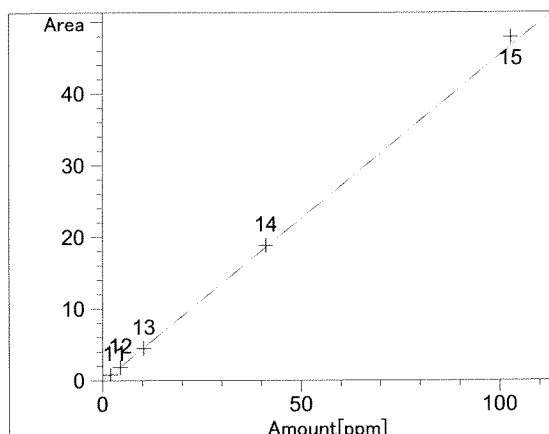
RetTime	Lvl	Amount	Area	Amt/Area	Ref Grp Name
[min]	Sig	[ppm]			
3.979	1 11	1.98100	8.20972e-1	2.41299	Acetone
	12	4.44000	1.84080	2.41199	
	13	10.30000	4.48319	2.29747	
	14	41.20000	18.84762	2.18595	
	15	103.00000	47.86759	2.15177	
6.765	1 11	1.98100	2.90820	6.81178e-1	Benzene
	12	4.44000	6.51698	6.81297e-1	
	13	10.30000	15.36646	6.70291e-1	
	14	41.20000	63.05889	6.53358e-1	
	15	103.00000	158.73637	6.48875e-1	
7.838	1 11	1.98100	3.05866	6.47668e-1	Toluene
	12	4.44000	6.88747	6.44649e-1	
	13	10.30000	16.82837	6.12062e-1	
	14	41.20000	70.44241	5.84875e-1	
	15	103.00000	178.68423	5.76436e-1	
8.639	1 11	1.98100	3.15268	6.28355e-1	Ethylbenzene
	12	4.44000	7.10527	6.24888e-1	
	13	10.30000	18.06059	5.70303e-1	
	14	41.20000	75.95344	5.42438e-1	
	15	103.00000	192.71248	5.34475e-1	
8.703	1 11	1.98100	2.99505	6.61425e-1	m-p-Xylenes
	12	4.44000	6.78043	6.54826e-1	
	13	10.30000	17.82745	5.77761e-1	
	14	41.20000	76.06460	5.41645e-1	
	15	103.00000	194.11854	5.30604e-1	

RetTime [min]	Lvl Sig	Amount [ppm]	Area	Amt/Area	Ref Grp Name
8.927	1 11	1.98100	2.97723	6.65385e-1	o-Xylene
	12	4.44000	6.74795	6.57978e-1	
	13	10.30000	17.41992	5.91277e-1	
	14	41.20000	73.62040	5.59627e-1	
	15	103.00000	187.75536	5.48586e-1	

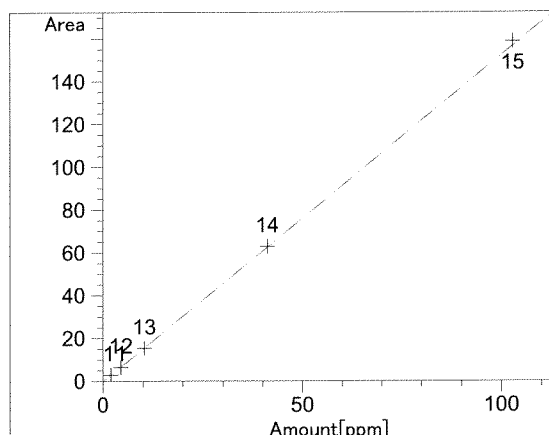
Peak Sum Table

Name	StartTime [min]	EndTime [min]	Use Reference	Response factor	Multiplier	ISTD Peak
as Ethane	1.550	1.855	None	1.8693	1.8630	None
as Propane	1.855	2.479	None	1.2383	1.2383	None
as Butane	2.479	3.714	None	9.4644e-1	0.9464	None
as Pentane	3.714	5.209	None	7.4700e-1	0.7470	None
as Hexane	5.209	6.650	None	6.3600e-1	0.6360	None
as Heptane	6.650	16.300	None	5.3600e-1	0.5360	None

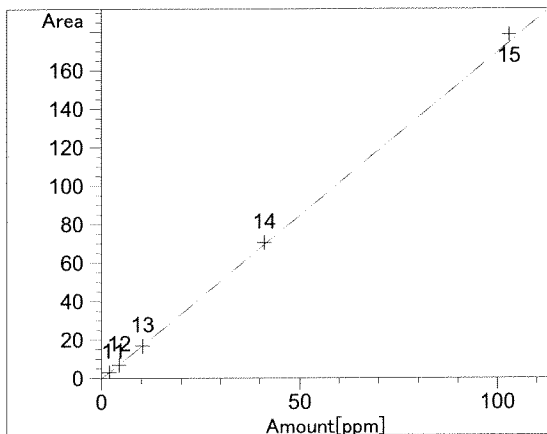
Calibration Curves



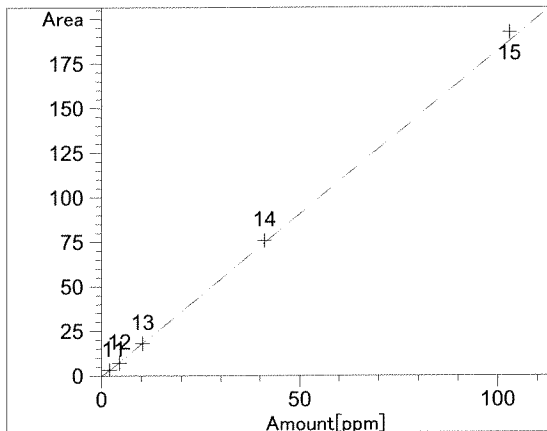
Acetone at exp. RT: 3.979
FID1 A, Front Signal
Correlation: 0.99940
Residual Std. Dev.: 0.71964
Formula: $y = mx + b$
m: 4.53864e-1
b: -9.62030e-2
x: Amount
y: Area
Calibration Level Weights:
Level 11 : 1
Level 12 : 0.199069
Level 13 : 0.036991
Level 14 : 0.002312
Level 15 : 0.00037



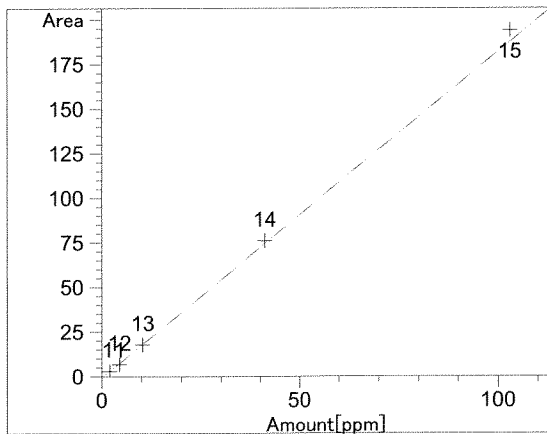
Benzene at exp. RT: 6.765
FID1 A, Front Signal
Correlation: 0.99987
Residual Std. Dev.: 1.16259
Formula: $y = mx + b$
m: 1.52348
b: -1.37013e-1
x: Amount
y: Area
Calibration Level Weights:
Level 11 : 1
Level 12 : 0.199069
Level 13 : 0.036991
Level 14 : 0.002312
Level 15 : 0.00037



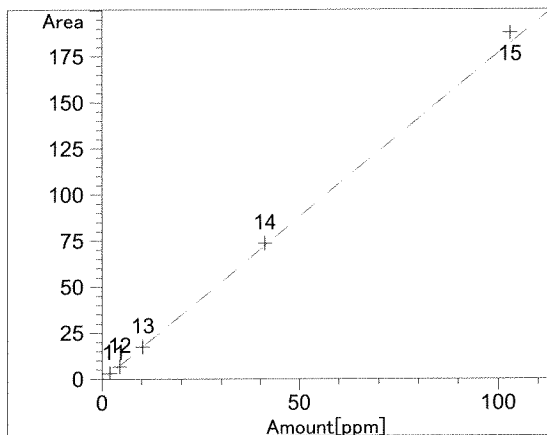
Toluene at exp. RT: 7.838
 FID1 A, Front Signal
 Correlation: 0.99948
 Residual Std. Dev.: 2.43749
 Formula: $y = mx + b$
 m: 1.69842
 b: -3.69838e-1
 x: Amount
 y: Area
 Calibration Level Weights:
 Level 11 : 1
 Level 12 : 0.199069
 Level 13 : 0.036991
 Level 14 : 0.002312
 Level 15 : 0.00037



Ethylbenzene at exp. RT: 8.639
 FID1 A, Front Signal
 Correlation: 0.99910
 Residual Std. Dev.: 2.90974
 Formula: $y = mx + b$
 m: 1.82911
 b: -5.64196e-1
 x: Amount
 y: Area
 Calibration Level Weights:
 Level 11 : 1
 Level 12 : 0.199069
 Level 13 : 0.036991
 Level 14 : 0.002312
 Level 15 : 0.00037



m-p-Xylenes at exp. RT: 8.703
 FID1 A, Front Signal
 Correlation: 0.99846
 Residual Std. Dev.: 3.82571
 Formula: $y = mx + b$
 m: 1.82947
 b: -7.50969e-1
 x: Amount
 y: Area
 Calibration Level Weights:
 Level 11 : 1
 Level 12 : 0.199069
 Level 13 : 0.036991
 Level 14 : 0.002312
 Level 15 : 0.00037



o-Xylene at exp. RT: 8.927
 FID1 A, Front Signal
 Correlation: 0.99886
 Residual Std. Dev.: 3.28936
 Formula: $y = mx + b$
 m: 1.77513
 b: -6.40973e-1
 x: Amount
 y: Area
 Calibration Level Weights:
 Level 11 : 1
 Level 12 : 0.199069
 Level 13 : 0.036991
 Level 14 : 0.002312

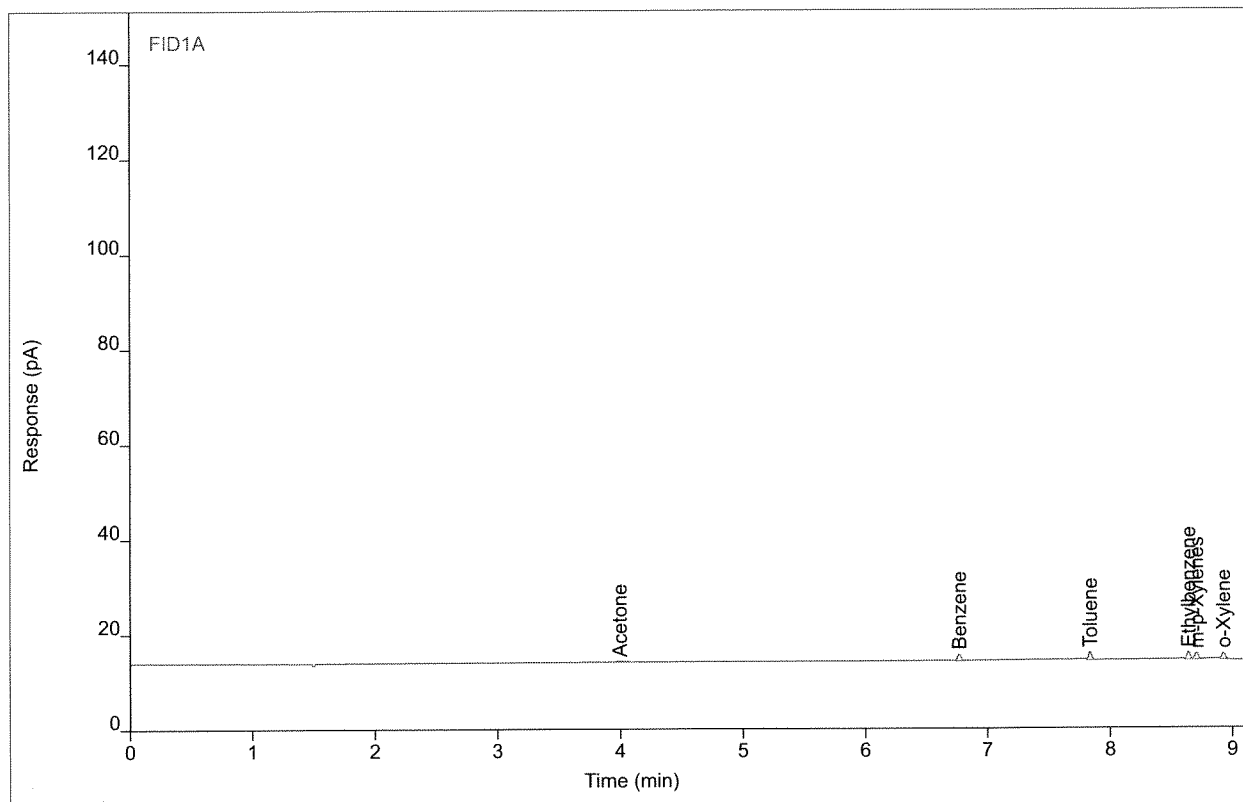
Level 15 : 0.00037

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp723 #B1 ENV(1=2550,6=50)
Sequence Name EDITHP725 ver.5
Data File 002F0808.D
File Location GC/2016/Edith/Quarter 3
Injection Date 9/13/2016 5:13 PM
File Modified 9/14/2016 11:45 AM
Instrument
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 2
Injection Volume 250
Injection 8 of 10
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP723F_BTEX.M
Method Modified 9/14/2016 8:15 AM
Printed 9/15/2016 1:11 PM



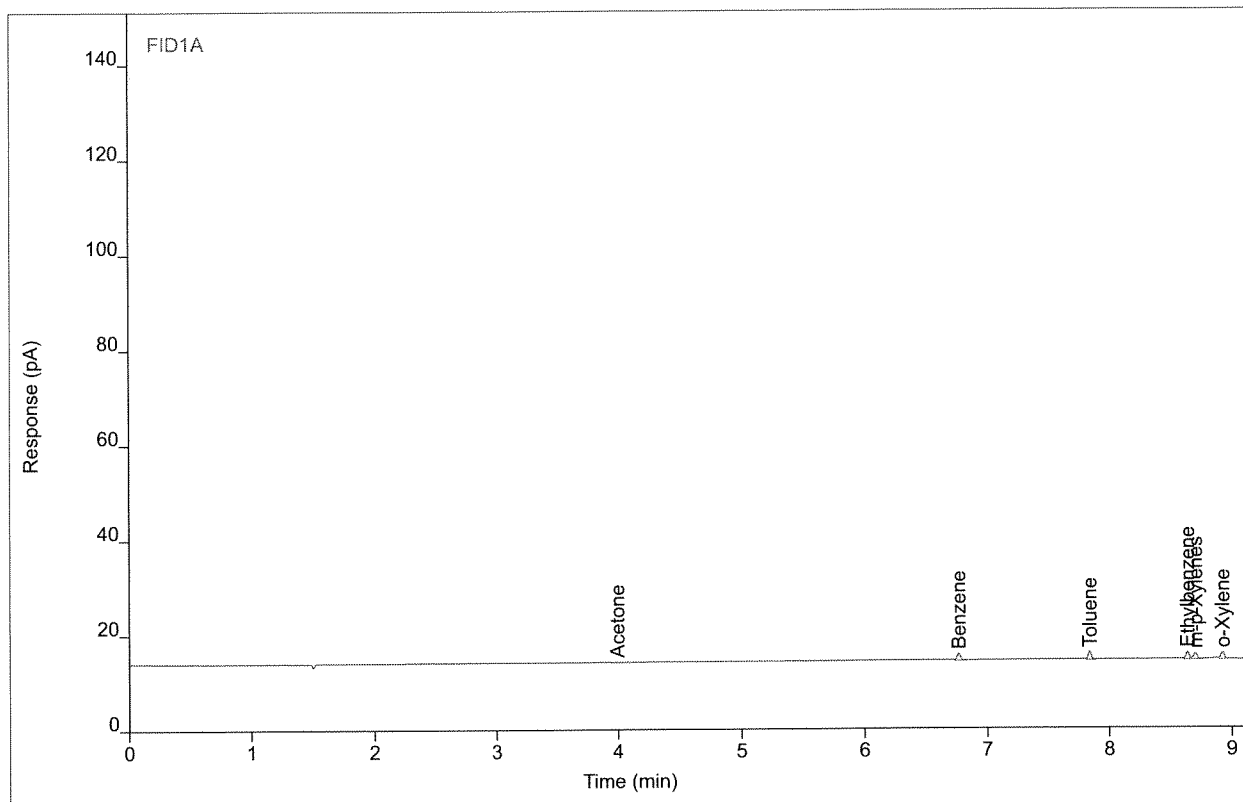
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetone	BB	4.00	0.87157	0.21523	2.13231	1	2.13231	ppm
Benzene	BB	6.77	2.90184	1.45372	1.99468	1	1.99468	ppm
Toluene	BB	7.84	3.03798	1.68853	2.00647	1	2.00647	ppm
Ethylbenzene	BV	8.64	3.13562	1.66128	2.02274	1	2.02274	ppm
m-p-Xylenes	VB	8.70	2.96758	1.38418	2.03258	1	2.03258	ppm
o-Xylene	BB	8.93	2.96003	1.45758	2.02859	1	2.02859	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp723 #B1 ENV(1=2550,6=50)
Sequence Name EDITHP725 ver.5
Data File 002F0809.D
File Location GC/2016/Edith/Quarter 3
Injection Date 9/13/2016 5:27 PM
File Modified 9/14/2016 11:45 AM
Instrument
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 2
Injection Volume 250
Injection 9 of 10
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP723F_BTEX.M
Method Modified 9/14/2016 8:15 AM
Printed 9/15/2016 1:11 PM



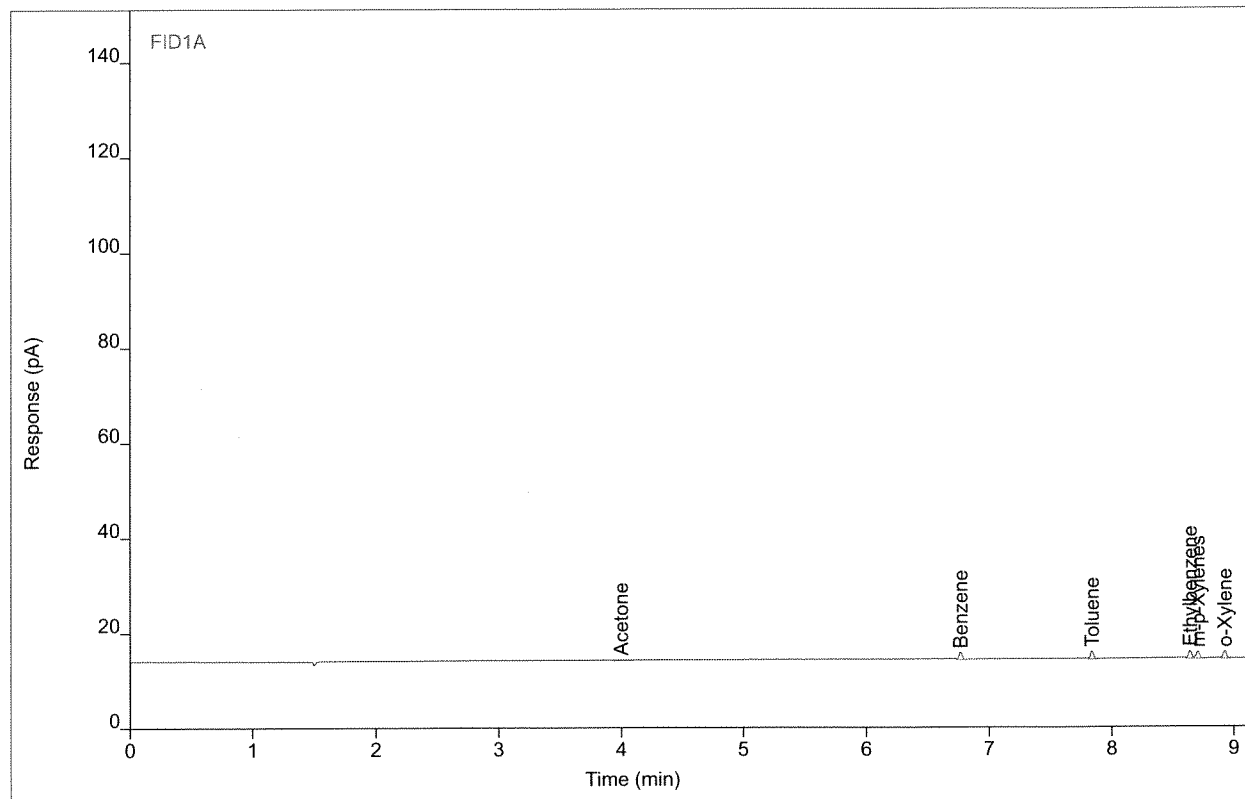
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetone	BB	3.99	0.78665	0.20920	1.94091	1	1.94091	ppm
Benzene	BB	6.77	2.90793	1.45616	1.99868	1	1.99868	ppm
Toluene	BB	7.84	3.07153	1.71507	2.02622	1	2.02622	ppm
Ethylbenzene	BV	8.64	3.13966	1.65656	2.02495	1	2.02495	ppm
m-p-Xylenes	VB	8.70	2.97142	1.41949	2.03468	1	2.03468	ppm
o-Xylene	BB	8.93	2.96776	1.48893	2.03294	1	2.03294	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp723 #B1 ENV(1=2550,6=50)
Sequence Name EDITHP725 ver.5
Data File 002F0810.D
File Location GC/2016/Edith/Quarter 3
Injection Date 9/13/2016 5:42 PM
File Modified 9/14/2016 11:45 AM
Instrument
Operator Nicholas Traversa

Sample Type
Vial Number
Injection Volume 250
Injection 10 of 10
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP723F_BTEX.M
Method Modified 9/14/2016 8:15 AM
Printed 9/15/2016 1:11 PM



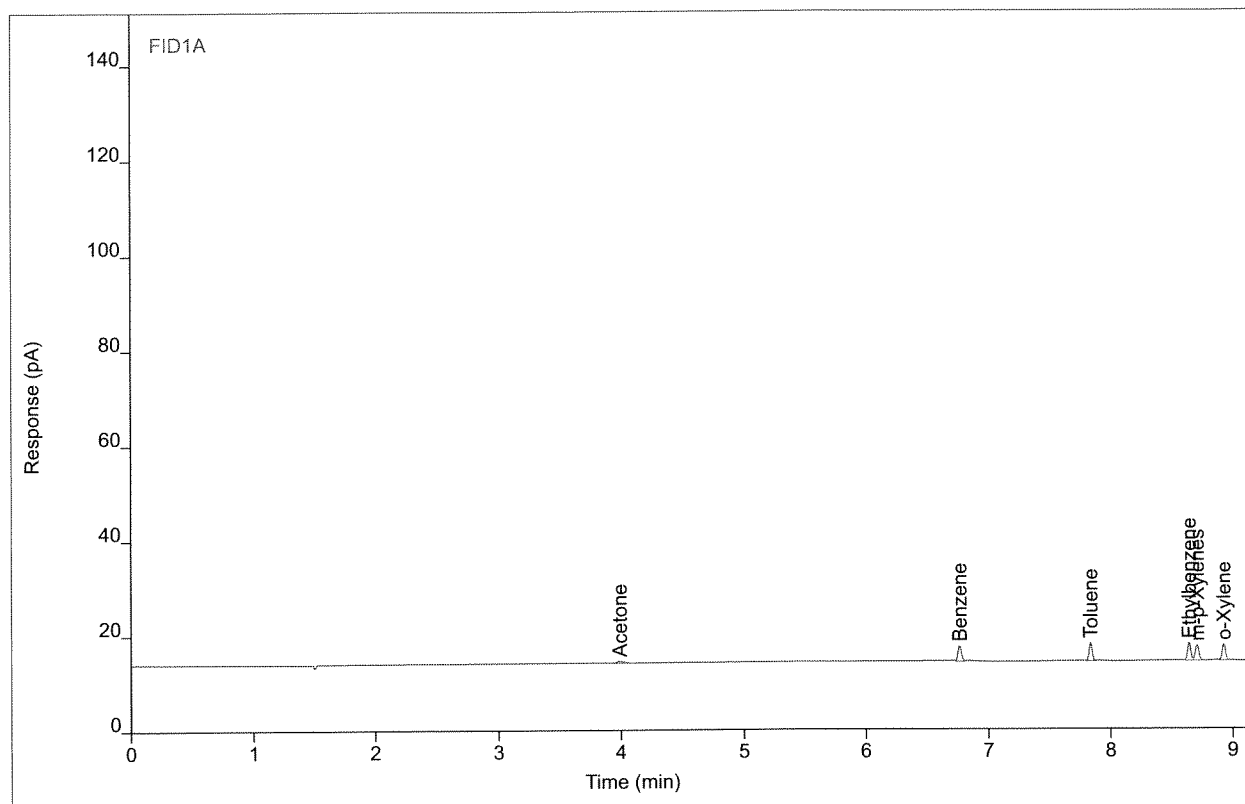
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Acetone	BB	4.00	0.80469	0.21509	1.98495	1	1.98495	ppm
Benzene	BB	6.77	2.91481	1.46517	2.00320	1	2.00320	ppm
Toluene	BB	7.84	3.06649	1.71287	2.02325	1	2.02325	ppm
Ethylbenzene	BV	8.64	3.18275	1.67703	2.04851	1	2.04851	ppm
m-p-Xylenes	VB	8.70	3.04615	1.43642	2.07553	1	2.07553	ppm
o-Xylene	BB	8.93	3.00388	1.49447	2.05329	1	2.05329	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp723 #B2 ENV(1=1000,6=45)
Sequence Name EDITHP725 ver.5
Data File 002F0903.D
File Location GC/2016/Edith/Quarter 3
Injection Date 9/13/2016 6:27 PM
File Modified 9/14/2016 11:45 AM
Instrument
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 2
Injection Volume 250
Injection 3 of 5
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP723F_BTEX.M
Method Modified 9/14/2016 8:15 AM
Printed 9/15/2016 1:11 PM



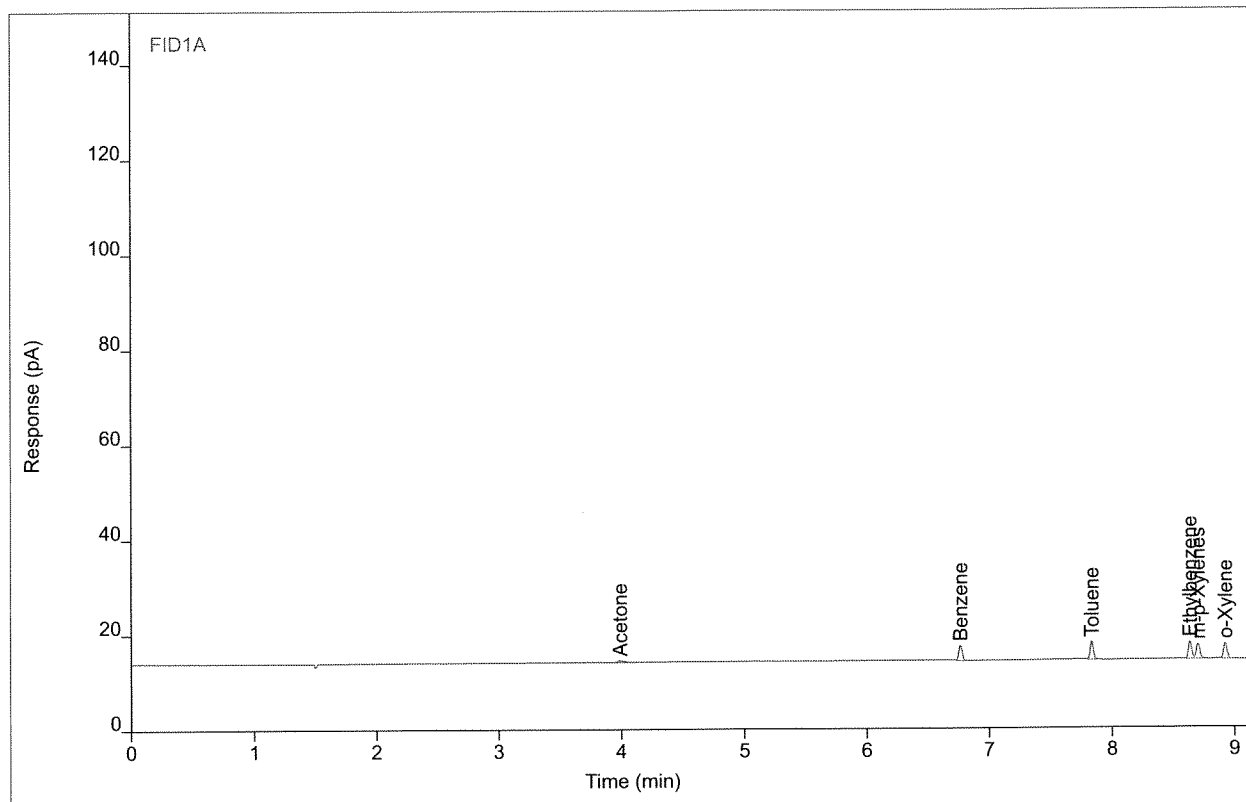
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetone	BB	3.99	1.86887	0.49613	4.32965	1	4.32965	ppm
Benzene	BB	6.77	6.49749	3.28423	4.35484	1	4.35484	ppm
Toluene	BB	7.84	6.87017	3.83278	4.26280	1	4.26280	ppm
Ethylbenzene	BV	8.64	7.06805	3.73668	4.17266	1	4.17266	ppm
m-p-Xylenes	VB	8.70	6.72925	3.17330	4.08873	1	4.08873	ppm
o-Xylene	BB	8.93	6.70045	3.32778	4.13571	1	4.13571	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp723 #B2 ENV(1=1000,6=45)
Sequence Name EDITHP725 ver.5
Data File 002F0904.D
File Location GC/2016/Edith/Quarter 3
Injection Date 9/13/2016 6:41 PM
File Modified 9/14/2016 11:45 AM
Instrument
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 2
Injection Volume 250
Injection 4 of 5
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP723F_BTEX.M
Method Modified 9/14/2016 8:15 AM
Printed 9/15/2016 1:11 PM



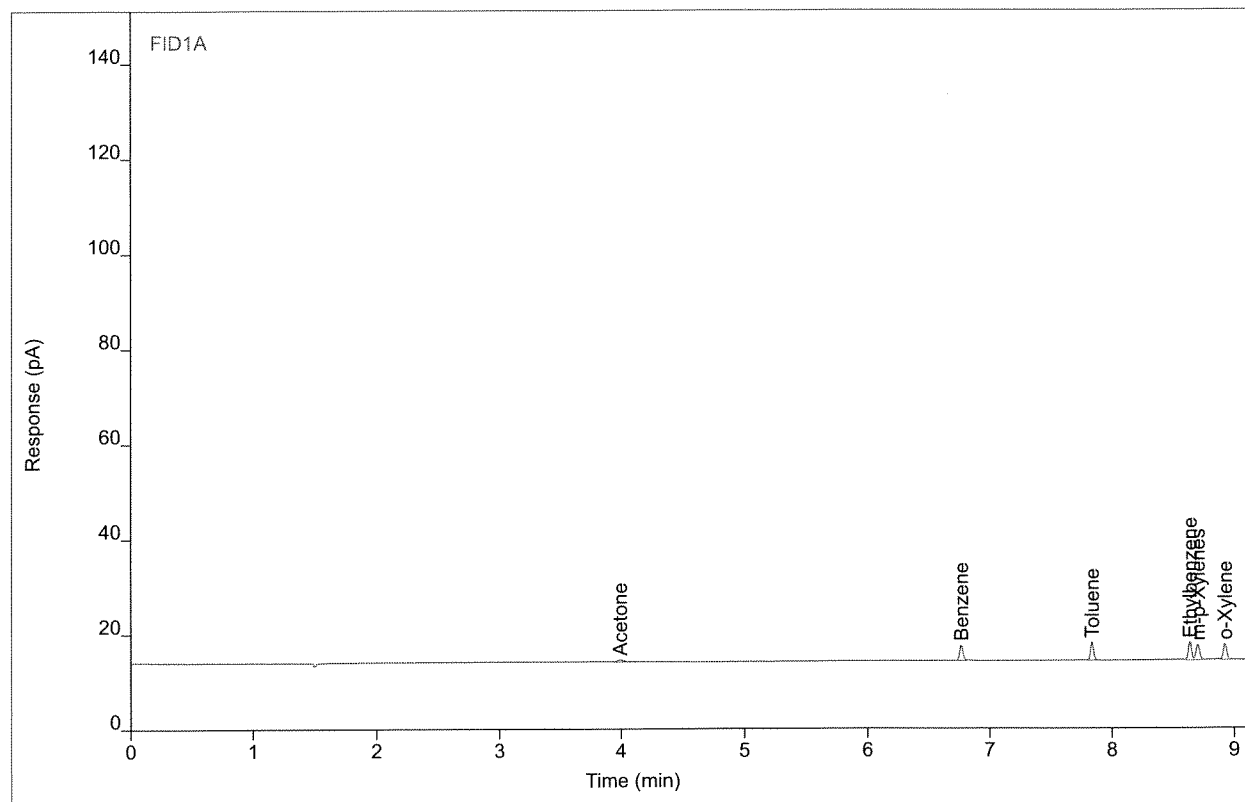
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetone	BB	3.99	1.81527	0.48578	4.21157	1	4.21157	ppm
Benzene	BB	6.77	6.52409	3.26071	4.37230	1	4.37230	ppm
Toluene	BB	7.84	6.88011	3.84016	4.26865	1	4.26865	ppm
Ethylbenzene	BV	8.64	7.10310	3.74725	4.19182	1	4.19182	ppm
m-p-Xylenes	VB	8.70	6.78881	3.20854	4.12129	1	4.12129	ppm
o-Xylene	BB	8.93	6.75250	3.34574	4.16503	1	4.16503	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp723 #B2 ENV(1=1000,6=45)
Sequence Name EDITHP725 ver.5
Data File 002F0905.D
File Location GC/2016/Edith/Quarter 3
Injection Date 9/13/2016 6:56 PM
File Modified 9/14/2016 11:45 AM
Instrument
Operator Nicholas Traversa

Sample Type
Vial Number
Injection Volume 250
Injection 5 of 5
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP723F_BTEX.M
Method Modified 9/14/2016 8:15 AM
Printed 9/15/2016 1:11 PM



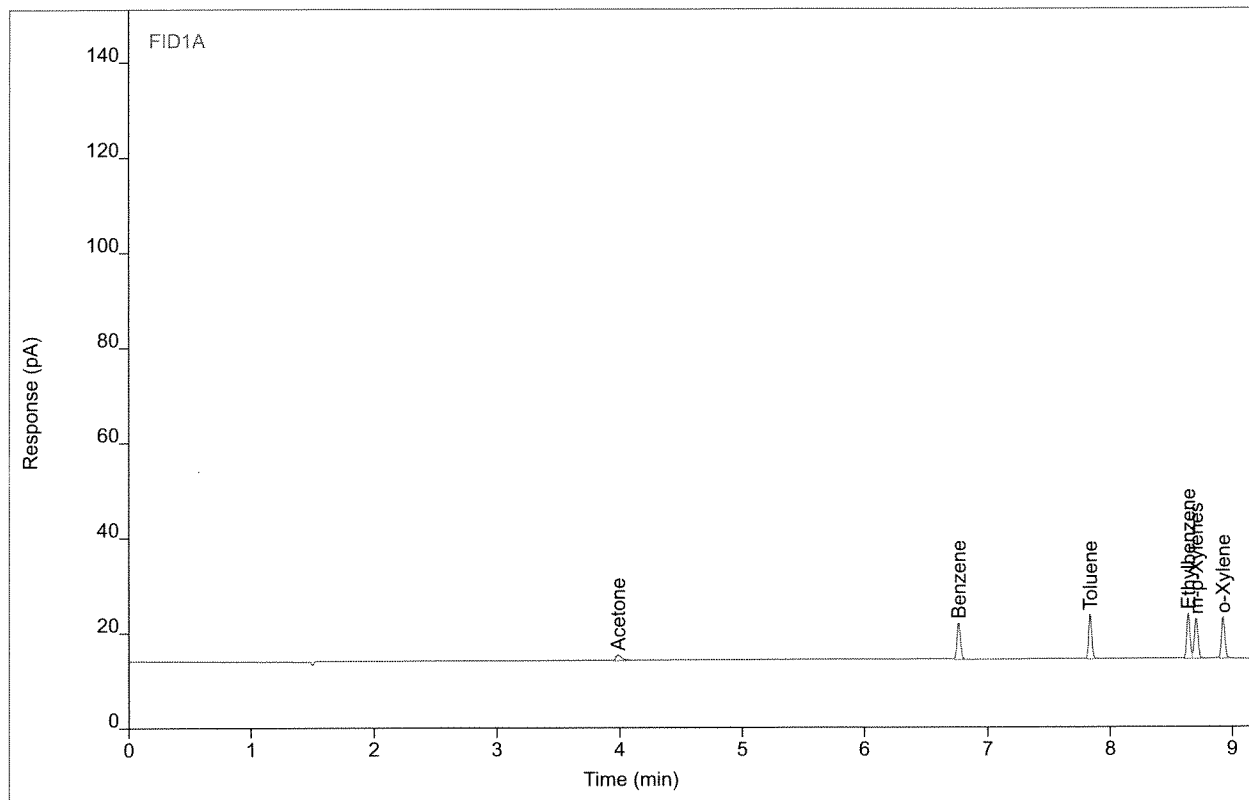
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetone	BB	3.99	1.83826	0.48563	4.26221	1	4.26221	ppm
Benzene	BB	6.77	6.52935	3.29346	4.37575	1	4.37575	ppm
Toluene	BB	7.84	6.91214	3.85386	4.28751	1	4.28751	ppm
Ethylbenzene	BV	8.64	7.14467	3.77213	4.21455	1	4.21455	ppm
m-p-Xylenes	VB	8.70	6.82324	3.22530	4.14011	1	4.14011	ppm
o-Xylene	BB	8.93	6.79089	3.35488	4.18665	1	4.18665	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp723 #B3 ENV(1=900,6=100)
Sequence Name EDITHP725 ver.5
Data File 002F1003.D
File Location GC/2016/Edith/Quarter 3
Injection Date 9/13/2016 7:40 PM
File Modified 9/14/2016 11:46 AM
Instrument
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 2
Injection Volume 250
Injection 3 of 5
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP723F_BTEX.M
Method Modified 9/14/2016 8:15 AM
Printed 9/15/2016 1:11 PM



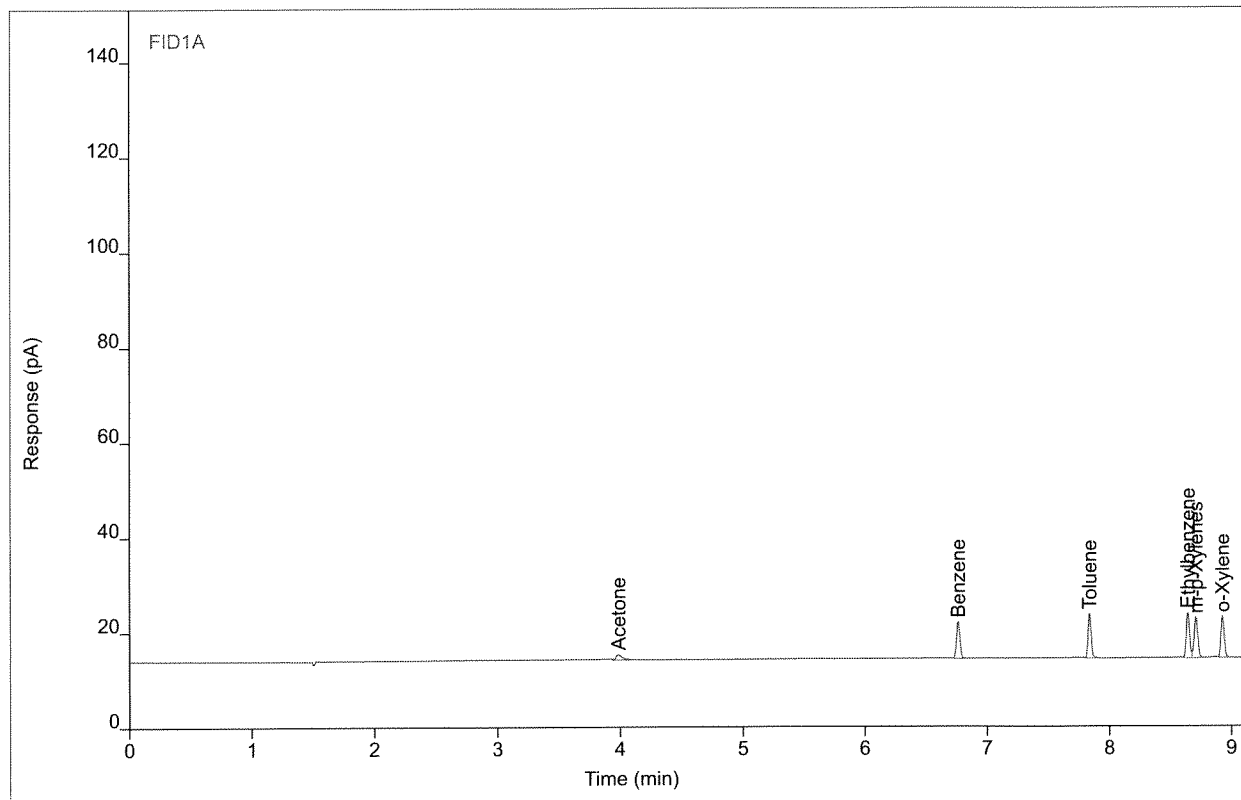
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetone	BB	3.99	4.50116	1.21166	10.1294	1	10.1294	ppm
Benzene	BB	6.77	15.3758	7.74191	10.1825	1	10.1825	ppm
Toluene	BB	7.84	16.7956	9.38604	10.1067	1	10.1067	ppm
Ethylbenzene	BV	8.64	18.0582	9.53169	10.1811	1	10.1811	ppm
m-p-Xylenes	VB	8.70	17.7895	8.44378	10.1343	1	10.1343	ppm
o-Xylene	BB	8.93	17.3674	8.65031	10.1448	1	10.1448	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp723 #B3 ENV(1=900,6=100)
Sequence Name EDITHP725 ver.5
Data File 002F1004.D
File Location GC/2016/Edith/Quarter 3
Injection Date 9/13/2016 7:55 PM
File Modified 9/14/2016 11:46 AM
Instrument
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 2
Injection Volume 250
Injection 4 of 5
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP723F_BTEX.M
Method Modified 9/14/2016 8:15 AM
Printed 9/15/2016 1:11 PM



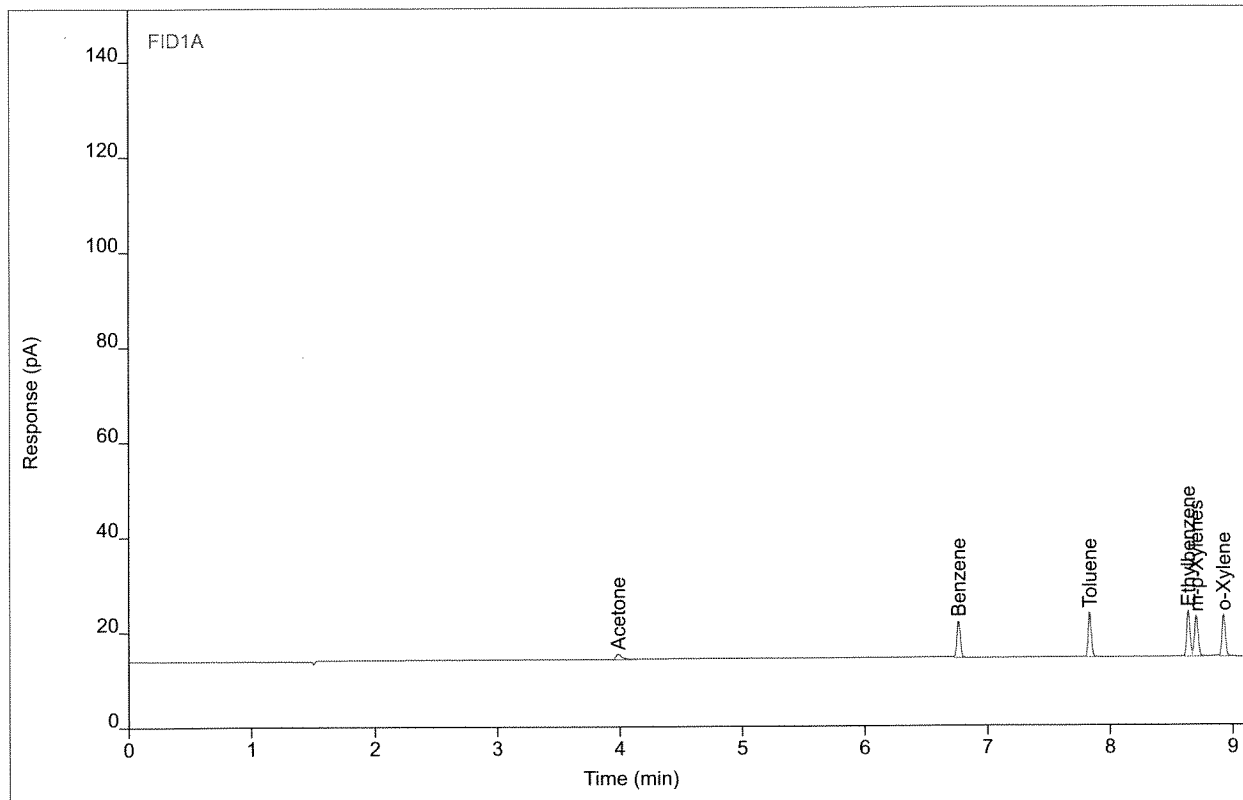
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Acetone	BB	3.99	4.48674	1.21381	10.0976	1	10.0976	ppm
Benzene	BB	6.77	15.3421	7.75177	10.1604	1	10.1604	ppm
Toluene	BB	7.84	16.8164	9.36464	10.1189	1	10.1189	ppm
Ethylbenzene	BV	8.64	18.0132	9.53150	10.1565	1	10.1565	ppm
m-p-Xylenes	VB	8.70	17.8118	8.45537	10.1465	1	10.1465	ppm
o-Xylene	BB	8.93	17.4184	8.66255	10.1735	1	10.1735	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp723 #B3 ENV(1=900,6=100)
Sequence Name EDITHP725 ver.5
Data File 002F1005.D
File Location GC/2016/Edith/Quarter 3
Injection Date 9/13/2016 8:10 PM
File Modified 9/14/2016 11:46 AM
Instrument
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 2
Injection Volume 250
Injection 5 of 5
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP723F_BTEx.M
Method Modified 9/14/2016 8:15 AM
Printed 9/15/2016 1:11 PM



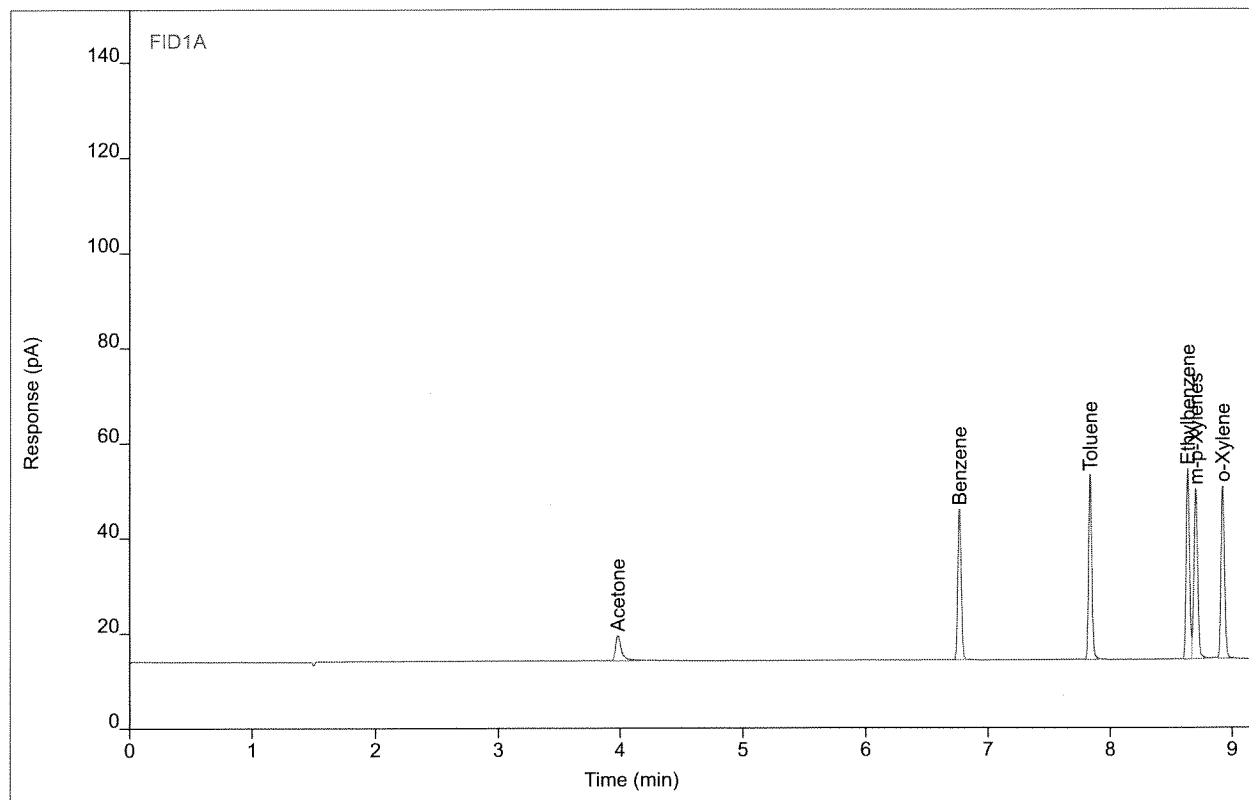
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetone	BB	3.99	4.46167	1.21051	10.0424	1	10.0424	ppm
Benzene	BB	6.77	15.3815	7.76343	10.1862	1	10.1862	ppm
Toluene	BB	7.84	16.8731	9.44539	10.1524	1	10.1524	ppm
Ethylbenzene	BV	8.64	18.1104	9.62796	10.2096	1	10.2096	ppm
m-p-Xylenes	VB	8.70	17.8810	8.46510	10.1844	1	10.1844	ppm
o-Xylene	BB	8.93	17.4739	8.70086	10.2048	1	10.2048	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp723 #B4 ENV(1=600,6=400)
Sequence Name EDITHP725 ver.5
Data File 002F1103.D
File Location GC/2016/Edith/Quarter 3
Injection Date 9/13/2016 8:54 PM
File Modified 9/14/2016 11:46 AM
Instrument
Operator Nicholas Traversa

Sample Type
Vial Number
Injection Volume 250
Injection 3 of 5
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP723F_BTEX.M
Method Modified 9/14/2016 8:15 AM
Printed 9/15/2016 1:11 PM



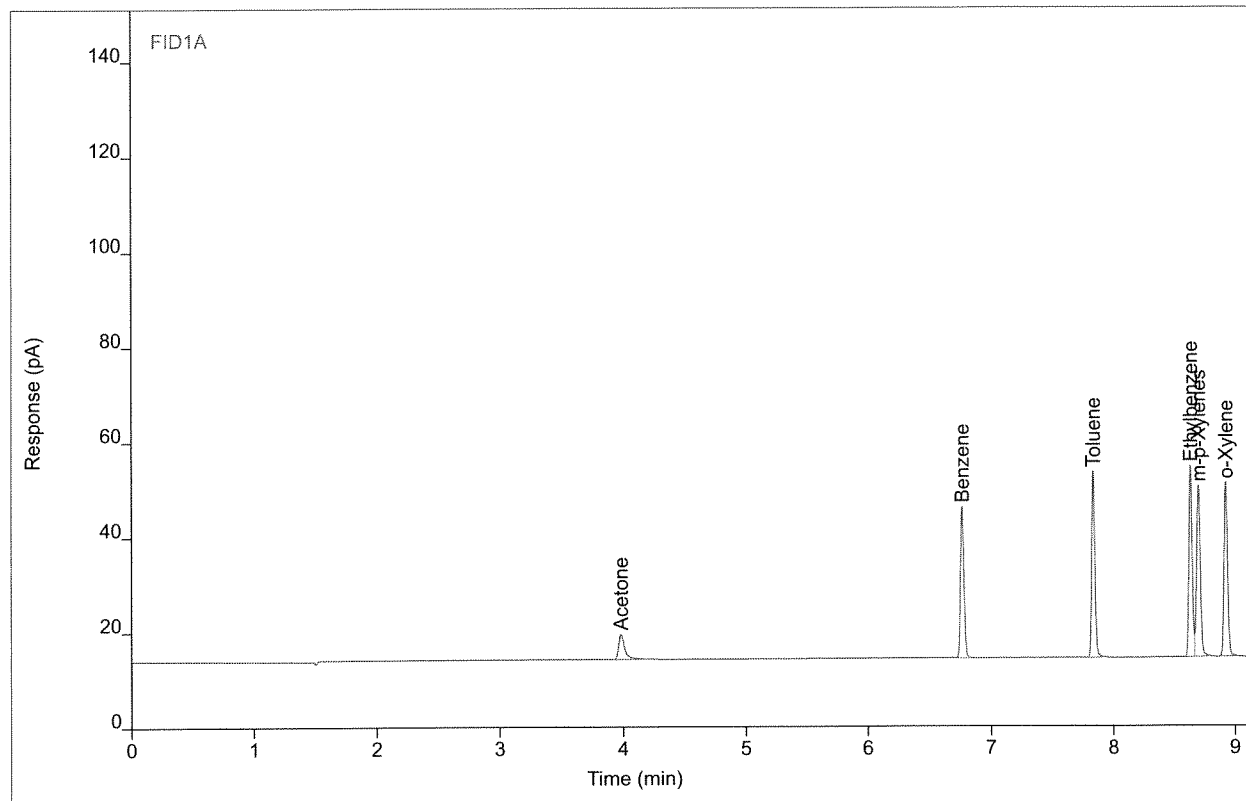
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetone	BB	3.98	18.9395	5.33130	41.9415	1	41.9415	ppm
Benzene	BB	6.77	62.9546	31.7036	41.4129	1	41.4129	ppm
Toluene	BB	7.84	70.3437	38.7831	41.6350	1	41.6350	ppm
Ethylbenzene	BV	8.64	75.7685	40.0047	41.7321	1	41.7321	ppm
m-p-Xylenes	VB	8.70	75.9132	35.7423	41.9051	1	41.9051	ppm
o-Xylene	BB	8.93	73.5332	36.2651	41.7852	1	41.7852	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp723 #B4 ENV(1=600,6=400)
Sequence Name EDITHP725 ver.5
Data File 002F1104.D
File Location GC/2016/Edith/Quarter 3
Injection Date 9/13/2016 9:09 PM
File Modified 9/14/2016 11:46 AM
Instrument
Operator Nicholas Traversa

Sample Type
Vial Number
Injection Volume 250
Injection 4 of 5
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP723F_BTEX.M
Method Modified 9/14/2016 8:15 AM
Printed 9/15/2016 1:11 PM



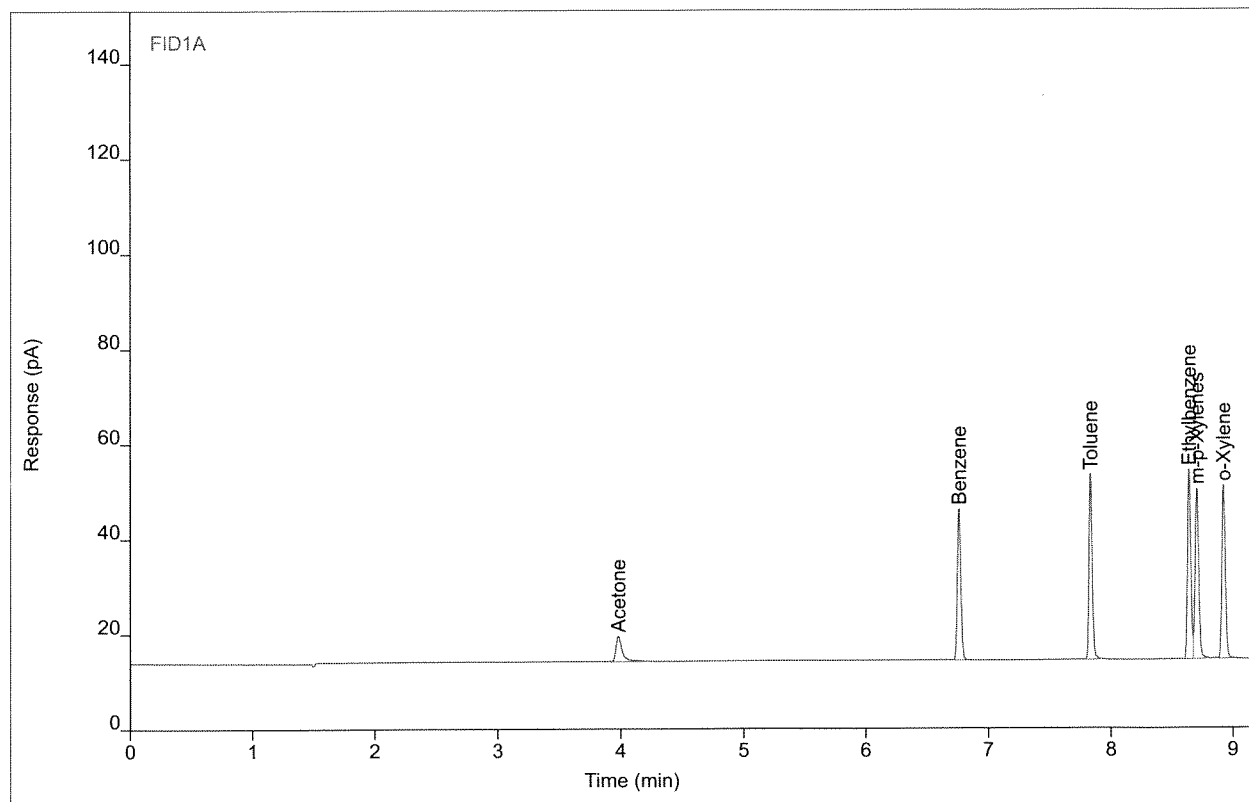
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetone	BB	3.98	18.6552	5.34221	41.3152	1	41.3152	ppm
Benzene	BB	6.77	63.2174	31.8531	41.5854	1	41.5854	ppm
Toluene	BB	7.84	70.4698	39.1353	41.7092	1	41.7092	ppm
Ethylbenzene	BV	8.64	76.1115	40.1689	41.9197	1	41.9197	ppm
m-p-Xylenes	VB	8.70	76.2094	35.9102	42.0670	1	42.0670	ppm
o-Xylene	BB	8.93	73.7821	36.4588	41.9254	1	41.9254	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp723 #B4 ENV(1=600,6=400)
Sequence Name EDITHP725 ver.5
Data File 002F1105.D
File Location GC/2016/Edith/Quarter 3
Injection Date 9/13/2016 9:23 PM
File Modified 9/14/2016 11:46 AM
Instrument
Operator Nicholas Traversa

Sample Type
Vial Number
Injection Volume
Injection
Acquisition Method
Analysis Method
Method Modified
Printed
Calibration
Vial 2
250
5 of 5
AQ_EDITHP503_HRVOC.M
EDITHP723F_BTEX.M
9/14/2016 8:15 AM
9/15/2016 1:11 PM



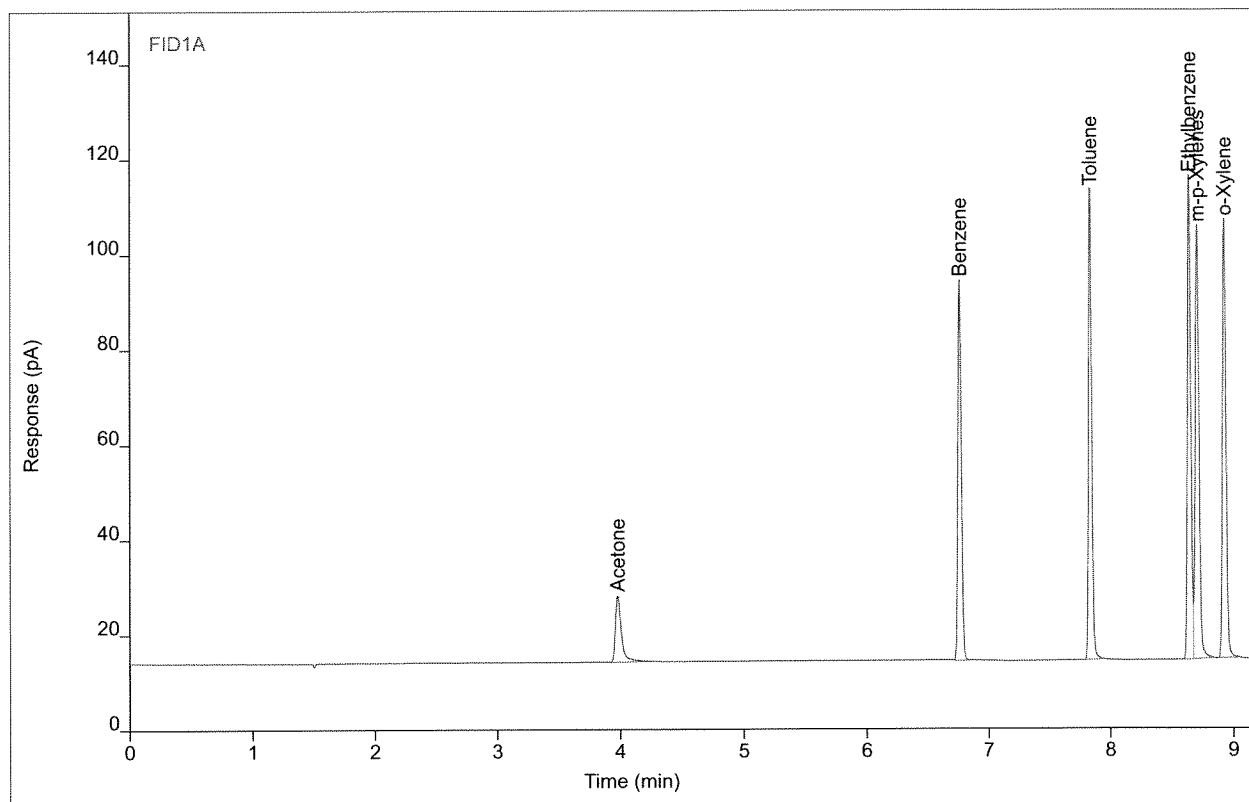
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetone	BB	3.98	18.9481	5.34796	41.9604	1	41.9604	ppm
Benzene	BB	6.77	63.0047	31.8650	41.4458	1	41.4458	ppm
Toluene	BB	7.84	70.5137	38.9285	41.7351	1	41.7351	ppm
Ethylbenzene	BV	8.64	75.9803	39.8797	41.8480	1	41.8480	ppm
m-p-Xylenes	VB	8.70	76.0712	35.8343	41.9914	1	41.9914	ppm
o-Xylene	BB	8.93	73.5459	36.3690	41.7923	1	41.7923	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp723 #B5 ENV(1=0,6=450)
Sequence Name EDITHP725 ver.5
Data File 002F1203.D
File Location GC/2016/Edith/Quarter 3
Injection Date 9/13/2016 10:08 PM
File Modified 9/14/2016 11:46 AM
Instrument
Operator Nicholas Traversa

Sample Type
Vial Number
Injection Volume 250
Injection 3 of 5
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP723F_BTEX.M
Method Modified 9/14/2016 8:15 AM
Printed 9/15/2016 1:11 PM



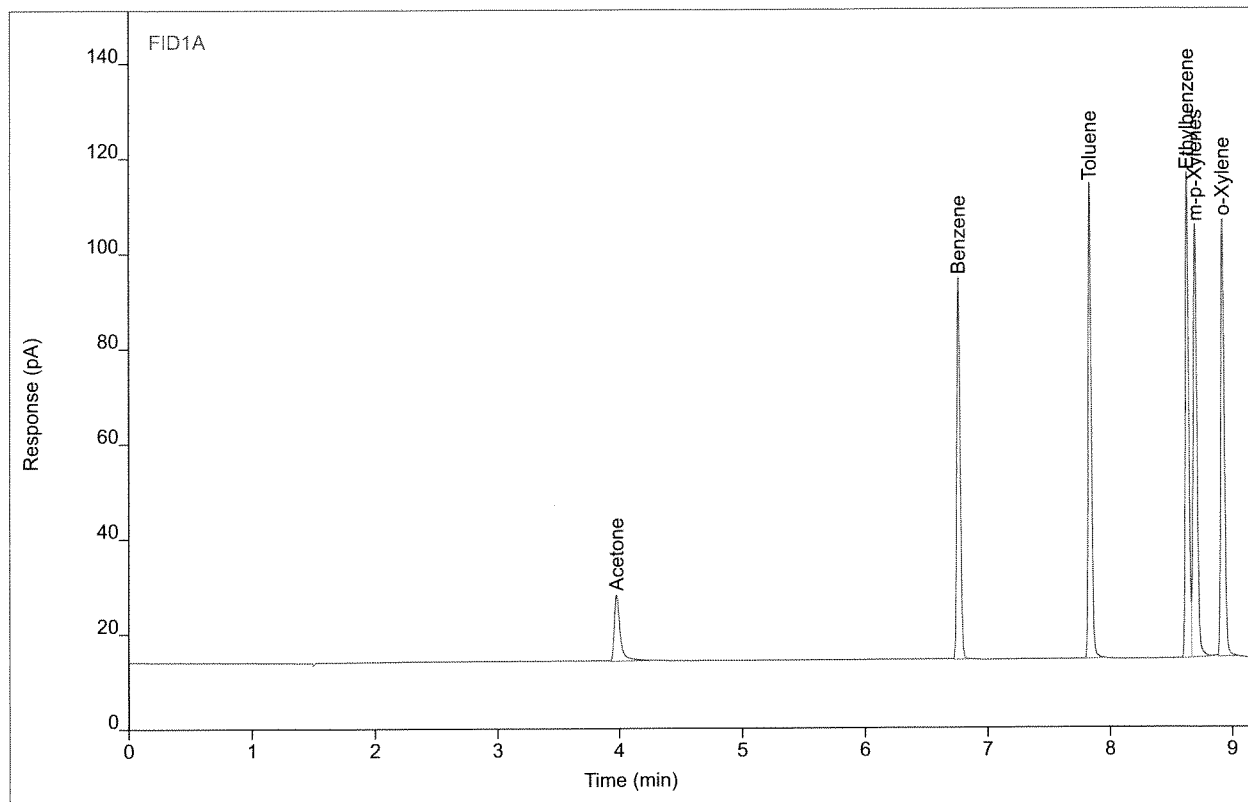
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetone	BB	3.98	47.8934	14.0025	105.736	1	105.736	ppm
Benzene	BB	6.77	159.011	79.8862	104.464	1	104.464	ppm
Toluene	BB	7.84	178.882	98.7176	105.541	1	105.541	ppm
Ethylbenzene	BV	8.64	192.946	101.459	105.795	1	105.795	ppm
m-p-Xylenes	VB	8.70	194.484	90.9806	106.717	1	106.717	ppm
o-Xylene	BB	8.93	187.993	92.0785	106.265	1	106.265	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp723 #B5 ENV(1=0,6=450)
Sequence Name EDITHP725 ver.5
Data File 002F1204.D
File Location GC/2016/Edith/Quarter 3
Injection Date 9/13/2016 10:22 PM
File Modified 9/14/2016 11:46 AM
Instrument
Operator Nicholas Traversa

Sample Type
Vial Number
Injection Volume 250
Injection 4 of 5
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP723F_BTEX.M
Method Modified 9/14/2016 8:15 AM
Printed 9/15/2016 1:11 PM



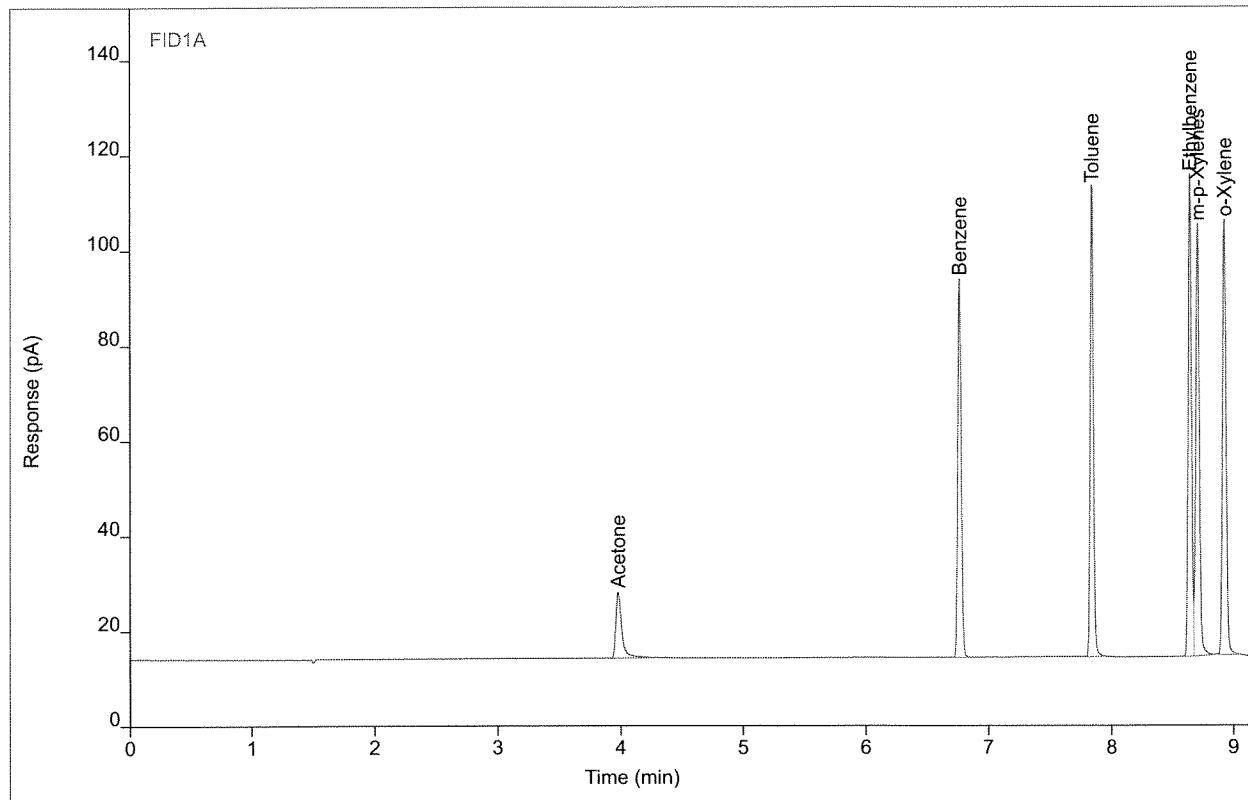
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetone	BB	3.98	48.1508	13.9524	106.303	1	106.303	ppm
Benzene	BB	6.77	158.924	80.1440	104.406	1	104.406	ppm
Toluene	BB	7.84	178.902	99.5583	105.552	1	105.552	ppm
Ethylbenzene	BV	8.64	192.888	101.762	105.763	1	105.763	ppm
m-p-Xylenes	VB	8.70	194.178	90.7859	106.549	1	106.549	ppm
o-Xylene	BB	8.93	188.053	91.7389	106.299	1	106.299	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp723 #B5 ENV(1=0,6=450)
Sequence Name EDITHP725 ver.5
Data File 002F1205.D
File Location GC/2016/Edith/Quarter 3
Injection Date 9/13/2016 10:37 PM
File Modified 9/14/2016 11:46 AM
Instrument
Operator Nicholas Traversa

Sample Type
Vial Number
Injection Volume 250
Injection 5 of 5
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP723F_BTEX.M
Method Modified 9/14/2016 8:15 AM
Printed 9/15/2016 1:11 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetone	BB	3.98	47.5586	13.9366	104.998	1	104.998	ppm
Benzene	BB	6.77	158.274	79.5304	103.980	1	103.980	ppm
Toluene	BB	7.84	178.269	98.8040	105.180	1	105.180	ppm
Ethylbenzene	BV	8.64	192.303	101.140	105.443	1	105.443	ppm
m-p-Xylenes	VB	8.70	193.694	90.6589	106.285	1	106.285	ppm
o-Xylene	BB	8.93	187.220	91.3030	105.829	1	105.829	ppm

THE LINDE GROUP

Linde

SHIPPED TO: Enthalpy Analytical Inc.
800 Capitola Dr Ste 1
Durham, NC 27713-4385

PAGE: 1 of 1

CERTIFICATE OF ANALYSIS

Sales#:	113402457	Cylinder Size:	2A (8" X 47 5")
Production#:	1357542	Cylinder #:	CC-20216
Certification Date:	Nov-20-2015	Cylinder Pressure:	1000 psig
P.O.#:	10201504	Cylinder Valve:	CGA 350 / Steel
Blend Type:	CERTIFIED	Cylinder Volume:	29.5 Liter
Material#:	24086389	Cylinder Material:	Aluminum
Traceability:	NIST by weight	Gas Volume:	2000 Liters
Expiration Date:	Nov-20-2016	Blend Tolerance:	5% Relative
Do NOT use under:	150 psig	Analytical Accuracy:	2% Relative

COMPONENT	CAS NUMBER	REQUESTED CONC	CERTIFIED CONC
Acetone	67-64-1	100 ppm	103 ppm
Benzene	71-43-2	100 ppm	103 ppm
Toluene	108-88-3	100 ppm	103 ppm
Ethylbenzene	100-41-4	100 ppm	103 ppm
p-Xylene	106-42-3	50.0 ppm	51.6 ppm
m-Xylene	108-38-3	50.0 ppm	51.6 ppm
o-Xylene	95-47-6	100 ppm	103 ppm
Nitrogen	7727-37-9	Balance	Balance

ANALYST: 
Lou Lorenzetti

DATE: Nov-20-2015

=====

Agilent 7890A

=====

Oven
 Equilibration Time 0.3 min
 Max Temperature 200 degrees C
 Slow Fan Disabled
 Oven Program On

35 °C for 2.2 min
 #1 then 15 °C/min to 70 °C for 0.07 min
 #2 then 30 °C/min to 180 °C for 1 min
 Run Time 9.27 min

Sample Overlap
 Sample overlap is not enabled

Front SS Inlet H2
 Mode Split
 Heater On 200 °C
 Pressure On 5.1931 psi
 Total Flow On 15.6 mL/min
 Septum Purge Flow On 3 mL/min
 Gas Saver Off
 Split Ratio 5 :1
 Split Flow 10.5 mL/min

Back SS Inlet H2
 Mode Split
 Heater On 200 °C
 Pressure On 14.935 psi
 Total Flow On 25.632 mL/min
 Septum Purge Flow On 3 mL/min
 Gas Saver Off
 Split Ratio 2 :1
 Split Flow 15.088 mL/min

Column #1
 Restek 10198Rtx-1 S/N 806941
 280 °C: 30 m x 320 µm x 4 µm
 In: Front SS Inlet H2
 Out: Front Detector FID

(Initial) 35 °C
 Pressure 5.1931 psi
 Flow 2.1 mL/min
 Average Velocity 39.91 cm/sec
 Holdup Time 1.2528 min
 Flow Program On
 2.1 mL/min for 0 min
 Run Time 9.27 min

Column #2
 Restek 19757Rt-Alumina BOND/Na2SO4
 200 °C: 30 m x 320 µm x 5 µm
 In: Back SS Inlet H2
 Out: Back Detector FID

(Initial) 35 °C
 Pressure 14.935 psi
 Flow 7.5439 mL/min
 Average Velocity 110 cm/sec
 Holdup Time 0.45455 min
 Flow Program On

E-367

Run Time 9.27 min

Front Detector FID
Heater On 300 °C
H2 Flow On 50 mL/min
Air Flow On 450 mL/min
Makeup Flow On 35 mL/min
Const Col + Makeup Off
Flame On
Electrometer On

Back Detector FID
Heater On 200 °C
H2 Flow On 50 mL/min
Air Flow On 450 mL/min
Makeup Flow On 35 mL/min
Const Col + Makeup Off
Flame On
Electrometer On

Valve 1
Gas Sampling Valve Off
GSV Loop Volume 0.25 mL
Load Time 1.5 min
Inject Time 0.5 min

Valve 2
Gas Sampling Valve Off
GSV Loop Volume 0.25 mL
Load Time 1.5 min
Inject Time 0.5 min

Valve Box
Heater On 150 °C

Signals
Signal #1: Front Signal Save On
20 Hz

Signal #2: Test Plot Save Off
50 Hz

Signal #3: Back Signal Save On
20 Hz

Signal #4: Test Plot Save Off
50 Hz

Calibration Table

Calib. Data Modified : 9/27/2016 9:41:00 AM

Rel. Reference Window : 0.000 %
 Abs. Reference Window : 0.100 min
 Rel. Non-ref. Window : 0.000 %
 Abs. Non-ref. Window : 0.050 min
 Uncalibrated Peaks : Separately calculated (see below)
 Partial Calibration : Yes, identified peaks are recalibrated
 Correct All Ret. Times: No, only for identified peaks

Curve Type : Linear
 Origin : Connected
 Weight : Quadratic (Amnt)

Recalibration Settings:
 Average Response : Average all calibrations
 Average Retention Time: Floating Average New 75%

Calibration Report Options :
 Printout of recalibrations within a sequence:
 Calibration Table after Recalibration
 Normal Report after Recalibration
 If the sequence is done with bracketing:
 Results of first cycle (ending previous bracket)

Signal 1: FID1 A, Front Signal
 Uncalibrated Peaks : using compound Propane
 Signal 2: FID3 B, Back Signal
 Uncalibrated Peaks : not reported

RetTime	Lvl	Amount	Area	Amt/Area	Ref Grp Name
[min]	Sig	[ppm]			
1.527	1	1	5.00000	1.24523	4.01531
		2	20.00000	5.11775	3.90797
		3	40.00000	10.40647	3.84376
		4	100.00000	26.34627	3.79560
		5	2073.00000	561.22530	3.69370
		6	8524.00000	2257.69914	3.77553
		7	1.45670e4	3854.73161	3.77899
		8	5.00600e4	1.36410e4	3.66982
1.665	1	1	5.00000	2.59503	1.92676
		2	20.00000	10.20115	1.96056
		3	40.00000	20.47167	1.95392
		4	100.00000	51.69932	1.93426
		5	2072.00000	1082.67851	1.91377
		6	8519.00000	4353.15251	1.95697
		7	1.45580e4	7432.60400	1.95867
		8	5.00300e4	2.62806e4	1.90369
1.994	1	1	5.00000	3.92909	1.27256
		2	20.00000	15.24554	1.31186
		3	40.00000	30.75794	1.30048
		4	100.00000	77.68890	1.28719
		5	2072.00000	1621.69543	1.27768
		6	8519.00000	6521.97721	1.30620
		7	1.45580e4	1.11378e4	1.30708
		8	5.00300e4	3.93981e4	1.26986
2.907	1	1	5.00000	5.26084	9.50418e-1

Butane

E-369

16-323A

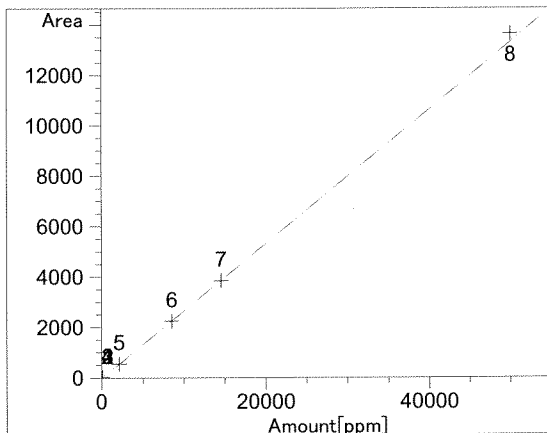
Page 1 of 5

RetTime [min]	Lvl Sig	Amount [ppm]	Area	Amt/Area	Ref Grp Name
2		20.00000	20.20296	9.89954e-1	
3		40.00000	40.62684	9.84571e-1	
4		100.00000	102.72145	9.73506e-1	
5		414.00000	430.28957	9.62143e-1	
6		1703.00000	1733.93445	9.82159e-1	
7		2910.00000	2964.44173	9.81635e-1	
8		1.00000e4	1.05115e4	9.51336e-1	
4.465	1	5.15000	6.87926	7.48627e-1	Pentane
	2	20.60000	26.13299	7.88276e-1	
	3	41.20000	52.58876	7.83437e-1	
	4	103.00000	132.20841	7.79073e-1	
	5	207.20000	267.50307	7.74571e-1	
	6	852.00000	1082.24023	7.87256e-1	
	7	1456.00000	1853.30054	7.85625e-1	
	8	5003.00000	6573.36165	7.61102e-1	
6.040	1	5.05000	7.95434	6.34874e-1	Hexane
	2	20.20000	30.50312	6.62227e-1	
	3	40.40000	61.57380	6.56123e-1	
	4	101.00000	155.21520	6.50709e-1	
	5	165.90000	253.98077	6.53199e-1	
	6	682.00000	1032.59574	6.60471e-1	
	7	1166.00000	1767.63330	6.59639e-1	
	8	4006.00000	6277.03906	6.38199e-1	
7.204	1	5.00000	9.08186	5.50548e-1	Heptane
	2	20.00000	34.88089	5.73380e-1	
	3	40.00000	70.44879	5.67788e-1	
	4	100.00000	177.67182	5.62835e-1	
	8	251.00000	459.73308	5.45969e-1	

Peak Sum Table

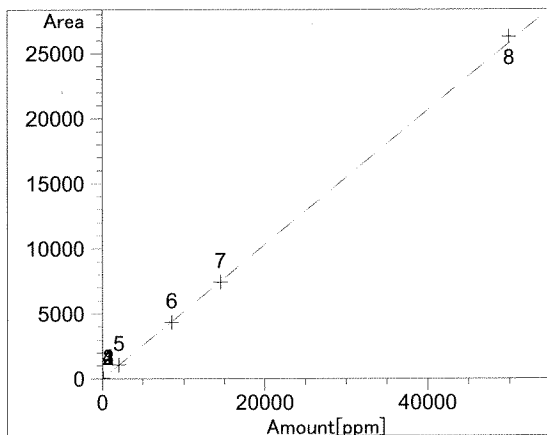
Name	StartTime [min]	EndTime [min]	Use Reference	Response factor	Multiplier	ISTD Peak
as Ethane	1.550	1.855	None	1.9388	1.9388	None
as Propane	1.855	2.479	None	1.2916	1.2916	None
as Butane	2.479	3.714	None	9.7197e-1	0.9720	None
as Pentane	3.714	5.209	None	7.7600e-1	0.7760	None
as Hexane	5.209	6.650	None	6.5193e-1	0.6519	None
as Heptane	6.650	16.300	None	5.6011e-1	0.5601	None

Calibration Curves

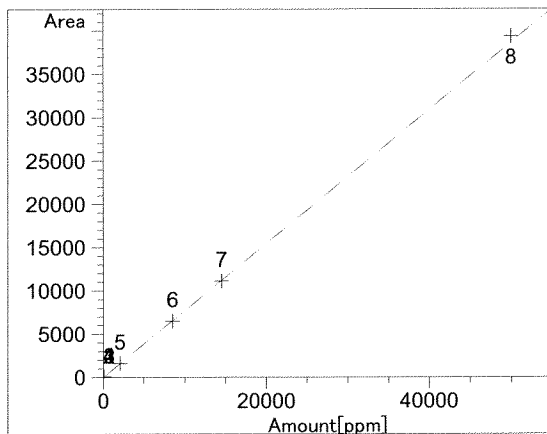


Methane at exp. RT: 1.527
 FID1 A, Front Signal
 Correlation: 0.99987
 Residual Std. Dev.: 132.66368
 Formula: $y = mx + b$
 m: 2.66022e-1
 b: -9.42011e-2
 x: Amount
 y: Area
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.0625
 Level 3 : 0.015625
 Level 4 : 0.0025
 Level 5 : 5.81757e-006
 Level 6 : 3.44075e-007
 Level 7 : 1.17815e-007

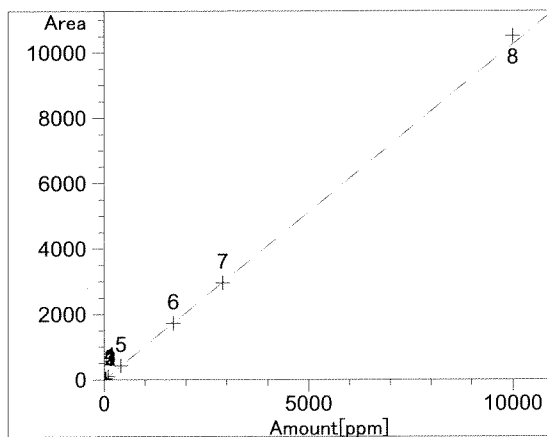
Level 8 : 9.97604e-009



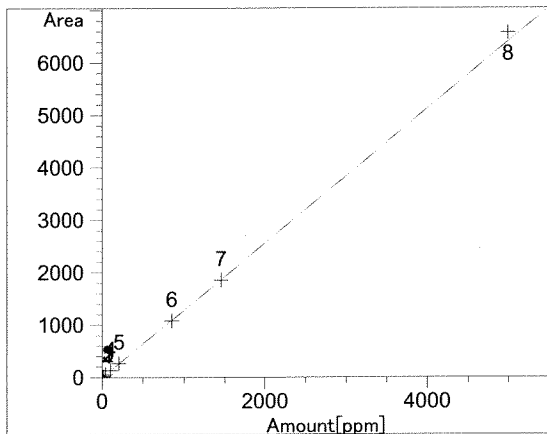
Ethane at exp. RT: 1.665
 FID1 A, Front Signal
 Correlation: 0.99992
 Residual Std. Dev.: 200.20277
 Formula: $y = mx + b$
 m: 5.15644e-1
 b: 7.24180e-3
 x: Amount
 y: Area
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.0625
 Level 3 : 0.015625
 Level 4 : 0.0025
 Level 5 : 5.82318e-006
 Level 6 : 3.44479e-007
 Level 7 : 1.1796e-007
 Level 8 : 9.98801e-009



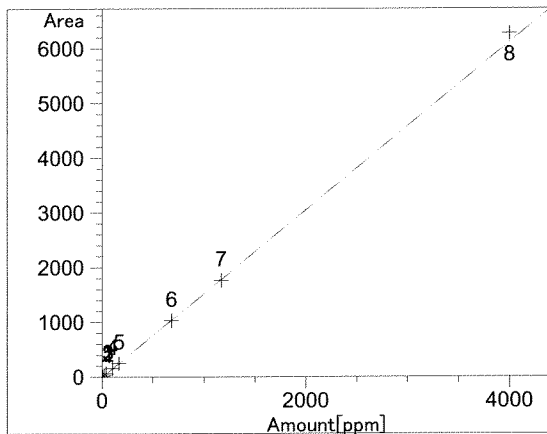
Propane at exp. RT: 1.994
 FID1 A, Front Signal
 Correlation: 0.99991
 Residual Std. Dev.: 307.93752
 Formula: $y = mx + b$
 m: 7.72628e-1
 b: 4.79983e-2
 x: Amount
 y: Area
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.0625
 Level 3 : 0.015625
 Level 4 : 0.0025
 Level 5 : 5.82318e-006
 Level 6 : 3.44479e-007
 Level 7 : 1.1796e-007
 Level 8 : 9.98801e-009



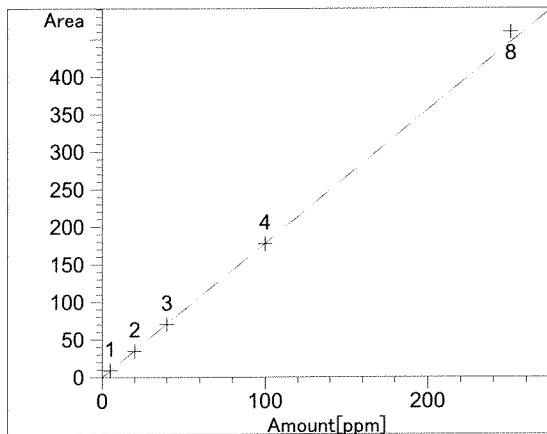
Butane at exp. RT: 2.907
 FID1 A, Front Signal
 Correlation: 0.99988
 Residual Std. Dev.: 105.51569
 Formula: $y = mx + b$
 m: 1.02541
 b: 1.01631e-1
 x: Amount
 y: Area
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.0625
 Level 3 : 0.015625
 Level 4 : 0.0025
 Level 5 : 0.000146
 Level 6 : 8.62007e-006
 Level 7 : 2.95226e-006
 Level 8 : 2.5e-007



Pentane at exp. RT: 4.465
 FID1 A, Front Signal
 Correlation: 0.99989
 Residual Std. Dev.: 69.01461
 Formula: $y = mx + b$
 m: 1.28016
 b: 2.50753e-1
 x: Amount
 y: Area
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.0625
 Level 3 : 0.015625
 Level 4 : 0.0025
 Level 5 : 0.000618
 Level 6 : 0.000037
 Level 7 : 0.000013
 Level 8 : 1.05963e-006



Hexane at exp. RT: 6.040
 FID1 A, Front Signal
 Correlation: 0.99990
 Residual Std. Dev.: 65.98846
 Formula: $y = mx + b$
 m: 1.52669
 b: 2.07685e-1
 x: Amount
 y: Area
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.0625
 Level 3 : 0.015625
 Level 4 : 0.0025
 Level 5 : 0.000927
 Level 6 : 0.000055
 Level 7 : 0.000019
 Level 8 : 1.58914e-006



Heptane at exp. RT: 7.204
 FID1 A, Front Signal
 Correlation: 0.99974
 Residual Std. Dev.: 7.65483
 Formula: $y = mx + b$
 m: 1.77848
 b: 1.29933e-1
 x: Amount
 y: Area
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.0625
 Level 3 : 0.015625
 Level 4 : 0.0025
 Level 8 : 0.000397

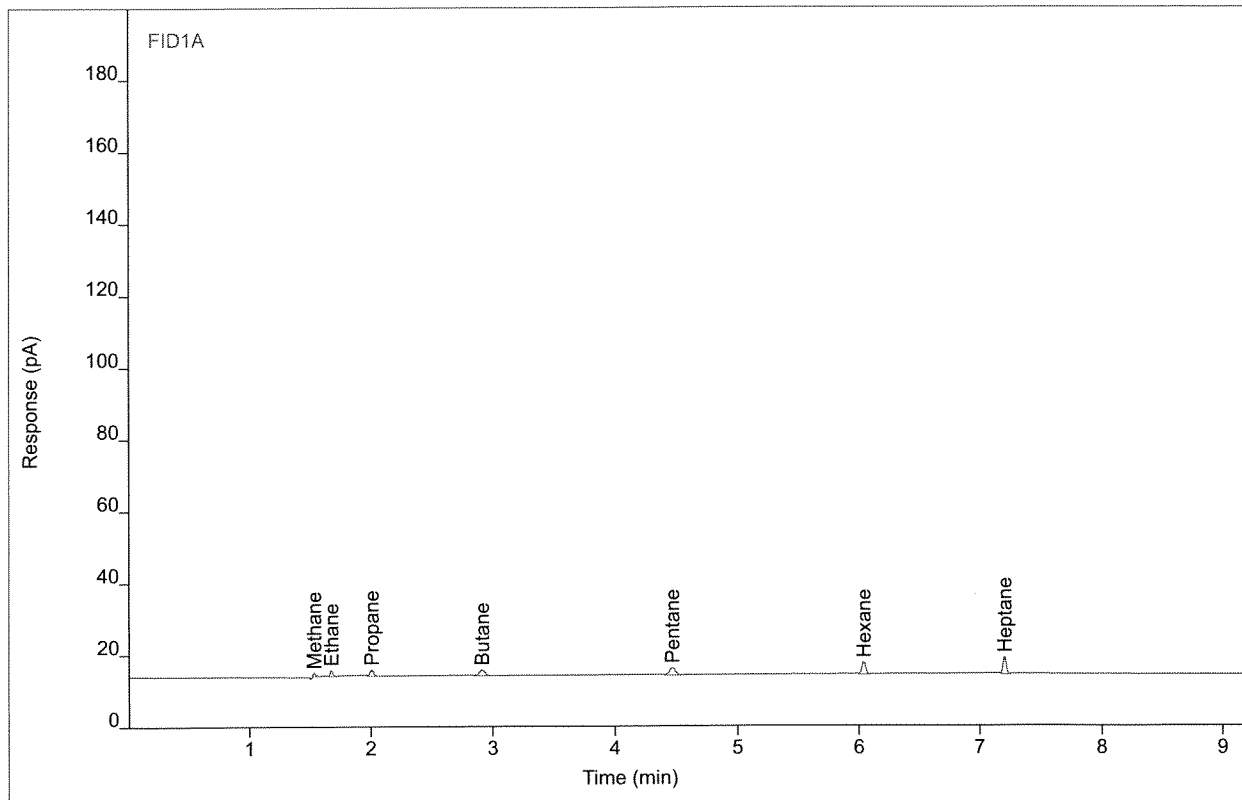
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Chromatogram Report

Enthalpy Analytical

Sample Name Edithp730 #C1 ENV(1=3800,2=200)
Sequence Name EDITHP730 ver.4
Data File 002F1302.D
File Location GC/2016/Edith/Quarter 3
Injection Date 9/16/2016 4:10 PM
File Modified 9/27/2016 9:18 AM
Instrument
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 2
Injection Volume 250
Injection 2 of 10
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP730F_C1-C7.M
Method Modified 9/27/2016 9:15 AM
Printed 9/27/2016 9:33 AM



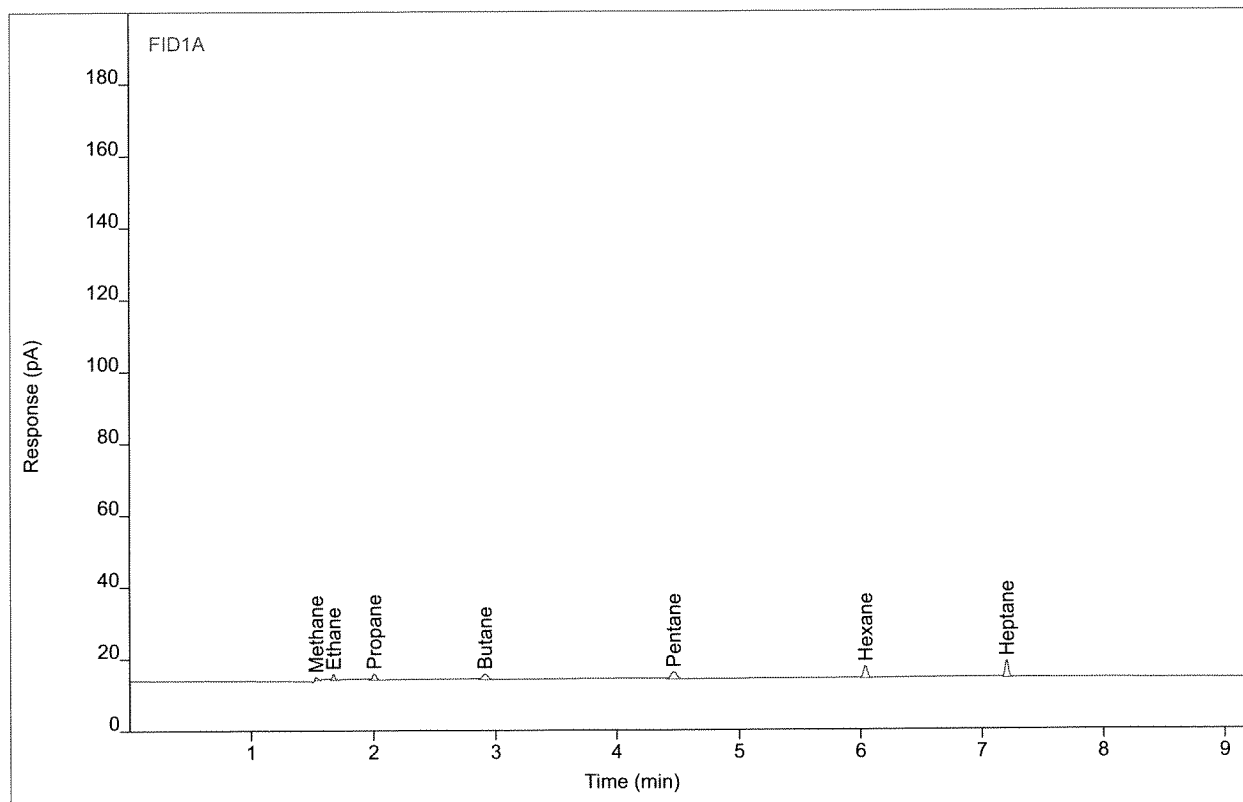
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.53	1.25738	0.97671	5.08069	1	5.08069	ppm
Ethane	BP	1.67	2.59394	1.69922	5.01644	1	5.01644	ppm
Propane	PB	2.01	3.94762	1.83868	5.04722	1	5.04722	ppm
Butane	BB	2.91	5.32860	1.72420	5.09745	1	5.09745	ppm
Pentane	BB	4.47	6.90751	2.12000	5.19993	1	5.19993	ppm
Hexane	BB	6.04	8.02530	3.46062	5.12061	1	5.12061	ppm
Heptane	BB	7.20	9.14444	4.76599	5.06865	1	5.06865	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp730 #C1 ENV(1=3800,2=200)
Sequence Name EDITHP730 ver.4
Data File 002F1303.D
File Location GC/2016/Edith/Quarter 3
Injection Date 9/16/2016 4:25 PM
File Modified 9/27/2016 9:18 AM
Instrument
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 2
Injection Volume 250
Injection 3 of 10
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP730F_C1-C7.M
Method Modified 9/27/2016 9:15 AM
Printed 9/27/2016 9:33 AM



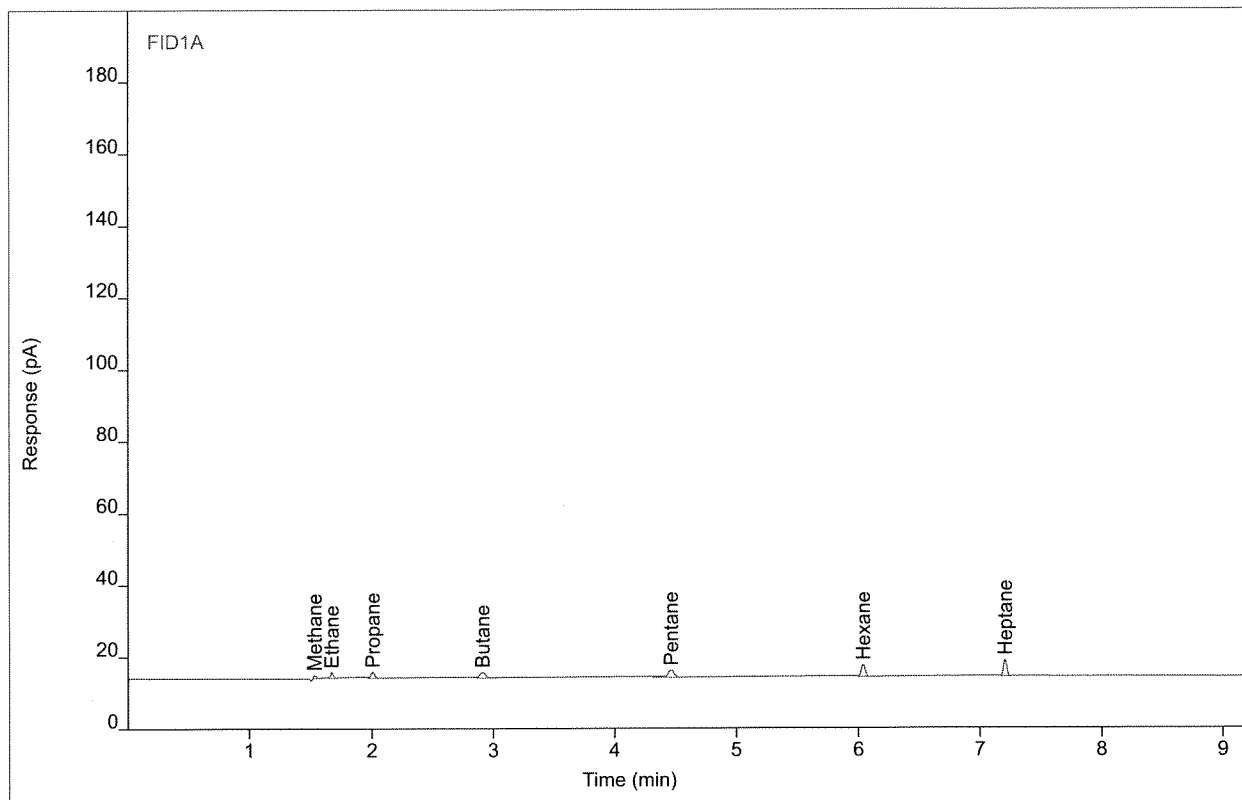
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.53	1.22340	0.97280	4.94940	1	4.94940	ppm
Ethane	BP	1.67	2.57368	1.68729	4.97722	1	4.97722	ppm
Propane	VB	2.01	3.93967	1.82644	5.03692	1	5.03692	ppm
Butane	BB	2.91	5.22991	1.70405	5.00121	1	5.00121	ppm
Pentane	BB	4.47	6.85265	2.11074	5.15708	1	5.15708	ppm
Hexane	BB	6.04	7.94928	3.44265	5.07082	1	5.07082	ppm
Heptane	BB	7.20	9.06647	4.73224	5.02481	1	5.02481	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp730 #C1 ENV(1=3800,2=200)
Sequence Name EDITHP730 ver.4
Data File 002F1304.D
File Location GC/2016/Edith/Quarter 3
Injection Date 9/16/2016 4:40 PM
File Modified 9/27/2016 9:18 AM
Instrument
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 2
Injection Volume 250
Injection 4 of 10
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP730F_C1-C7.M
Method Modified 9/27/2016 9:15 AM
Printed 9/27/2016 9:33 AM



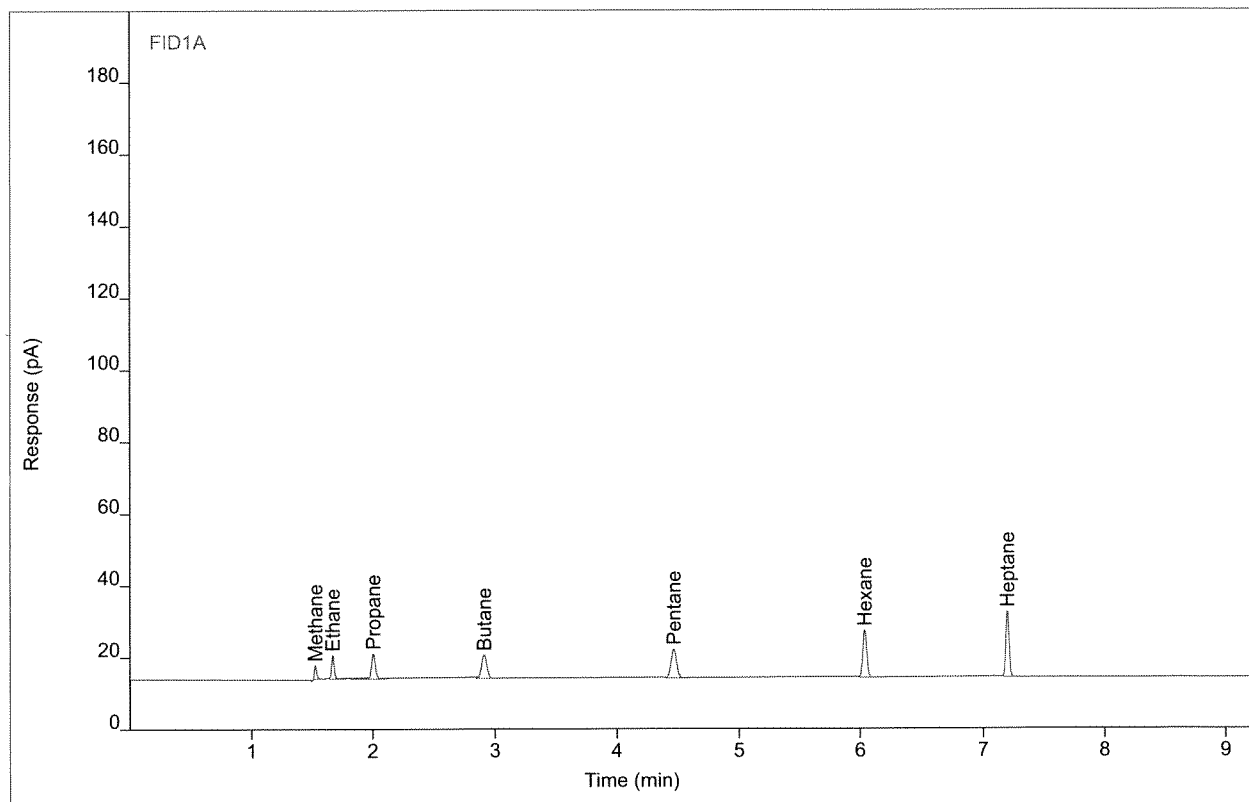
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	MM	1.53	1.25492	0.98533	5.07146	1	5.07146	ppm
Ethane	BB	1.67	2.61747	1.68119	5.06208	1	5.06208	ppm
Propane	BB	2.01	3.89998	1.80976	4.98573	1	4.98573	ppm
Butane	BB	2.91	5.22403	1.69197	4.99556	1	4.99556	ppm
Pentane	BB	4.47	6.87762	2.09426	5.17659	1	5.17659	ppm
Hexane	BB	6.04	7.88844	3.42014	5.03147	1	5.03147	ppm
Heptane	BB	7.20	9.03466	4.71034	5.00692	1	5.00692	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp730 #C2 ENV(1=800,2=200)
Sequence Name EDITHP730 ver.4
Data File 002F1402.D
File Location GC/2016/Edith/Quarter 3
Injection Date 9/16/2016 6:40 PM
File Modified 9/27/2016 9:18 AM
Instrument
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 2
Injection Volume 250
Injection 2 of 5
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP730F_C1-C7.M
Method Modified 9/27/2016 9:15 AM
Printed 9/27/2016 9:33 AM



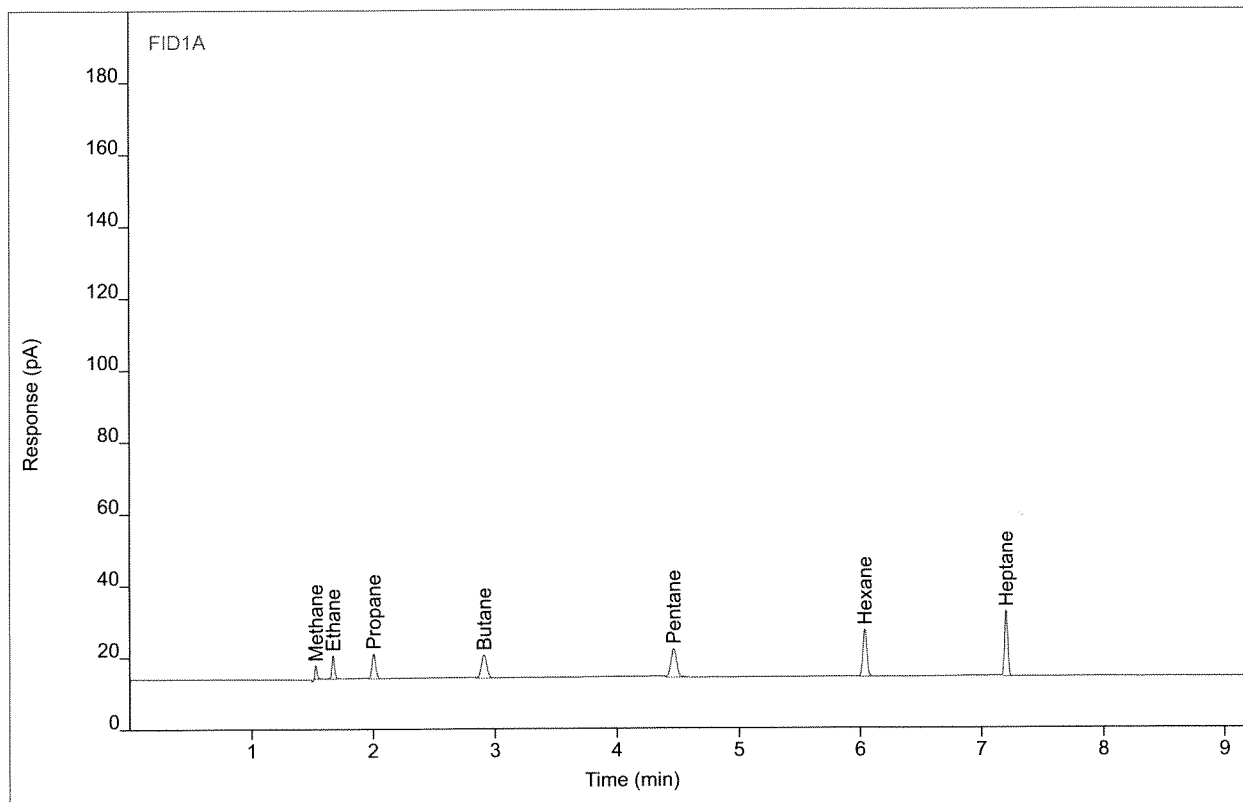
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.53	5.17497	3.80624	19.8073	1	19.8073	ppm
Ethane	BB	1.67	10.2947	6.50167	19.9507	1	19.9507	ppm
Propane	BB	2.01	15.3446	7.02413	19.7982	1	19.7982	ppm
Butane	BB	2.91	20.2189	6.54498	19.6188	1	19.6188	ppm
Pentane	BB	4.47	26.1365	8.03229	20.2207	1	20.2207	ppm
Hexane	BB	6.04	30.4601	13.1641	19.8156	1	19.8156	ppm
Heptane	BB	7.20	34.8227	18.2292	19.5069	1	19.5069	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp730 #C2 ENV(1=800,2=200)
Sequence Name EDITHP730 ver.4
Data File 002F1403.D
File Location GC/2016/Edith/Quarter 3
Injection Date 9/16/2016 6:55 PM
File Modified 9/27/2016 9:18 AM
Instrument
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 2
Injection Volume 250
Injection 3 of 5
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP730F_C1-C7.M
Method Modified 9/27/2016 9:15 AM
Printed 9/27/2016 9:33 AM



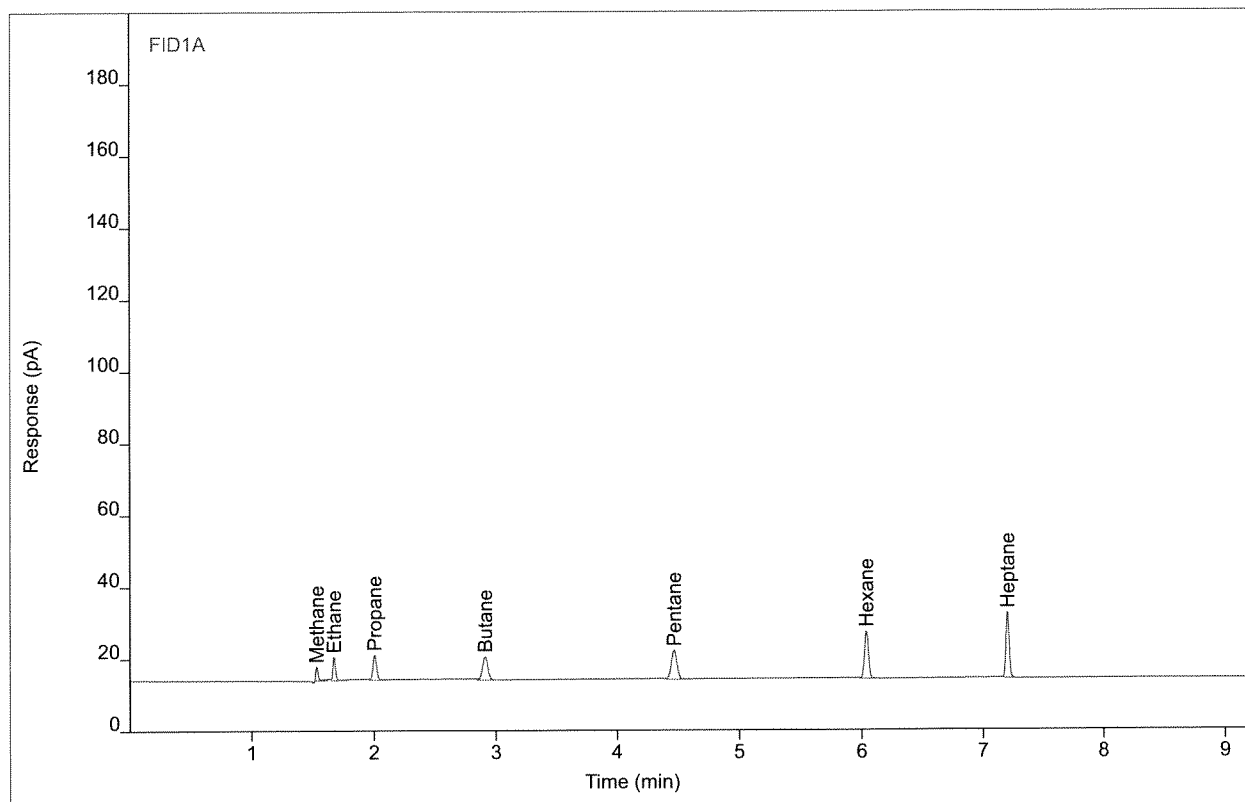
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.53	5.05994	3.80036	19.3748	1	19.3748	ppm
Ethane	PB	1.67	10.1573	6.50601	19.6843	1	19.6843	ppm
Propane	BB	2.01	15.1891	7.02127	19.5969	1	19.5969	ppm
Butane	BB	2.91	20.1877	6.54983	19.5884	1	19.5884	ppm
Pentane	BB	4.47	26.1340	8.05410	20.2187	1	20.2187	ppm
Hexane	BB	6.04	30.5082	13.1552	19.8471	1	19.8471	ppm
Heptane	BB	7.20	34.8852	18.2153	19.5421	1	19.5421	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp730 #C2 ENV(1=800,2=200)
Sequence Name EDITHP730 ver.4
Data File 002F1404.D
File Location GC/2016/Edith/Quarter 3
Injection Date 9/16/2016 7:10 PM
File Modified 9/27/2016 9:18 AM
Instrument
Operator Nicholas Traversa

Sample Type
Vial Number
Injection Volume
Injection
Acquisition Method
Analysis Method
Method Modified
Printed
Calibration
Vial 2
250
4 of 5
AQ_EDITHP503_HRVOC.M
EDITHP730F_C1-C7.M
9/27/2016 9:15 AM
9/27/2016 9:33 AM



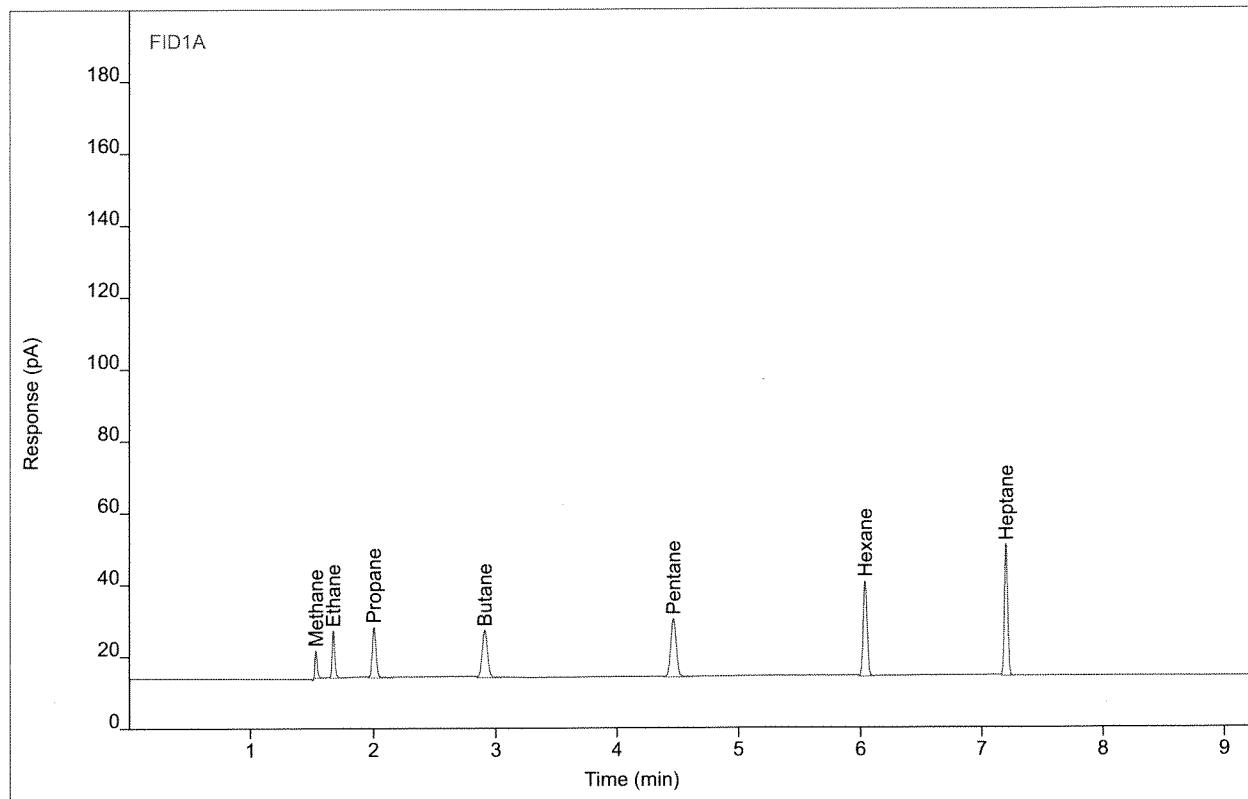
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.53	5.11833	3.81246	19.5943	1	19.5943	ppm
Ethane	BB	1.67	10.1514	6.50577	19.6728	1	19.6728	ppm
Propane	BB	2.01	15.2029	7.02903	19.6147	1	19.6147	ppm
Butane	BB	2.91	20.2023	6.55027	19.6026	1	19.6026	ppm
Pentane	BB	4.47	26.1284	8.05784	20.2144	1	20.2144	ppm
Hexane	BB	6.04	30.5411	13.1977	19.8687	1	19.8687	ppm
Heptane	BB	7.20	34.9348	18.2486	19.5700	1	19.5700	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp730 #C3 ENV(1=600,2=400)
Sequence Name EDITHP730 ver.4
Data File 002F1502.D
File Location GC/2016/Edith/Quarter 3
Injection Date 9/16/2016 7:54 PM
File Modified 9/27/2016 9:19 AM
Instrument
Operator Nicholas Traversa

Sample Type
Vial Number
Injection Volume 250
Injection 2 of 5
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP730F_C1-C7.M
Method Modified 9/27/2016 9:15 AM
Printed 9/27/2016 9:33 AM



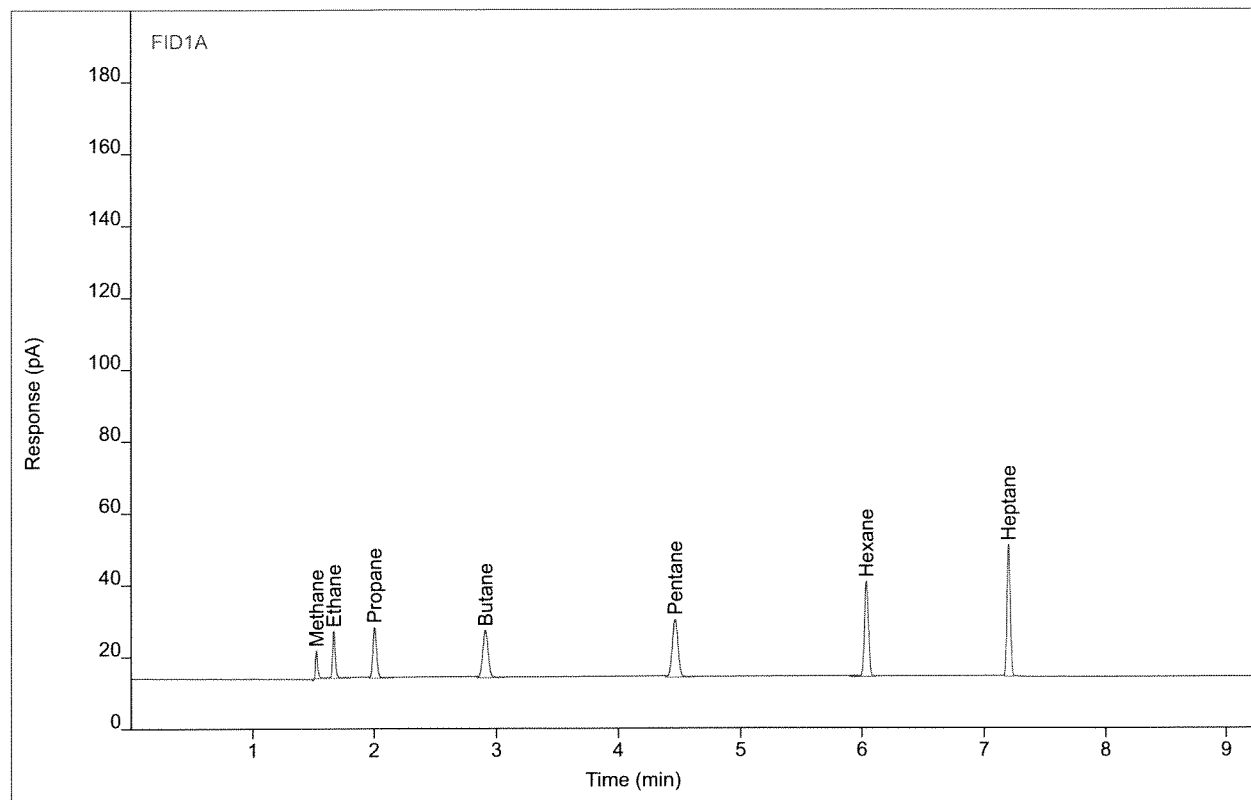
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.53	10.3539	7.66472	39.2751	1	39.2751	ppm
Ethane	BB	1.67	20.3996	13.0627	39.5475	1	39.5475	ppm
Propane	BB	2.01	30.7017	14.1345	39.6746	1	39.6746	ppm
Butane	BB	2.91	40.5251	13.1351	39.4219	1	39.4219	ppm
Pentane	BB	4.47	52.4794	16.1622	40.7985	1	40.7985	ppm
Hexane	BB	6.04	61.3748	26.4996	40.0651	1	40.0651	ppm
Heptane	BB	7.20	70.2368	36.5081	39.4195	1	39.4195	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp730 #C3 ENV(1=600,2=400)
Sequence Name EDITHP730 ver.4
Data File 002F1503.D
File Location GC/2016/Edith/Quarter 3
Injection Date 9/16/2016 8:09 PM
File Modified 9/27/2016 9:19 AM
Instrument
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 2
Injection Volume 250
Injection 3 of 5
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP730F_C1-C7.M
Method Modified 9/27/2016 9:15 AM
Printed 9/27/2016 9:33 AM



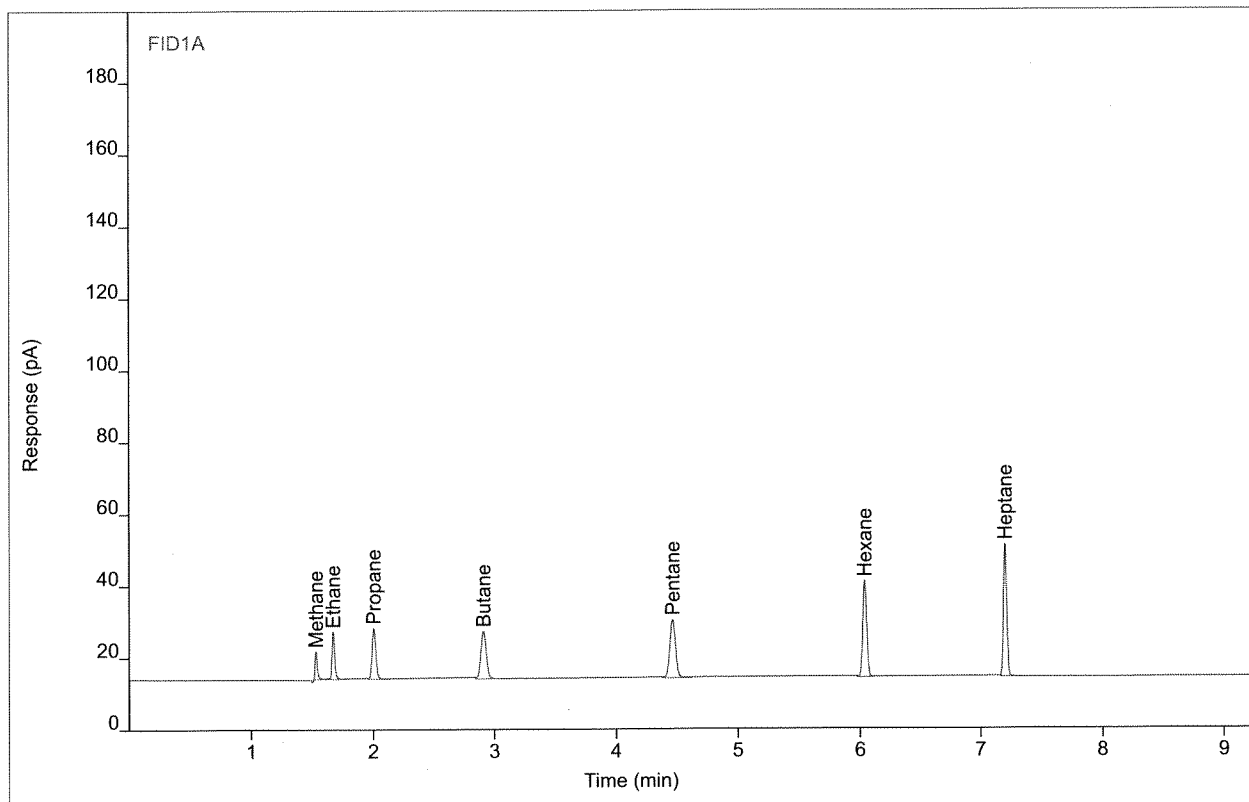
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PV	1.53	10.4372	7.67259	39.5884	1	39.5884	ppm
Ethane	VB	1.67	20.5421	13.0787	39.8238	1	39.8238	ppm
Propane	BB	2.01	30.7724	14.1633	39.7661	1	39.7661	ppm
Butane	BB	2.91	40.7350	13.1930	39.6266	1	39.6266	ppm
Pentane	BB	4.47	52.5999	16.1739	40.8927	1	40.8927	ppm
Hexane	VB	6.04	61.6986	26.4978	40.2772	1	40.2772	ppm
Heptane	BB	7.20	70.5527	36.6769	39.5971	1	39.5971	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp730 #C3 ENV(1=600,2=400)
Sequence Name EDITHP730 ver.4
Data File 002F1504.D
File Location GC/2016/Edith/Quarter 3
Injection Date 9/16/2016 8:24 PM
File Modified 9/27/2016 9:19 AM
Instrument
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 2
Injection Volume 250
Injection 4 of 5
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP730F_C1-C7.M
Method Modified 9/27/2016 9:15 AM
Printed 9/27/2016 9:33 AM



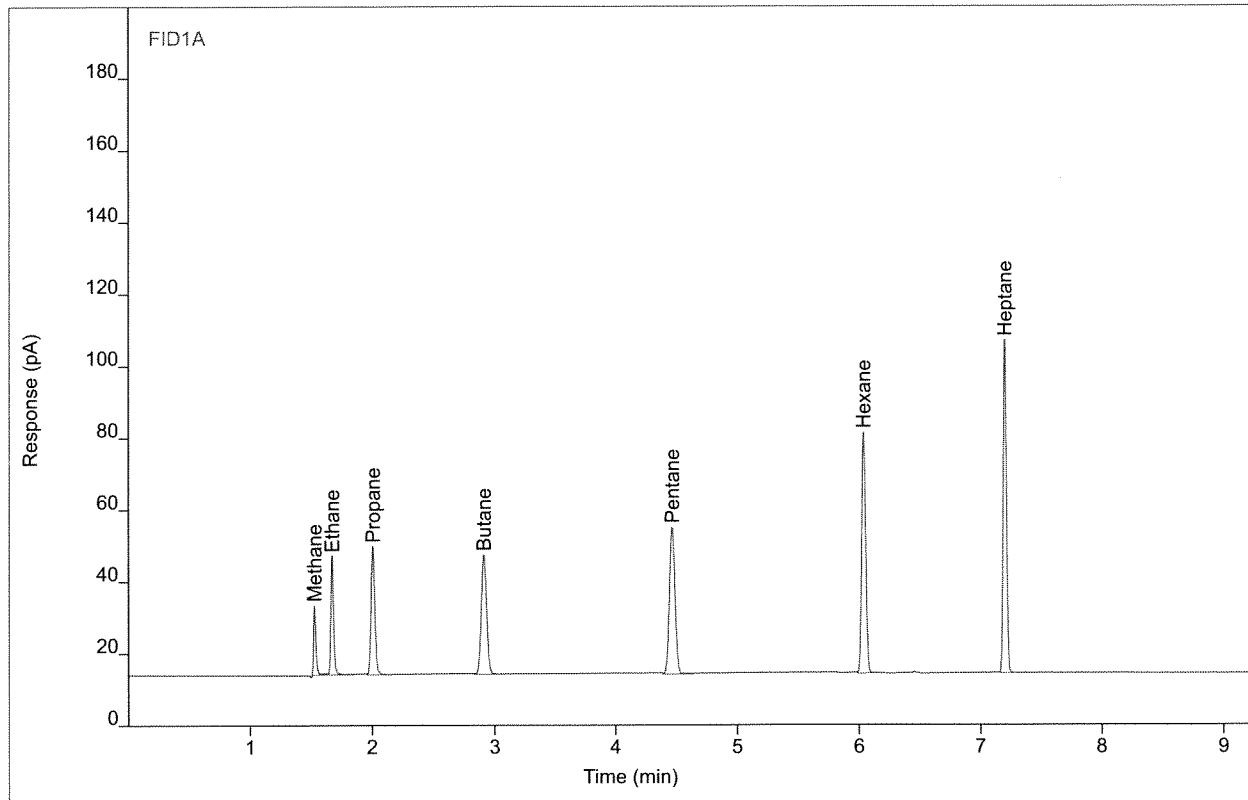
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.53	10.4284	7.68202	39.5551	1	39.5551	ppm
Ethane	BB	1.67	20.4733	13.1158	39.6902	1	39.6902	ppm
Propane	BB	2.01	30.7997	14.1547	39.8014	1	39.8014	ppm
Butane	BB	2.91	40.6204	13.2042	39.5148	1	39.5148	ppm
Pentane	BB	4.47	52.6870	16.2477	40.9606	1	40.9606	ppm
Hexane	BB	6.04	61.6480	26.7046	40.2440	1	40.2440	ppm
Heptane	BB	7.20	70.5569	36.8397	39.5995	1	39.5995	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp730 #C4 ENV(1=0,2=400)
Sequence Name EDITHP730 ver.4
Data File 002F1602.D
File Location GC/2016/Edith/Quarter 3
Injection Date 9/16/2016 9:15 PM
File Modified 9/27/2016 9:19 AM
Instrument
Operator Nicholas Traversa

Sample Type
Vial Number
Injection Volume 250
Injection 2 of 5
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP730F_C1-C7.M
Method Modified 9/27/2016 9:15 AM
Printed 9/27/2016 9:33 AM



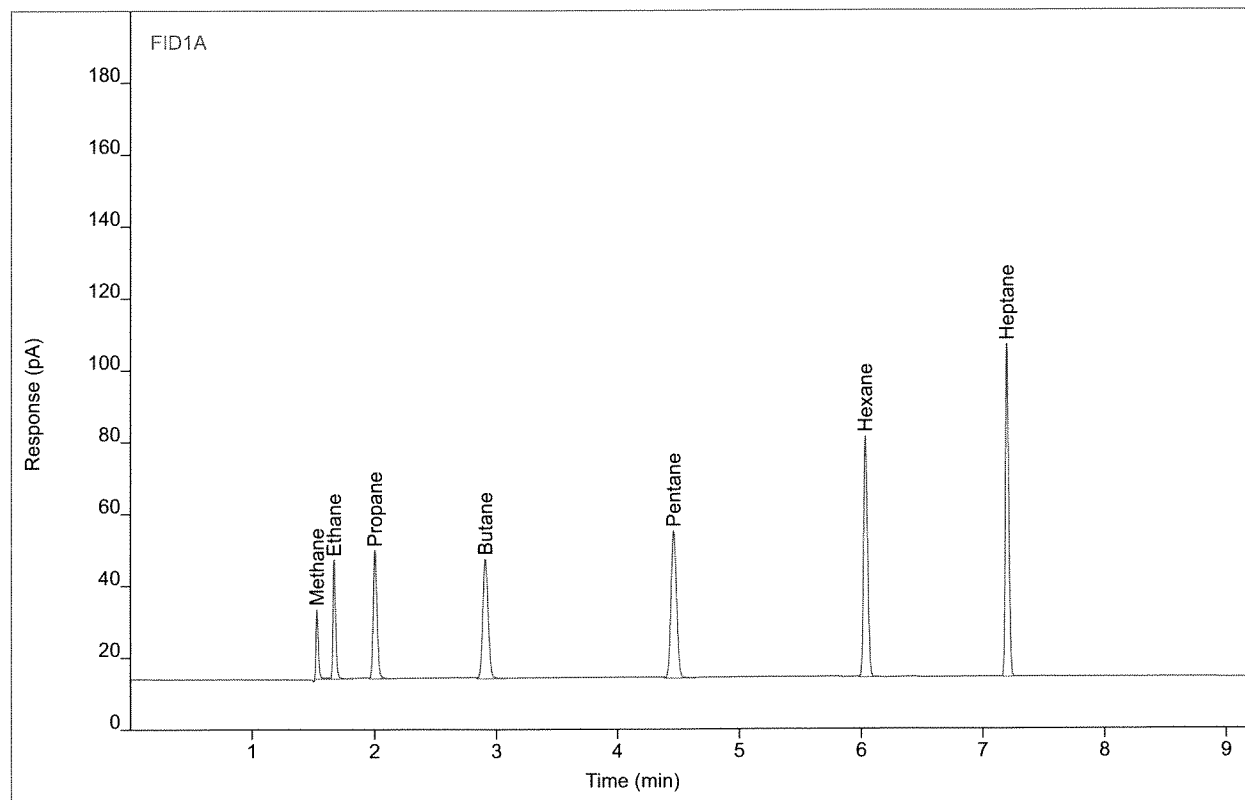
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PV	1.53	26.3382	19.3100	99.3616	1	99.3616	ppm
Ethane	VB	1.67	51.7127	32.9708	100.274	1	100.274	ppm
Propane	BB	2.01	77.6144	35.6266	100.393	1	100.393	ppm
Butane	BB	2.91	102.685	33.2284	100.042	1	100.042	ppm
Pentane	BB	4.47	132.156	40.8597	103.038	1	103.038	ppm
Hexane	BB	6.04	155.125	66.9865	101.472	1	101.472	ppm
Heptane	BB	7.20	177.578	92.5659	99.7750	1	99.7750	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp730 #C4 ENV(1=0,2=400)
Sequence Name EDITHP730 ver.4
Data File 002F1603.D
File Location GC/2016/Edith/Quarter 3
Injection Date 9/16/2016 9:29 PM
File Modified 9/27/2016 9:19 AM
Instrument
Operator Nicholas Traversa

Sample Type
Vial Number
Injection Volume 250
Injection 3 of 5
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP730F_C1-C7.M
Method Modified 9/27/2016 9:15 AM
Printed 9/27/2016 9:33 AM



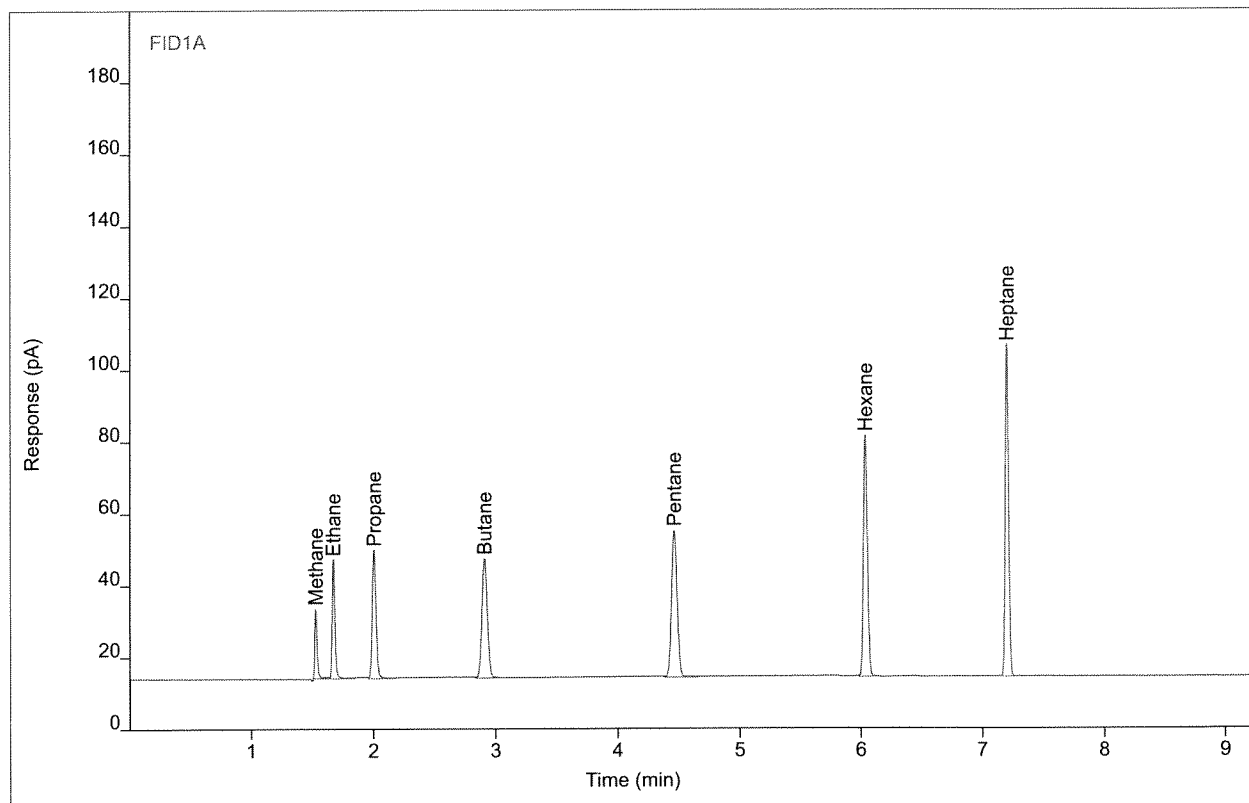
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PV	1.53	26.3630	19.3397	99.4547	1	99.4547	ppm
Ethane	VB	1.67	51.6909	32.9720	100.231	1	100.231	ppm
Propane	BB	2.01	77.7420	35.6761	100.558	1	100.558	ppm
Butane	BB	2.91	102.793	33.2637	100.147	1	100.147	ppm
Pentane	BB	4.47	132.387	40.9456	103.218	1	103.218	ppm
Hexane	BB	6.04	155.396	67.0256	101.650	1	101.650	ppm
Heptane	BB	7.20	177.821	92.5275	99.9115	1	99.9115	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp730 #C4 ENV(1=0,2=400)
Sequence Name EDITHP730 ver.4
Data File 002F1604.D
File Location GC/2016/Edith/Quarter 3
Injection Date 9/16/2016 9:44 PM
File Modified 9/27/2016 9:19 AM
Instrument
Operator Nicholas Traversa

Sample Type
Vial Number Vial 2
Injection Volume 250
Injection 4 of 5
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP730F_C1-C7.M
Method Modified 9/27/2016 9:15 AM
Printed 9/27/2016 9:33 AM



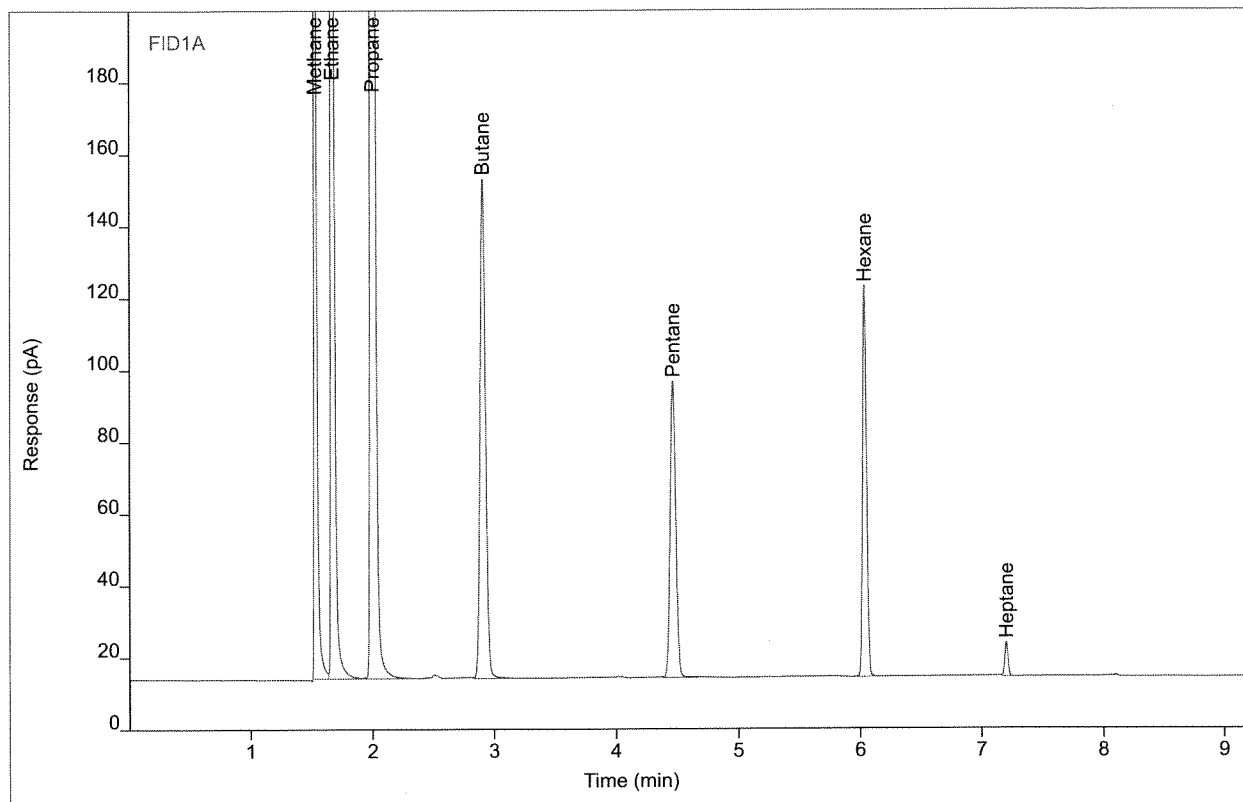
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PV	1.53	26.3376	19.3174	99.3594	1	99.3594	ppm
Ethane	VB	1.67	51.6944	32.9319	100.238	1	100.238	ppm
Propane	BB	2.01	77.7102	35.6454	100.517	1	100.517	ppm
Butane	BB	2.91	102.686	33.2016	100.043	1	100.043	ppm
Pentane	BB	4.47	132.083	40.8333	102.981	1	102.981	ppm
Hexane	BB	6.04	155.125	67.0748	101.472	1	101.472	ppm
Heptane	BB	7.20	177.617	92.1917	99.7967	1	99.7967	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp730 #C5 ENV(1=3800,3=200)
Sequence Name EDITHP730 ver.4
Data File 002F1702.D
File Location GC/2016/Edith/Quarter 3
Injection Date 9/16/2016 10:28 PM
File Modified 9/27/2016 9:19 AM
Instrument
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 2
Injection Volume 250
Injection 2 of 5
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP730F_C1-C7.M
Method Modified 9/27/2016 9:15 AM
Printed 9/27/2016 9:33 AM



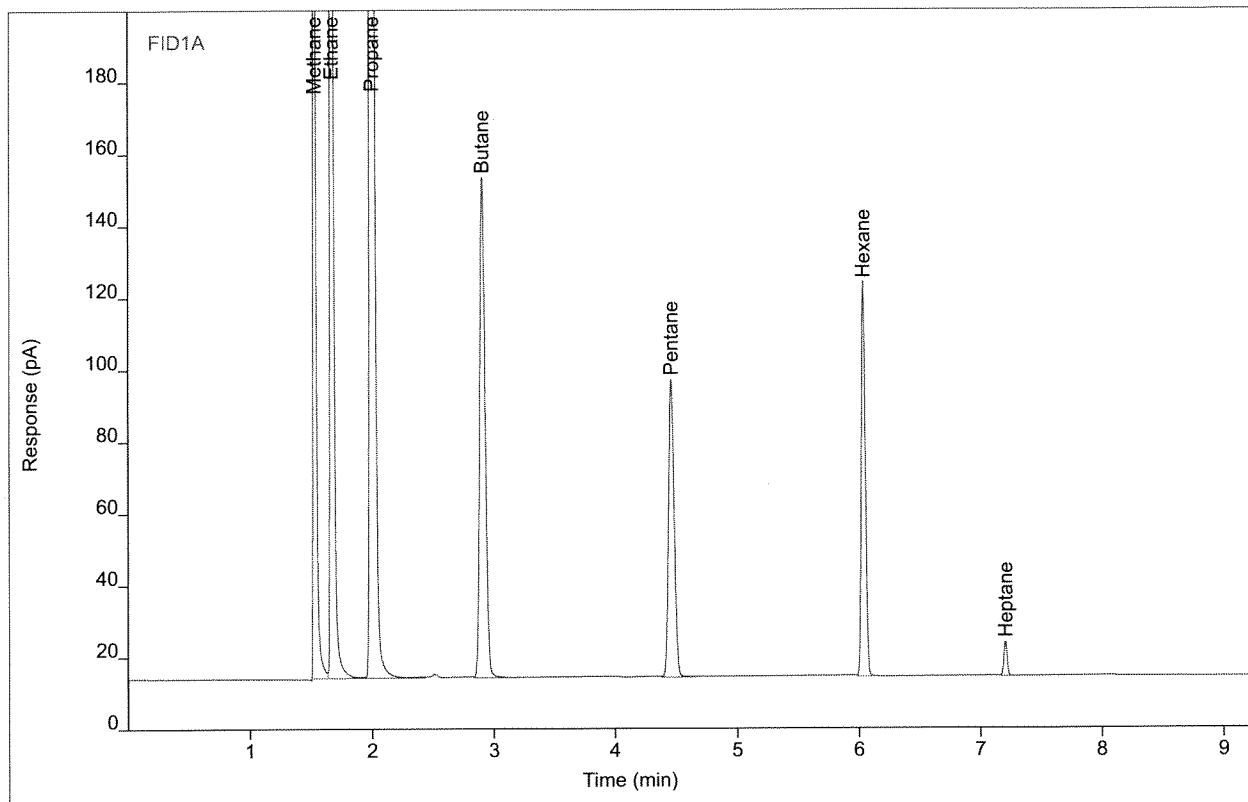
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	MF	1.53	562.993	415.594	2116.69	1	2116.69	ppm
Ethane	FM	1.67	1085.14	696.647	2104.43	1	2104.43	ppm
Propane	FM	2.01	1624.86	745.485	2102.96	1	2102.96	ppm
Butane	BB	2.91	430.744	138.863	419.972	1	419.972	ppm
Pentane	BB	4.47	267.192	82.4072	208.522	1	208.522	ppm
Hexane	BB	6.04	252.493	108.639	165.250	1	165.250	ppm
Heptane	BB	7.20	18.0951	9.43896	10.1014	1	10.1014	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp730 #C5 ENV(1=3800,3=200)
Sequence Name EDITHP730 ver.4
Data File 002F1703.D
File Location GC/2016/Edith/Quarter 3
Injection Date 9/16/2016 10:43 PM
File Modified 9/27/2016 9:19 AM
Instrument
Operator Nicholas Traversa

Sample Type
Vial Number Vial 2
Injection Volume 250
Injection 3 of 5
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP730F_C1-C7.M
Method Modified 9/27/2016 9:15 AM
Printed 9/27/2016 9:33 AM



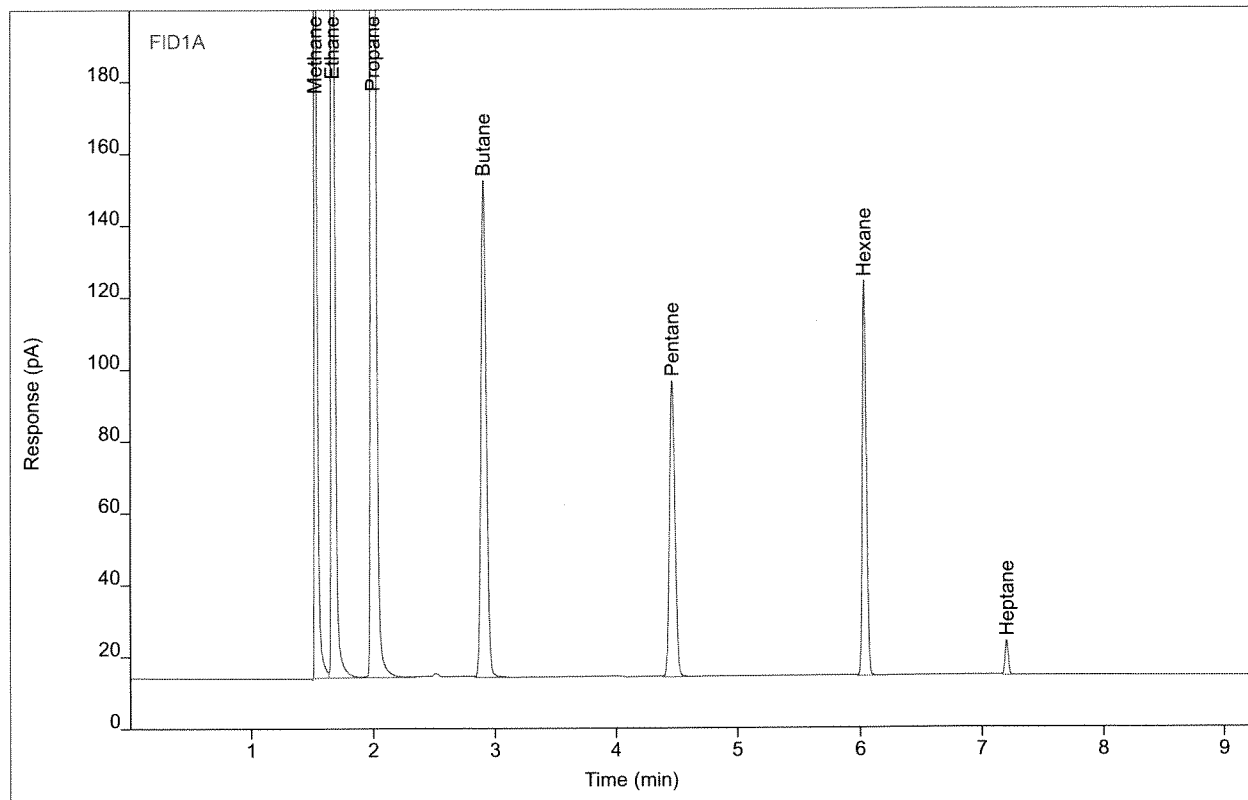
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	MF	1.53	563.268	416.513	2117.72	1	2117.72	ppm
Ethane	FM	1.67	1085.59	696.639	2105.30	1	2105.30	ppm
Propane	FM	2.01	1625.77	745.424	2104.14	1	2104.14	ppm
Butane	BB	2.91	431.166	139.193	420.383	1	420.383	ppm
Pentane	BB	4.47	268.238	82.8787	209.339	1	209.339	ppm
Hexane	BB	6.04	254.964	109.717	166.868	1	166.868	ppm
Heptane	BB	7.20	18.4567	9.63213	10.3047	1	10.3047	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp730 #C5 ENV(1=3800,3=200)
Sequence Name EDITHP730 ver.4
Data File 002F1704.D
File Location GC/2016/Edith/Quarter 3
Injection Date 9/16/2016 10:57 PM
File Modified 9/27/2016 9:19 AM
Instrument
Operator Nicholas Traversa

Sample Type
Vial Number
Injection Volume 250
Injection 4 of 5
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP730F_C1-C7.M
Method Modified 9/27/2016 9:15 AM
Printed 9/27/2016 9:33 AM



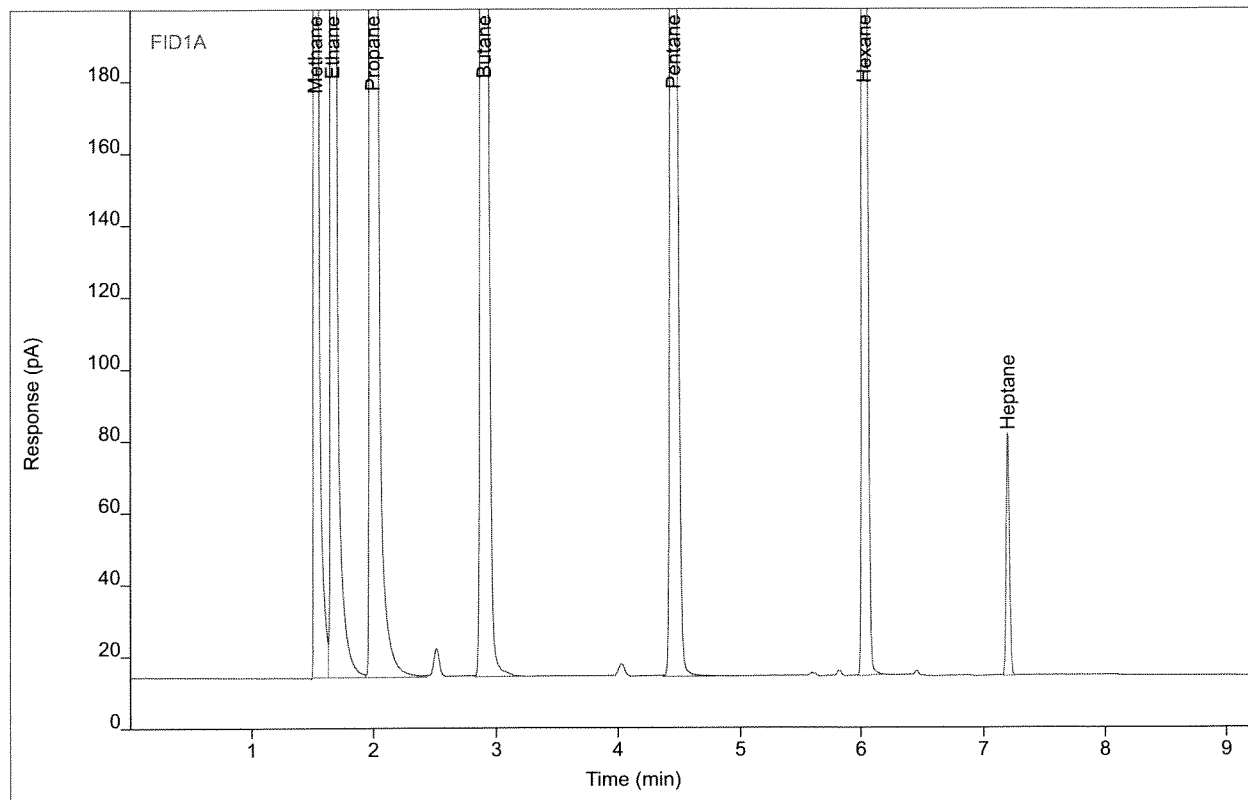
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PV	1.53	557.415	407.087	2095.72	1	2095.72	ppm
Ethane	VV	1.67	1077.30	683.639	2089.22	1	2089.22	ppm
Propane	VB	2.00	1614.46	737.648	2089.51	1	2089.51	ppm
Butane	BB	2.91	428.959	138.262	418.231	1	418.231	ppm
Pentane	BB	4.47	267.079	82.4565	208.433	1	208.433	ppm
Hexane	BB	6.04	254.485	109.890	166.554	1	166.554	ppm
Heptane	BB	7.20	18.5165	9.68164	10.3384	1	10.3384	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp730 #C7 ENV(1=800,3=400)
Sequence Name EDITHP730 ver.4
Data File 002F1802.D
File Location GC/2016/Edith/Quarter 3
Injection Date 9/16/2016 11:49 PM
File Modified 9/27/2016 9:20 AM
Instrument
Operator Nicholas Traversa

Sample Type
Vial Number
Injection Volume 250
Injection 2 of 5
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP730F_C1-C7.M
Method Modified 9/27/2016 9:15 AM
Printed 9/27/2016 9:33 AM



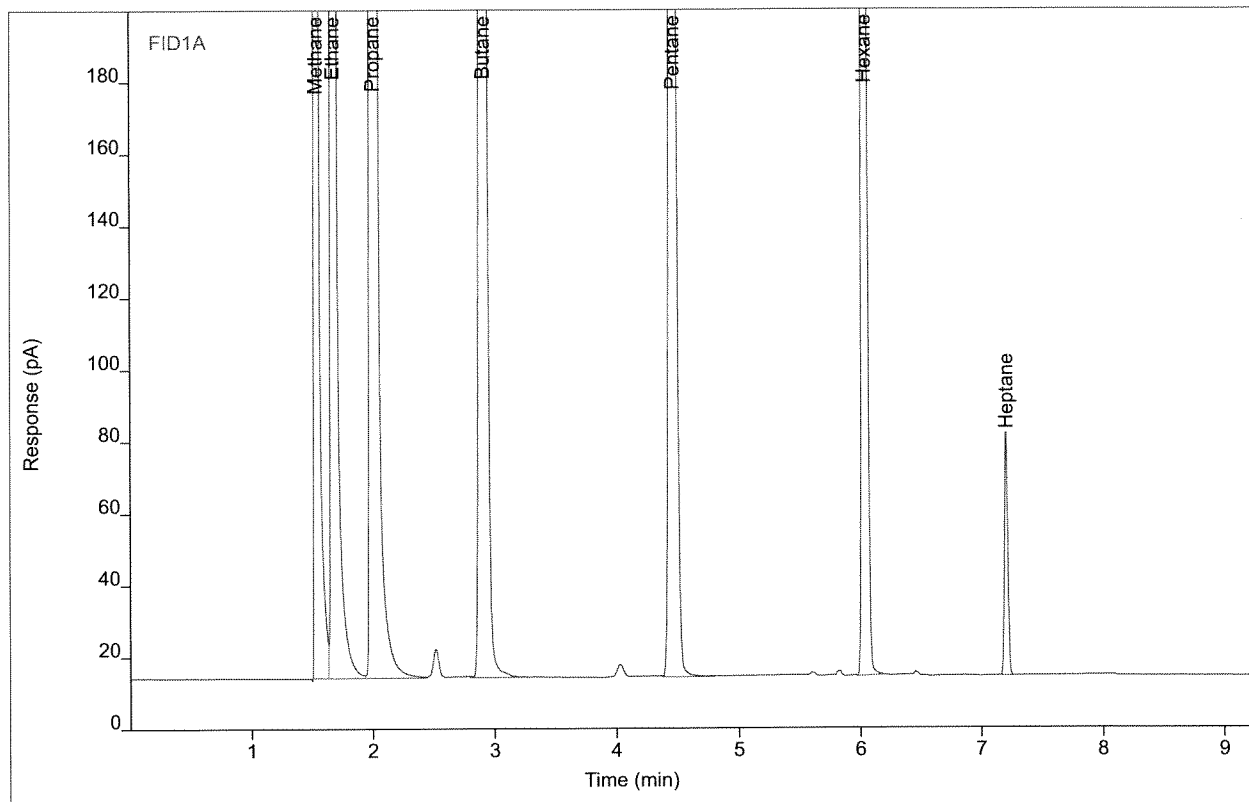
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PV	1.53	3834.73	2812.65	14415.4	1	14415.4	ppm
Ethane	VV	1.67	7398.11	4700.39	14347.3	1	14347.3	ppm
Propane	VV	2.00	11088.3	5022.62	14351.4	1	14351.4	ppm
Butane	BB	2.91	2951.28	949.782	2878.06	1	2878.06	ppm
Pentane	BB	4.47	1845.18	568.576	1441.17	1	1441.17	ppm
Hexane	BB	6.04	1759.22	760.166	1152.17	1	1152.17	ppm
Heptane	BB	7.20	128.683	67.1185	72.2827	1	72.2827	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp730 #C7 ENV(1=800,3=400)
Sequence Name EDITHP730 ver.4
Data File 002F1803.D
File Location GC/2016/Edith/Quarter 3
Injection Date 9/17/2016 12:04 AM
File Modified 9/27/2016 9:20 AM
Instrument
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 2
Injection Volume 250
Injection 3 of 5
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP730F_C1-C7.M
Method Modified 9/27/2016 9:15 AM
Printed 9/27/2016 9:33 AM



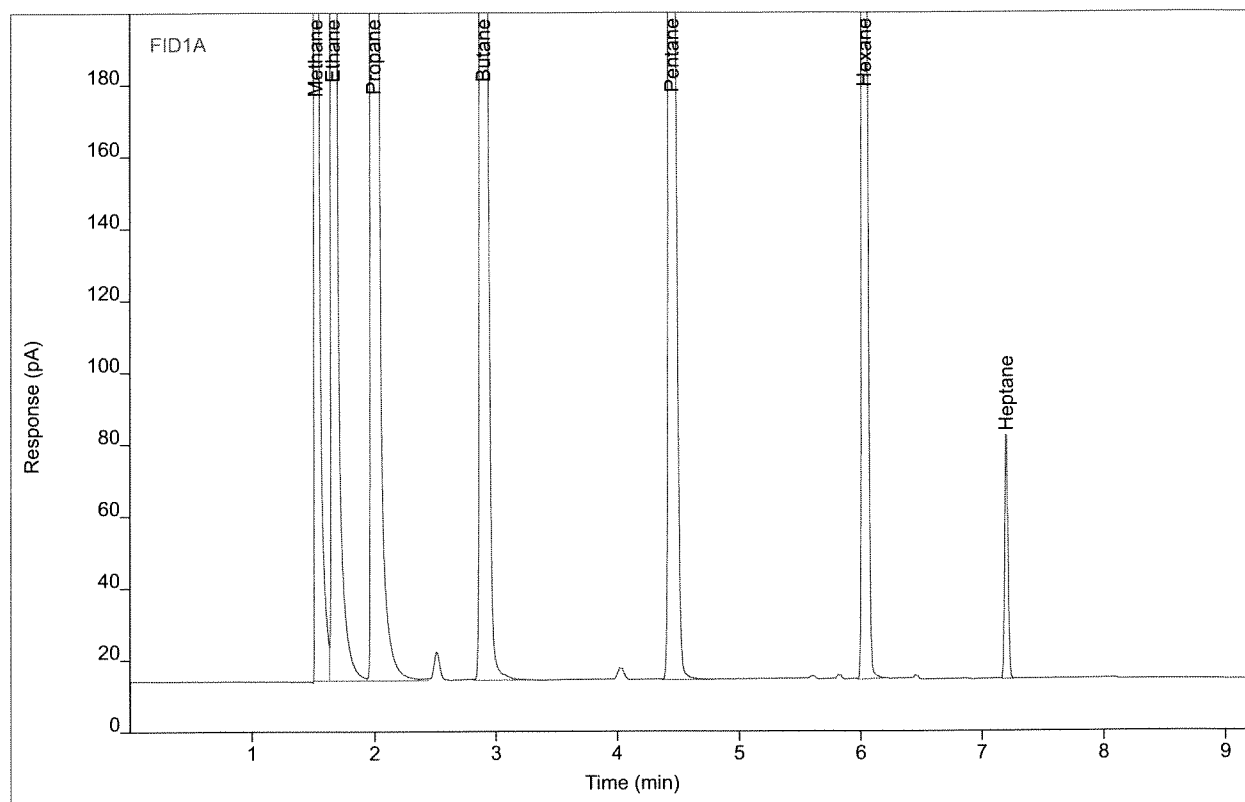
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PV	1.53	3866.73	2835.74	14535.7	1	14535.7	ppm
Ethane	VV	1.67	7454.47	4734.43	14456.6	1	14456.6	ppm
Propane	VV	2.00	11170.1	5062.06	14457.3	1	14457.3	ppm
Butane	BB	2.91	2973.21	957.206	2899.44	1	2899.44	ppm
Pentane	BB	4.47	1858.70	572.096	1451.73	1	1451.73	ppm
Hexane	BB	6.04	1773.11	766.404	1161.27	1	1161.27	ppm
Heptane	BB	7.20	129.634	67.4334	72.8170	1	72.8170	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp730 #C7 ENV(1=800,3=400)
Sequence Name EDITHP730 ver.4
Data File 002F1804.D
File Location GC/2016/Edith/Quarter 3
Injection Date 9/17/2016 12:18 AM
File Modified 9/27/2016 9:20 AM
Instrument
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 2
Injection Volume 250
Injection 4 of 5
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP730F_C1-C7.M
Method Modified 9/27/2016 9:15 AM
Printed 9/27/2016 9:33 AM



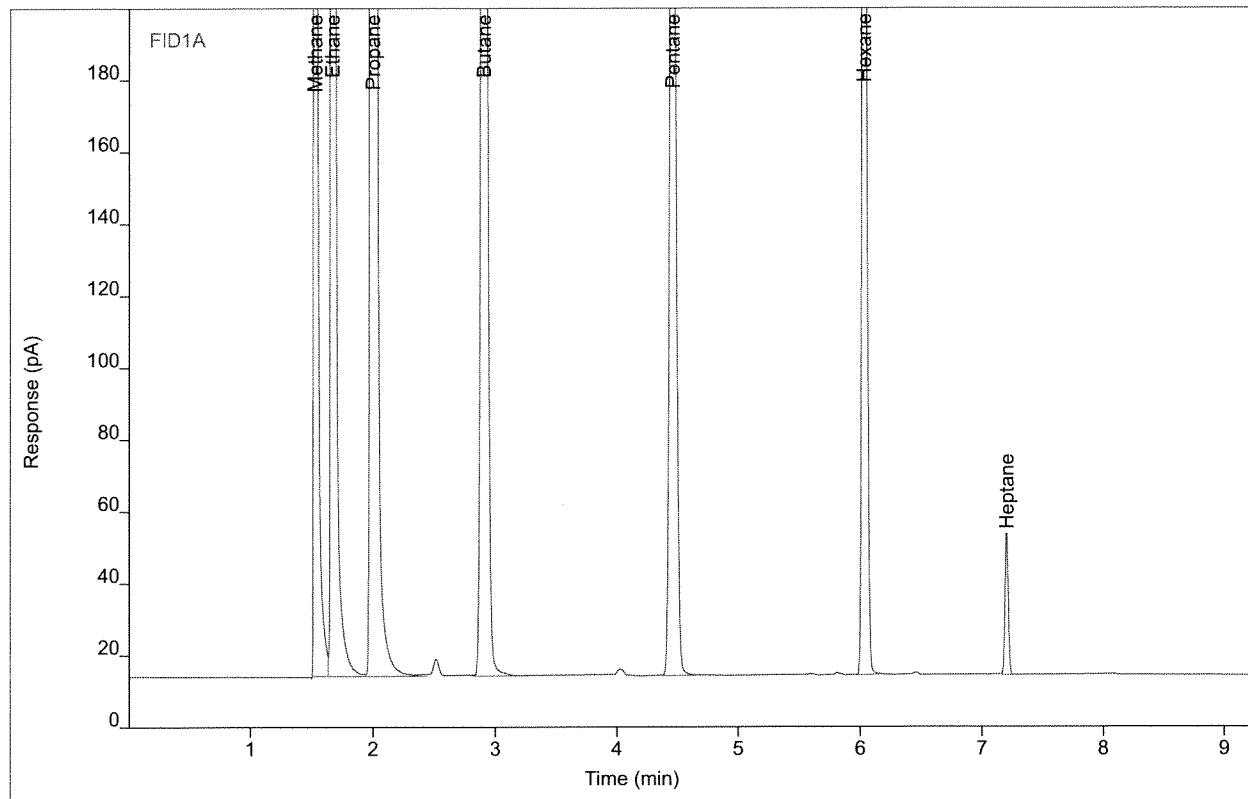
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PV	1.53	3862.74	2835.79	14520.7	1	14520.7	ppm
Ethane	VV	1.67	7445.23	4730.90	14438.7	1	14438.7	ppm
Propane	VV	2.00	11155.0	5055.75	14437.7	1	14437.7	ppm
Butane	BB	2.91	2968.83	956.379	2895.17	1	2895.17	ppm
Pentane	BB	4.47	1856.02	571.947	1449.63	1	1449.63	ppm
Hexane	BB	6.04	1770.57	761.392	1159.61	1	1159.61	ppm
Heptane	BB	7.20	129.468	67.8116	72.7236	1	72.7236	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp730 #C6 ENV(1=800,3=200)
Sequence Name EDITHP730 ver.4
Data File 002F1902.D
File Location GC/2016/Edith/Quarter 3
Injection Date 9/17/2016 1:02 AM
File Modified 9/27/2016 9:20 AM
Instrument
Operator Nicholas Traversa

Sample Type
Vial Number
Injection Volume 250
Injection 2 of 5
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP730F_C1-C7.M
Method Modified 9/27/2016 9:15 AM
Printed 9/27/2016 9:33 AM



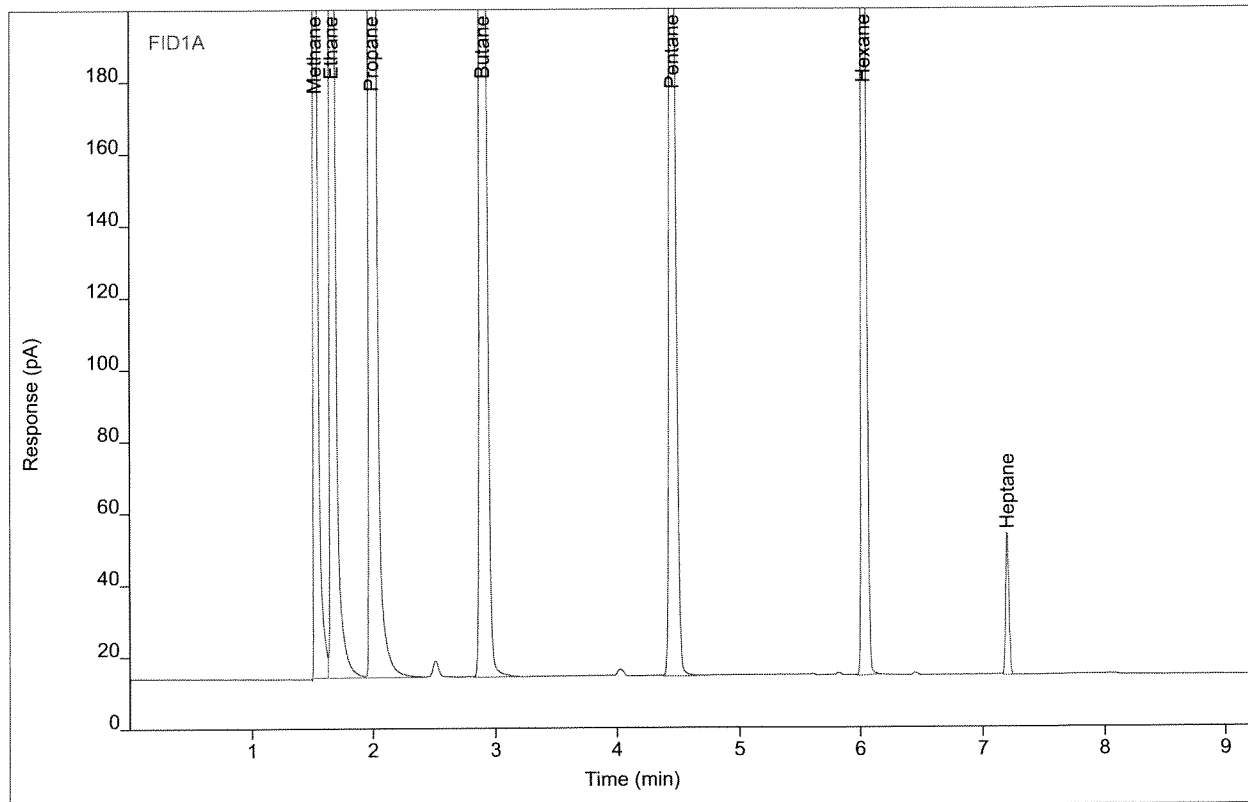
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PV	1.53	2257.17	1651.39	8485.25	1	8485.25	ppm
Ethane	VV	1.67	4352.00	2767.30	8439.92	1	8439.92	ppm
Propane	VV	2.00	6519.92	2958.58	8438.57	1	8438.57	ppm
Butane	BB	2.91	1733.43	558.466	1690.38	1	1690.38	ppm
Pentane	BB	4.47	1081.81	333.393	844.860	1	844.860	ppm
Hexane	BB	6.04	1032.45	446.536	676.129	1	676.129	ppm
Heptane	BB	7.20	75.4116	39.4122	42.3292	1	42.3292	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp730 #C6 ENV(1=800,3=200)
Sequence Name EDITHP730 ver.4
Data File 002F1903.D
File Location GC/2016/Edith/Quarter 3
Injection Date 9/17/2016 1:17 AM
File Modified 9/27/2016 9:20 AM
Instrument
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 2
Injection Volume 250
Injection 3 of 5
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP730F_C1-C7.M
Method Modified 9/27/2016 9:15 AM
Printed 9/27/2016 9:33 AM



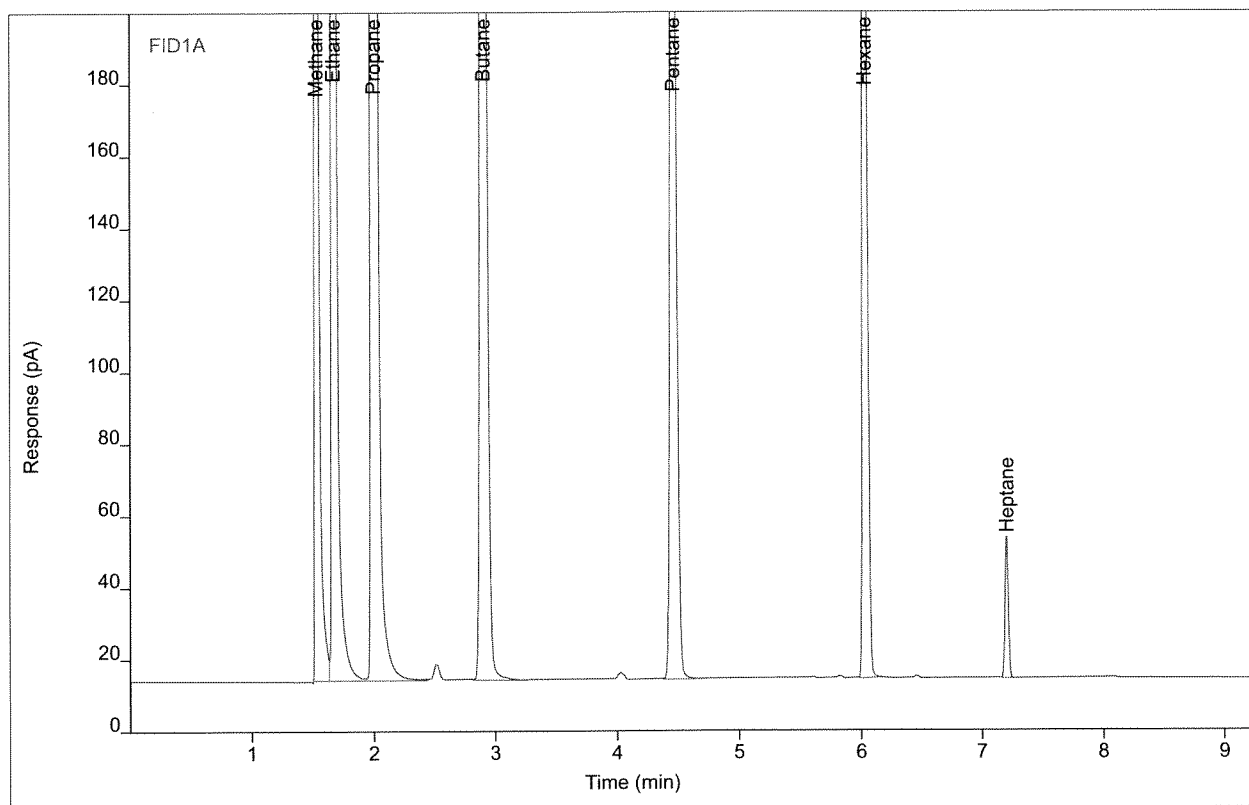
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PV	1.53	2257.48	1652.14	8486.40	1	8486.40	ppm
Ethane	VV	1.67	4352.85	2767.46	8441.58	1	8441.58	ppm
Propane	VV	2.00	6521.64	2963.29	8440.79	1	8440.79	ppm
Butane	BB	2.91	1733.68	558.839	1690.62	1	1690.62	ppm
Pentane	BB	4.47	1082.24	333.424	845.198	1	845.198	ppm
Hexane	BB	6.04	1032.51	444.464	676.165	1	676.165	ppm
Heptane	BB	7.20	75.3985	39.4401	42.3218	1	42.3218	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp730 #C6 ENV(1=800,3=200)
Sequence Name EDITHP730 ver.4
Data File 002F1904.D
File Location GC/2016/Edith/Quarter 3
Injection Date 9/17/2016 1:32 AM
File Modified 9/27/2016 9:20 AM
Instrument
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 2
Injection Volume 250
Injection 4 of 5
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP730F_C1-C7.M
Method Modified 9/27/2016 9:15 AM
Printed 9/27/2016 9:33 AM



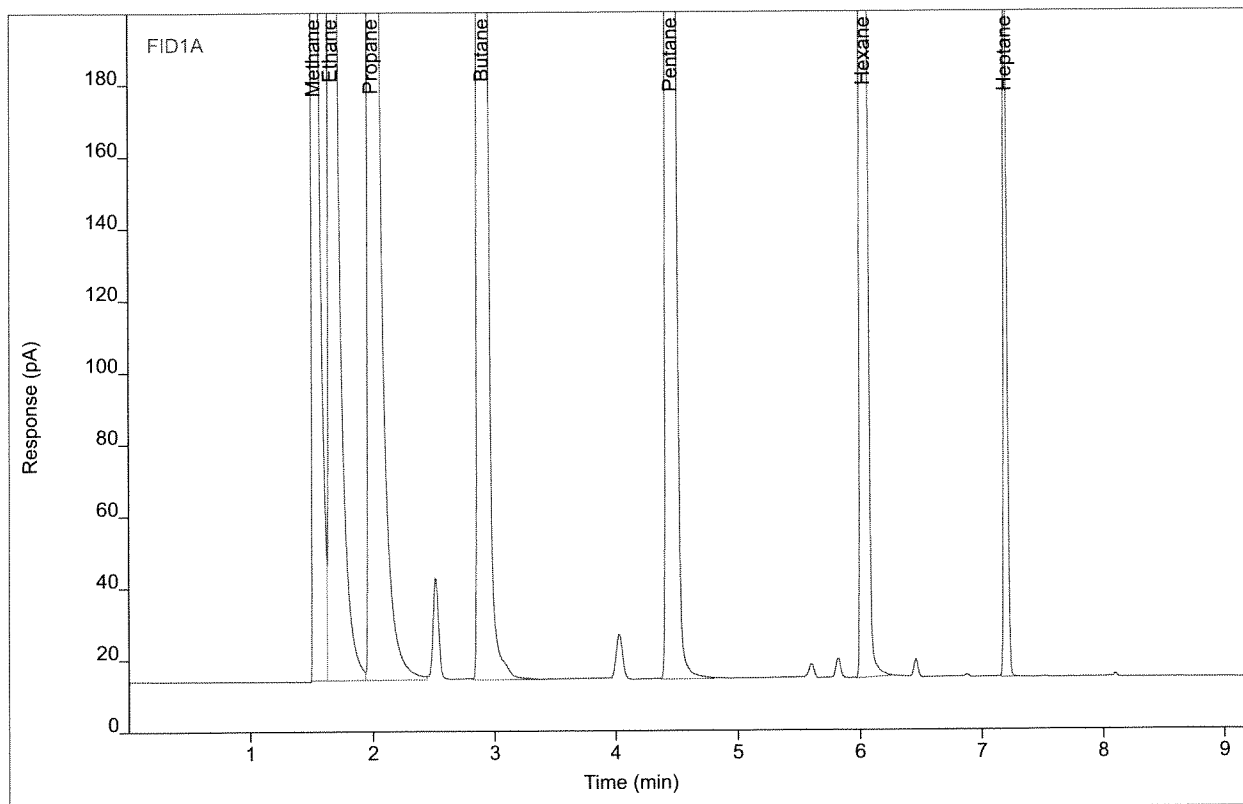
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PV	1.53	2258.45	1652.54	8490.04	1	8490.04	ppm
Ethane	VV	1.67	4354.60	2769.96	8444.97	1	8444.97	ppm
Propane	VV	2.00	6524.37	2963.20	8444.32	1	8444.32	ppm
Butane	BB	2.91	1734.70	558.857	1691.62	1	1691.62	ppm
Pentane	BB	4.47	1082.67	333.521	845.535	1	845.535	ppm
Hexane	BB	6.04	1032.83	444.274	676.379	1	676.379	ppm
Heptane	BB	7.20	75.4717	39.2811	42.3630	1	42.3630	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp730 #C8 ENV(1=0,3=400)
Sequence Name EDITHP730 ver.4
Data File 002F2002.D
File Location GC/2016/Edith/Quarter 3
Injection Date 9/17/2016 2:16 AM
File Modified 9/27/2016 9:20 AM
Instrument
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 2
Injection Volume 250
Injection 2 of 5
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP730F_C1-C7.M
Method Modified 9/27/2016 9:15 AM
Printed 9/27/2016 9:33 AM



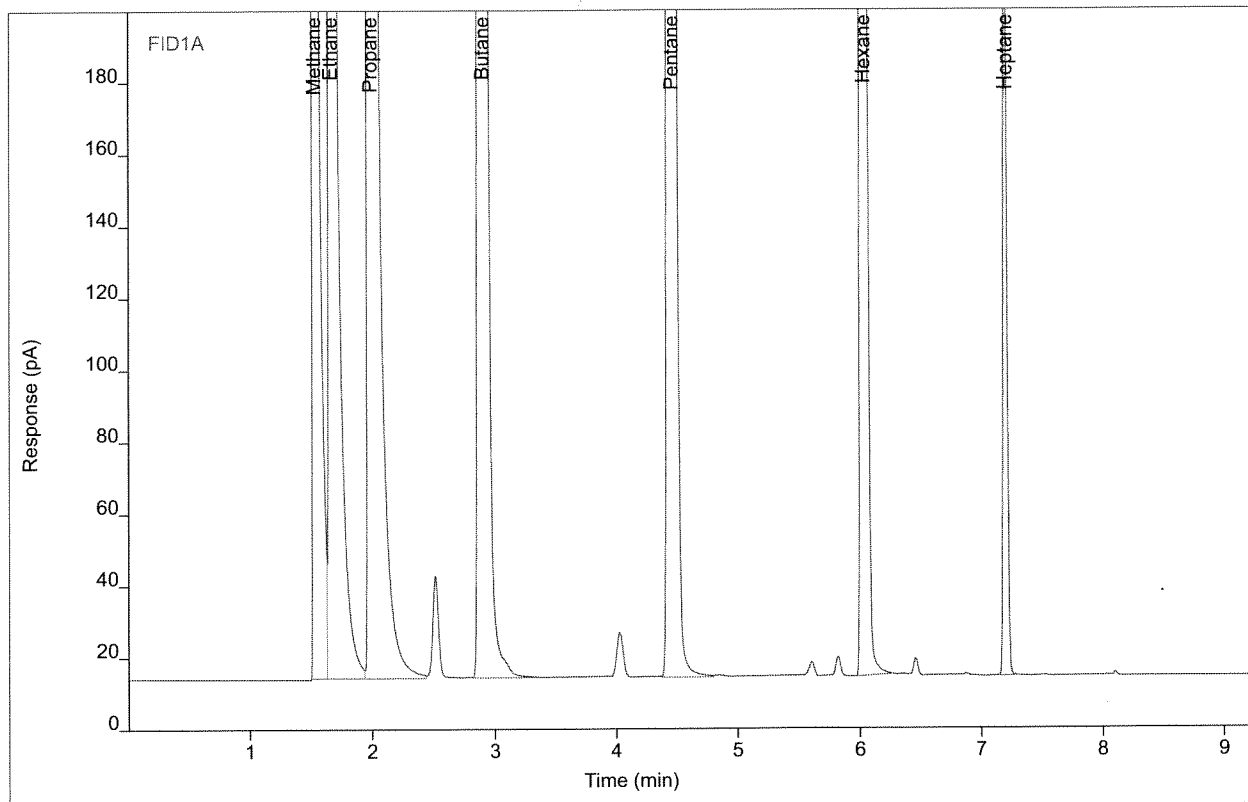
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PV	1.53	13650.7	10107.0	51314.3	1	51314.3	ppm
Ethane	VV	1.67	26300.1	16356.7	51004.4	1	51004.4	ppm
Propane	VV	1.99	39428.0	17177.1	51030.9	1	51030.9	ppm
Butane	BB	2.91	10519.3	3371.92	10258.5	1	10258.5	ppm
Pentane	BB	4.46	6577.94	2028.06	5138.17	1	5138.17	ppm
Hexane	BB	6.04	6280.68	2702.32	4113.77	1	4113.77	ppm
Heptane	BB	7.20	459.873	239.933	258.503	1	258.503	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp730 #C8 ENV(1=0,3=400)
Sequence Name EDITHP730 ver.4
Data File 002F2003.D
File Location GC/2016/Edith/Quarter 3
Injection Date 9/17/2016 2:31 AM
File Modified 9/27/2016 9:20 AM
Instrument
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 2
Injection Volume 250
Injection 3 of 5
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP730F_C1-C7.M
Method Modified 9/27/2016 9:15 AM
Printed 9/27/2016 9:33 AM



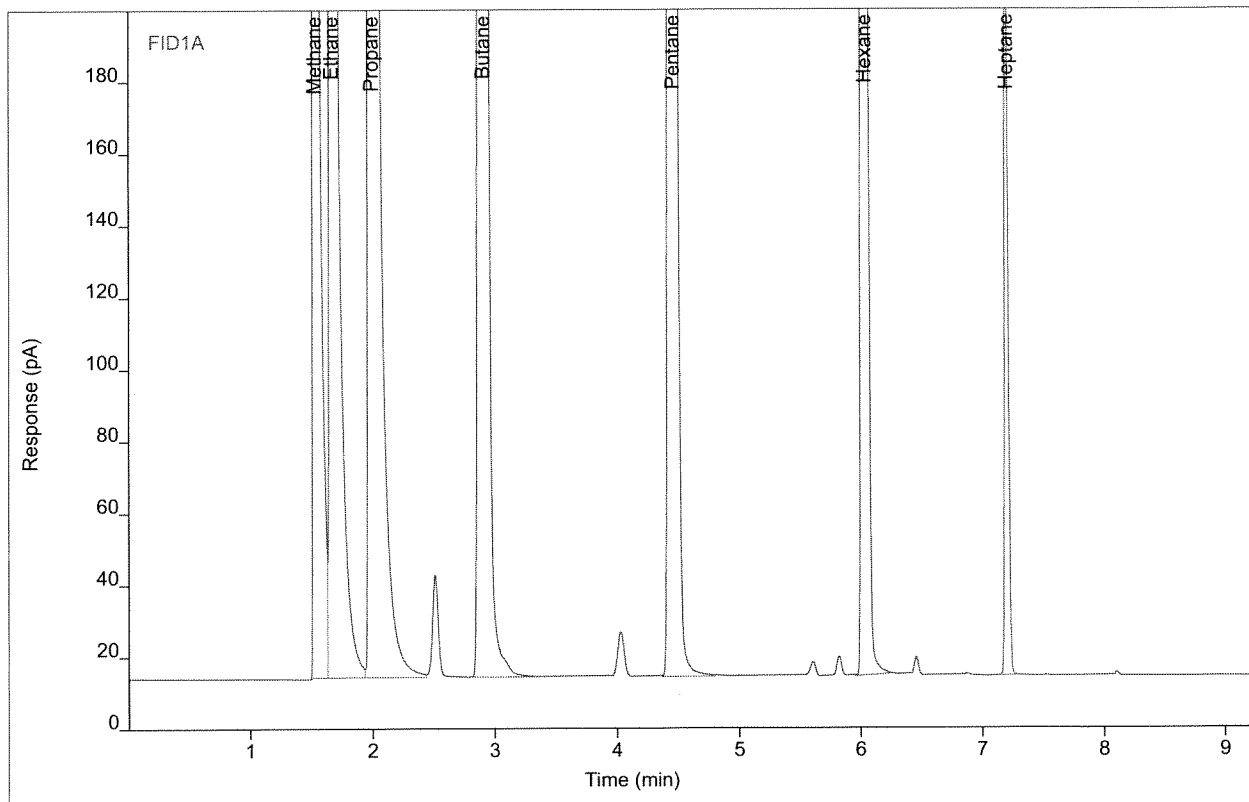
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PV	1.53	13621.8	10091.5	51205.9	1	51205.9	ppm
Ethane	VV	1.67	26243.2	16338.3	50894.0	1	50894.0	ppm
Propane	VV	1.99	39342.7	17147.7	50920.5	1	50920.5	ppm
Butane	BB	2.91	10496.8	3364.44	10236.6	1	10236.6	ppm
Pentane	BV	4.46	6564.15	2018.59	5127.40	1	5127.40	ppm
Hexane	VB	6.04	6268.73	2695.15	4105.94	1	4105.94	ppm
Heptane	BB	7.20	459.186	239.567	258.117	1	258.117	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name Edithp730 #C8 ENV(1=0,3=400)
Sequence Name EDITHP730 ver.4
Data File 002F2004.D
File Location GC/2016/Edith/Quarter 3
Injection Date 9/17/2016 2:46 AM
File Modified 9/27/2016 9:20 AM
Instrument
Operator Nicholas Traversa

Sample Type
Vial Number
Injection Volume 250
Injection 4 of 5
Acquisition Method AQ_EDITHP503_HRVOC.M
Analysis Method EDITHP730F_C1-C7.M
Method Modified 9/27/2016 9:15 AM
Printed 9/27/2016 9:33 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PV	1.53	13650.6	10095.2	51313.9	1	51313.9	ppm
Ethane	VV	1.67	26298.5	16347.4	51001.2	1	51001.2	ppm
Propane	VV	1.99	39423.7	17153.5	51025.4	1	51025.4	ppm
Butane	BB	2.91	10518.6	3371.34	10257.8	1	10257.8	ppm
Pentane	BV	4.46	6577.99	2023.19	5138.21	1	5138.21	ppm
Hexane	VB	6.04	6281.71	2702.16	4114.45	1	4114.45	ppm
Heptane	BB	7.20	460.141	239.162	258.654	1	258.654	ppm

Method Information

Method: C:\GC\2016\EDITH\METHODS\AQ_EDITHP503_HRVOC.M
Modified: 2/5/2016 at 4:56:13 PM

Agilent 7890A

Oven
Equilibration Time 0.3 min
Max Temperature 200 degrees C
Slow Fan Disabled
Oven Program On
35 °C for 2.2 min
#1 then 15 °C/min to 70 °C for 0.07 min
#2 then 30 °C/min to 180 °C for 1 min
Run Time 9.27 min

Sample Overlap
Sample overlap is not enabled

Front SS Inlet H2
Mode Split
Heater On 200 °C
Pressure On 5.1931 psi
Total Flow On 15.6 mL/min
Septum Purge Flow On 3 mL/min
Gas Saver Off
Split Ratio 5 :1
Split Flow 10.5 mL/min

Back SS Inlet H2
Mode Split
Heater On 200 °C
Pressure On 14.935 psi
Total Flow On 25.632 mL/min
Septum Purge Flow On 3 mL/min
Gas Saver Off
Split Ratio 2 :1
Split Flow 15.088 mL/min

Column #1
Restek 10198Rtx-1 S/N 806941
280 °C: 30 m x 320 µm x 4 µm
In: Front SS Inlet H2
Out: Front Detector FID

CERTIFICATE OF ANALYSIS

Grade of Product: CERTIFIED STANDARD-SPEC

Part Number:	X08NI99C15A0079	Reference Number:	141-124544672-1
Cylinder Number:	CC16105	Cylinder Volume:	144.4 CF
Laboratory:	ASG - Conley Stryker - OH	Cylinder Pressure:	2015 PSIG
Analysis Date:	Mar 28, 2016	Valve Outlet:	350
Lot Number:	141-124544672-1		

Expiration Date: Mar 28, 2019

Product composition verified by direct comparison to calibration standards traceable to N.I.S.T. weights and/or N.I.S.T. Gas Mixture reference materials.

ANALYTICAL RESULTS

Component	Req Conc	Actual Concentration (Mole %)	Analytical Uncertainty
ETHANE	100.0 PPM	100.0 PPM	+/- 2%
HEXANE	100.0 PPM	101.0 PPM	+/- 2%
METHANE	100.0 PPM	100.0 PPM	+/- 2%
N BUTANE	100.0 PPM	100.0 PPM	+/- 2%
N HEPTANE	100.0 PPM	100.0 PPM	+/- 2%
N PENTANE	100.0 PPM	103.0 PPM	+/- 2%
PROPANE	100.0 PPM	100.0 PPM	+/- 2%
NITROGEN	Balance		


 Approved for Release

CERTIFICATE OF ANALYSIS

Grade of Product: CERTIFIED HYDROCARBON

Customer: MONTROSE ENVIRONMETAL GROUP - MORRISVILLE ,
NC

Part X08NI83C15AC015

Number:

Cylinder CC425315

Number:

Laboratory: ASG - LaPorte Mix (SAP) - TX

Analysis Jul 11, 2016

Date:

Lot Number: 126-400736189-1

Reference Number: 126-400736189-1

Cylinder Volume: 15.8 CF

Cylinder Pressure: 204 PSIG

Valve Outlet: 350

Expiration Date: Jul 11 2019

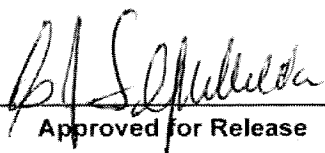
Traceability Statement: Hydrocarbon Process standards are NIST traceable either directly by weight or by comparison to Airgas laboratory standards that are directly NIST traceable by weight.

CERTIFIED CONCENTRATIONS

Component	Requested Concentration	Reported Mole %	Accuracy
N HEPTANE	250.0 PPM	251.0 PPM	+/- 2%
HEXANE	0.4000 %	0.4006 %	+/- 2%
N PENTANE	0.5000 %	0.5003 %	+/- 2%
N BUTANE	1.000 %	1.000 %	+/- 2%
ETHANE	5.000 %	5.003 %	+/- 2%
METHANE	5.000 %	5.006 %	+/- 2%
PROPANE	5.000 %	5.003 %	+/- 2%
NITROGEN	Balance	Balance	

Notes:

MONTROSE ENVIRONMETAL GROUP


Approved for Release

(Initial)	35 °C
Pressure	5.1931 psi
Flow	2.1 mL/min
Average Velocity	39.91 cm/sec
Holdup Time	1.2528 min
Flow Program	On
2.1 mL/min for 0 min	
Run Time	9.27 min

Column #2
 Restek 19757Rt-Alumina BOND/Na2SO4
 200 °C: 30 m x 320 µm x 5 µm
 In: Back SS Inlet H2
 Out: Back Detector FID

(Initial)	35 °C
Pressure	14.935 psi
Flow	7.5439 mL/min
Average Velocity	110 cm/sec
Holdup Time	0.45455 min
Flow Program	On
7.5439 mL/min for 0 min	
Run Time	9.27 min

Front Detector FID

Heater	On	300 °C
H2 Flow	On	50 mL/min
Air Flow	On	450 mL/min
Makeup Flow	On	35 mL/min
Const Col + Makeup		Off
Flame	On	
Electrometer	On	

Back Detector FID

Heater	On	200 °C
H2 Flow	On	50 mL/min
Air Flow	On	450 mL/min
Makeup Flow	On	35 mL/min
Const Col + Makeup		Off
Flame	On	
Electrometer	On	

Valve 1

Gas Sampling Valve	Unknown
GSV Loop Volume	0.25 mL
Load Time	1.5 min
Inject Time	0.5 min

Valve 2

Gas Sampling Valve	Unknown
GSV Loop Volume	0.25 mL
Load Time	1.5 min
Inject Time	0.5 min

On 150 °C

Signal #1: Front Signal Save On
20 Hz

50 Hz

20 Hz

50 Hz

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Agilent 7890A

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Oven
 Equilibration Time 0.3 min
 Max Temperature 200 degrees C
 Slow Fan Disabled
 Oven Program On

35 °C for 2.2 min
 #1 then 15 °C/min to 70 °C for 0.07 min
 #2 then 30 °C/min to 180 °C for 8 min
 Run Time 16.27 min

Sample Overlap
 Sample overlap is not enabled

Front SS Inlet H2
 Mode Split
 Heater On 200 °C
 Pressure On 5.1931 psi
 Total Flow On 15.6 mL/min
 Septum Purge Flow On 3 mL/min
 Gas Saver Off
 Split Ratio 5 :1
 Split Flow 10.5 mL/min

Back SS Inlet H2
 Mode Split
 Heater On 200 °C
 Pressure On 14.935 psi
 Total Flow On 25.632 mL/min
 Septum Purge Flow On 3 mL/min
 Gas Saver Off
 Split Ratio 2 :1
 Split Flow 15.088 mL/min

Column #1
 Restek 10198Rtx-1 S/N 806941
 280 °C: 30 m x 320 µm x 4 µm
 In: Front SS Inlet H2
 Out: Front Detector FID

(Initial) 35 °C
 Pressure 5.1931 psi
 Flow 2.1 mL/min
 Average Velocity 39.91 cm/sec
 Holdup Time 1.2528 min
 Flow Program On
 2.1 mL/min for 0 min
 Run Time 16.27 min

Column #2
 Restek 19757Rt-Alumina BOND/Na2SO4
 200 °C: 30 m x 320 µm x 5 µm
 In: Back SS Inlet H2
 Out: Back Detector FID

(Initial) 35 °C
 Pressure 14.935 psi
 Flow 7.5439 mL/min
 Average Velocity 110 cm/sec
 Holdup Time 0.45455 min
 Flow Program On

E-403

7.5439 mL/min for 0 min

Run Time

16.27 min

Front Detector FID

Heater	On	300 °C
H2 Flow	On	50 mL/min
Air Flow	On	450 mL/min
Makeup Flow	On	35 mL/min
Const Col + Makeup	Off	
Flame	On	
Electrometer	On	

Back Detector FID

Heater	On	200 °C
H2 Flow	On	50 mL/min
Air Flow	On	450 mL/min
Makeup Flow	On	35 mL/min
Const Col + Makeup	Off	
Flame	On	
Electrometer	On	

Valve 1

Gas Sampling Valve	Unknown
GSV Loop Volume	0.25 mL
Load Time	1.5 min
Inject Time	0.5 min

Valve 2

Gas Sampling Valve	Unknown
GSV Loop Volume	0.25 mL
Load Time	1.5 min
Inject Time	0.5 min

Valve Box

Heater	On	150 °C
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Signals

Signal #1: Front Signal	Save On
	20 Hz

Signal #2: Test Plot	Save Off
	50 Hz

Signal #3: Back Signal	Save On
	20 Hz

Signal #4: Test Plot	Save Off
	50 Hz

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Agilent 7890A

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Oven
 Equilibration Time 0.3 min
 Max Temperature 200 degrees C
 Slow Fan Disabled
 Oven Program On

35 °C for 2.2 min
 then 15 °C/min to 70 °C for 0.07 min

Run Time 4.6033 min

Sample Overlap
 Sample overlap is not enabled

Front SS Inlet H2

Mode Split
 Heater On 200 °C
 Pressure On 5.1931 psi
 Total Flow On 15.6 mL/min
 Septum Purge Flow On 3 mL/min
 Gas Saver Off
 Split Ratio 5 :1
 Split Flow 10.5 mL/min

Back SS Inlet H2

Mode Split
 Heater On 200 °C
 Pressure On 14.935 psi
 Total Flow On 25.632 mL/min
 Septum Purge Flow On 3 mL/min
 Gas Saver Off
 Split Ratio 2 :1
 Split Flow 15.088 mL/min

Column #1

Restek 10198Rtx-1 S/N 806941
 280 °C: 30 m x 320 µm x 4 µm
 In: Front SS Inlet H2
 Out: Front Detector FID

(Initial) 35 °C
 Pressure 5.1931 psi
 Flow 2.1 mL/min
 Average Velocity 39.91 cm/sec
 Holdup Time 1.2528 min
 Flow Program On
 2.1 mL/min for 0 min
 Run Time 4.6033 min

Column #2

Restek 19757Rt-Alumina BOND/Na2SO4
 200 °C: 30 m x 320 µm x 5 µm
 In: Back SS Inlet H2
 Out: Back Detector FID

(Initial) 35 °C
 Pressure 14.935 psi
 Flow 7.5439 mL/min
 Average Velocity 110 cm/sec
 Holdup Time 0.45455 min
 Flow Program On
 7.5439 mL/min for 0 min

Run Time 4.6033 min

Front Detector FID

Heater	On	300 °C
H2 Flow	On	50 mL/min
Air Flow	On	450 mL/min
Makeup Flow	On	35 mL/min
Const Col + Makeup	Off	
Flame	On	
Electrometer	On	

Back Detector FID

Heater	On	200 °C
H2 Flow	On	50 mL/min
Air Flow	On	450 mL/min
Makeup Flow	On	35 mL/min
Const Col + Makeup	Off	
Flame	On	
Electrometer	On	

Valve 1

Gas Sampling Valve	Unknown
GSV Loop Volume	0.25 mL
Load Time	1.5 min
Inject Time	0.5 min

Valve 2

Gas Sampling Valve	Unknown
GSV Loop Volume	0.25 mL
Load Time	1.5 min
Inject Time	0.5 min

Valve Box

Heater	On	150 °C
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Signals

Signal #1: Front Signal	Save On
	20 Hz

Signal #2: Test Plot	Save Off
	50 Hz

Signal #3: Back Signal	Save On
	20 Hz

Signal #4: Test Plot	Save Off
	50 Hz

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Agilent 7890A

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Oven

Equilibration Time	0.3 min
Max Temperature	200 degrees C
Slow Fan	Disabled
Oven Program	On
35 °C for 2.2 min	
#1 then 15 °C/min to 70 °C for 0.07 min	
#2 then 30 °C/min to 180 °C for 1 min	
Run Time	9.27 min

Sample Overlap

Sample overlap is not enabled

Front SS Inlet H2

Mode	Split
Heater	On 200 °C
Pressure	On 5.1931 psi
Total Flow	On 15.6 mL/min
Septum Purge Flow	On 3 mL/min
Gas Saver	Off
Split Ratio	5 :1
Split Flow	10.5 mL/min

Back SS Inlet H2

Mode	Split
Heater	On 200 °C
Pressure	On 14.935 psi
Total Flow	On 25.632 mL/min
Septum Purge Flow	On 3 mL/min
Gas Saver	Off
Split Ratio	2 :1
Split Flow	15.088 mL/min

Column #1

Restek 10198Rtx-1 S/N 806941

280 °C: 30 m x 320 µm x 4 µm

In: Front SS Inlet H2

Out: Front Detector FID

(Initial)	35 °C
Pressure	5.1931 psi
Flow	2.1 mL/min
Average Velocity	39.91 cm/sec
Holdup Time	1.2528 min
Flow Program	On
2.1 mL/min for 0 min	
Run Time	9.27 min

Column #2

Restek 19757Rt-Alumina BOND/Na2SO4

200 °C: 30 m x 320 µm x 5 µm

In: Back SS Inlet H2

Out: Back Detector FID

(Initial)	35 °C
Pressure	14.935 psi
Flow	7.5439 mL/min
Average Velocity	110 cm/sec
Holdup Time	0.45455 min
Flow Program	On

7.5439 mL/min for 0 min

Run Time 9.27 min

Front Detector FID

Heater	On	300 °C
H2 Flow	On	50 mL/min
Air Flow	On	450 mL/min
Makeup Flow	On	35 mL/min
Const Col + Makeup	Off	
Flame	On	
Electrometer	On	

Back Detector FID

Heater	On	200 °C
H2 Flow	On	50 mL/min
Air Flow	On	450 mL/min
Makeup Flow	On	35 mL/min
Const Col + Makeup	Off	
Flame	On	
Electrometer	On	

Valve 1

Gas Sampling Valve	Off
GSV Loop Volume	0.25 mL
Load Time	1.5 min
Inject Time	0.5 min

Valve 2

Gas Sampling Valve	Off
GSV Loop Volume	0.25 mL
Load Time	1.5 min
Inject Time	0.5 min

Valve Box

Heater	On	150 °C
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Signals

Signal #1: Front Signal	Save On
	20 Hz

Signal #2: Test Plot	Save Off
	50 Hz

Signal #3: Back Signal	Save On
	20 Hz

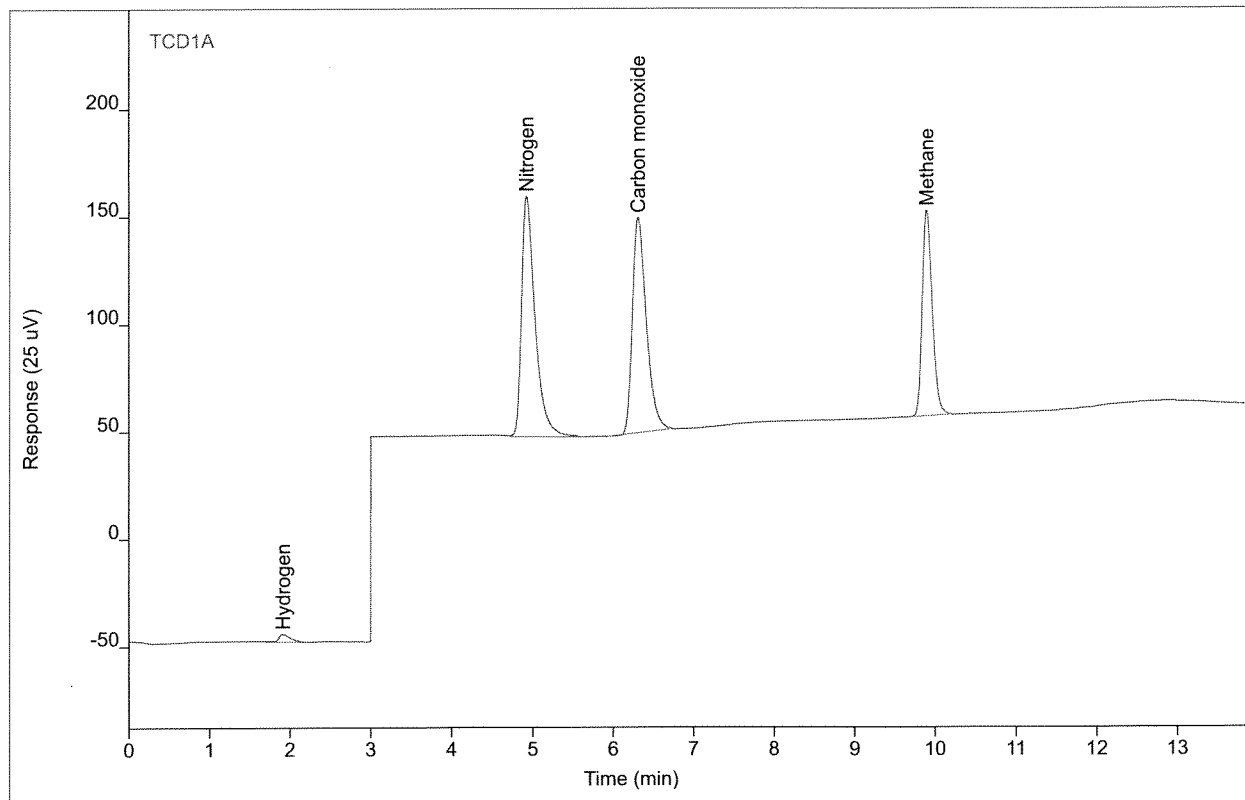
Signal #4: Test Plot	Save Off
	50 Hz

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG7 ENV(1=530,3=319.09)
Sequence Name BETTYP462 1 ver.14
Data File 009F1401.D
File Location GC/2016/Betty/Quarter 4
Injection Date 10/13/2016 1:07 AM
File Modified 10/18/2016 11:12 AM
Instrument Betty
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 1 of 2
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 8/12/2016 4:02 PM
Printed 10/25/2016 12:59 PM



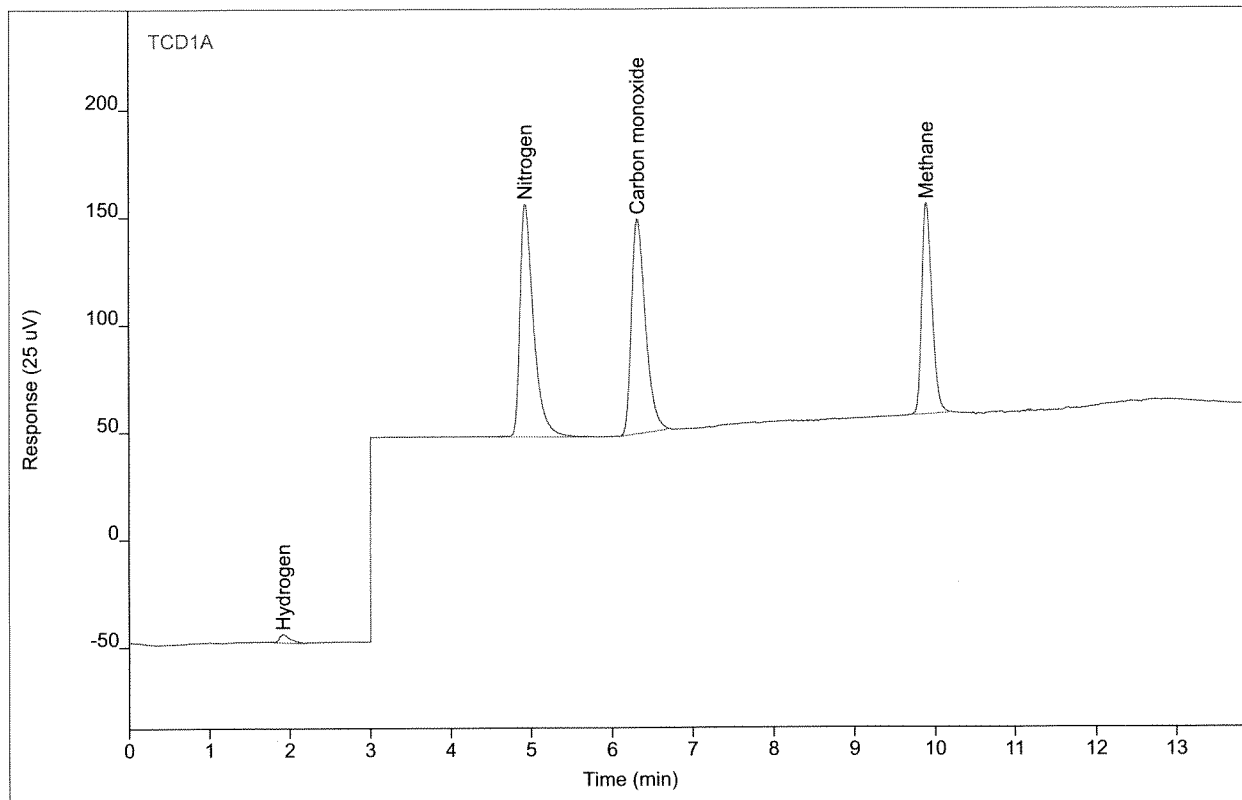
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	BB	1.91	37.4940	3.95254	2.55824	1	2.55824	%
Nitrogen	VB	4.93	1298.49	112.029	3.26821	1	3.26821	%
Carbon monoxide	BB	6.32	1190.36	100.313	3.07248	1	3.07248	%
Methane	BB	9.90	840.026	95.6954	2.50710	1	2.50710	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG7 ENV(1=530,3=319.09)
Sequence Name BETTYP462 1 ver.14
Data File 009F1402.D
File Location GC/2016/Betty/Quarter 4
Injection Date 10/13/2016 1:30 AM
File Modified 10/18/2016 11:12 AM
Instrument Betty
Operator Nicholas Traversa

Sample Type
Vial Number Vial 9
Injection Volume 250
Injection 2 of 2
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 8/12/2016 4:02 PM
Printed 10/25/2016 12:59 PM



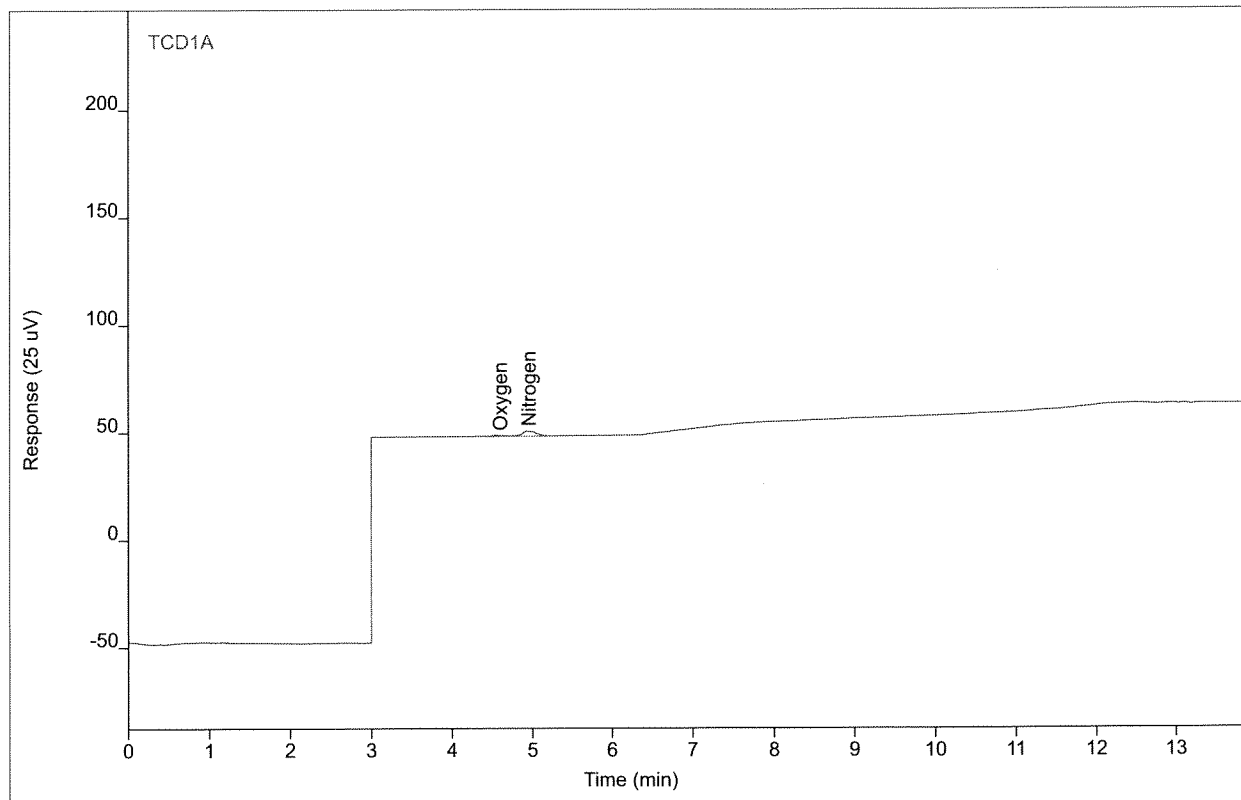
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	BV	1.92	38.3435	4.03142	2.61720	1	2.61720	%
Nitrogen	BB	4.94	1262.67	108.441	3.17471	1	3.17471	%
Carbon monoxide	BB	6.32	1198.11	100.097	3.09271	1	3.09271	%
Methane	BB	9.90	859.810	98.0015	2.56727	1	2.56727	%

Chromatogram Report

Enthalpy Analytical

Sample Name Bettyp374 Method Blank-1
Sequence Name BETTYP464 ver.3
Data File 001F0401.D
File Location GC/2016/Betty/Quarter 4
Injection Date 10/15/2016 1:41 PM
File Modified 10/17/2016 1:11 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 1
Injection Volume 250
Injection 1 of 2
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 10/14/2016 10:09 AM
Printed 10/25/2016 12:59 PM



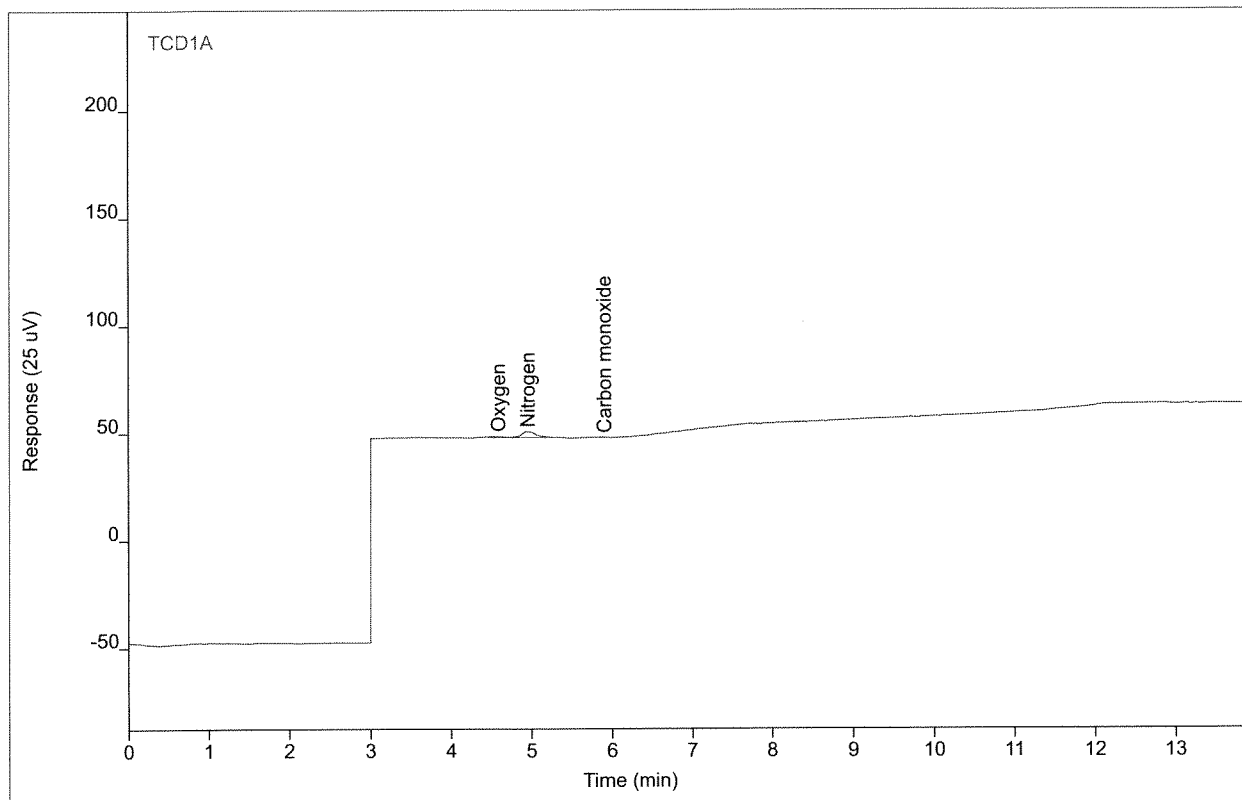
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(1.87)				1		
Oxygen	BV	4.61	8.08272	0.81585	0.01958	1	0.01958	%
Nitrogen	VB	4.96	32.2475	2.77312	0.06375	1	0.06375	%
Carbon monoxide		(6.30)				1		
Methane		(9.86)				1		
Carbon Dioxide		(13.19)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name Bettyp374 Method Blank-1
Sequence Name BETTYP464 ver.3
Data File 001F0402.D
File Location GC/2016/Betty/Quarter 4
Injection Date 10/15/2016 2:03 PM
File Modified 10/17/2016 1:11 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 1
Injection Volume 250
Injection 2 of 2
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 10/14/2016 10:09 AM
Printed 10/25/2016 12:59 PM



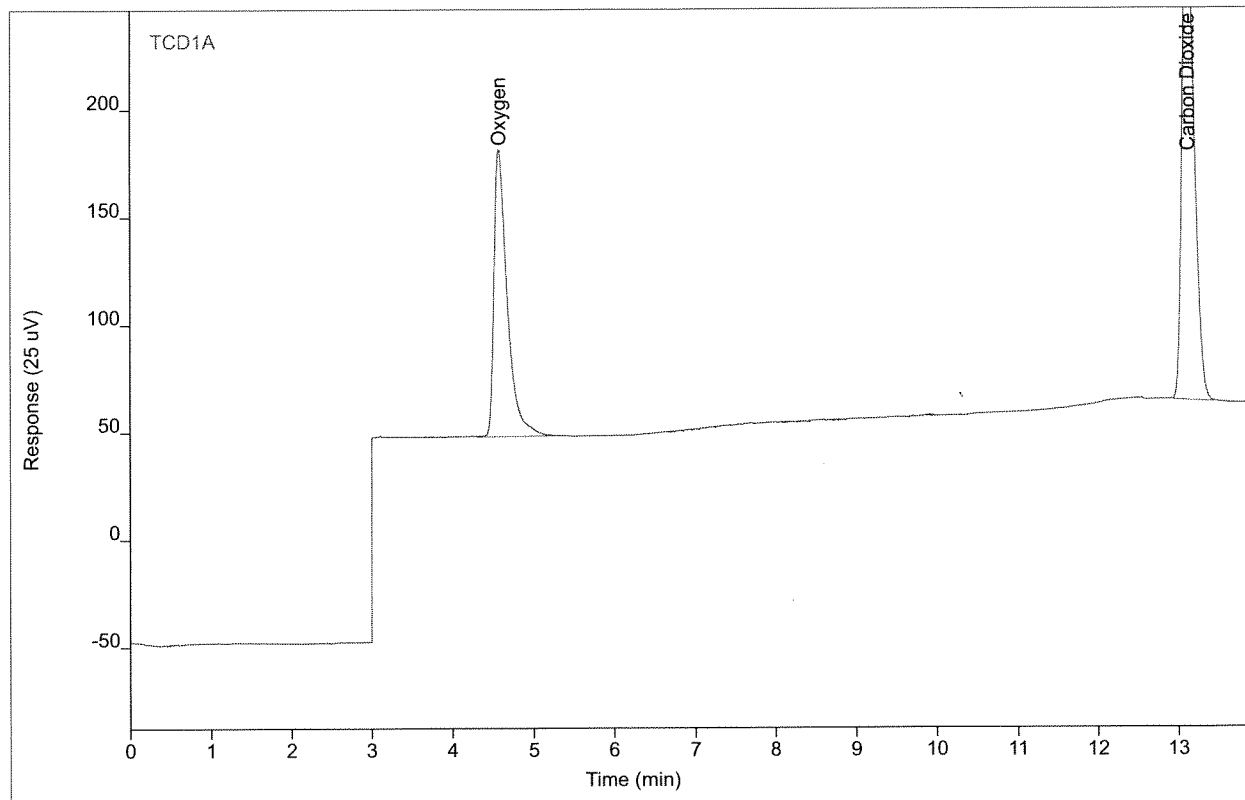
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(1.87)				1		
Oxygen	BV	4.59	6.93910	0.74046	0.01681	1	0.01681	%
Nitrogen	VB	4.96	35.4077	2.93173	0.07000	1	0.07000	%
Carbon monoxide	BV	5.91	1.22726	0.24780	0.00292	1	0.00292	%
Methane		(9.86)				1		
Carbon Dioxide		(13.19)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG3 ENV(1=374.56,2=391.07)
Sequence Name BETTYP462 1 ver.14
Data File 009F1501.D
File Location GC/2016/Betty/Quarter 4
Injection Date 10/13/2016 1:53 AM
File Modified 10/18/2016 11:12 AM
Instrument Betty
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 1 of 2
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 8/12/2016 4:02 PM
Printed 10/25/2016 12:59 PM



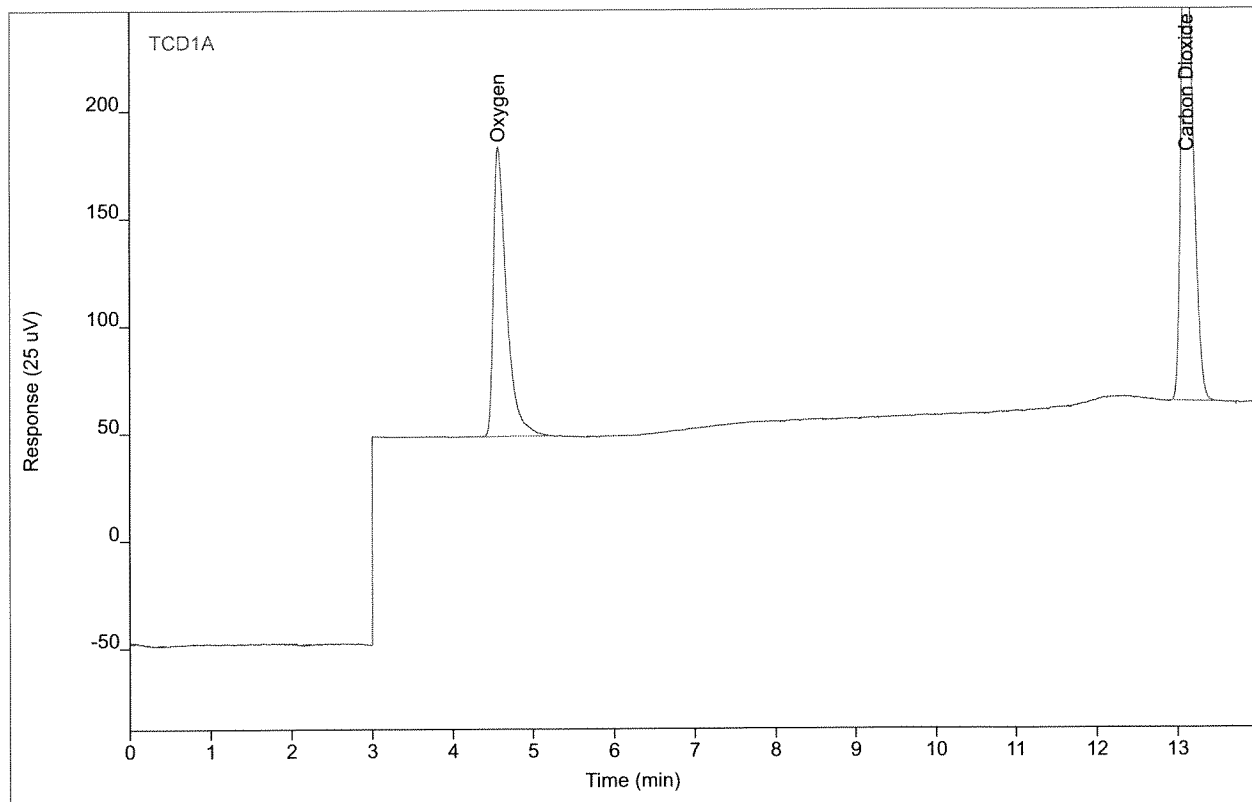
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Oxygen	VB	4.58	1532.47	133.397	4.40553	1	4.40553	%
Carbon Dioxide	BB	13.12	2385.23	236.005	4.49542	1	4.49542	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG3 ENV(1=374.56,2=391.07)
Sequence Name BETTYP462 1 ver.14
Data File 009F1502.D
File Location GC/2016/Betty/Quarter 4
Injection Date 10/13/2016 2:16 AM
File Modified 10/18/2016 11:12 AM
Instrument Betty
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 2 of 2
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 8/12/2016 4:02 PM
Printed 10/25/2016 12:59 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Oxygen	MM	4.58	1543.69	134.836	4.43864	1	4.43864	%
Carbon Dioxide	BB	13.13	2367.28	233.935	4.46092	1	4.46092	%

Analyst Peak Integration Comments

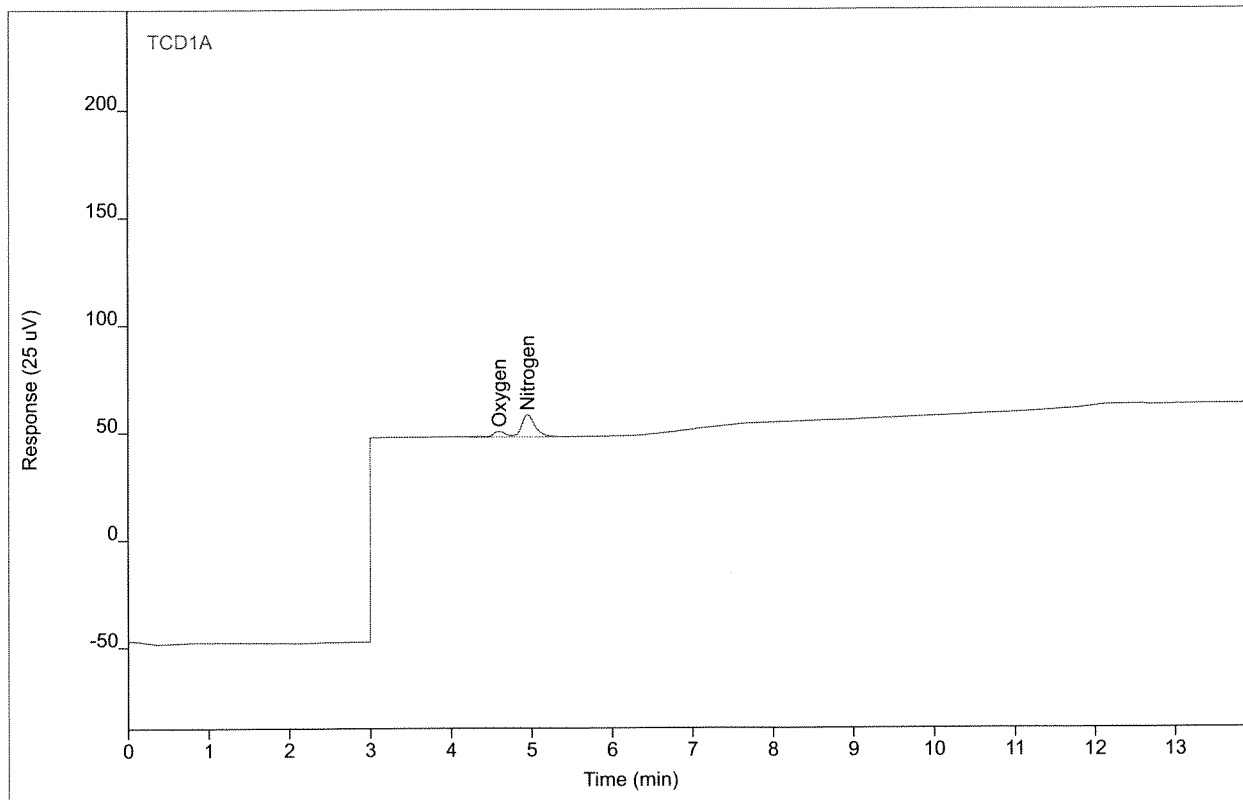
07:40:15 10/13/16 Justin Guenzler II

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.U3-C1-Primary Can1368.Can
Sequence Name BETTYP463 ver.6
Data File 004F0101.D
File Location GC/2016/Betty/Quarter 4
Injection Date 10/13/2016 1:44 PM
File Modified 10/24/2016 1:55 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 4
Injection Volume 250
Injection 1 of 3
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 10/14/2016 10:09 AM
Printed 10/25/2016 12:59 PM



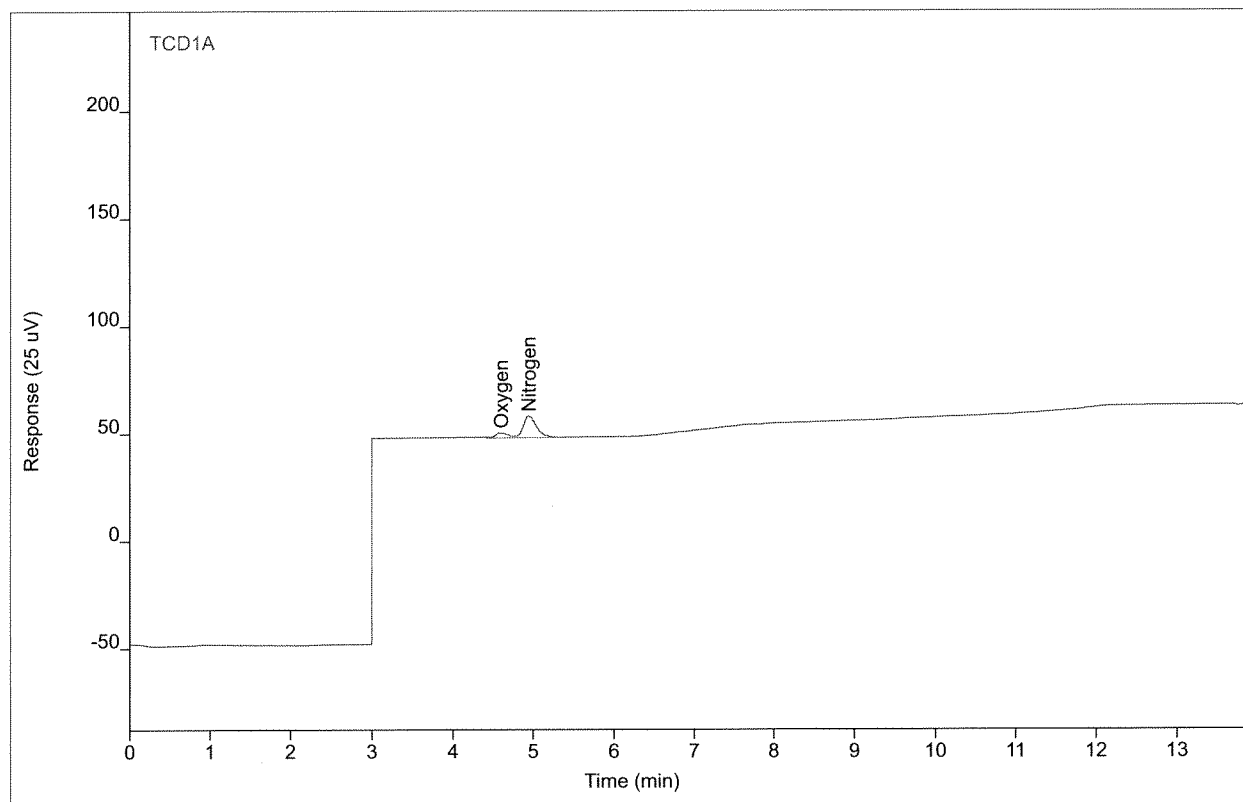
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(1.87)				1		
Oxygen	BV	4.61	28.5604	2.67907	0.06918	1	0.06918	%
Nitrogen	VB	4.96	119.545	10.4650	0.23633	1	0.23633	%
Carbon monoxide		(6.30)				1		
Methane		(9.86)				1		
Carbon Dioxide		(13.19)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.U3-C1-Primary Can1368.Can
Sequence Name BETTYP463 ver.6
Data File 004F0102.D
File Location GC/2016/Betty/Quarter 4
Injection Date 10/13/2016 2:05 PM
File Modified 10/24/2016 1:55 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 4
Injection Volume 250
Injection 2 of 3
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 10/14/2016 10:09 AM
Printed 10/25/2016 12:59 PM



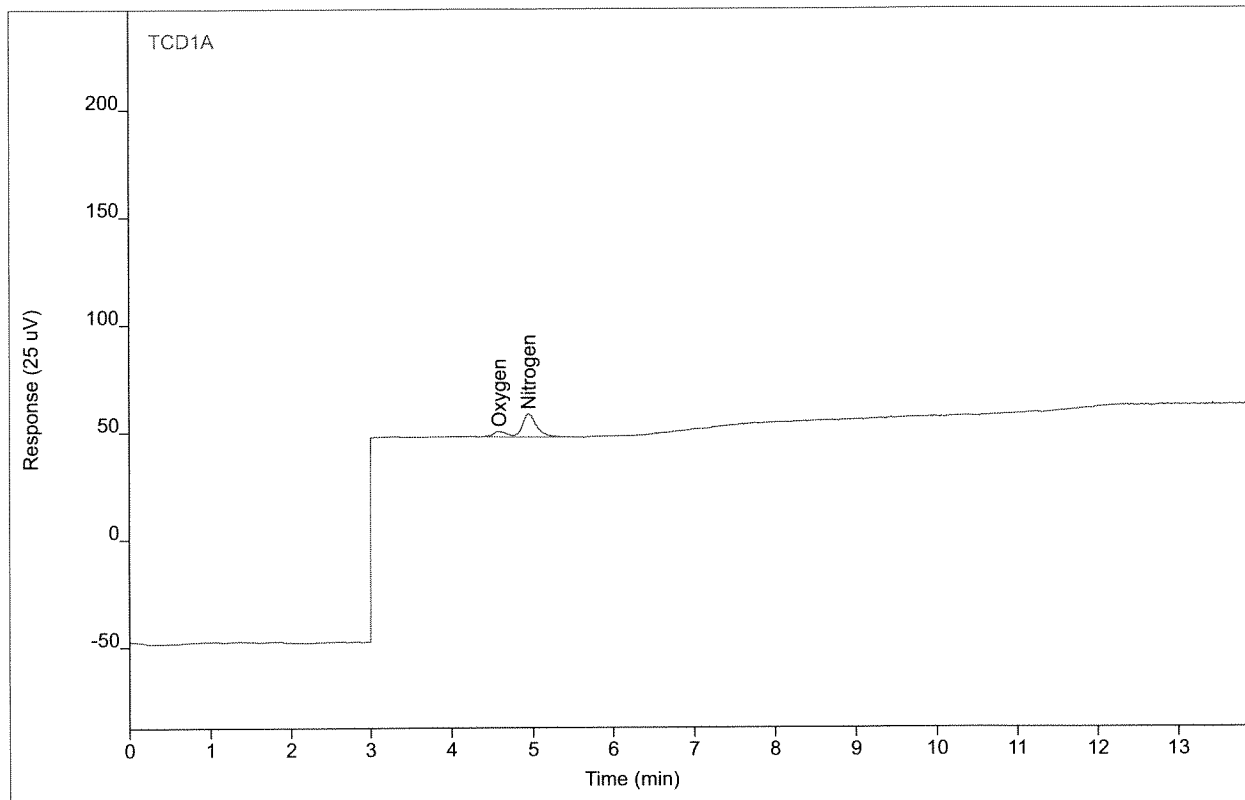
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(1.87)				1		
Oxygen	BV	4.61	26.8520	2.58680	0.06504	1	0.06504	%
Nitrogen	VB	4.95	118.443	10.2409	0.23415	1	0.23415	%
Carbon monoxide		(6.30)				1		
Methane		(9.86)				1		
Carbon Dioxide		(13.19)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.U3-C2-Primary Can1321.Can
Sequence Name BETTYP463 ver.6
Data File 005F0201.D
File Location GC/2016/Betty/Quarter 4
Injection Date 10/13/2016 2:46 PM
File Modified 10/24/2016 1:55 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 5
Injection Volume 250
Injection 1 of 3
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 10/14/2016 10:09 AM
Printed 10/25/2016 12:59 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(1.87)				1		
Oxygen	VV	4.60	28.2565	2.70657	0.06844	1	0.06844	%
Nitrogen	VV	4.95	129.461	10.9158	0.25593	1	0.25593	%
Carbon monoxide		(6.30)				1		
Methane		(9.86)				1		
Carbon Dioxide		(13.19)				1		

Analyst Peak Integration Comments

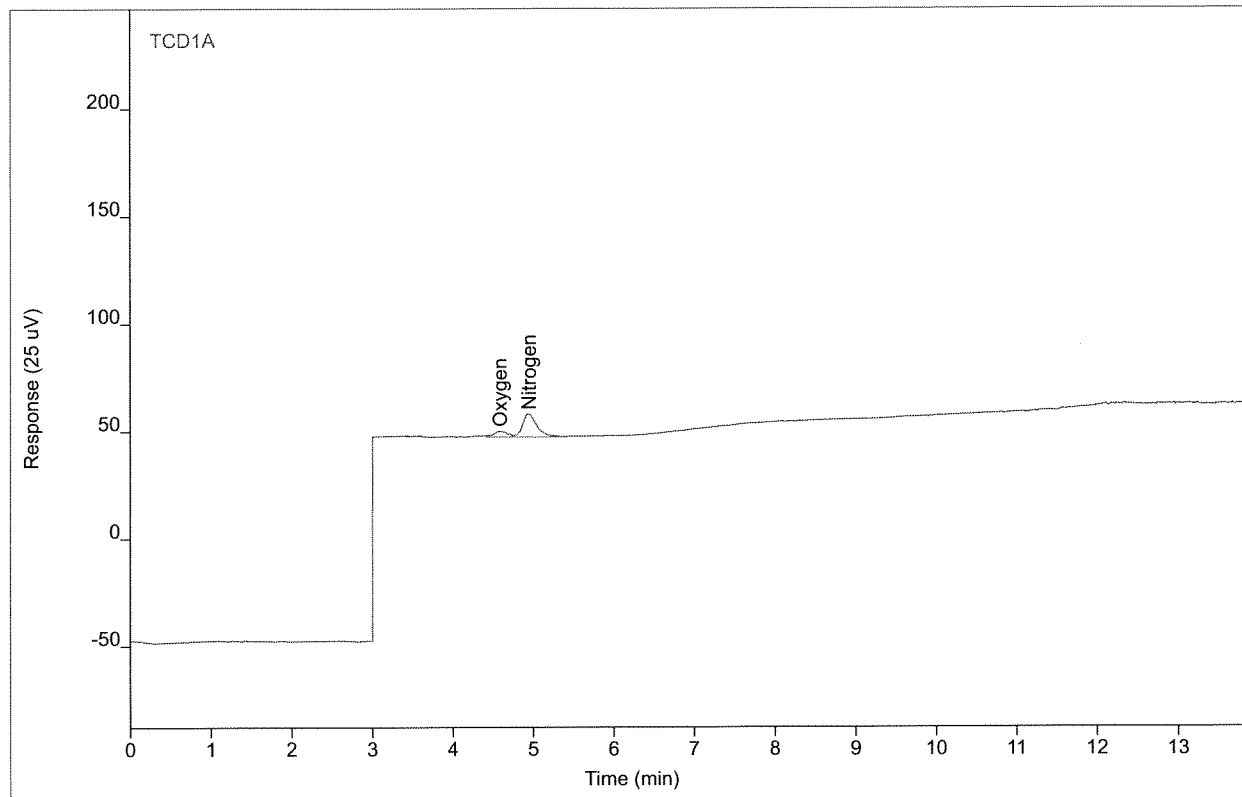
13:35:56 10/24/16 Justin Guenzler false positive

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.U3-C2-Primary Can1321.Can
 Sequence Name BETTYP463 ver.6
 Data File 005F0202.D
 File Location GC/2016/Betty/Quarter 4
 Injection Date 10/13/2016 3:07 PM
 File Modified 10/24/2016 1:55 PM
 Instrument Betty
 Operator Nicholas Traversa

Sample Type Sample
 Vial Number Vial 5
 Injection Volume 250
 Injection 2 of 3
 Acquisition Method GC142P133_CAL.M
 Analysis Method BETTYP338_FGA.M
 Method Modified 10/14/2016 10:09 AM
 Printed 10/25/2016 12:59 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(1.87)				1		
Oxygen	VV	4.60	32.2753	2.92968	0.07818	1	0.07818	%
Nitrogen	VB	4.96	131.109	10.8778	0.25919	1	0.25919	%
Carbon monoxide		(6.30)				1		
Methane		(9.86)				1		
Carbon Dioxide		(13.19)				1		

Analyst Peak Integration Comments

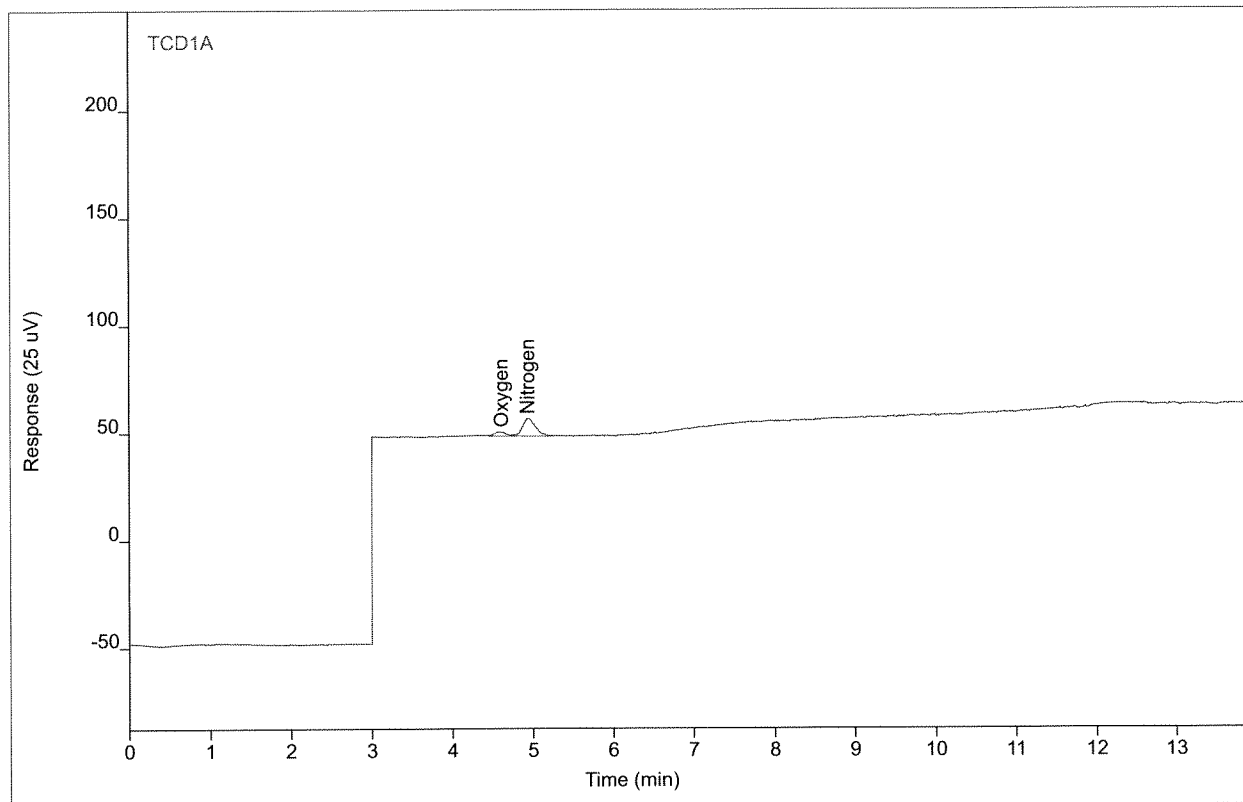
13:36:09 10/24/16 Justin Guenzler false positive

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.U3-C3-Primary Can1655.Can
Sequence Name BETTYP463 ver.6
Data File 006F0301.D
File Location GC/2016/Betty/Quarter 4
Injection Date 10/13/2016 3:48 PM
File Modified 10/24/2016 1:55 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 6
Injection Volume 250
Injection 1 of 3
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 10/14/2016 10:09 AM
Printed 10/25/2016 12:59 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(1.87)				1		
Oxygen	MF	4.61	20.4616	2.24917	0.04956	1	0.04956	%
Nitrogen	FM	4.94	93.3195	8.39499	0.18448	1	0.18448	%
Carbon monoxide		(6.30)				1		
Methane		(9.86)				1		
Carbon Dioxide		(13.19)				1		

Analyst Peak Integration Comments

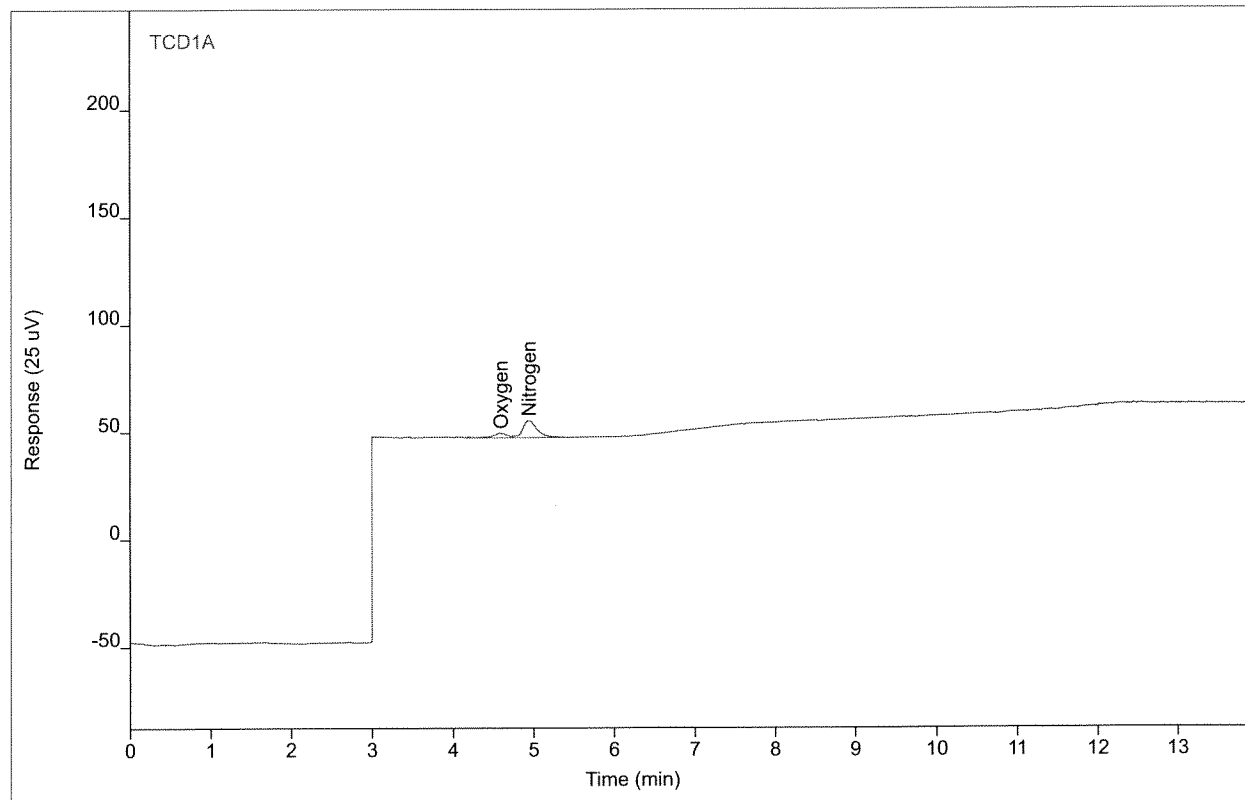
13:36:29 10/24/16 Justin Guenzler II

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.U3-C3-Primary Can1655.Can
Sequence Name BETTYP463 ver.6
Data File 006F0302.D
File Location GC/2016/Betty/Quarter 4
Injection Date 10/13/2016 4:09 PM
File Modified 10/24/2016 1:55 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 6
Injection Volume 250
Injection 2 of 3
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 10/14/2016 10:09 AM
Printed 10/25/2016 12:59 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(1.87)				1		
Oxygen	VV	4.60	27.6587	2.24829	0.06700	1	0.06700	%
Nitrogen	VV	4.95	99.0123	8.09950	0.19574	1	0.19574	%
Carbon monoxide		(6.30)				1		
Methane		(9.86)				1		
Carbon Dioxide		(13.19)				1		

Analyst Peak Integration Comments

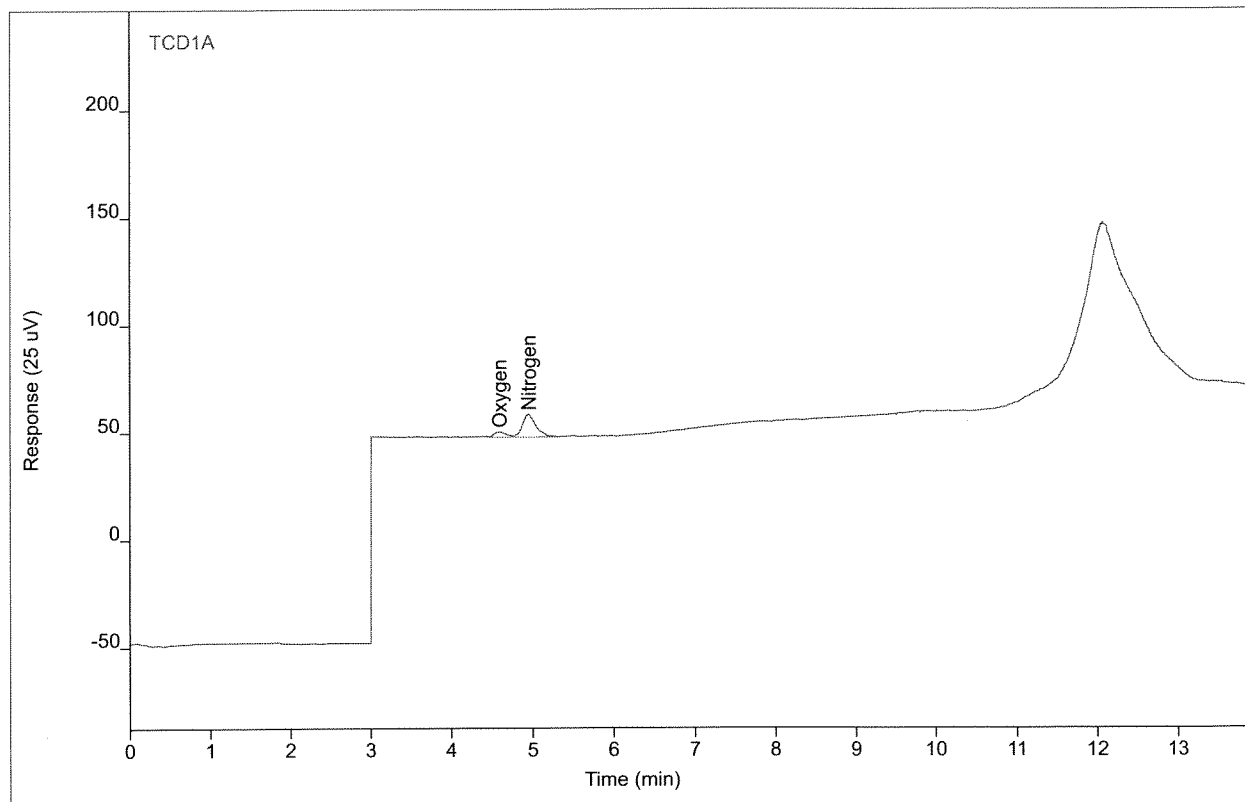
13:36:44 10/24/16 Justin Guenzler II

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.U3-C4-Primary Can1109.Can
Sequence Name BETTYP463 ver.6
Data File 007F0401.D
File Location GC/2016/Betty/Quarter 4
Injection Date 10/13/2016 4:51 PM
File Modified 10/24/2016 1:55 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 7
Injection Volume 250
Injection 1 of 3
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 10/14/2016 10:09 AM
Printed 10/25/2016 12:59 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(1.87)				1		
Oxygen	MF	4.60	25.4205	2.49811	0.06157	1	0.06157	%
Nitrogen	FM	4.96	122.629	10.5541	0.24242	1	0.24242	%
Carbon monoxide		(6.30)				1		
Methane		(9.86)				1		
Carbon Dioxide		(13.19)				1		

Analyst Peak Integration Comments

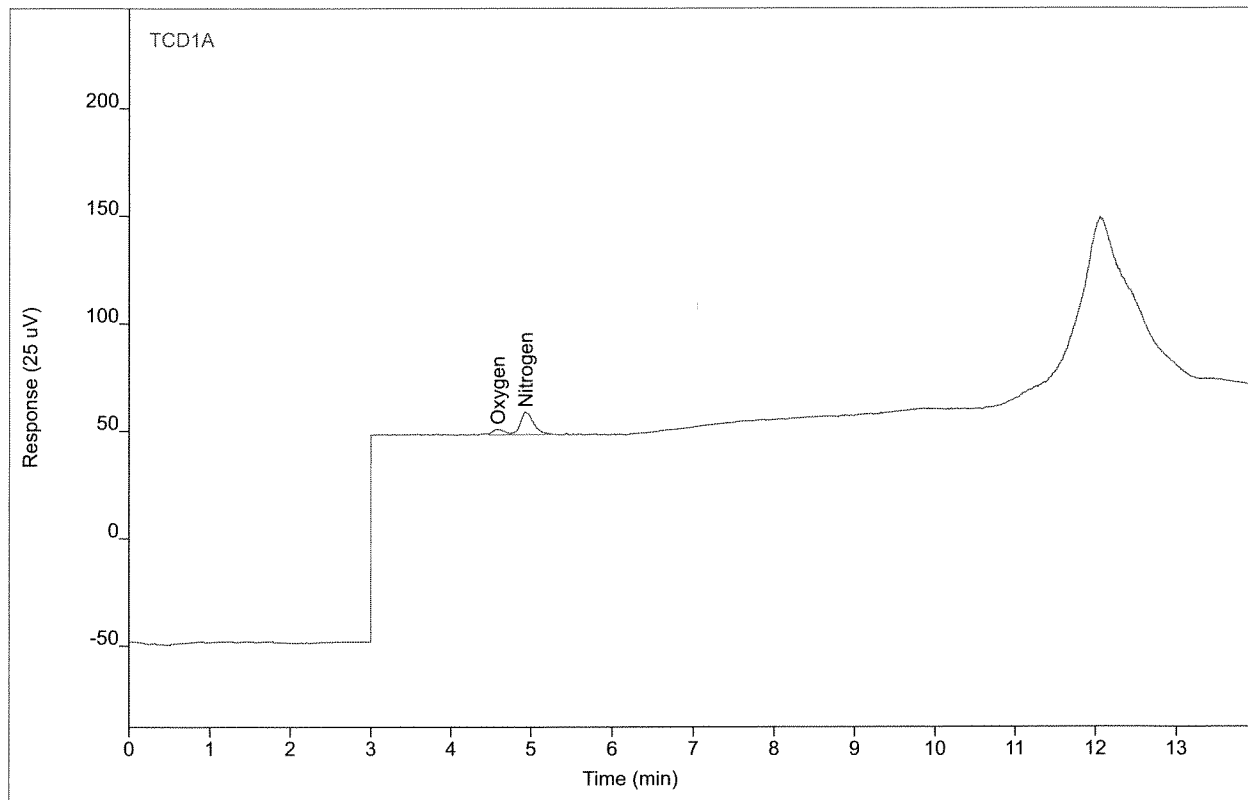
13:37:08 10/24/16 Justin Guenzler II

Chromatogram Report

Enthalpy Analytical

Sample Name 0816-140.U3-C4-Primary Can1109.Can
Sequence Name BETTYP463 ver.6
Data File 007F0402.D
File Location GC/2016/Betty/Quarter 4
Injection Date 10/13/2016 5:11 PM
File Modified 10/24/2016 1:55 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 7
Injection Volume 250
Injection 2 of 3
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 10/14/2016 10:09 AM
Printed 10/25/2016 12:59 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen		(1.87)				1		
Oxygen	MF	4.59	27.4496	2.85414	0.06649	1	0.06649	%
Nitrogen	FM	4.94	119.401	10.8682	0.23604	1	0.23604	%
Carbon monoxide		(6.30)				1		
Methane		(9.86)				1		
Carbon Dioxide		(13.19)				1		

Analyst Peak Integration Comments

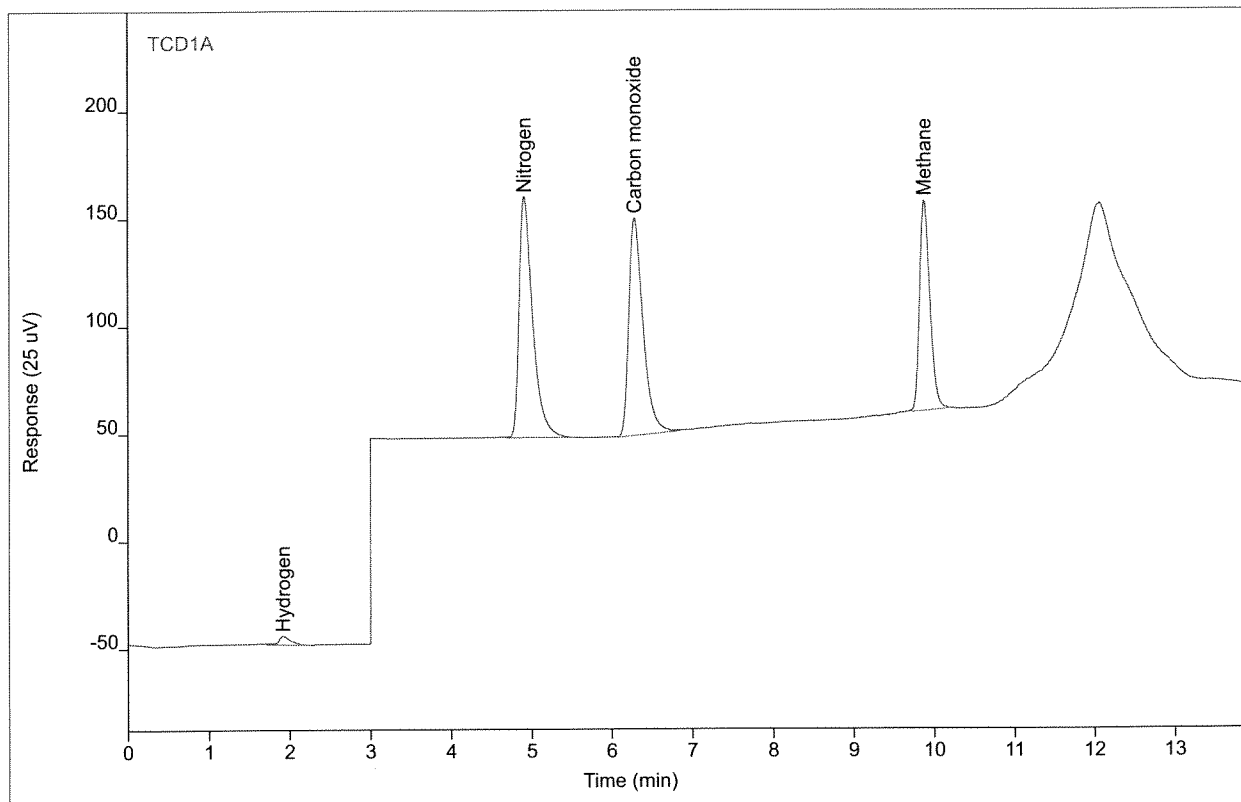
13:37:29 10/24/16 Justin Guenzler II
13:37:40 10/24/16 Justin Guenzler false positive

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG7 ENV(1=530,3=319.09)
Sequence Name BETTYP464 ver.3
Data File 009F1101.D
File Location GC/2016/Betty/Quarter 4
Injection Date 10/15/2016 9:11 PM
File Modified 10/20/2016 11:00 AM
Instrument Betty
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 1 of 2
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 10/14/2016 10:09 AM
Printed 10/25/2016 12:59 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	BB	1.92	41.0117	4.07273	2.80237	1	2.80237	%
Nitrogen	MM	4.92	1289.96	112.063	3.24594	1	3.24594	%
Carbon monoxide	MM	6.30	1242.56	101.317	3.20885	1	3.20885	%
Methane	BB	9.89	859.956	97.8240	2.56771	1	2.56771	%

Analyst Peak Integration Comments

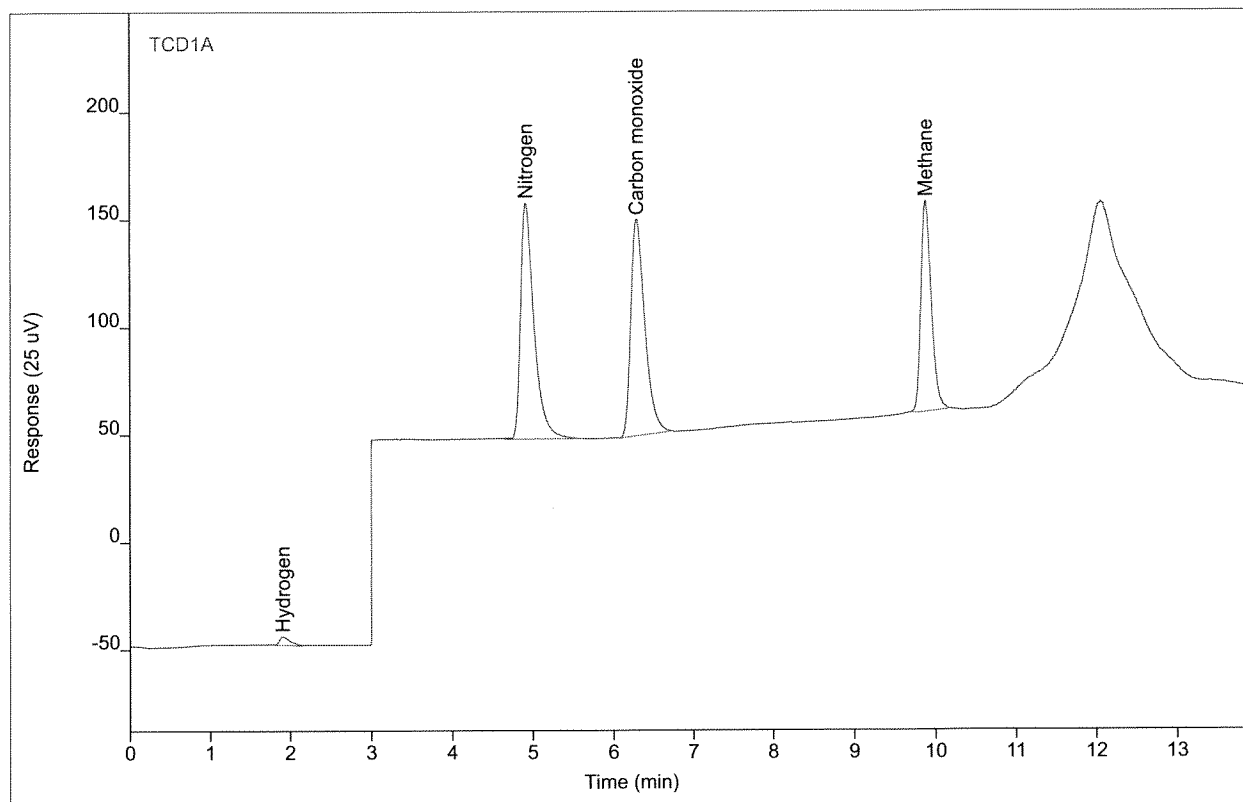
11:00:18 10/20/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG7 ENV(1=530,3=319.09)
Sequence Name BETTYP464 ver.3
Data File 009F1102.D
File Location GC/2016/Betty/Quarter 4
Injection Date 10/15/2016 9:34 PM
File Modified 10/20/2016 11:00 AM
Instrument Betty
Operator Nicholas Traversa

Sample Type
Vial Number
Injection Volume
Injection
Acquisition Method
Analysis Method
Method Modified
Printed
Calibration
Vial 9
250
2 of 2
GC142P133_CAL.M
BETTYP338_FGA.M
10/14/2016 10:09 AM
10/25/2016 12:59 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	MM	1.91	38.7770	4.24130	2.64728	1	2.64728	%
Nitrogen	VB	4.92	1274.76	109.913	3.20628	1	3.20628	%
Carbon monoxide	BB	6.30	1222.74	100.656	3.15706	1	3.15706	%
Methane	BB	9.89	868.332	97.9419	2.59318	1	2.59318	%

Analyst Peak Integration Comments

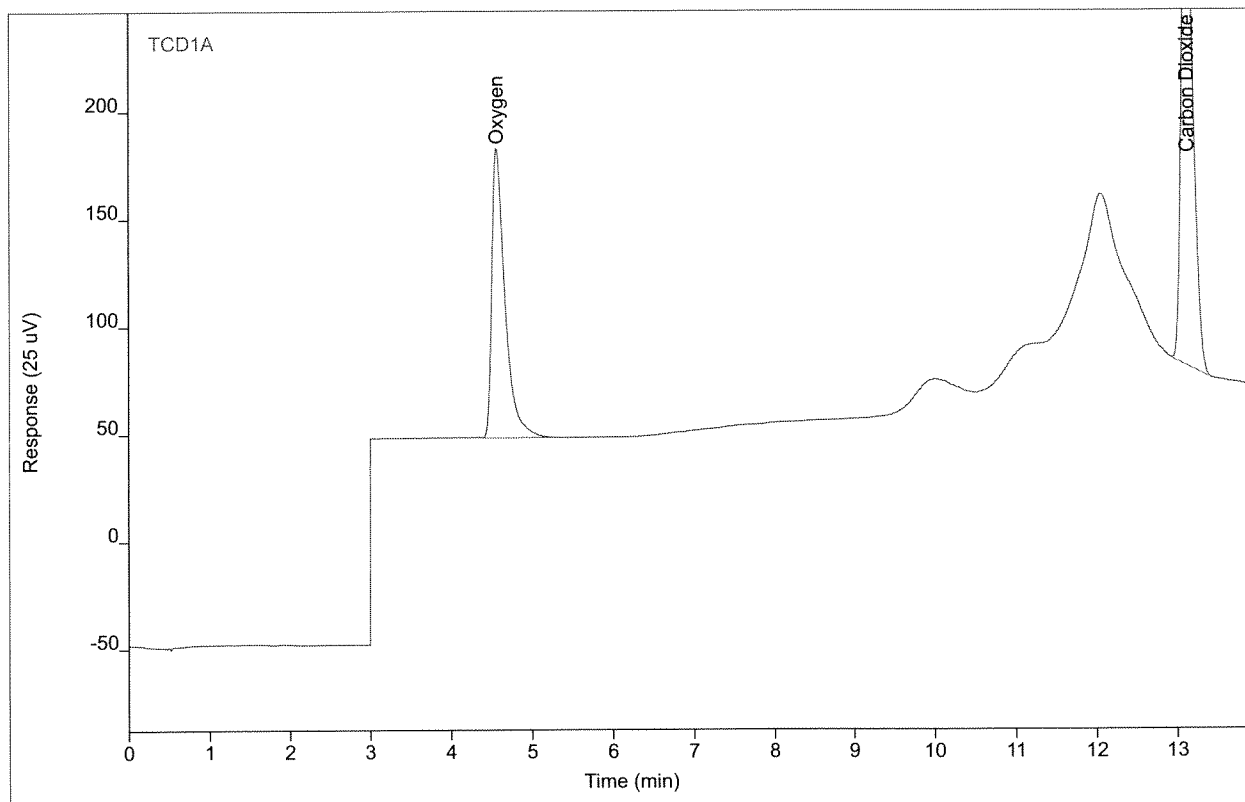
11:00:32 10/20/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG3 ENV(1=374.56,2=391.07)
Sequence Name BETTYP464 ver.3
Data File 009F1201.D
File Location GC/2016/Betty/Quarter 4
Injection Date 10/15/2016 9:58 PM
File Modified 10/20/2016 11:04 AM
Instrument Betty
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 1 of 2
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 10/14/2016 10:09 AM
Printed 10/25/2016 12:59 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Oxygen	BB	4.57	1544.78	134.625	4.44187	1	4.44187	%
Carbon Dioxide	MM	13.12	2289.30	230.277	4.31108	1	4.31108	%

Analyst Peak Integration Comments

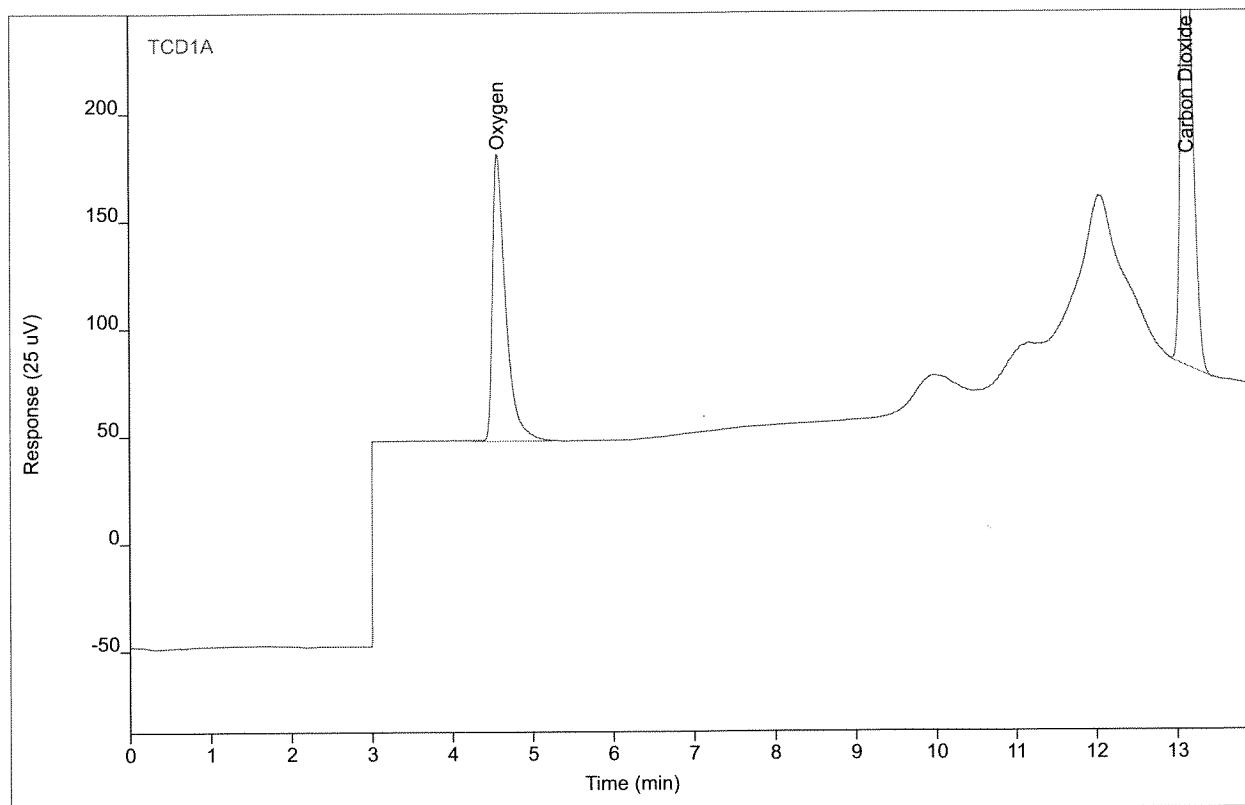
11:04:11 10/20/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG3 ENV(1=374.56,2=391.07)
Sequence Name BETTYP464 ver.3
Data File 009F1202.D
File Location GC/2016/Betty/Quarter 4
Injection Date 10/15/2016 10:21 PM
File Modified 10/20/2016 11:04 AM
Instrument Betty
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 2 of 2
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 10/14/2016 10:09 AM
Printed 10/25/2016 12:59 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Oxygen	BV	4.57	1531.93	133.525	4.40391	1	4.40391	%
Carbon Dioxide	MM	13.13	2320.56	232.074	4.37114	1	4.37114	%

Analyst Peak Integration Comments

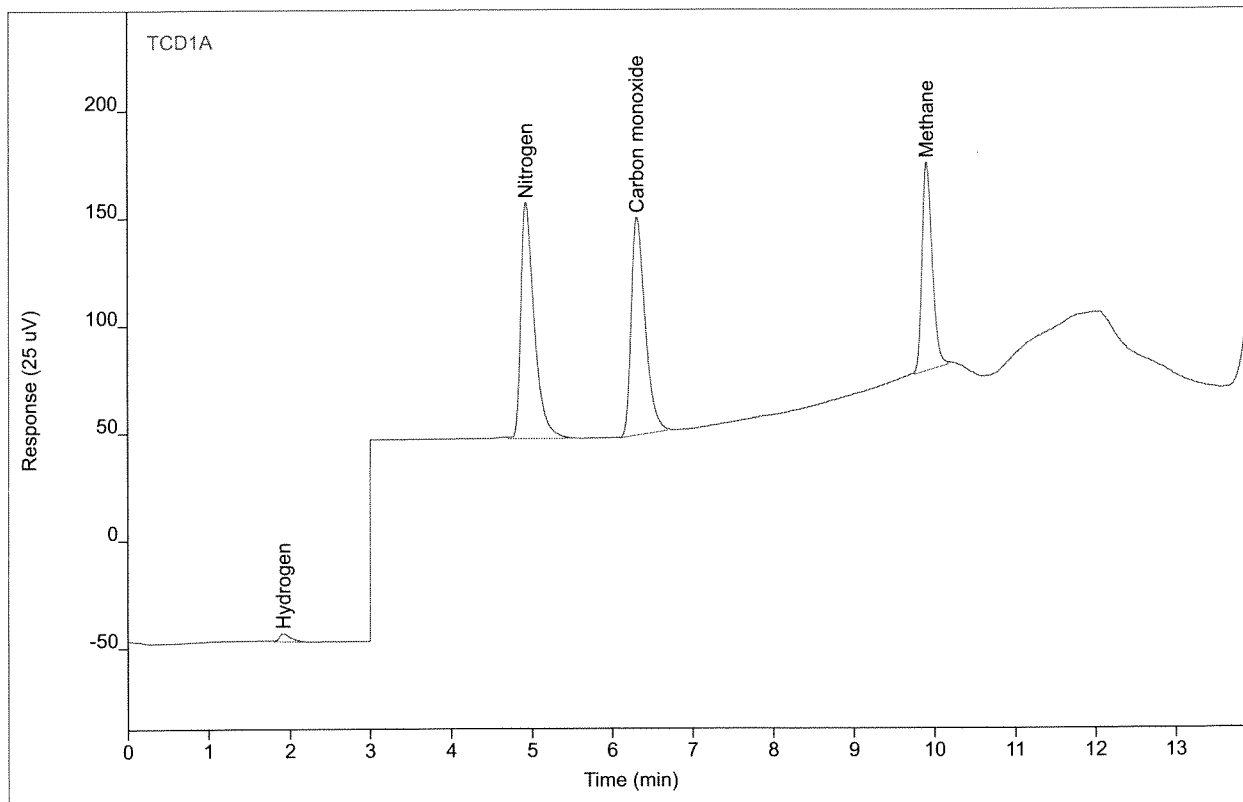
11:04:24 10/20/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG7 ENV(1=530,3=319.09)
Sequence Name BETTYP469 ver.2
Data File 009F0701.D
File Location GC/2016/Betty/Quarter 4
Injection Date 10/20/2016 1:07 AM
File Modified 10/20/2016 9:42 AM
Instrument Betty
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 1 of 2
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 10/14/2016 10:09 AM
Printed 10/25/2016 12:59 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	MM	1.92	37.5441	4.08025	2.56172	1	2.56172	%
Nitrogen	VB	4.94	1266.74	109.836	3.18532	1	3.18532	%
Carbon monoxide	BB	6.32	1216.76	101.335	3.14144	1	3.14144	%
Methane	BB	9.91	861.083	96.9802	2.57114	1	2.57114	%

Analyst Peak Integration Comments

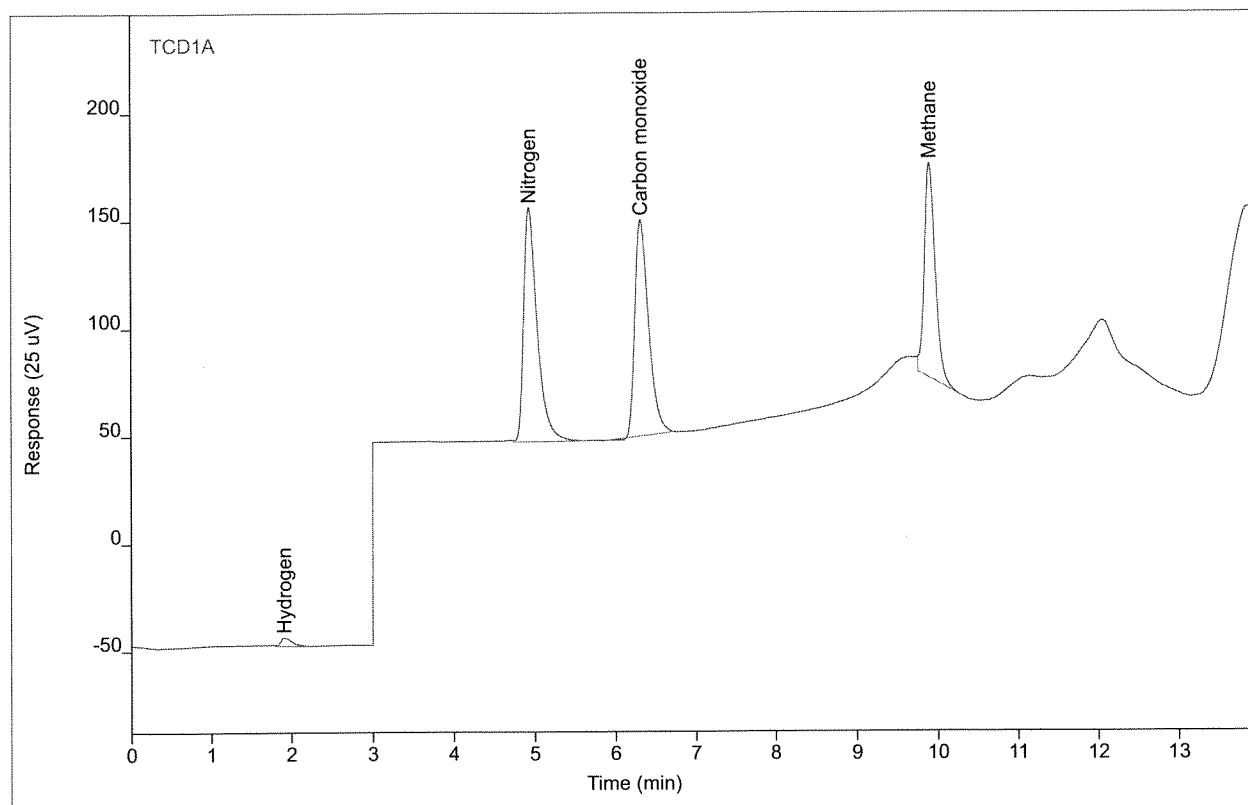
08:59:00 10/20/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG7 ENV(1=530,3=319.09)
Sequence Name BETTYP469 ver.2
Data File 009F0702.D
File Location GC/2016/Betty/Quarter 4
Injection Date 10/20/2016 1:30 AM
File Modified 10/20/2016 9:42 AM
Instrument Betty
Operator Nicholas Traversa

Sample Type
Vial Number
Injection Volume
Injection
Acquisition Method
Analysis Method
Method Modified
Printed
Calibration
Vial 9
250
2 of 2
GC142P133_CAL.M
BETTYP338_FGA.M
10/14/2016 10:09 AM
10/25/2016 12:59 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	MM	1.91	37.4566	4.08031	2.55564	1	2.55564	%
Nitrogen	VB	4.94	1261.05	108.819	3.17046	1	3.17046	%
Carbon monoxide	BB	6.32	1181.02	100.501	3.04806	1	3.04806	%
Methane	BB	9.91	923.801	99.6828	2.76187	1	2.76187	%

Analyst Peak Integration Comments

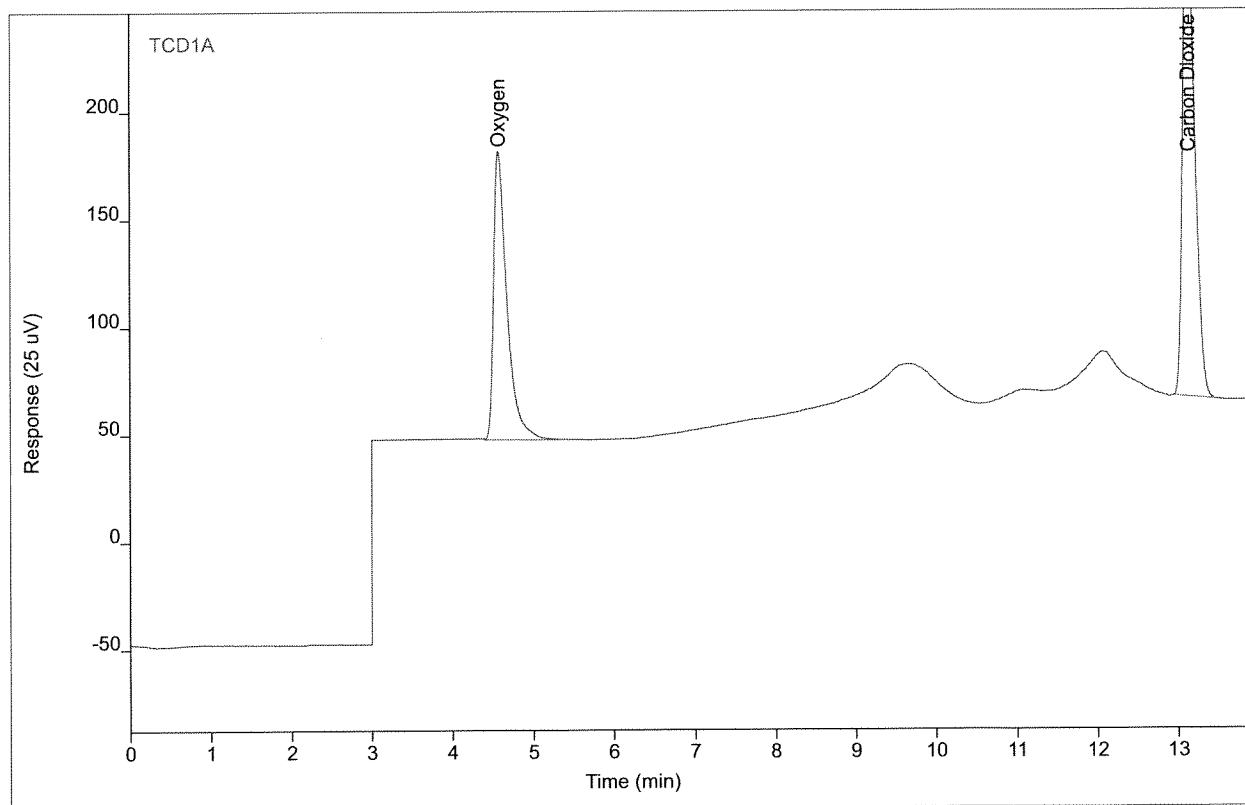
08:59:10 10/20/16 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG3 ENV(1=374.56,2=391.07)
Sequence Name BETTYP469 ver.2
Data File 009F0801.D
File Location GC/2016/Betty/Quarter 4
Injection Date 10/20/2016 1:53 AM
File Modified 10/20/2016 9:42 AM
Instrument Betty
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 1 of 2
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 10/14/2016 10:09 AM
Printed 10/25/2016 12:59 PM



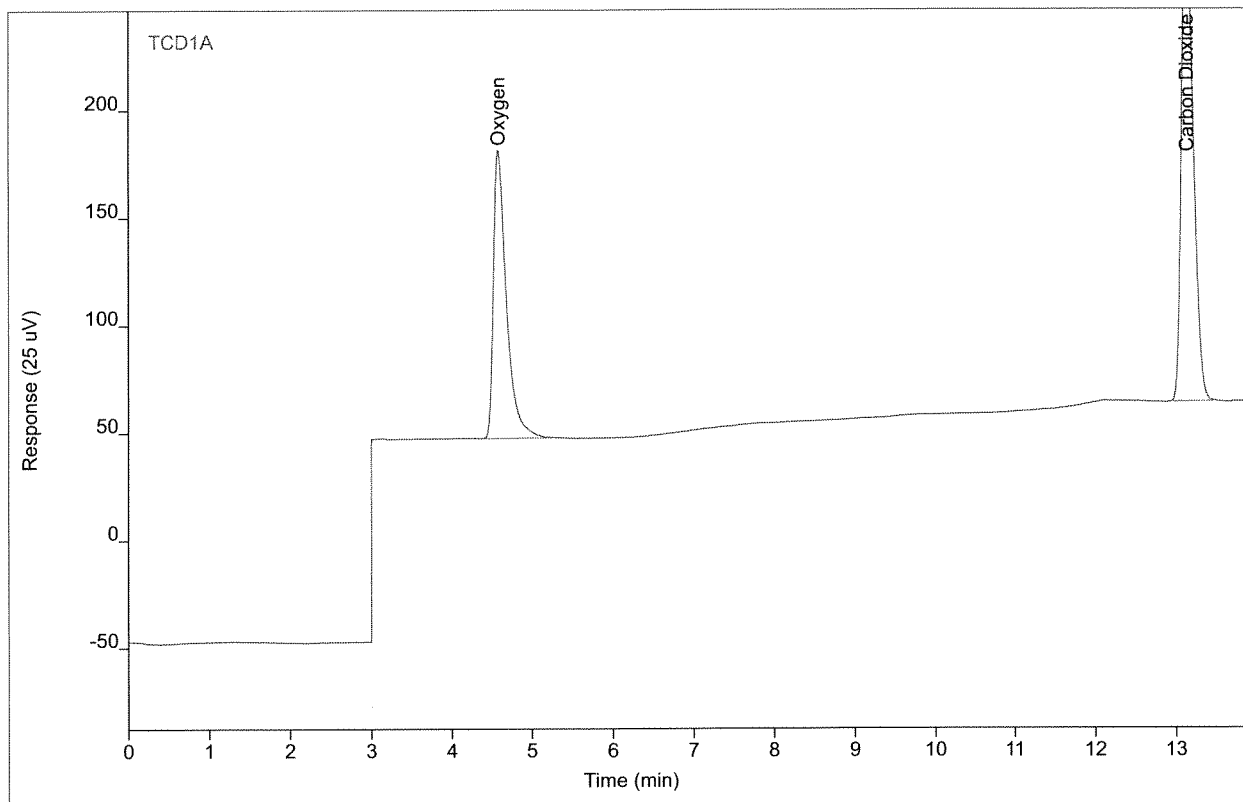
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Oxygen	BV	4.59	1544.56	134.121	4.44120	1	4.44120	%
Carbon Dioxide	BB	13.14	2338.36	230.344	4.40535	1	4.40535	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG3 ENV(1=374.56,2=391.07)
Sequence Name BETTYP469 ver.2
Data File 009F0802.D
File Location GC/2016/Betty/Quarter 4
Injection Date 10/20/2016 2:16 AM
File Modified 10/20/2016 9:42 AM
Instrument Betty
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 2 of 2
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 10/14/2016 10:09 AM
Printed 10/25/2016 12:59 PM



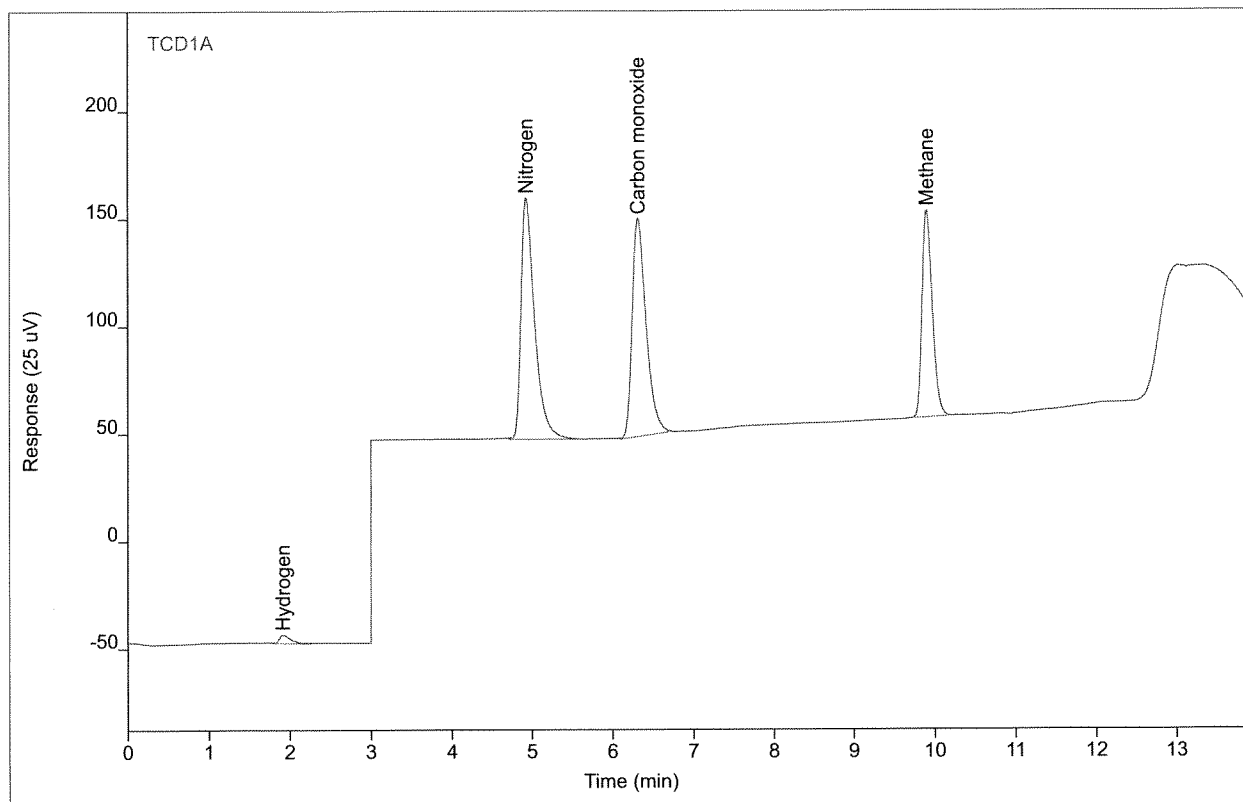
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Oxygen	BB	4.59	1533.67	134.255	4.40906	1	4.40906	%
Carbon Dioxide	BB	13.14	2371.92	232.663	4.46985	1	4.46985	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG7 ENV(1=530,3=319.09)
Sequence Name BETTYP470 ver.2
Data File 009F0501.D
File Location GC/2016/Betty/Quarter 4
Injection Date 10/20/2016 5:38 PM
File Modified 10/21/2016 1:15 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 1 of 2
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 10/14/2016 10:09 AM
Printed 10/25/2016 12:59 PM



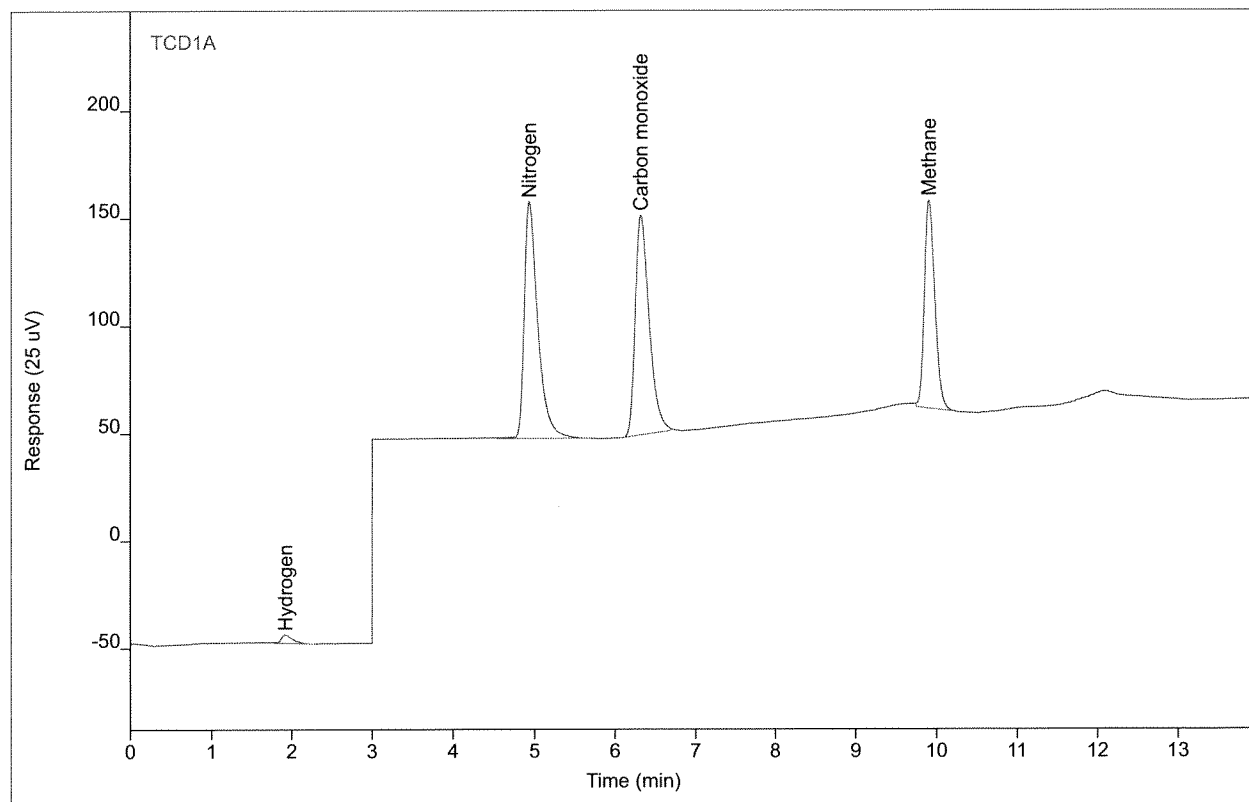
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	BB	1.92	39.0915	4.08689	2.66911	1	2.66911	%
Nitrogen	VB	4.94	1300.56	112.339	3.27362	1	3.27362	%
Carbon monoxide	BB	6.33	1218.25	101.407	3.14533	1	3.14533	%
Methane	BB	9.91	845.841	96.1605	2.52479	1	2.52479	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG7 ENV(1=530,3=319.09)
Sequence Name BETTYP470 ver.2
Data File 009F0502.D
File Location GC/2016/Betty/Quarter 4
Injection Date 10/20/2016 6:01 PM
File Modified 10/21/2016 1:15 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 2 of 2
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 10/14/2016 10:09 AM
Printed 10/25/2016 12:59 PM



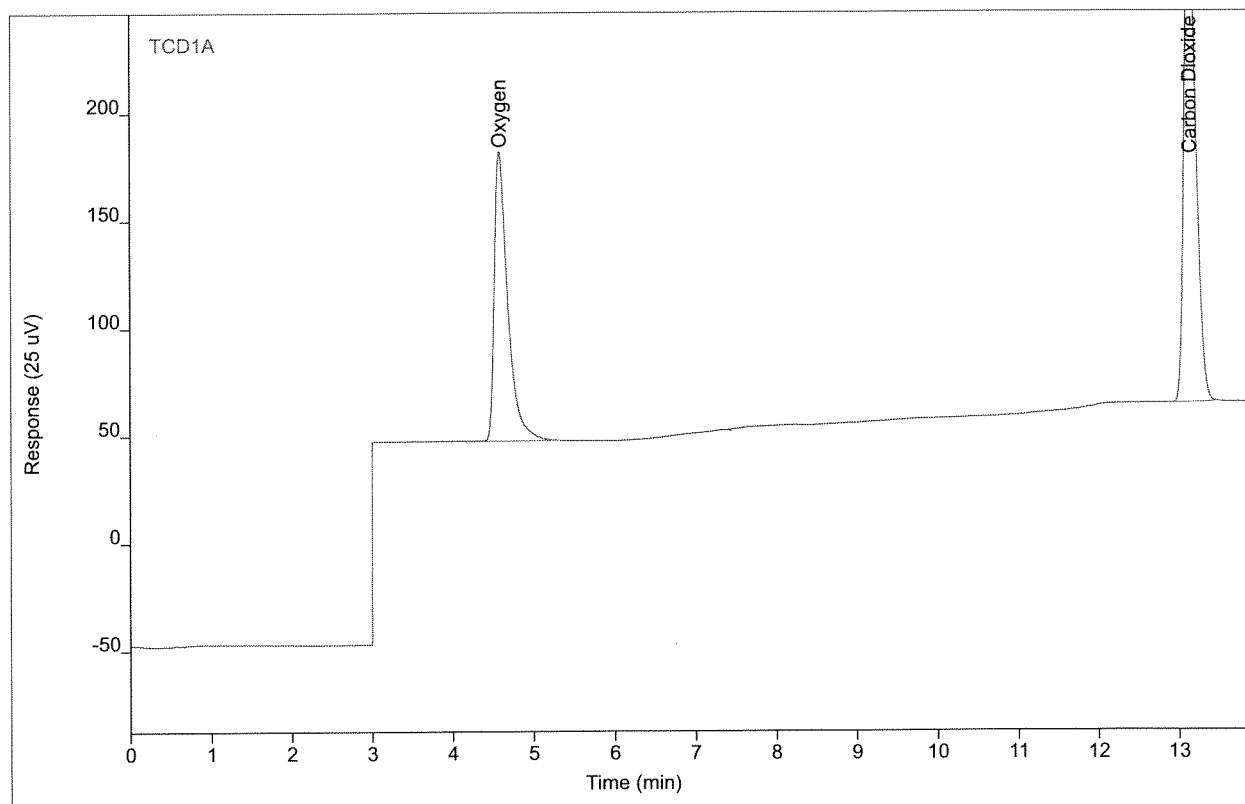
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	BB	1.92	37.9804	4.00119	2.59200	1	2.59200	%
Nitrogen	BB	4.94	1284.44	110.039	3.23155	1	3.23155	%
Carbon monoxide	BB	6.33	1219.54	102.265	3.14872	1	3.14872	%
Methane	BB	9.92	861.738	96.8147	2.57313	1	2.57313	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG3 ENV(1=374.56,2=391.07)
Sequence Name BETTYP470 ver.2
Data File 009F0601.D
File Location GC/2016/Betty/Quarter 4
Injection Date 10/20/2016 6:25 PM
File Modified 10/21/2016 1:15 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 1 of 2
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 10/14/2016 10:09 AM
Printed 10/25/2016 12:59 PM



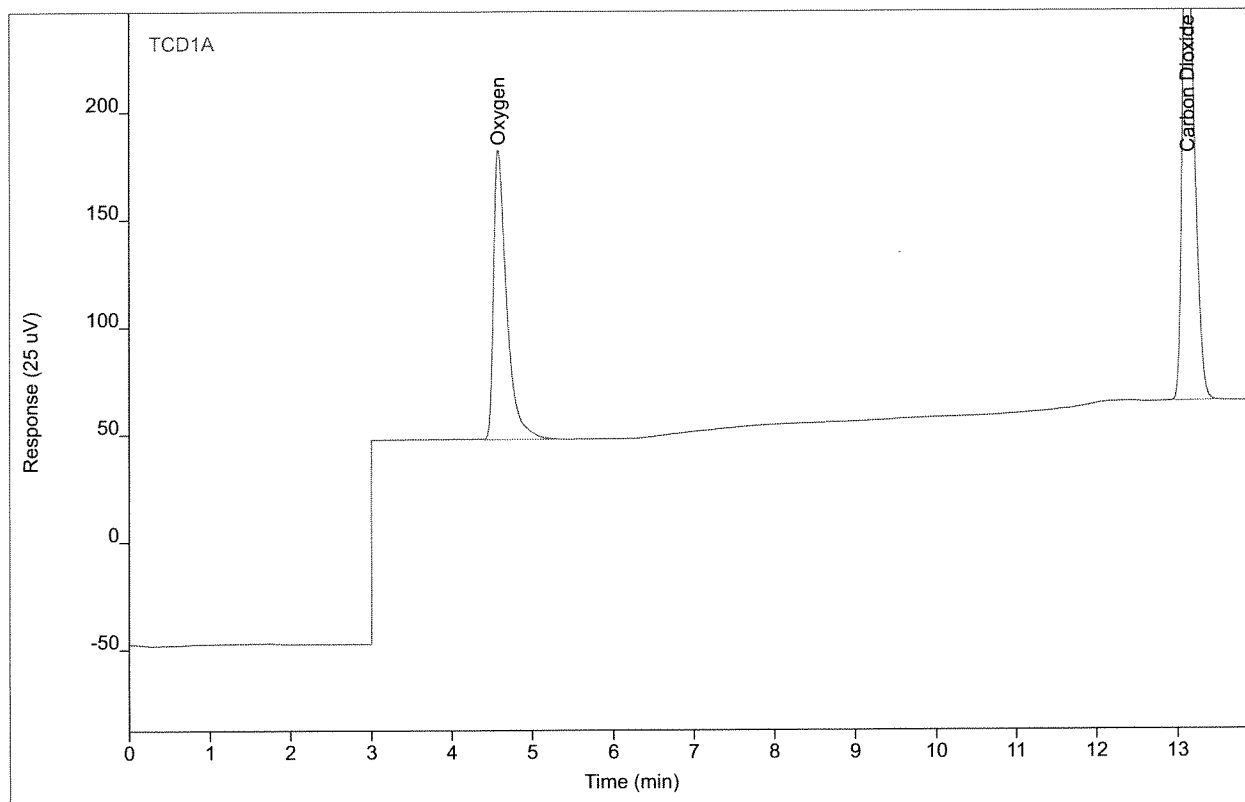
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Oxygen	BB	4.59	1549.21	134.459	4.45494	1	4.45494	%
Carbon Dioxide	BB	13.14	2396.41	234.126	4.51690	1	4.51690	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG3 ENV(1=374.56,2=391.07)
Sequence Name BETTYP470 ver.2
Data File 009F0602.D
File Location GC/2016/Betty/Quarter 4
Injection Date 10/20/2016 6:48 PM
File Modified 10/21/2016 1:15 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 2 of 2
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 10/14/2016 10:09 AM
Printed 10/25/2016 12:59 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Oxygen	BB	4.59	1559.39	134.947	4.48498	1	4.48498	%
Carbon Dioxide	BB	13.14	2404.28	235.280	4.53203	1	4.53203	%

Enthalpy Analytical

Company: METCO Environmental

Job No.: 0816-140 line 6. ASTM D1946-90 Canister Analysis

Client No.: 16-323

Sample Name	Filename #1	Filename #2	Analysis Method	Ret Time (min)	Ret Time (min)	%dif RT	Conc # 1 (%)	Conc # 2 (%)	%dif conc	Avg Conc (%)	Standard Tag	% Tag
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Hydrogen -- Calibration Standards, Laboratory Blanks and Controls

BettyP300 #FG7 ENV(1=530,3=319.09)	009F1401.D	009F1402.D	BETTYP338_FGA.M	1.91	1.92	0.1	2.56	2.62	1.1	2.59	2.76	93.8
BettyP300 #FG7 ENV(1=530,3=319.09)	009F1001.D	009F1002.D	BETTYP338_FGA.M	1.91	1.92	0.1	2.55	2.60	1.0	2.58	2.76	93.3
BettyP300 #FG7 ENV(1=530,3=319.09)	009F0201.D	009F0202.D	BETTYP338_FGA.M	1.91	1.90	0.3	2.74	2.55	3.5	2.65	2.76	95.8
BettyP374 Method Blank-1	001F0401.D	001F0402.D	BETTYP338_FGA.M	NA	NA	NA	0.0853	0.0853	0.0	0.0853	NA	NA
BettyP300 #FG7 ENV(1=530,3=319.09)	009F1101.D	009F1102.D	BETTYP338_FGA.M	1.92	1.91	0.2	2.80	2.65	2.8	2.72	2.76	98.7
BettyP300 #FG7 ENV(1=530,3=319.09)	009F0701.D	009F0702.D	BETTYP338_FGA.M	1.92	1.91	0.2	2.56	2.56	0.1	2.56	2.76	92.7
BettyP300 #FG7 ENV(1=530,3=319.09)	009F0501.D	009F0502.D	BETTYP338_FGA.M	1.92	1.92	0.1	2.67	2.59	1.5	2.63	2.76	95.3

Oxygen -- Calibration Standards, Laboratory Blanks and Controls

BettyP300 #FG3 ENV(1=374.56,2=391.07)	009F1501.D	009F1502.D	BETTYP338_FGA.M	4.58	4.58	0.0	4.41	4.44	0.4	4.42	4.80	92.0
BettyP300 #FG3 ENV(1=374.56,2=391.07)	009F1101.D	009F1102.D	BETTYP338_FGA.M	4.58	4.58	0.0	4.43	4.50	0.8	4.47	4.80	92.9
BettyP300 #FG3 ENV(1=374.56,2=391.07)	009F0301.D	009F0302.D	BETTYP338_FGA.M	4.58	4.58	0.0	4.58	4.52	0.7	4.55	4.80	94.6
BettyP374 Method Blank-1	001F0401.D	001F0402.D	BETTYP338_FGA.M	NA	NA	NA	0.0543	0.0543	0.0	0.0543	NA	NA
BettyP300 #FG3 ENV(1=374.56,2=391.07)	009F1201.D	009F1202.D	BETTYP338_FGA.M	4.57	4.57	0.0	4.44	4.40	0.4	4.42	4.80	92.0
BettyP300 #FG3 ENV(1=374.56,2=391.07)	009F0801.D	009F0802.D	BETTYP338_FGA.M	4.59	4.59	0.0	4.44	4.41	0.4	4.43	4.80	92.1
BettyP300 #FG3 ENV(1=374.56,2=391.07)	009F0601.D	009F0602.D	BETTYP338_FGA.M	4.59	4.59	0.0	4.45	4.48	0.3	4.47	4.80	93.0

Enthalpy Analytical

Company: METCO Environmental

Job No.: 0816-140 line 6. ASTM D1946-90 Canister Analysis

Client No.: 16-323

Sample Name	Filename #1	Filename #2	Analysis Method	Ret Time (min)	Ret Time (min)	%dif RT	Conc # 1 (%)	Conc # 2 (%)	%dif conc	Avg Conc (%)	Standard Tag	% Tag
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Nitrogen -- Calibration Standards, Laboratory Blanks and Controls

BettyP300 #FG7 ENV(1=530,3=319.09)	009F1401.D	009F1402.D	BETTYP338_FGA.M	4.93	4.94	0.0	3.27	3.17	1.5	3.22	3.37	95.6
BettyP300 #FG7 ENV(1=530,3=319.09)	009F1001.D	009F1002.D	BETTYP338_FGA.M	4.93	4.93	0.0	3.25	3.20	0.8	3.22	3.37	95.7
BettyP300 #FG7 ENV(1=530,3=319.09)	009F0201.D	009F0202.D	BETTYP338_FGA.M	4.94	4.94	0.0	3.32	3.18	2.3	3.25	3.37	96.4
BettyP374 Method Blank-1	001F0401.D	001F0402.D	BETTYP338_FGA.M	4.96	4.96	0.0	0.0637	0.0700	4.7	0.0669	NA	NA
BettyP300 #FG7 ENV(1=530,3=319.09)	009F1101.D	009F1102.D	BETTYP338_FGA.M	4.92	4.92	0.0	3.25	3.21	0.6	3.23	3.37	95.7
BettyP300 #FG7 ENV(1=530,3=319.09)	009F0701.D	009F0702.D	BETTYP338_FGA.M	4.94	4.94	0.0	3.19	3.17	0.2	3.18	3.37	94.3
BettyP300 #FG7 ENV(1=530,3=319.09)	009F0501.D	009F0502.D	BETTYP338_FGA.M	4.94	4.94	0.0	3.27	3.23	0.6	3.25	3.37	96.5

Carbon monoxide -- Calibration Standards, Laboratory Blanks and Controls

BettyP300 #FG7 ENV(1=530,3=319.09)	009F1401.D	009F1402.D	BETTYP338_FGA.M	6.32	6.32	0.0	3.07	3.09	0.3	3.08	3.37	91.5
BettyP300 #FG7 ENV(1=530,3=319.09)	009F1001.D	009F1002.D	BETTYP338_FGA.M	6.31	6.32	0.0	3.13	3.18	0.8	3.15	3.37	93.5
BettyP300 #FG7 ENV(1=530,3=319.09)	009F0201.D	009F0202.D	BETTYP338_FGA.M	6.32	6.32	0.0	3.19	3.15	0.6	3.17	3.37	94.0
BettyP374 Method Blank-1	001F0401.D	001F0402.D	BETTYP338_FGA.M	NA	NA	NA	0.0380	0.0380	0.0	0.0380	NA	NA
BettyP300 #FG7 ENV(1=530,3=319.09)	009F1101.D	009F1102.D	BETTYP338_FGA.M	6.30	6.30	0.0	3.21	3.16	0.8	3.18	3.37	94.4
BettyP300 #FG7 ENV(1=530,3=319.09)	009F0701.D	009F0702.D	BETTYP338_FGA.M	6.32	6.32	0.0	3.14	3.05	1.5	3.09	3.37	91.8
BettyP300 #FG7 ENV(1=530,3=319.09)	009F0501.D	009F0502.D	BETTYP338_FGA.M	6.33	6.33	0.0	3.15	3.15	0.1	3.15	3.37	93.4

Enthalpy Analytical

Company: METCO Environmental

Job No.: 0816-140 line 6. ASTM D1946-90 Canister Analysis

Client No.: 16-323

Sample Name	Filename #1	Filename #2	Analysis Method	Ret Time (min)	Ret Time (min)	%dif RT	Conc # 1 (%)	Conc # 2 (%)	%dif conc	Avg Conc (%)	Standard Tag	% Tag
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Methane -- Calibration Standards, Laboratory Blanks and Controls

BettyP300 #FG7 ENV(1=530,3=319.09)	009F1401.D	009F1402.D	BETTYP338_FGA.M	9.90	9.90	0.0	2.51	2.57	1.2	2.54	2.70	94.0
BettyP300 #FG7 ENV(1=530,3=319.09)	009F1001.D	009F1002.D	BETTYP338_FGA.M	9.90	9.90	0.0	2.52	2.59	1.3	2.56	2.70	94.8
BettyP300 #FG7 ENV(1=530,3=319.09)	009F0201.D	009F0202.D	BETTYP338_FGA.M	9.91	9.91	0.0	2.53	2.56	0.6	2.54	2.70	94.2
BettyP374 Method Blank-1	001F0401.D	001F0402.D	BETTYP338_FGA.M	NA	NA	NA	0.0310	0.0310	0.0	0.0310	NA	NA
BettyP300 #FG7 ENV(1=530,3=319.09)	009F1101.D	009F1102.D	BETTYP338_FGA.M	9.89	9.89	0.0	2.57	2.59	0.5	2.58	2.70	95.6
BettyP300 #FG7 ENV(1=530,3=319.09)	009F0701.D	009F0702.D	BETTYP338_FGA.M	9.91	9.91	0.0	2.57	2.76	3.6	2.67	2.70	98.8
BettyP300 #FG7 ENV(1=530,3=319.09)	009F0501.D	009F0502.D	BETTYP338_FGA.M	9.91	9.92	0.0	2.52	2.57	0.9	2.55	2.70	94.4

Carbon Dioxide -- Calibration Standards, Laboratory Blanks and Controls

BettyP300 #FG3 ENV(1=374.56,2=391.07)	009F1501.D	009F1502.D	BETTYP338_FGA.M	13.12	13.13	0.0	4.50	4.46	0.4	4.48	4.80	93.3
BettyP300 #FG3 ENV(1=374.56,2=391.07)	009F1101.D	009F1102.D	BETTYP338_FGA.M	13.13	13.13	0.0	4.28	4.35	0.7	4.31	4.80	89.9
BettyP300 #FG3 ENV(1=374.56,2=391.07)	009F0301.D	009F0302.D	BETTYP338_FGA.M	13.13	13.13	0.0	4.53	4.55	0.3	4.54	4.80	94.6
BettyP374 Method Blank-1	001F0401.D	001F0402.D	BETTYP338_FGA.M	NA	NA	NA	0.0543	0.0543	0.0	0.0543	NA	NA
BettyP300 #FG3 ENV(1=374.56,2=391.07)	009F1201.D	009F1202.D	BETTYP338_FGA.M	13.12	13.13	0.0	4.31	4.37	0.7	4.34	4.80	90.4
BettyP300 #FG3 ENV(1=374.56,2=391.07)	009F0801.D	009F0802.D	BETTYP338_FGA.M	13.14	13.14	0.0	4.41	4.47	0.7	4.44	4.80	92.4
BettyP300 #FG3 ENV(1=374.56,2=391.07)	009F0601.D	009F0602.D	BETTYP338_FGA.M	13.14	13.14	0.0	4.52	4.53	0.2	4.52	4.80	94.3

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 Calibration Table
 =====

Calib. Data Modified : 3/10/2016 2:30:51 PM

Rel. Reference Window : 2.000 %
 Abs. Reference Window : 0.000 min
 Rel. Non-ref. Window : 2.000 %
 Abs. Non-ref. Window : 0.200 min
 Uncalibrated Peaks : not reported
 Partial Calibration : Yes, identified peaks are recalibrated
 Correct All Ret. Times: No, only for identified peaks

Curve Type : Linear
 Origin : Connected
 Weight : Quadratic (Amnt)

Recalibration Settings:
 Average Response : Average all calibrations
 Average Retention Time: Floating Average New 75%

Calibration Report Options :
 Printout of recalibrations within a sequence:
 Calibration Table after Recalibration
 Normal Report after Recalibration
 If the sequence is done with bracketing:
 Results of first cycle (ending previous bracket)

Signal 1: TCD1 A,
 Signal 2: FID2 B,

RetTime	Lvl	Amount	Area	Amt/Area	Ref Grp Name
[min]	Sig	[%]			
1.872	1	5 3.10000e-1	5.13678	6.03491e-2	Hydrogen
		6 7.90000e-1	11.76654	6.71395e-2	
		7 2.76000	41.26264	6.68886e-2	
		8 8.20000	109.55068	7.48512e-2	
	29	28.54000	440.66239	6.47661e-2	
4.500	1	5.43000e-1	218.59111	2.48409e-3	Oxygen
		2 1.32800	520.62223	2.55079e-3	
		3 4.80500	1736.12236	2.76766e-3	
		4 10.00000	3307.48104	3.02345e-3	
	23	99.99900	3.24159e4	3.08487e-3	
4.750	1	5 3.80000e-1	187.50402	2.02662e-3	Nitrogen
		6 9.60000e-1	437.08495	2.19637e-3	
		7 3.37000	1440.89331	2.33883e-3	
		8 10.00000	3803.79207	2.62896e-3	
	22	99.90000	3.48535e4	2.86629e-3	
6.200	1	5 3.80000e-1	155.97675	2.43626e-3	Carbon monoxide
		6 9.60000e-1	401.70233	2.38983e-3	
		7 3.37000	1381.79004	2.43887e-3	
		8 10.00000	3722.06681	2.68668e-3	
	25	99.50000	3.59590e4	2.76704e-3	
9.927	1	5 3.10000e-1	114.25856	2.71314e-3	Methane
		6 7.70000e-1	285.04939	2.70129e-3	
		7 2.70000	965.95817	2.79515e-3	
		8 8.00000	2565.40658	3.11841e-3	
	24	99.99900	3.05536e4	3.27291e-3	
13.187	1	5.43000e-1	321.34324	1.68978e-3	Carbon Dioxide
		2 1.32700	775.62209	1.71088e-3	

RetTime [min]	Lvl Sig	Amount [%]	Area	Amt/Area	Ref Grp Name
	3	4.80000	2628.36450	1.82623e-3	
	4	9.98800	5052.13818	1.97698e-3	
	21	99.99000	5.05745e4	1.97708e-3	

More compound-specific settings:

Compound: Hydrogen
Time Window : From 1.753 min To 1.990 min

Compound: Oxygen
Time Window : From 4.217 min To 4.656 min

Compound: Nitrogen
Time Window : From 4.410 min To 4.950 min

Compound: Carbon monoxide
Time Window : From 5.600 min To 6.350 min

Compound: Methane
Time Window : From 9.509 min To 10.277 min

Compound: Carbon Dioxide
Time Window : From 12.572 min To 13.418 min

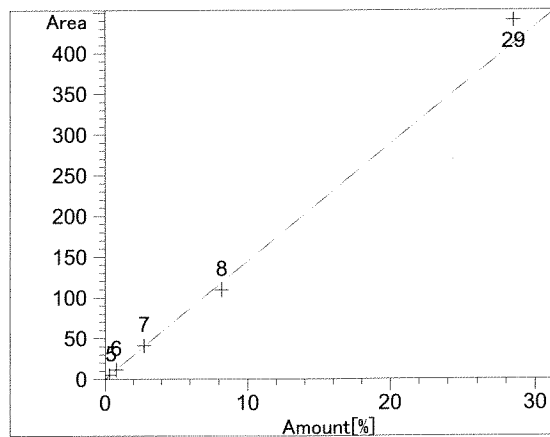
1 Warnings or Errors :

Warning : Overlapping peak time windows at 4.5 min, signal 1

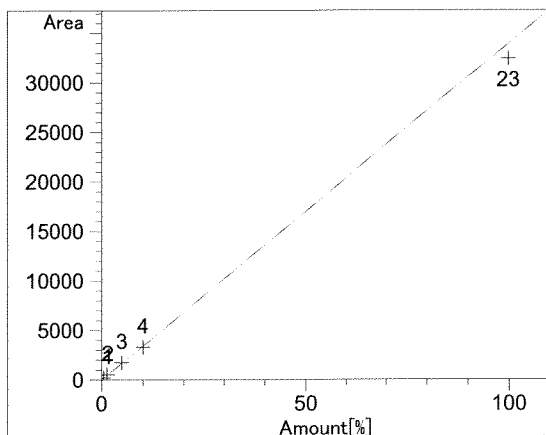
Peak Sum Table

No Entries in table

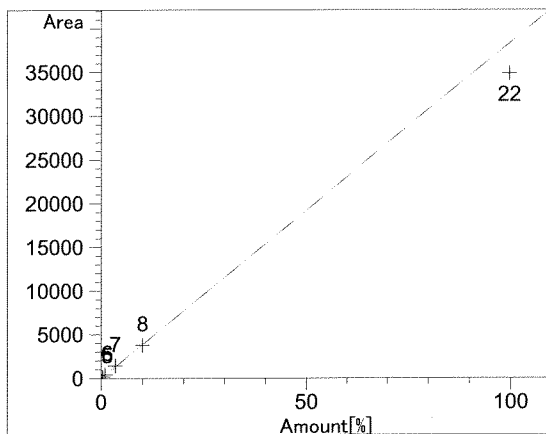
Calibration Curves



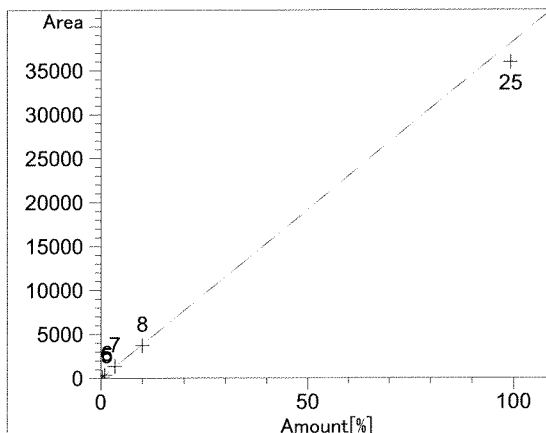
Hydrogen at exp. RT: 1.872
TCD1 A,
Correlation: 0.99796
Residual Std. Dev.: 17.46977
Formula: $y = mx + b$
m: 14.40886
b: 6.32728e-1
x: Amount
y: Area
Calibration Level Weights:
Level 5 : 1
Level 6 : 0.153982
Level 7 : 0.012616
Level 8 : 0.001429
Level 29 : 0.000118



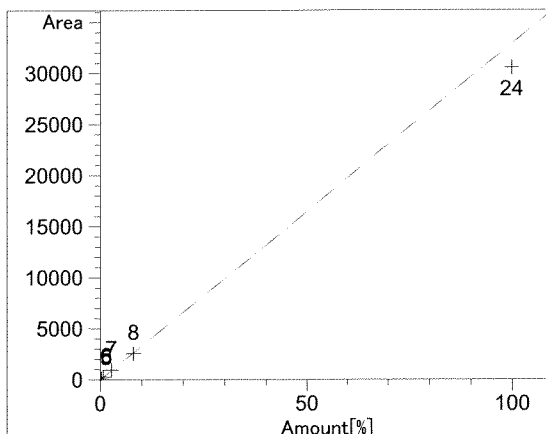
Oxygen at exp. RT: 4.500
 TCD1 A,
 Correlation: 0.99818
 Residual Std. Dev.: 867.33345
 Formula: $y = mx + b$
 m: 338.71575
 b: 40.25204
 x: Amount
 y: Area
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.167187
 Level 3 : 0.012771
 Level 4 : 0.002948
 Level 23 : 0.000029



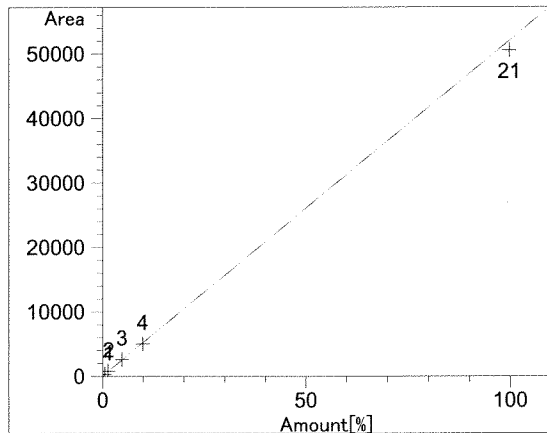
Nitrogen at exp. RT: 4.750
 TCD1 A,
 Correlation: 0.99666
 Residual Std. Dev.: 1997.69987
 Formula: $y = mx + b$
 m: 383.02817
 b: 46.67047
 x: Amount
 y: Area
 Calibration Level Weights:
 Level 5 : 1
 Level 6 : 0.156684
 Level 7 : 0.012715
 Level 8 : 0.001444
 Level 22 : 0.000014



Carbon monoxide at exp. RT: 6.200
 TCD1 A,
 Correlation: 0.99808
 Residual Std. Dev.: 1236.72354
 Formula: $y = mx + b$
 m: 382.73114
 b: 14.43109
 x: Amount
 y: Area
 Calibration Level Weights:
 Level 5 : 1
 Level 6 : 0.156684
 Level 7 : 0.012715
 Level 8 : 0.001444
 Level 25 : 0.000015



Methane at exp. RT: 9.927
 TCD1 A,
 Correlation: 0.99726
 Residual Std. Dev.: 1354.64394
 Formula: $y = mx + b$
 m: 328.82302
 b: 15.63295
 x: Amount
 y: Area
 Calibration Level Weights:
 Level 5 : 1
 Level 6 : 0.162085
 Level 7 : 0.013182
 Level 8 : 0.001502



Carbon Dioxide at exp. RT: 13.187

TCD1 A,

Correlation: 0.99876

Residual Std. Dev.: 878.28250

Formula: $y = mx + b$

m: 520.40162

b: 45.80839

x: Amount

y: Area

Calibration Level Weights:

Level 1 : 1

Level 2 : 0.167439

Level 3 : 0.012797

Level 4 : 0.002956

Level 21 : 0.000029

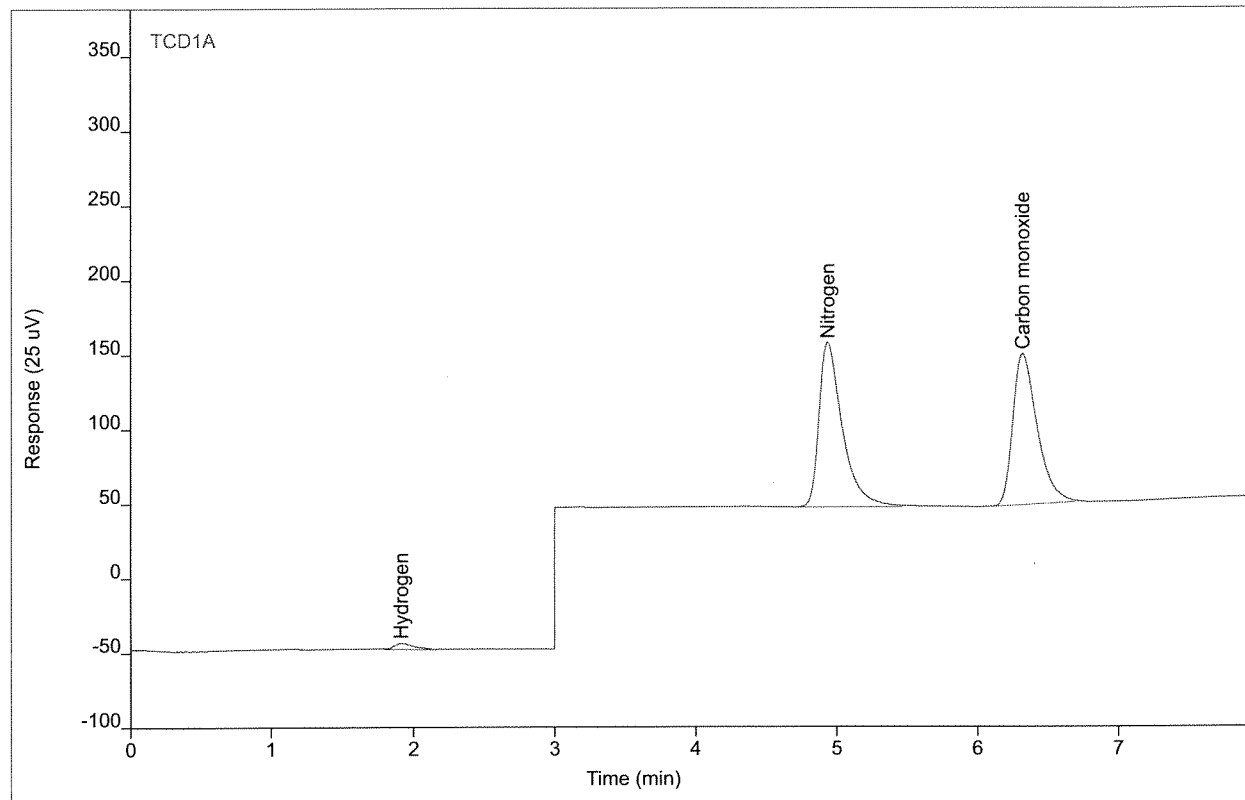
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Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG7 ENV(1=530,3=319.09)
Sequence Name BETTYP465A ver.3
Data File 009F1202.D
File Location GC/2016/Betty/Quarter 4
Injection Date 10/18/2016 5:18 AM
File Modified 10/19/2016 8:02 AM
Instrument Betty
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 2 of 4
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 10/14/2016 10:09 AM
Printed 10/24/2016 9:45 AM



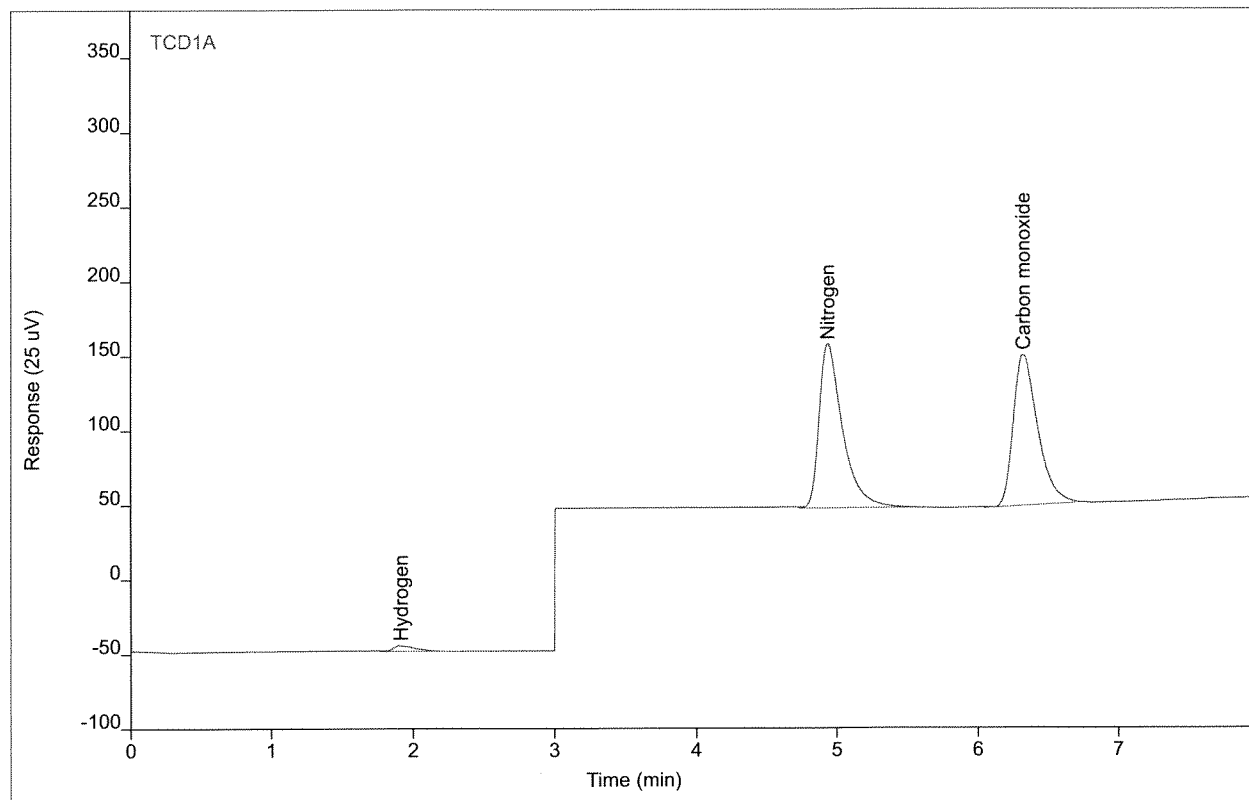
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	MM	1.91	42.2998	4.45292	2.89177	1	2.89177	%
Nitrogen	VV	4.94	1287.05	110.228	3.23835	1	3.23835	%
Carbon monoxide	BB	6.32	1216.77	101.378	3.14147	1	3.14147	%
Methane	BB	9.91	849.786	96.8566	2.53678	1	2.53678	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG7 ENV(1=530,3=319.09)
Sequence Name BETTYP465A ver.3
Data File 009F1203.D
File Location GC/2016/Betty/Quarter 4
Injection Date 10/18/2016 5:41 AM
File Modified 10/19/2016 8:02 AM
Instrument Betty
Operator Nicholas Traversa

Sample Type
Vial Number
Injection Volume 250
Injection 3 of 4
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 10/14/2016 10:09 AM
Printed 10/24/2016 9:45 AM



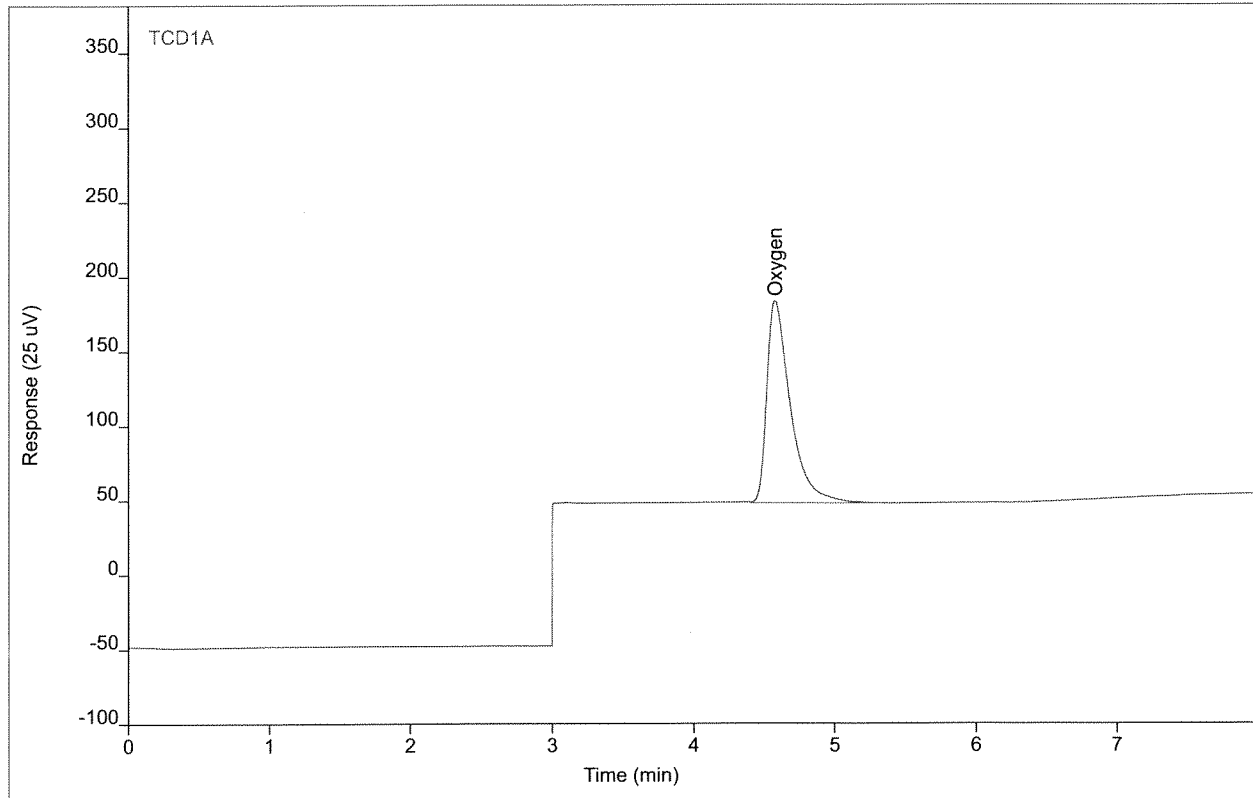
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	BB	1.91	41.2898	4.19681	2.82167	1	2.82167	%
Nitrogen	VB	4.94	1281.40	110.154	3.22361	1	3.22361	%
Carbon monoxide	VB	6.33	1215.50	101.423	3.13815	1	3.13815	%
Methane	BB	9.91	841.192	95.9342	2.51065	1	2.51065	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG3 ENV(1=374.56,2=391.07)
Sequence Name BETTYP465A ver.3
Data File 009F1303.D
File Location GC/2016/Betty/Quarter 4
Injection Date 10/18/2016 7:14 AM
File Modified 10/19/2016 8:02 AM
Instrument Betty
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 3 of 4
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 10/14/2016 10:09 AM
Printed 10/24/2016 9:45 AM



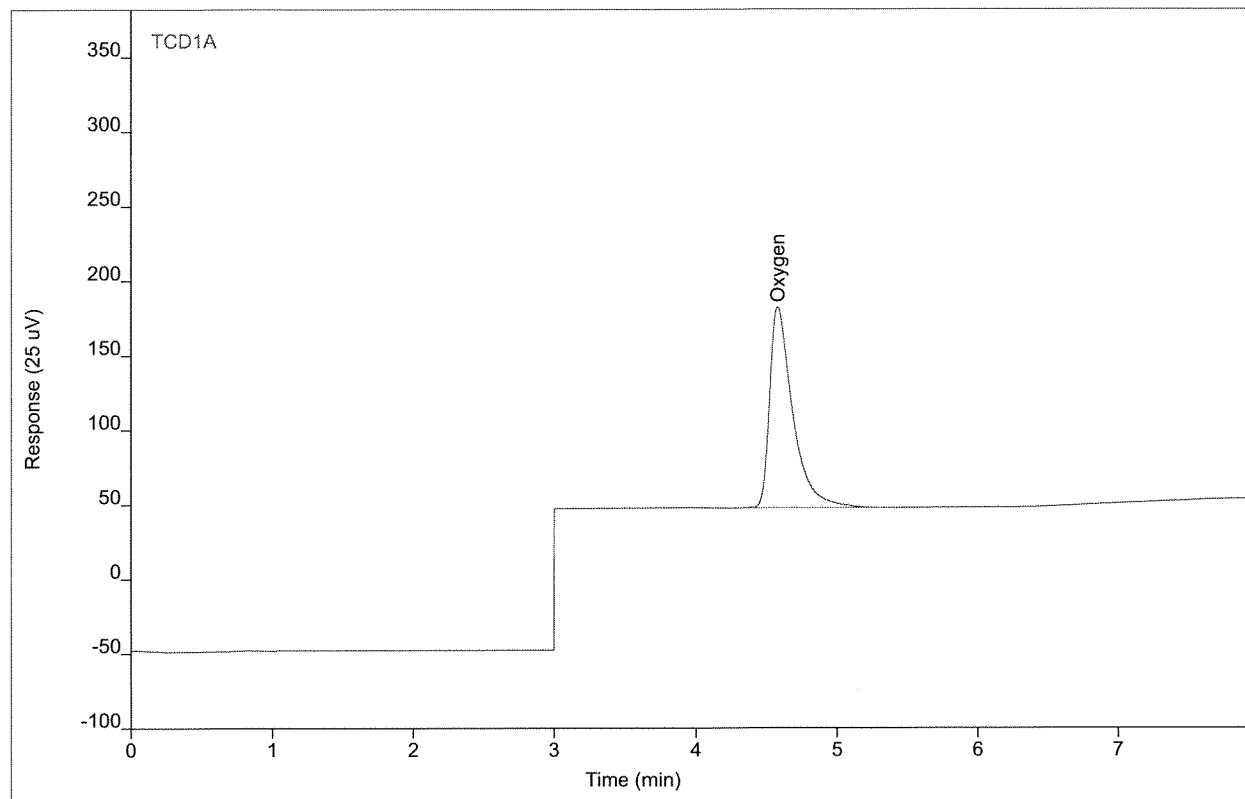
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Oxygen	BB	4.58	1560.28	135.754	4.48762	1	4.48762	%
Carbon Dioxide	BB	13.14	2406.07	236.638	4.53547	1	4.53547	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG3 ENV(1=374.56,2=391.07)
Sequence Name BETTYP465A ver.3
Data File 009F1304.D
File Location GC/2016/Betty/Quarter 4
Injection Date 10/18/2016 7:37 AM
File Modified 10/19/2016 8:02 AM
Instrument Betty
Operator Nicholas Traversa

Sample Type
Vial Number
Injection Volume
Injection
Acquisition Method
Analysis Method
Method Modified
Printed
Calibration
Vial 9
250
4 of 4
GC142P133_CAL.M
BETTYP338_FGA.M
10/14/2016 10:09 AM
10/24/2016 9:45 AM



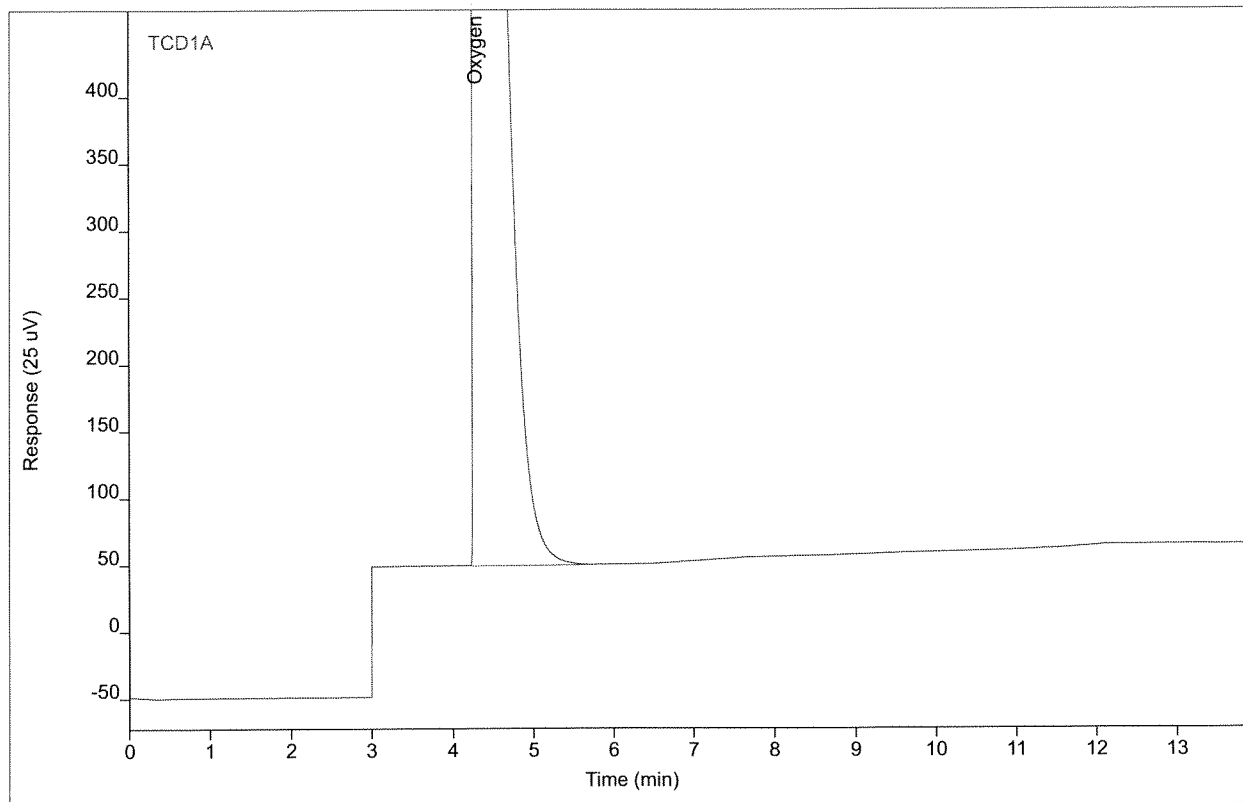
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Oxygen	BB	4.58	1552.11	134.889	4.46351	1	4.46351	%
Carbon Dioxide	BB	13.14	2385.49	235.018	4.49592	1	4.49592	%

Chromatogram Report

Enthalpy Analytical

Sample Name O2 99.99 % #FG23 ENV(1=0,4=400)
Sequence Name BETTYP338 ver.3
Data File 009F0102.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/8/2016 9:21 AM
File Modified 3/10/2016 1:20 PM
Instrument Betty
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 2 of 4
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 3/10/2016 10:02 AM
Printed 3/10/2016 2:39 PM



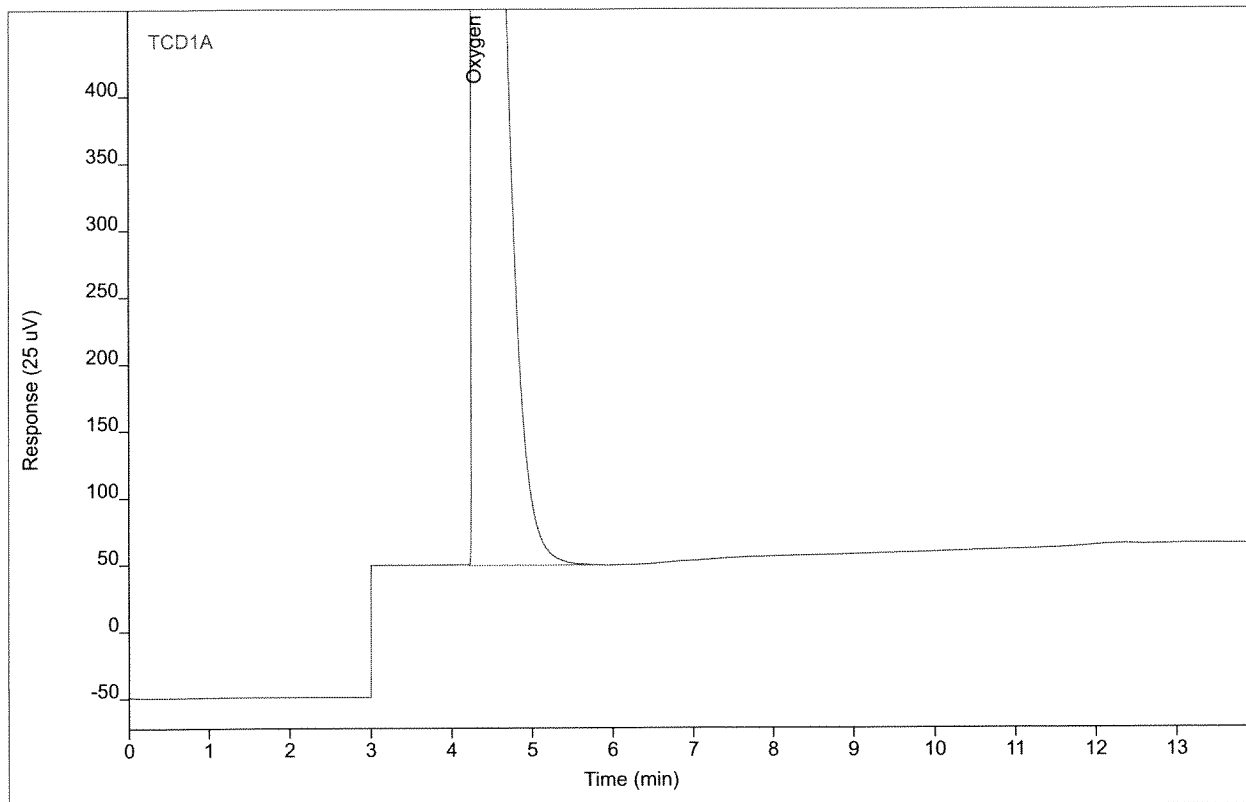
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Oxygen	BB	4.29	32325.2	1646.19	95.3159	1	95.3159	%

Chromatogram Report

Enthalpy Analytical

Sample Name O2 99.99 % #FG23 ENV(1=0,4=400)
Sequence Name BETTYP338 ver.3
Data File 009F0103.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/8/2016 9:44 AM
File Modified 3/10/2016 1:20 PM
Instrument Betty
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 3 of 4
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 3/10/2016 10:02 AM
Printed 3/10/2016 2:39 PM



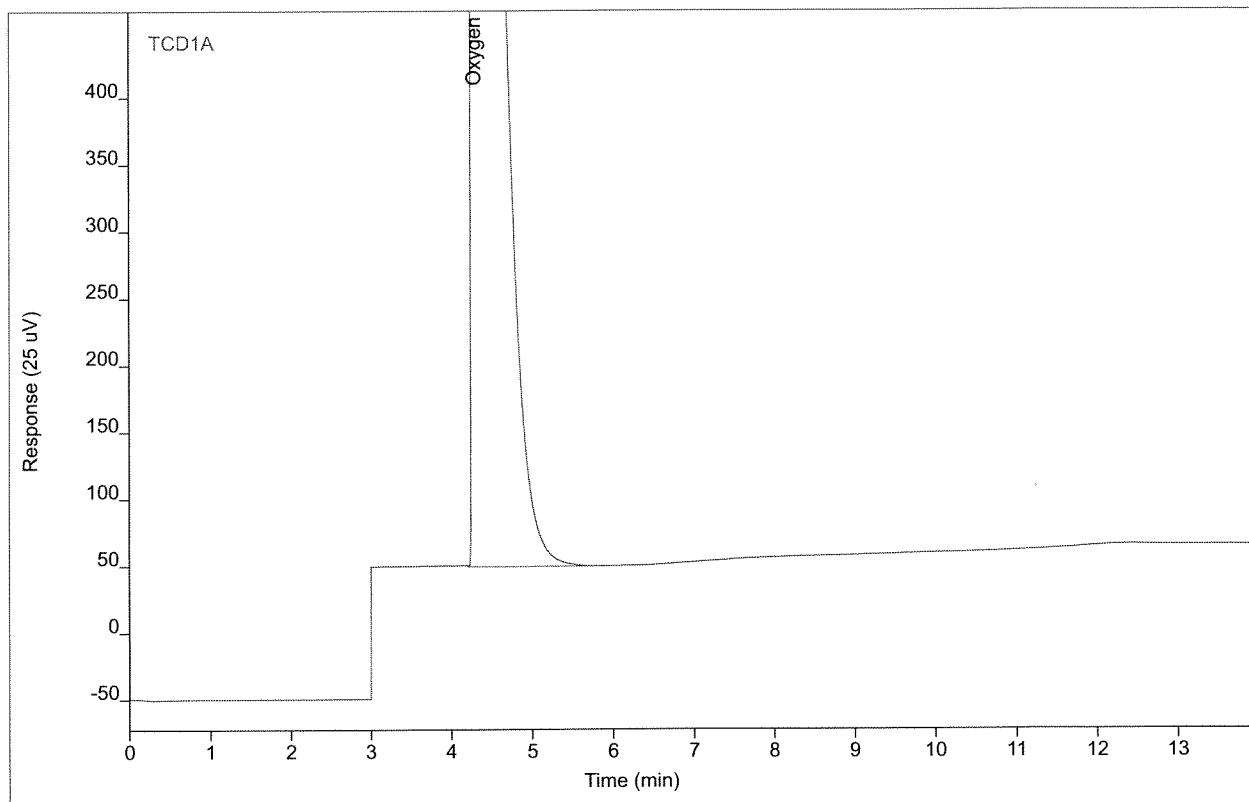
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Oxygen	BB	4.29	32385.7	1644.14	95.4944	1	95.4944	%

Chromatogram Report

Enthalpy Analytical

Sample Name O2 99.99 % #FG23 ENV(1=0,4=400)
Sequence Name BETTYP338 ver.3
Data File 009F0104.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/8/2016 10:08 AM
File Modified 3/10/2016 1:20 PM
Instrument Betty
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 4 of 4
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 3/10/2016 10:02 AM
Printed 3/10/2016 2:39 PM



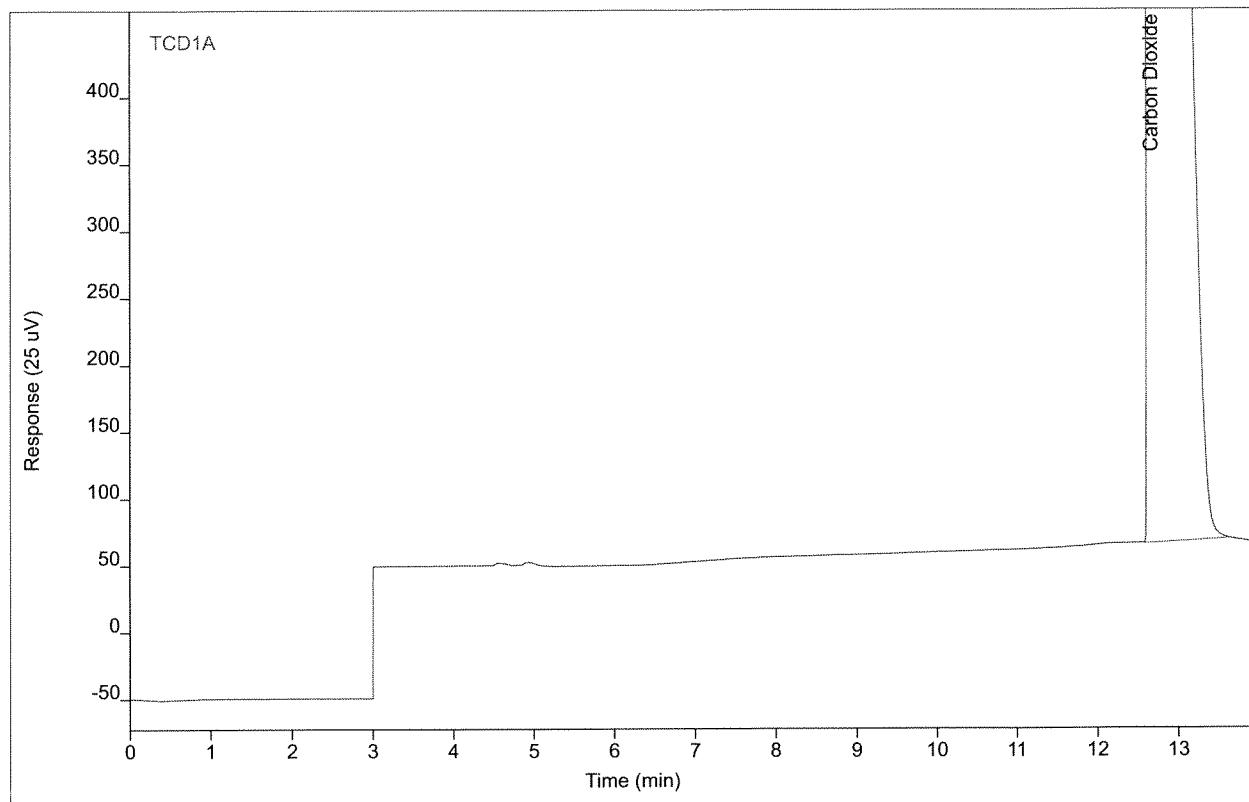
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Oxygen	BB	4.29	32536.8	1654.25	95.9404	1	95.9404	%

Chromatogram Report

Enthalpy Analytical

Sample Name CO2 99.99 % #FG21 ENV(1=0,4=400)
Sequence Name BETTYP338 ver.3
Data File 009F0202.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/8/2016 10:56 AM
File Modified 3/10/2016 1:21 PM
Instrument Betty
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 2 of 4
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 3/10/2016 10:02 AM
Printed 3/10/2016 2:39 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Carbon Dioxide	MM	12.67	50862.0	2324.52	97.6481	1	97.6481	%

Analyst Peak Integration Comments

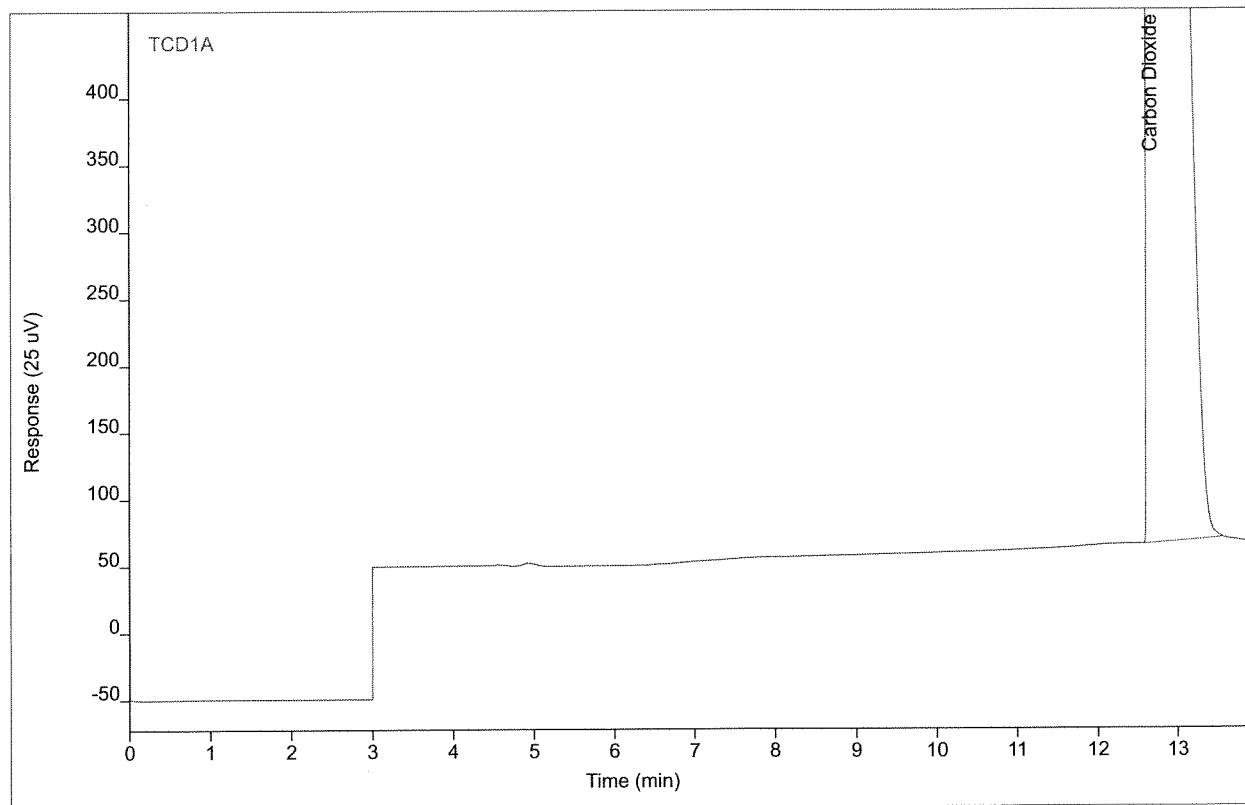
11:12:29 03/08/16 Justin Guenzler II

Chromatogram Report

Enthalpy Analytical

Sample Name CO2 99.99 % #FG21 ENV(1=0,4=400)
Sequence Name BETTYP338 ver.3
Data File 009F0203.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/8/2016 11:20 AM
File Modified 3/10/2016 1:21 PM
Instrument Betty
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 3 of 4
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 3/10/2016 10:02 AM
Printed 3/10/2016 2:39 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Carbon Dioxide	MM	12.67	50559.9	2313.50	97.0674	1	97.0674	%

Analyst Peak Integration Comments

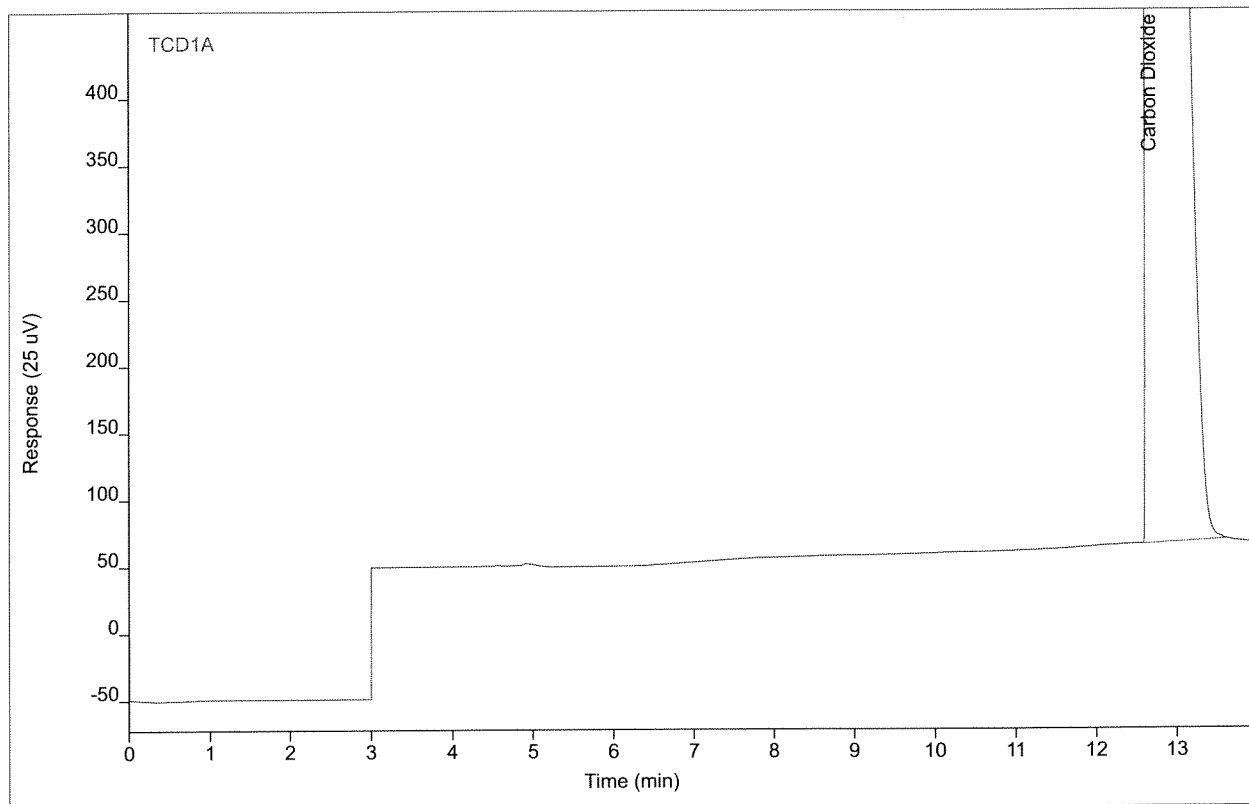
11:41:02 03/08/16 Justin Guenzler II-Baseline

Chromatogram Report

Enthalpy Analytical

Sample Name CO2 99.99 % #FG21 ENV(1=0,4=400)
Sequence Name BETTYP338 ver.3
Data File 009F0204.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/8/2016 11:44 AM
File Modified 3/10/2016 1:21 PM
Instrument Betty
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 4 of 4
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 3/10/2016 10:02 AM
Printed 3/10/2016 2:39 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Carbon Dioxide	MM	12.67	50301.7	2281.28	96.5714	1	96.5714	%

Analyst Peak Integration Comments

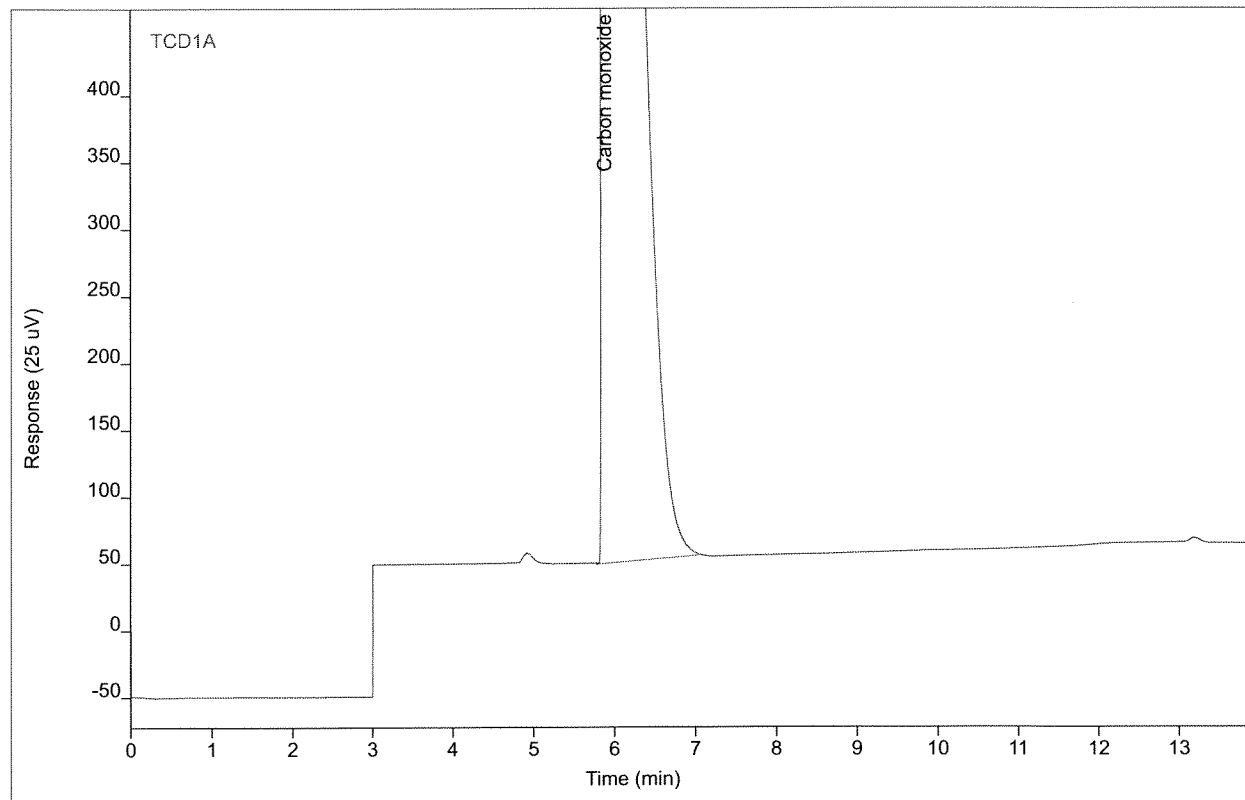
12:24:30 03/08/16 Justin Guenzler II

Chromatogram Report

Enthalpy Analytical

Sample Name CO 99.5 % #FG25 ENV(1=0,4=400)
Sequence Name BETTYP338 ver.3
Data File 009F0302.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/8/2016 12:32 PM
File Modified 3/10/2016 1:21 PM
Instrument Betty
Operator Justin Guenzler

Sample Type
Vial Number
Injection Volume
Injection
Acquisition Method
Analysis Method
Method Modified
Printed
Calibration
Vial 9
250
2 of 4
GC142P133_CAL.M
BETTYP338_FGA.M
3/10/2016 10:02 AM
3/10/2016 2:39 PM



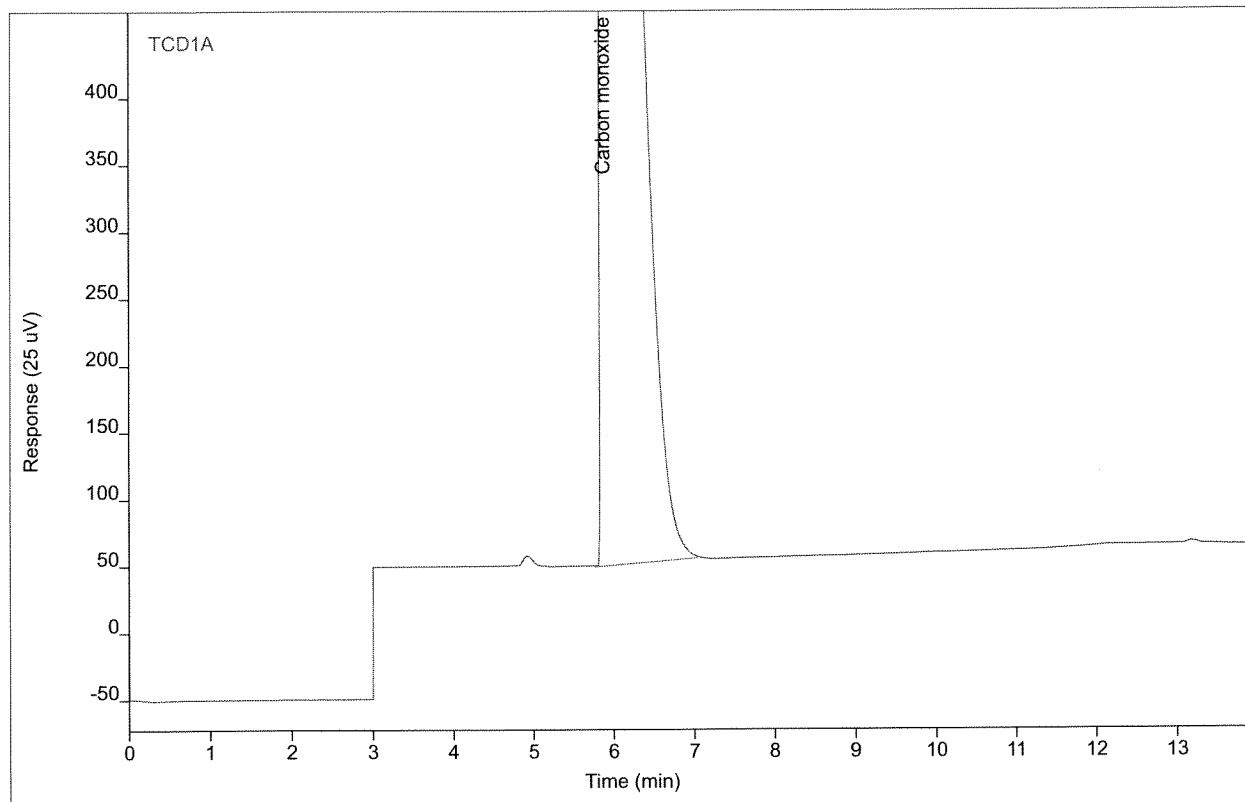
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Carbon monoxide	BB	5.89	35879.0	1426.39	93.7070	1	93.7070	%

Chromatogram Report

Enthalpy Analytical

Sample Name CO 99.5 % #FG25 ENV(1=0,4=400)
Sequence Name BETTYP338 ver.3
Data File 009F0303.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/8/2016 12:55 PM
File Modified 3/10/2016 1:21 PM
Instrument Betty
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 3 of 4
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 3/10/2016 10:02 AM
Printed 3/10/2016 2:39 PM



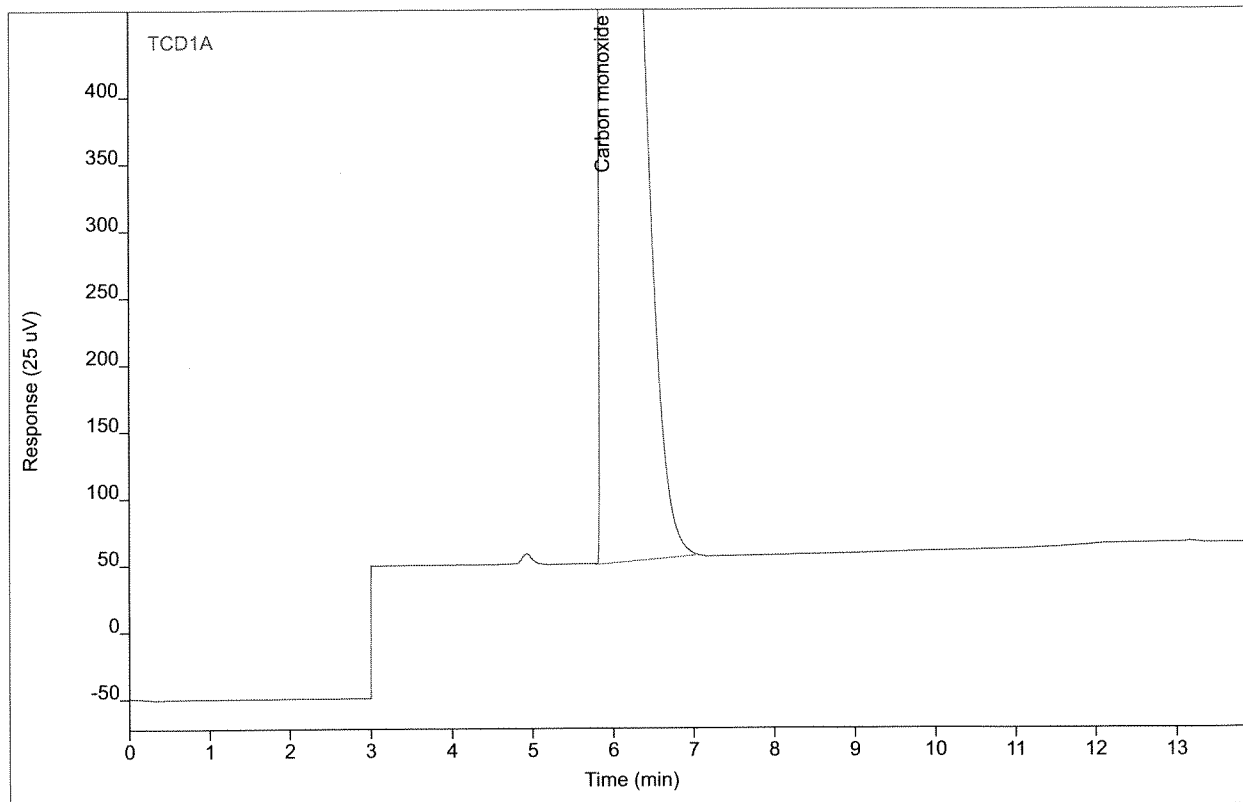
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Carbon monoxide	BB	5.89	35829.4	1419.53	93.5774	1	93.5774	%

Chromatogram Report

Enthalpy Analytical

Sample Name CO 99.5 % #FG25 ENV(1=0,4=400)
Sequence Name BETTYP338 ver.3
Data File 009F0304.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/8/2016 1:19 PM
File Modified 3/10/2016 1:21 PM
Instrument Betty
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 4 of 4
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 3/10/2016 10:02 AM
Printed 3/10/2016 2:39 PM



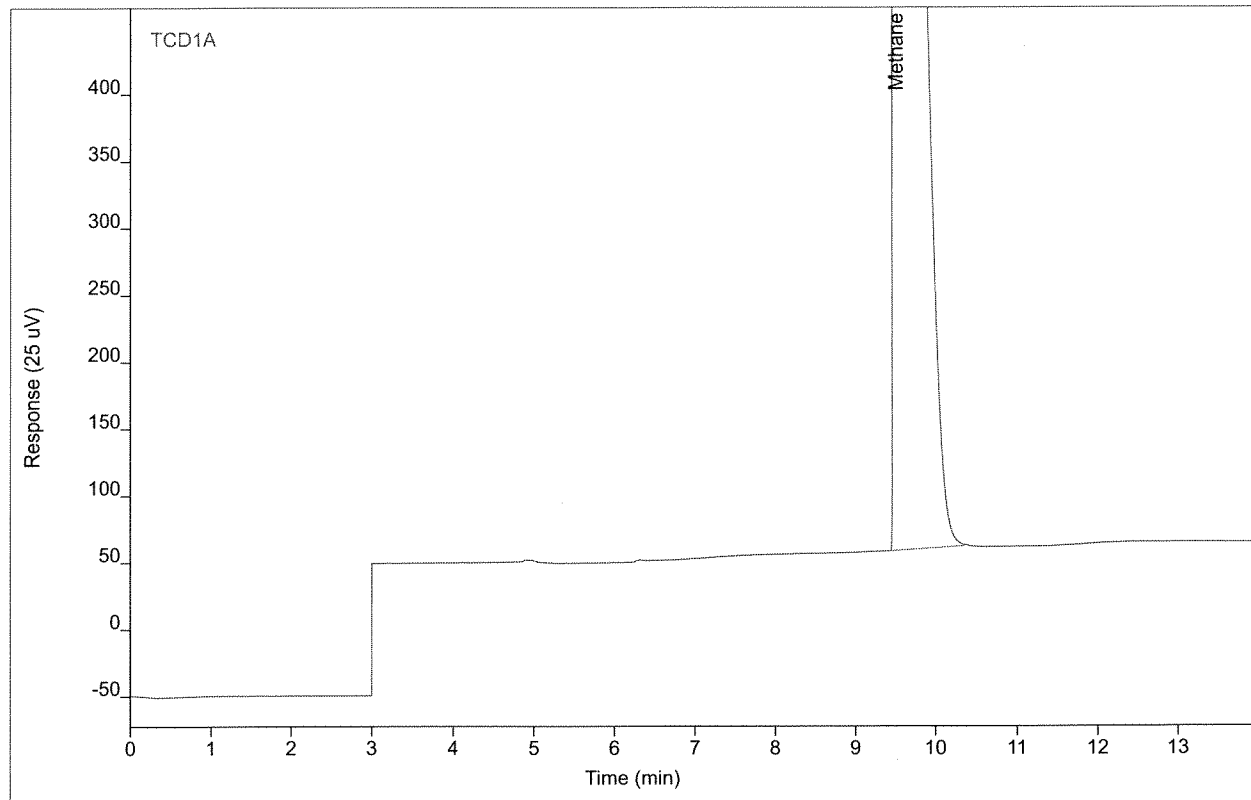
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Carbon monoxide	BB	5.89	36168.5	1437.02	94.4633	1	94.4633	%

Chromatogram Report

Enthalpy Analytical

Sample Name Methane 99.999 % #FG24 ENV(1=0,4=400)
Sequence Name BETTYP338 ver.3
Data File 009F0502.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/8/2016 2:34 PM
File Modified 3/10/2016 1:21 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 2 of 4
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 3/10/2016 10:02 AM
Printed 3/10/2016 2:39 PM



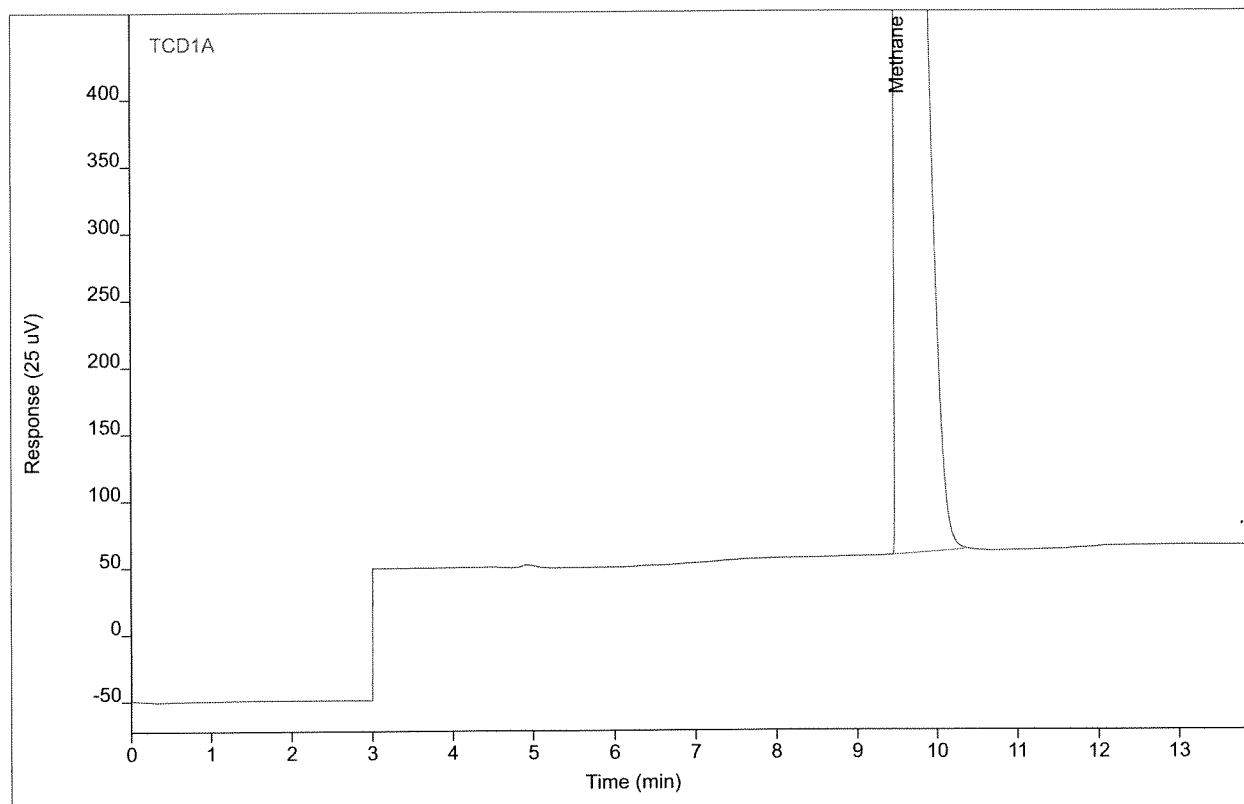
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BB	9.52	30485.5	1667.37	92.6634	1	92.6634	%

Chromatogram Report

Enthalpy Analytical

Sample Name Methane 99.999 % #FG24 ENV(1=0,4=400)
Sequence Name BETTYP338 ver.3
Data File 009F0503.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/8/2016 2:57 PM
File Modified 3/10/2016 1:21 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 3 of 4
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 3/10/2016 10:02 AM
Printed 3/10/2016 2:39 PM



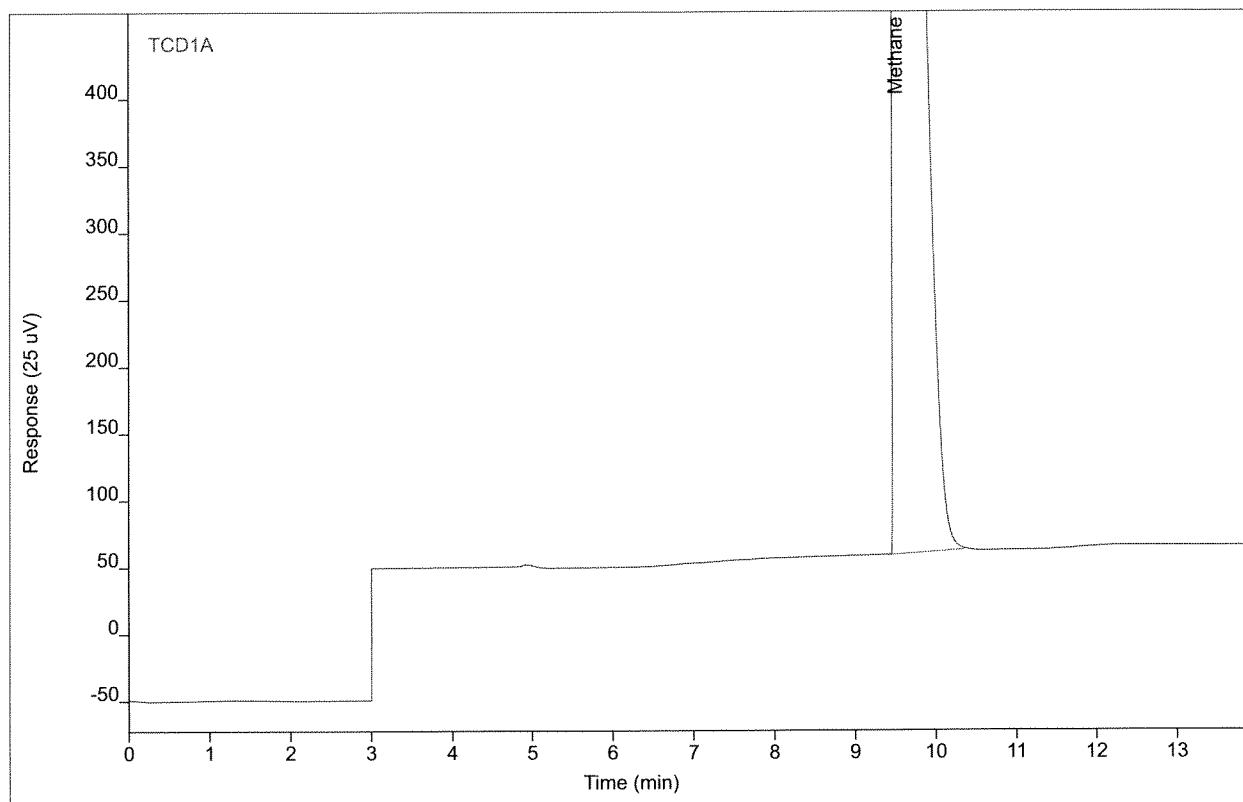
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BB	9.52	30372.2	1668.64	92.3189	1	92.3189	%

Chromatogram Report

Enthalpy Analytical

Sample Name Methane 99.999 % #FG24 ENV(1=0,4=400)
Sequence Name BETTYP338 ver.3
Data File 009F0504.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/8/2016 3:21 PM
File Modified 3/10/2016 1:21 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 4 of 4
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 3/10/2016 10:02 AM
Printed 3/10/2016 2:39 PM



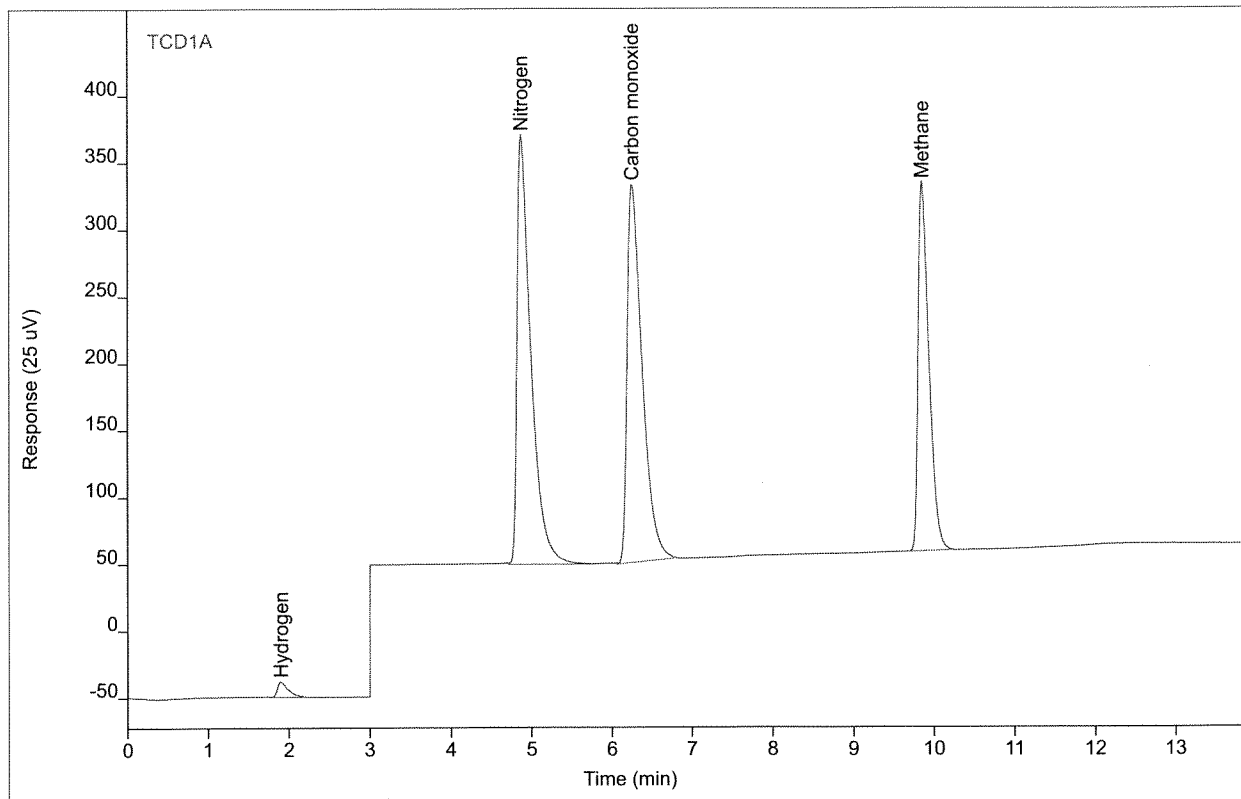
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BB	9.52	30803.0	1686.10	93.6291	1	93.6291	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG8 ENV(1=0,3=319.09)
Sequence Name BETTYP338 ver.3
Data File 009F0706.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/8/2016 6:33 PM
File Modified 3/10/2016 2:30 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 6 of 8
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 3/10/2016 10:02 AM
Printed 3/10/2016 2:39 PM



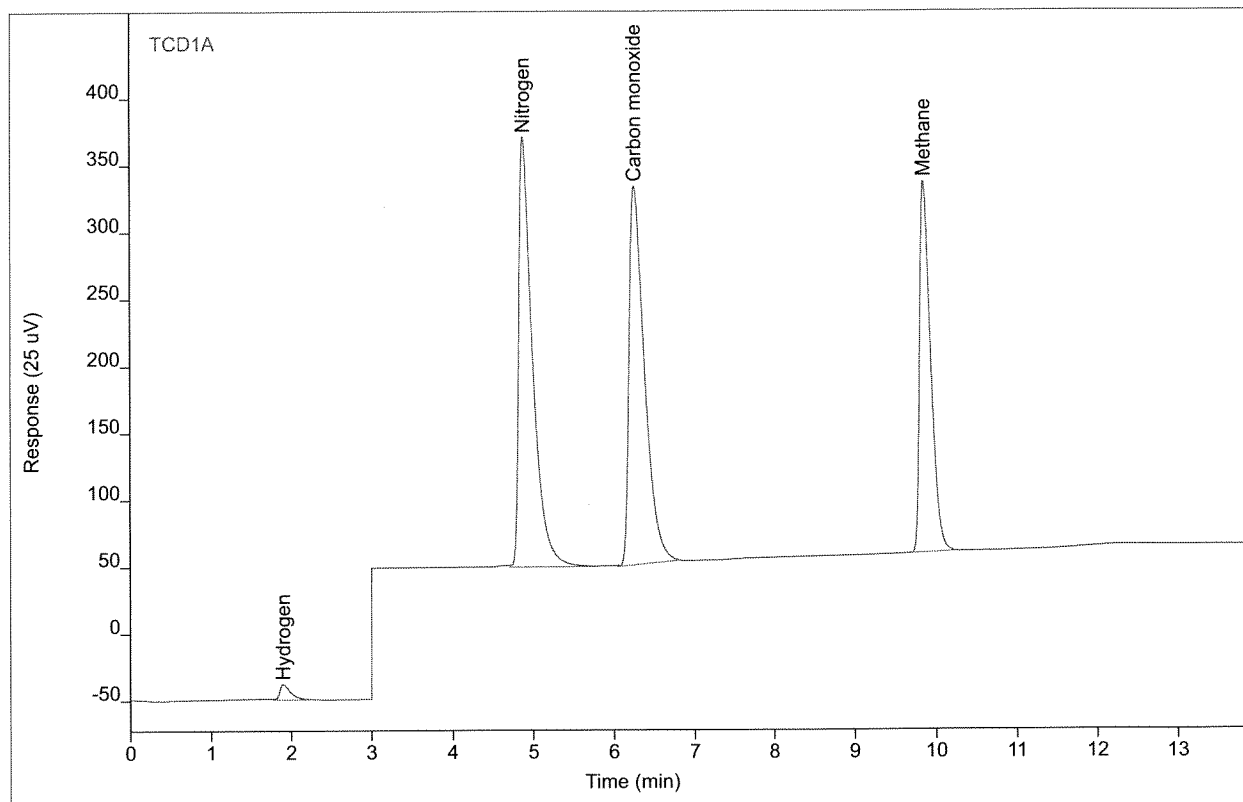
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	BB	1.90	108.784	11.6748	7.50590	1	7.50590	%
Nitrogen	VB	4.88	3808.71	320.870	9.82183	1	9.82183	%
Carbon monoxide	BB	6.26	3727.25	282.439	9.70086	1	9.70086	%
Methane	BB	9.86	2544.39	275.258	7.69033	1	7.69033	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG8 ENV(1=0,3=319.09)
Sequence Name BETTYP338 ver.3
Data File 009F0707.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/8/2016 6:57 PM
File Modified 3/10/2016 2:30 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 7 of 8
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 3/10/2016 10:02 AM
Printed 3/10/2016 2:39 PM



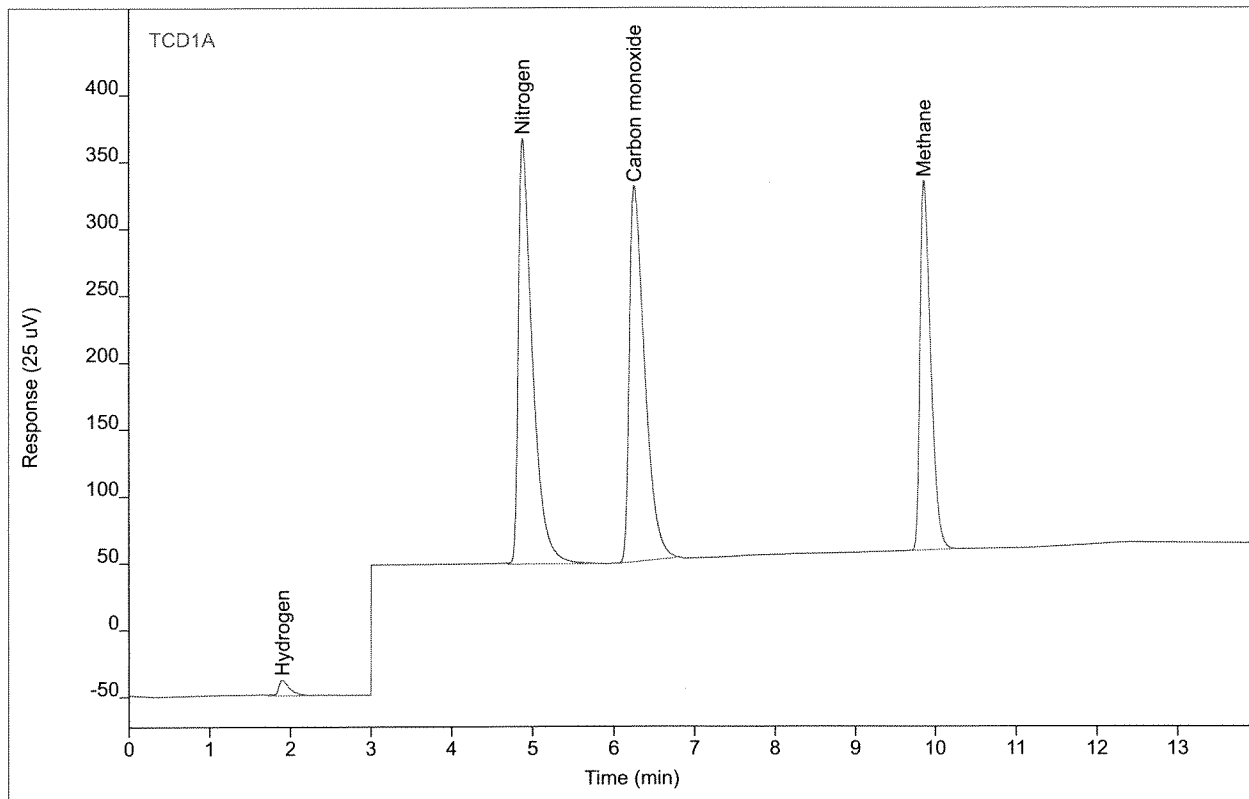
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	BB	1.90	109.665	11.7216	7.56700	1	7.56700	%
Nitrogen	VB	4.88	3820.06	321.367	9.85147	1	9.85147	%
Carbon monoxide	BB	6.26	3739.33	283.309	9.73241	1	9.73241	%
Methane	BB	9.86	2586.47	277.651	7.81830	1	7.81830	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG8 ENV(1=0,3=319.09)
Sequence Name BETTYP338 ver.3
Data File 009F0708.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/8/2016 7:20 PM
File Modified 3/10/2016 2:30 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 8 of 8
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 3/10/2016 10:02 AM
Printed 3/10/2016 2:39 PM



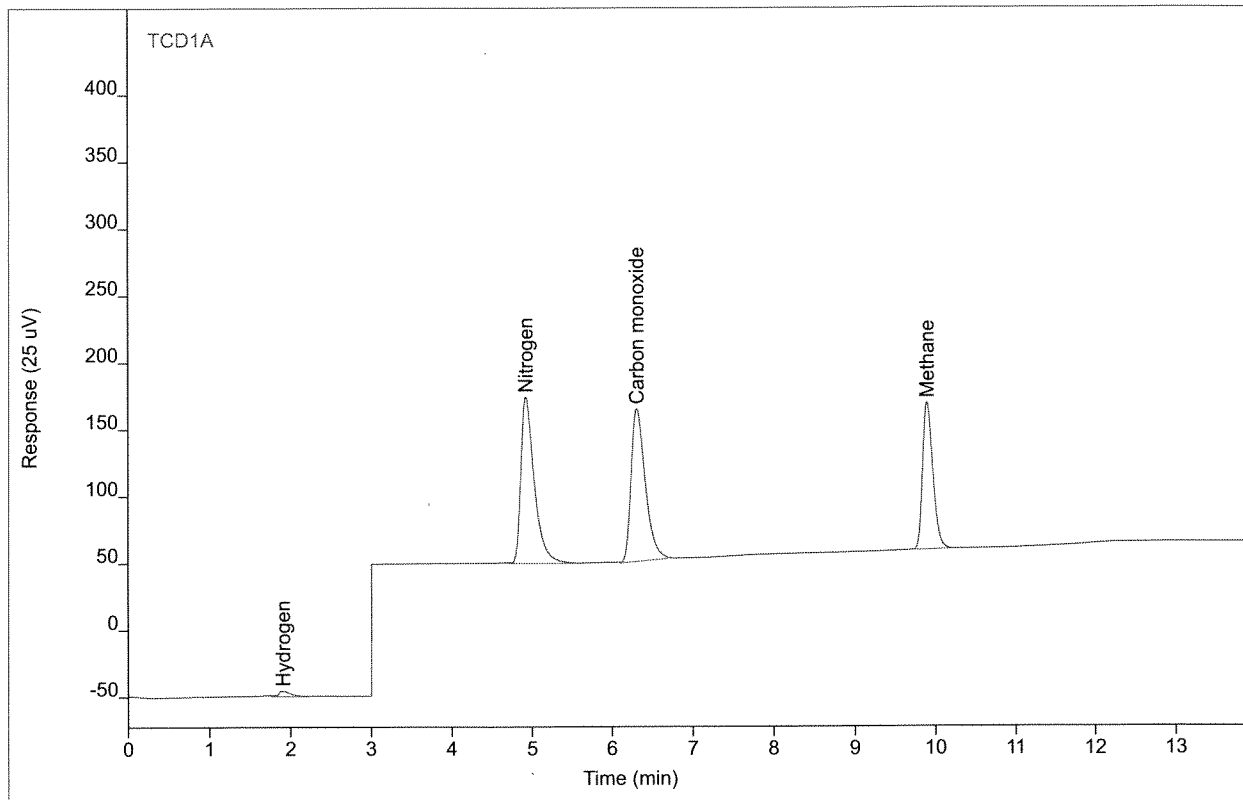
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	BB	1.90	110.203	11.8418	7.60439	1	7.60439	%
Nitrogen	VB	4.88	3782.61	318.019	9.75369	1	9.75369	%
Carbon monoxide	BB	6.26	3699.62	280.667	9.62867	1	9.62867	%
Methane	BB	9.86	2565.36	275.714	7.75410	1	7.75410	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG7 ENV(1=530,3=319.09)
Sequence Name BETTYP338 ver.3
Data File 009F0801.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/8/2016 7:44 PM
File Modified 3/10/2016 2:30 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 1 of 3
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 3/10/2016 10:02 AM
Printed 3/10/2016 2:39 PM



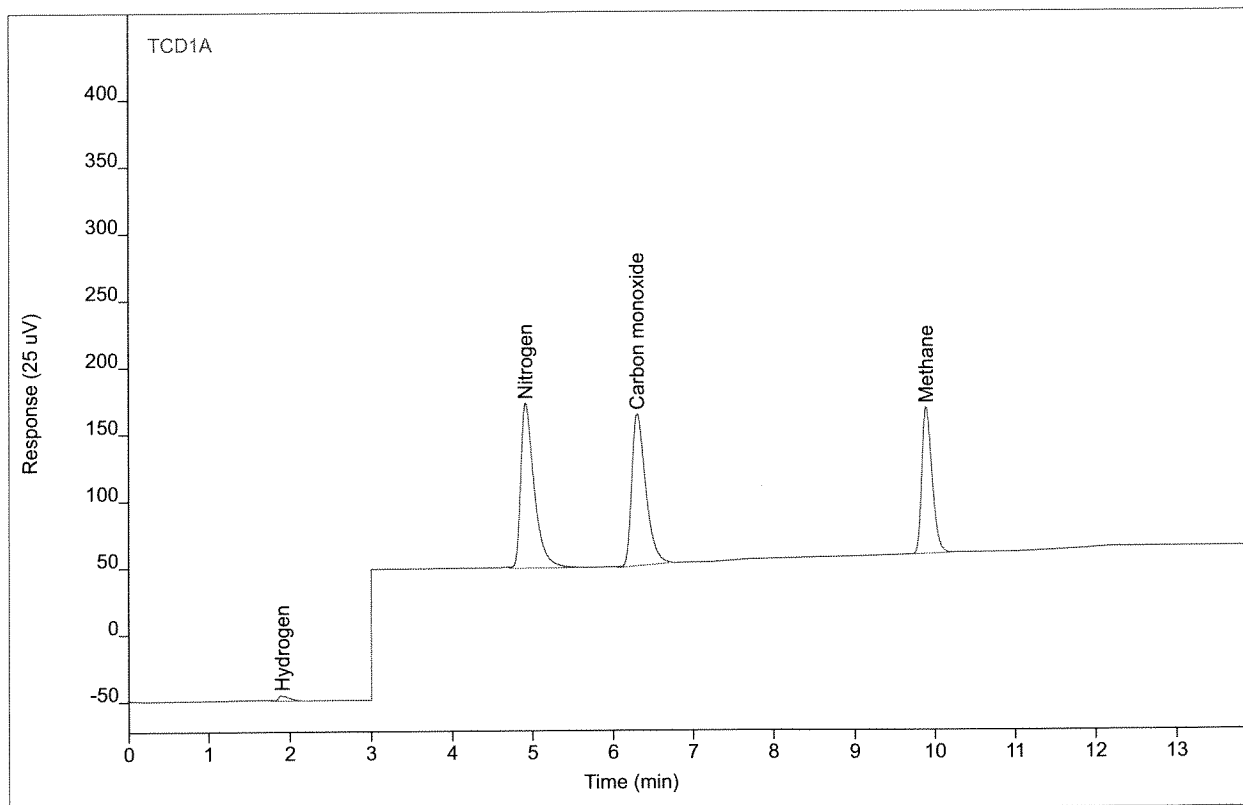
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	BB	1.91	42.1630	4.43367	2.88227	1	2.88227	%
Nitrogen	VB	4.93	1448.19	124.799	3.65904	1	3.65904	%
Carbon monoxide	BB	6.31	1383.47	114.559	3.57702	1	3.57702	%
Methane	BB	9.90	970.170	110.193	2.90289	1	2.90289	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG7 ENV(1=530,3=319.09)
Sequence Name BETTYP338 ver.3
Data File 009F0802.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/8/2016 8:08 PM
File Modified 3/10/2016 2:30 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 2 of 3
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 3/10/2016 10:02 AM
Printed 3/10/2016 2:39 PM



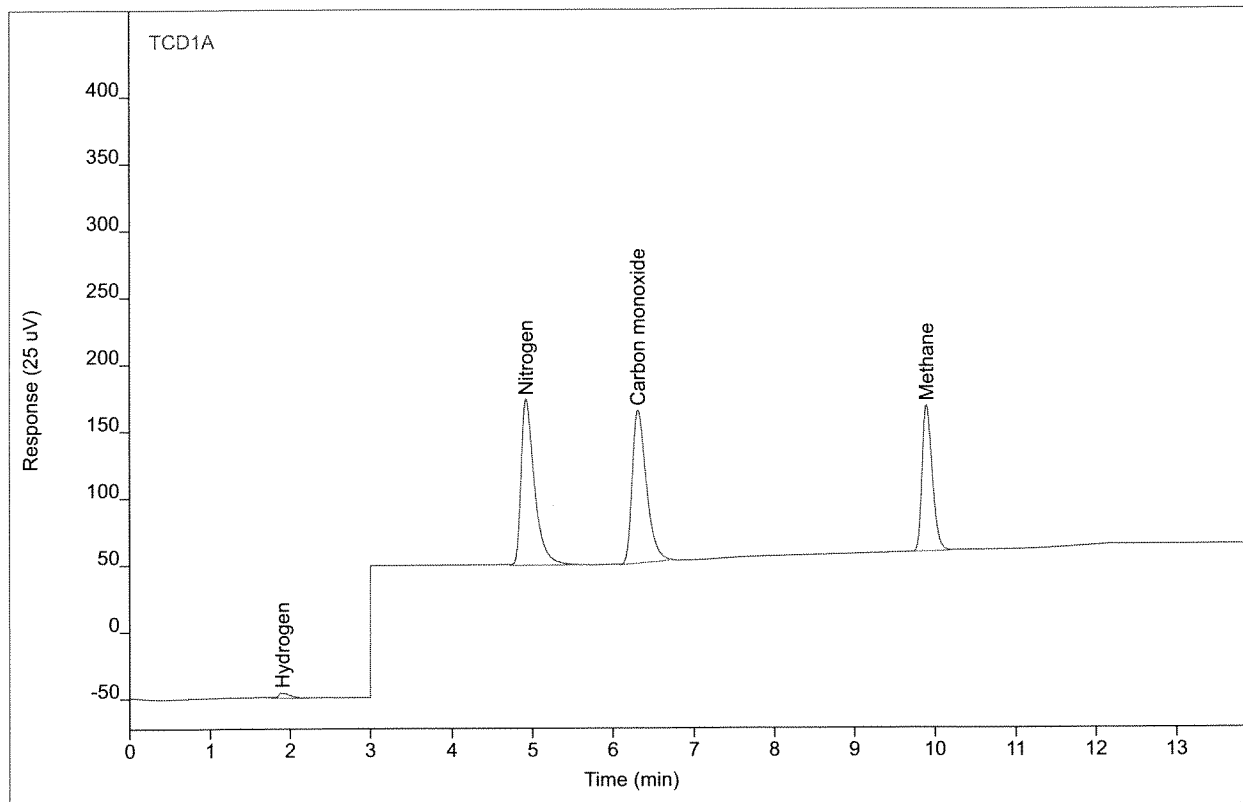
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	BB	1.90	40.1210	4.31515	2.74055	1	2.74055	%
Nitrogen	VB	4.93	1430.23	123.313	3.61216	1	3.61216	%
Carbon monoxide	BB	6.31	1375.20	113.556	3.55541	1	3.55541	%
Methane	BB	9.90	963.281	109.584	2.88194	1	2.88194	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG7 ENV(1=530,3=319.09)
Sequence Name BETTYP338 ver.3
Data File 009F0803.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/8/2016 8:33 PM
File Modified 3/10/2016 2:30 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type
Vial Number
Injection Volume
Injection
Acquisition Method
Analysis Method
Method Modified
Printed
Calibration
Vial 9
250
3 of 3
GC142P133_CAL.M
BETTYP338_FGA.M
3/10/2016 10:02 AM
3/10/2016 2:39 PM



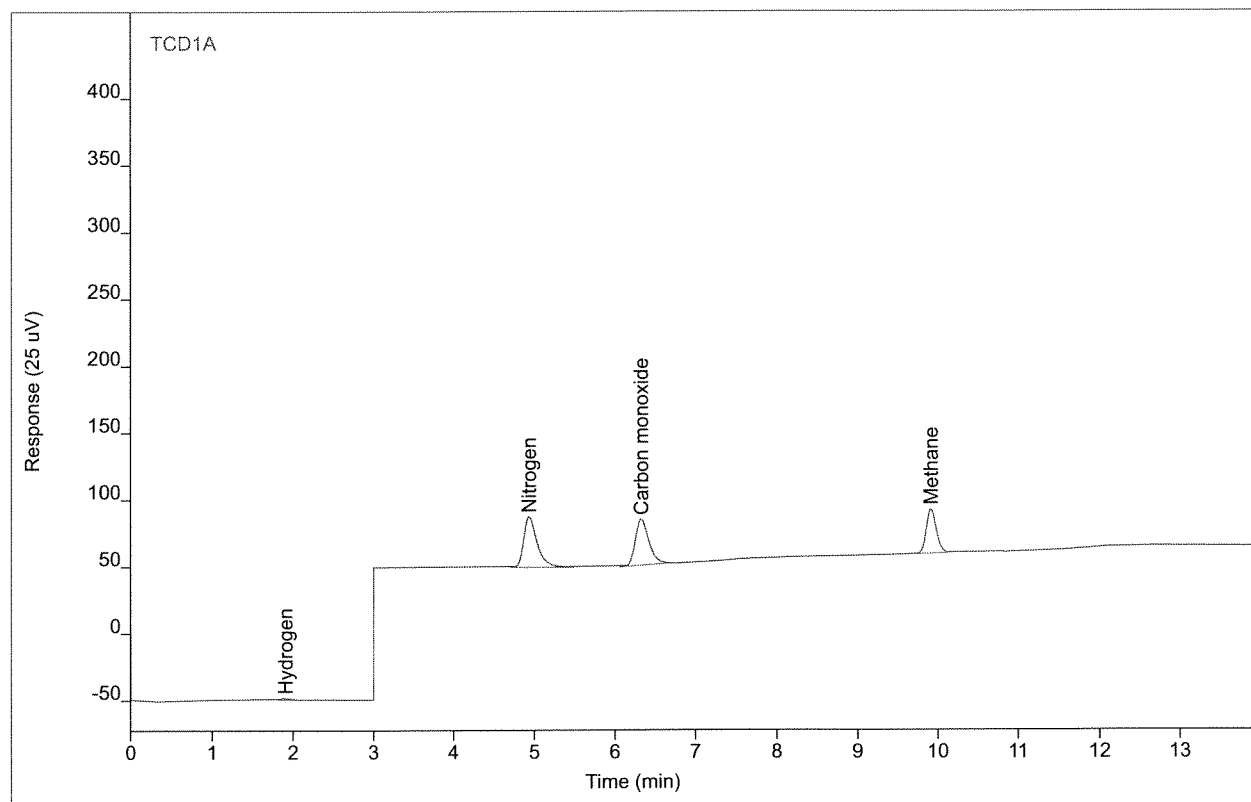
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	BB	1.90	41.5040	4.39795	2.83654	1	2.83654	%
Nitrogen	VB	4.93	1444.26	124.092	3.64880	1	3.64880	%
Carbon monoxide	BB	6.31	1386.71	114.651	3.58548	1	3.58548	%
Methane	BB	9.90	964.424	109.451	2.88542	1	2.88542	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG6 ENV(1=1271.99,3=159.55)
Sequence Name BETTYP338 ver.3
Data File 009F0901.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/8/2016 8:57 PM
File Modified 3/10/2016 2:30 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 1 of 3
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 3/10/2016 10:02 AM
Printed 3/10/2016 2:39 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	MM	1.91	11.7895	1.33243	0.77430	1	0.77430	%
Nitrogen	VB	4.94	438.574	37.9344	1.02317	1	1.02317	%
Carbon monoxide	VB	6.33	401.406	34.4962	1.01109	1	1.01109	%
Methane	BB	9.92	285.620	33.2135	0.82107	1	0.82107	%

Analyst Peak Integration Comments

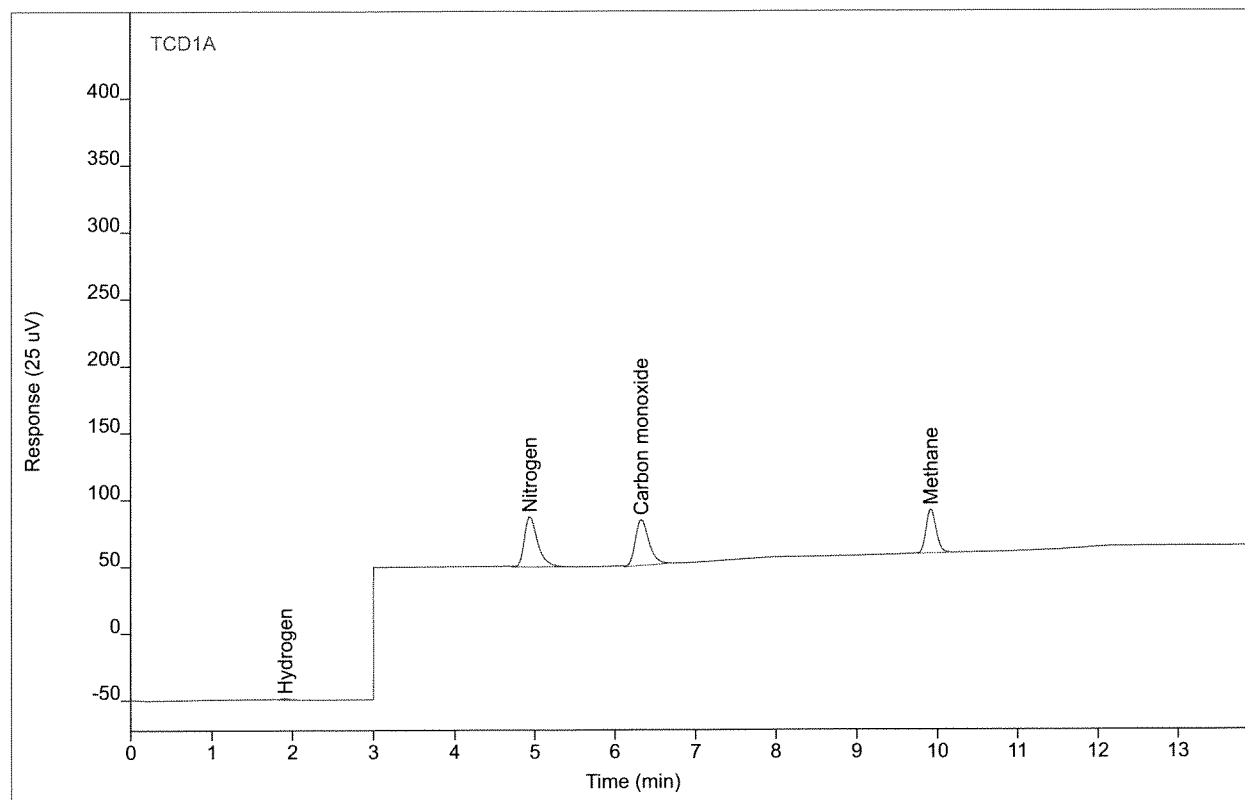
08:59:29 03/09/16 Nicholas Traversa II-Baseline

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG6 ENV(1=1271.99,3=159.55)
Sequence Name BETTYP338 ver.3
Data File 009F0902.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/8/2016 9:21 PM
File Modified 3/10/2016 2:30 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 2 of 3
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 3/10/2016 10:02 AM
Printed 3/10/2016 2:39 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	MM	1.91	11.9883	1.40042	0.78810	1	0.78810	%
Nitrogen	VB	4.94	432.946	37.8657	1.00848	1	1.00848	%
Carbon monoxide	BB	6.33	401.265	34.4190	1.01072	1	1.01072	%
Methane	BB	9.92	284.301	32.9372	0.81706	1	0.81706	%

Analyst Peak Integration Comments

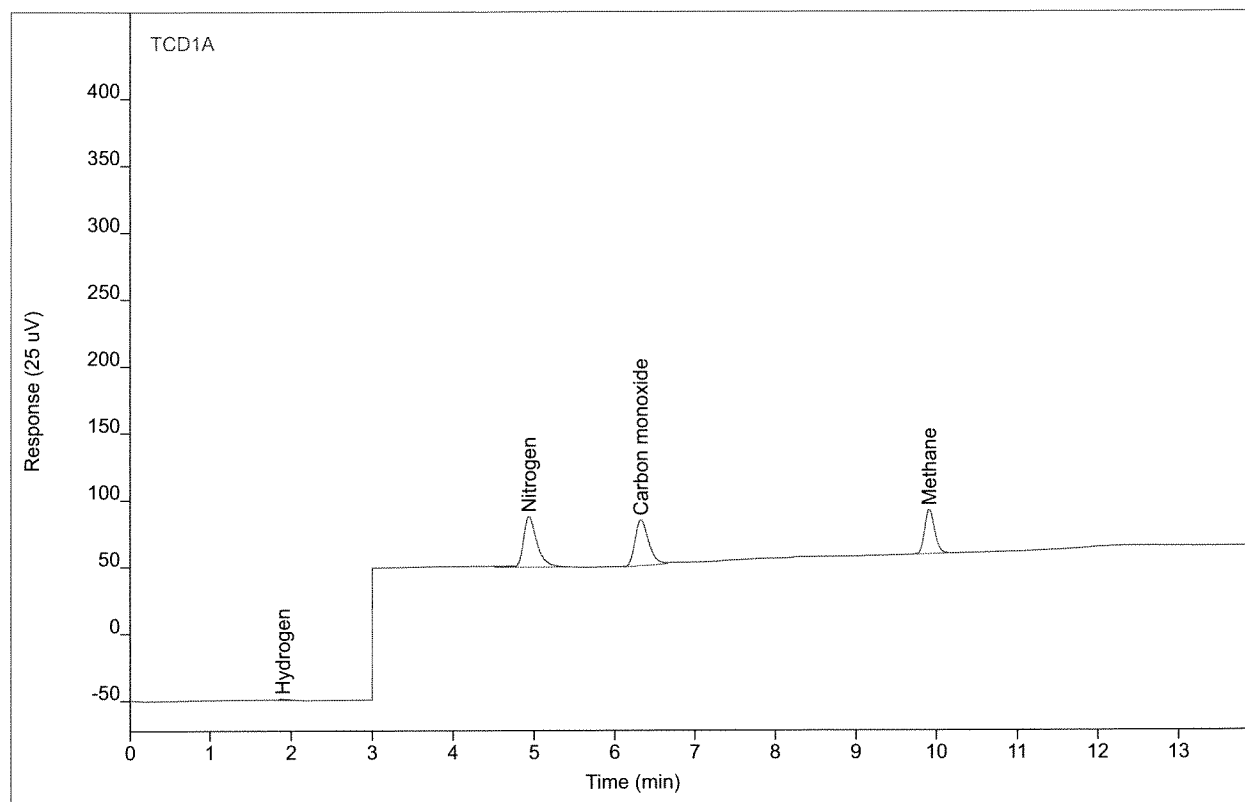
09:00:18 03/09/16 Nicholas Traversa II-Baseline

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG6 ENV(1=1271.99,3=159.55)
Sequence Name BETTYP338 ver.3
Data File 009F0903.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/8/2016 9:45 PM
File Modified 3/10/2016 2:31 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 3 of 3
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 3/10/2016 10:02 AM
Printed 3/10/2016 2:39 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	MM	1.90	11.5218	1.30186	0.75572	1	0.75572	%
Nitrogen	BB	4.94	439.735	38.0820	1.02620	1	1.02620	%
Carbon monoxide	BB	6.33	402.436	34.4670	1.01378	1	1.01378	%
Methane	BB	9.92	285.227	33.1581	0.81988	1	0.81988	%

Analyst Peak Integration Comments

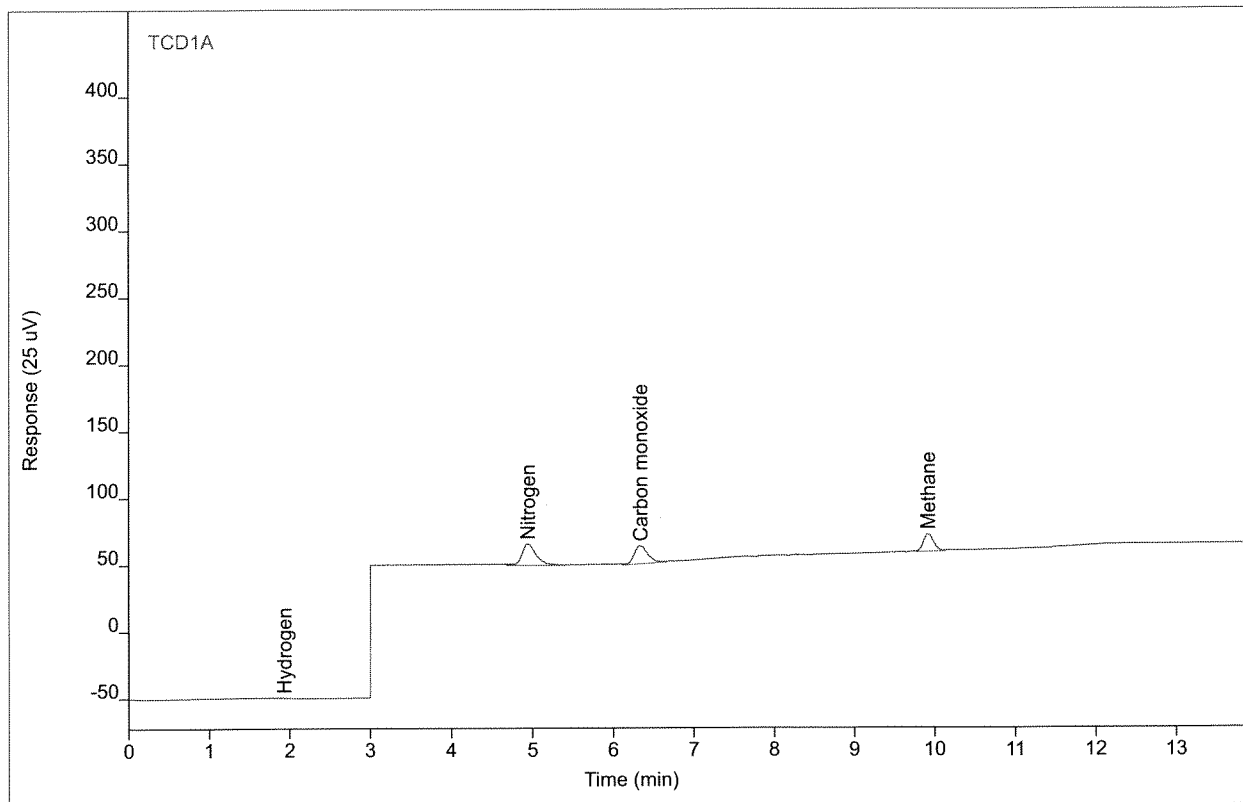
09:00:47 03/09/16 Nicholas Traversa II-Baseline

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG5 ENV(1=3391.99,3=159.55)
Sequence Name BETTYP338 ver.3
Data File 009F1001.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/8/2016 10:09 PM
File Modified 3/10/2016 2:31 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 1 of 3
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 3/10/2016 10:02 AM
Printed 3/10/2016 2:39 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	MM	1.93	5.13970	0.52556	0.31279	1	0.31279	%
Nitrogen	VV	4.95	196.149	16.2957	0.39025	1	0.39025	%
Carbon monoxide	MM	6.34	157.913	13.6648	0.37535	1	0.37535	%
Methane	BB	9.92	114.772	13.3437	0.30263	1	0.30263	%

Analyst Peak Integration Comments

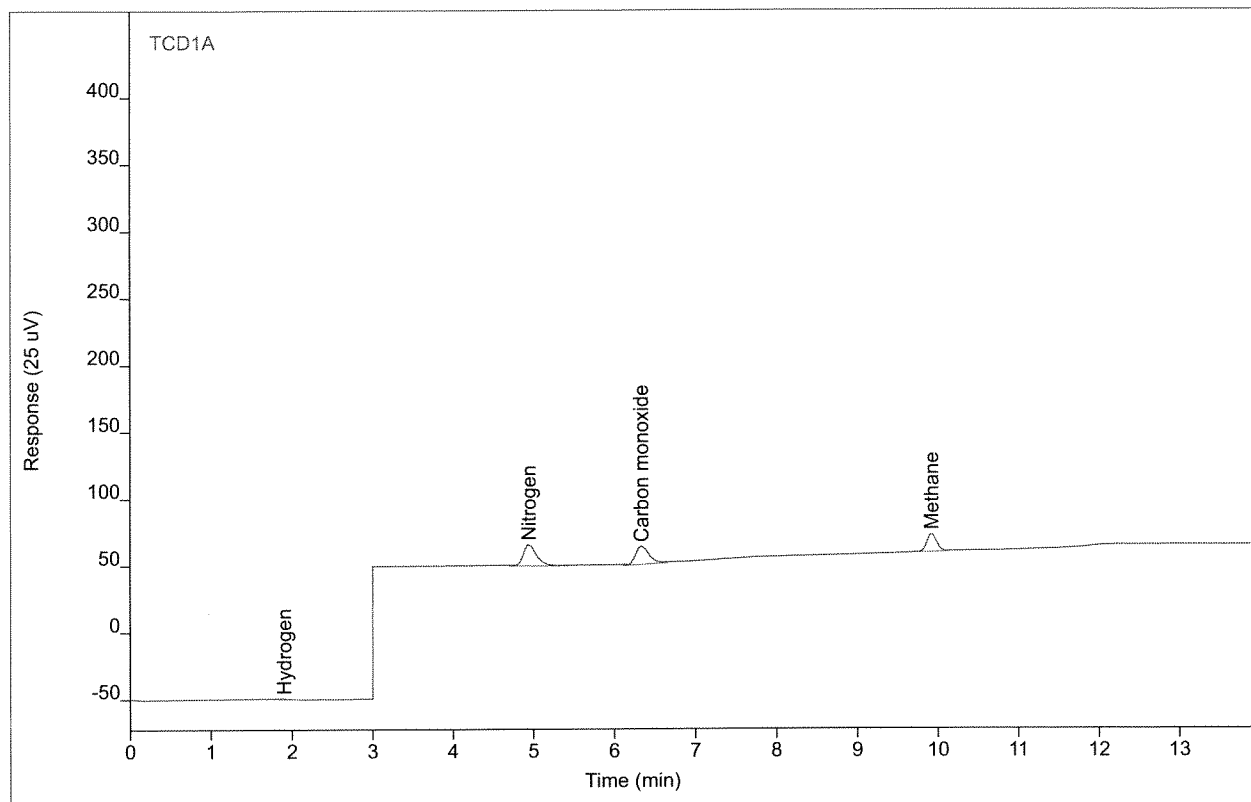
11:32:14 03/09/16 Justin Guenzler II-FP
11:48:09 03/09/16 Justin Guenzler II-Baseline
13:33:59 03/09/16 Nicholas Traversa II

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG5 ENV(1=3391.99,3=159.55)
Sequence Name BETTYP338 ver.3
Data File 009F1002.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/8/2016 10:33 PM
File Modified 3/10/2016 2:31 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 2 of 3
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 3/10/2016 10:02 AM
Printed 3/10/2016 2:39 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	MM	1.90	5.14901	0.57666	0.31344	1	0.31344	%
Nitrogen	VB	4.95	186.256	16.0015	0.36821	1	0.36821	%
Carbon monoxide	BB	6.34	154.003	13.5688	0.36606	1	0.36606	%
Methane	BB	9.93	114.057	13.2736	0.30074	1	0.30074	%

Analyst Peak Integration Comments

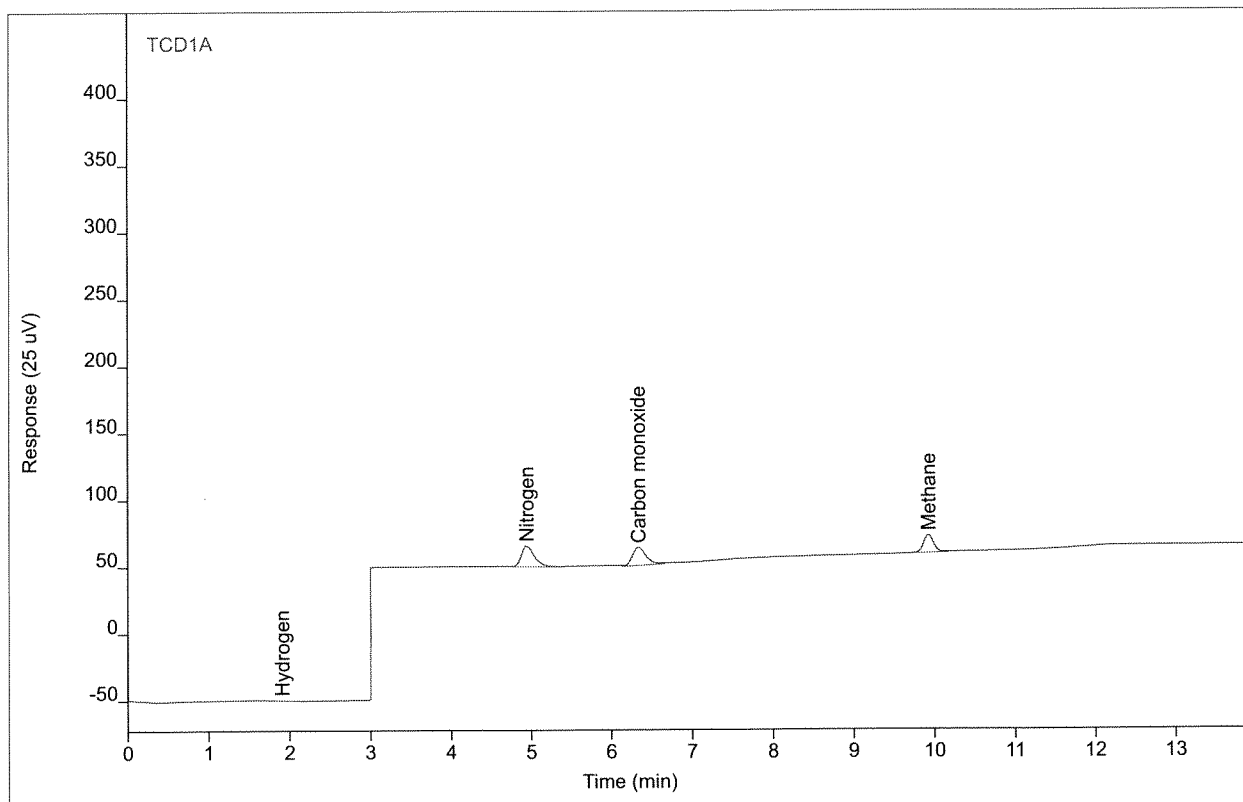
13:34:17 03/09/16 Nicholas Traversa II
13:34:47 03/09/16 Nicholas Traversa II
13:36:03 03/09/16 Nicholas Traversa II

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG5 ENV(1=3391.99,3=159.55)
Sequence Name BETTYP338 ver.3
Data File 009F1003.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/8/2016 10:57 PM
File Modified 3/10/2016 2:31 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 3 of 3
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 3/10/2016 10:02 AM
Printed 3/10/2016 2:39 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	MM	1.91	5.12162	0.56365	0.31154	1	0.31154	%
Nitrogen	BB	4.95	180.108	15.8393	0.35605	1	0.35605	%
Carbon monoxide	BB	6.34	156.014	13.6775	0.37084	1	0.37084	%
Methane	BB	9.93	113.947	13.1993	0.30045	1	0.30045	%

Analyst Peak Integration Comments

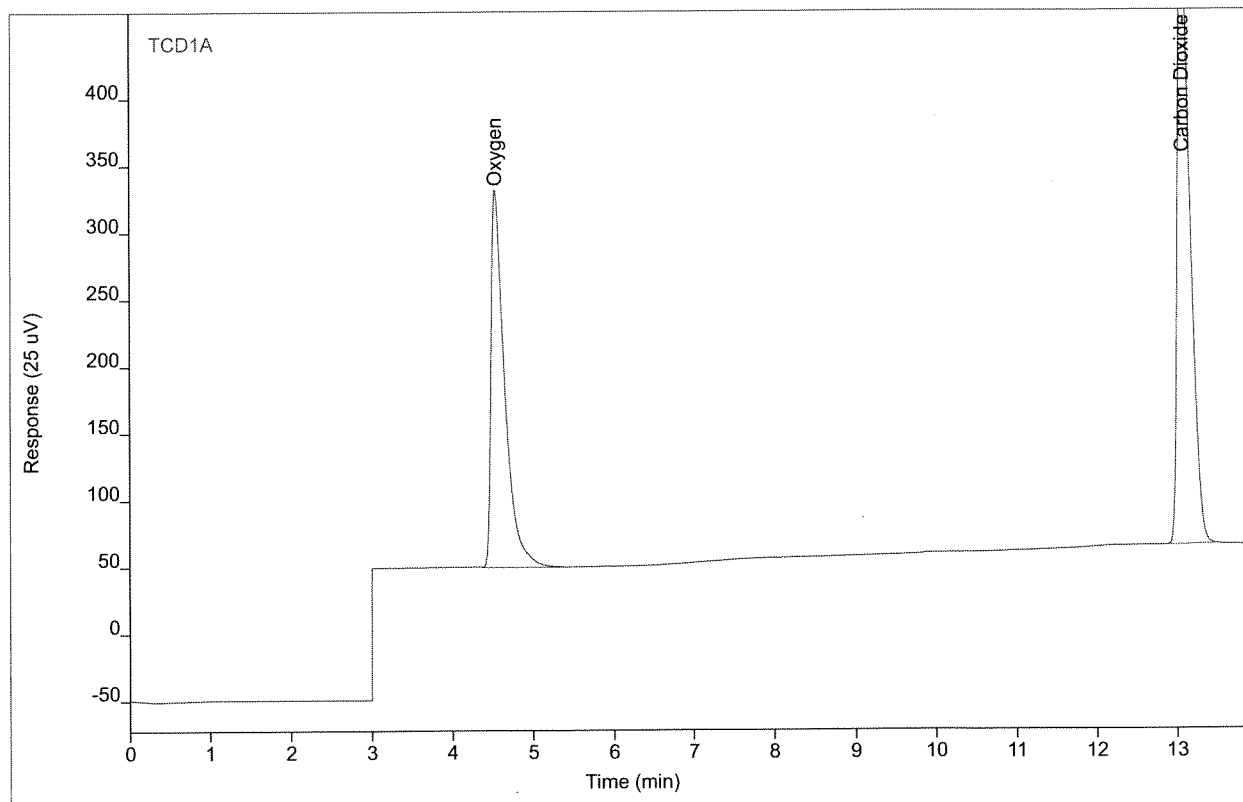
13:34:59 03/09/16 Nicholas Traversa II

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG4 ENV(1=0,2=358.93)
 Sequence Name BETTYP338 ver.3
 Data File 009F1101.D
 File Location GC/2016/Betty/Quarter 1
 Injection Date 3/8/2016 11:20 PM
 File Modified 3/10/2016 1:45 PM
 Instrument Betty
 Operator Nicholas Traversa

Sample Type Calibration
 Vial Number Vial 9
 Injection Volume 250
 Injection 1 of 3
 Acquisition Method GC142P133_CAL.M
 Analysis Method BETTYP338_FGA.M
 Method Modified 3/10/2016 10:02 AM
 Printed 3/10/2016 2:39 PM



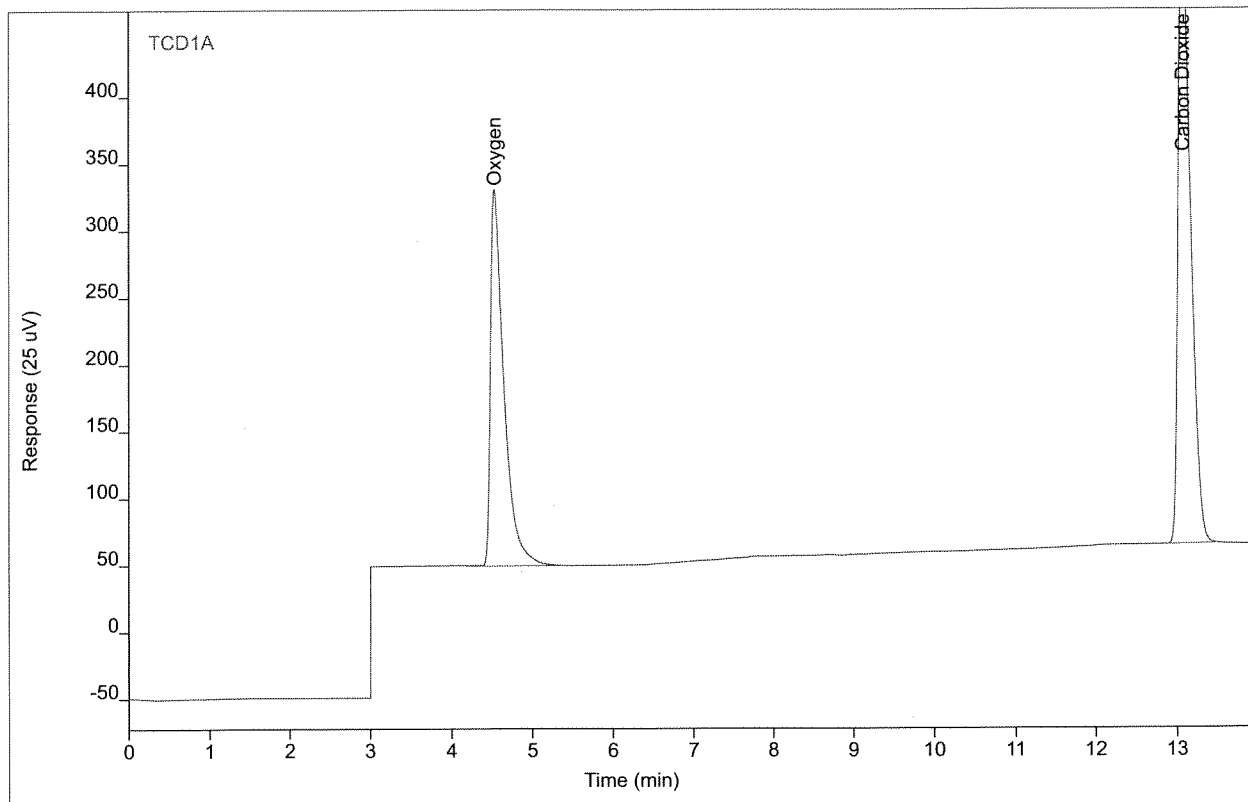
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Oxygen	BB	4.54	3318.33	282.002	9.67796	1	9.67796	%
Carbon Dioxide	BB	13.08	5051.10	464.310	9.61814	1	9.61814	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG4 ENV(1=0,2=358.93)
Sequence Name BETTYP338 ver.3
Data File 009F1102.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/8/2016 11:44 PM
File Modified 3/10/2016 1:45 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 2 of 3
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 3/10/2016 10:02 AM
Printed 3/10/2016 2:39 PM



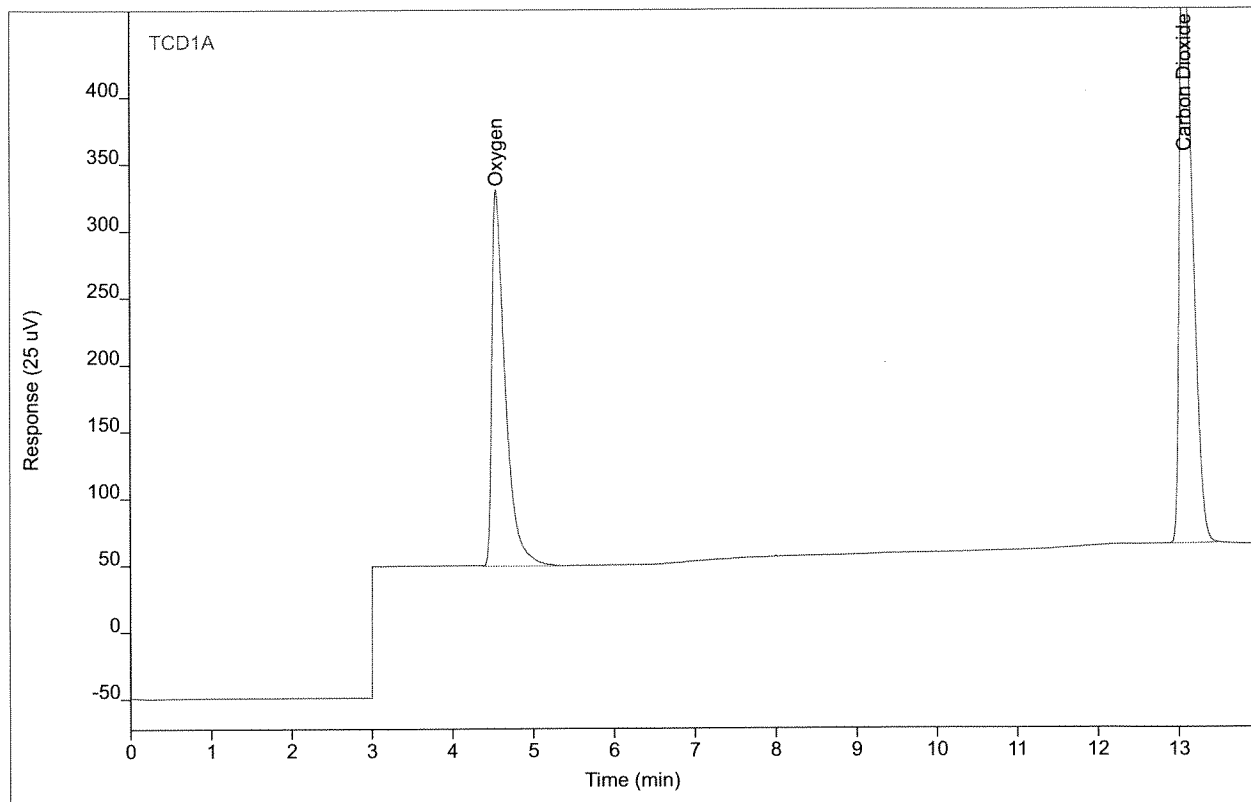
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Oxygen	BB	4.54	3309.76	281.240	9.65266	1	9.65266	%
Carbon Dioxide	BB	13.08	5048.59	463.156	9.61331	1	9.61331	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG4 ENV(1=0,2=358.93)
Sequence Name BETTYP338 ver.3
Data File 009F1103.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/9/2016 12:08 AM
File Modified 3/10/2016 1:45 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 3 of 3
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 3/10/2016 10:02 AM
Printed 3/10/2016 2:39 PM



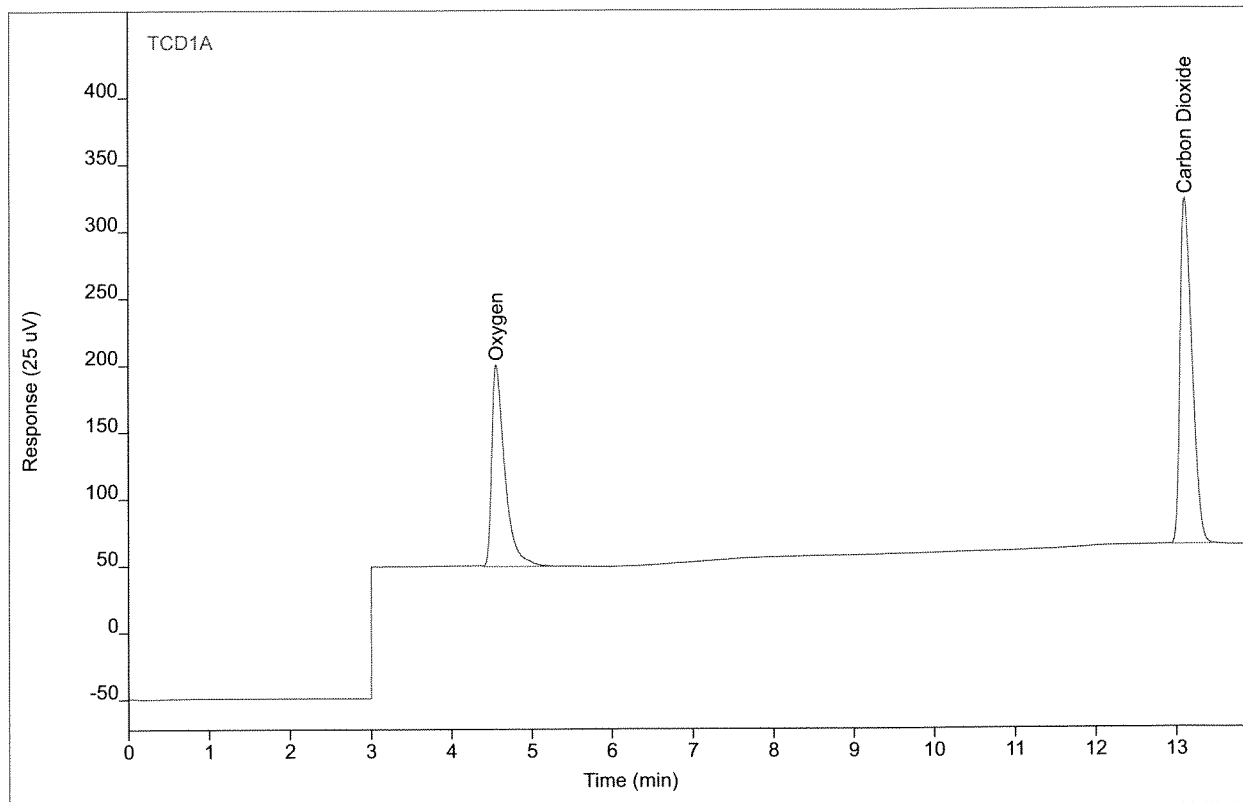
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Oxygen	BB	4.54	3294.35	280.788	9.60718	1	9.60718	%
Carbon Dioxide	BB	13.08	5056.72	465.904	9.62894	1	9.62894	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG3 ENV(1=374.56,2=391.07)
Sequence Name BETTYP338 ver.3
Data File 009F1201.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/9/2016 12:31 AM
File Modified 3/10/2016 1:45 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 1 of 3
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 3/10/2016 10:02 AM
Printed 3/10/2016 2:39 PM



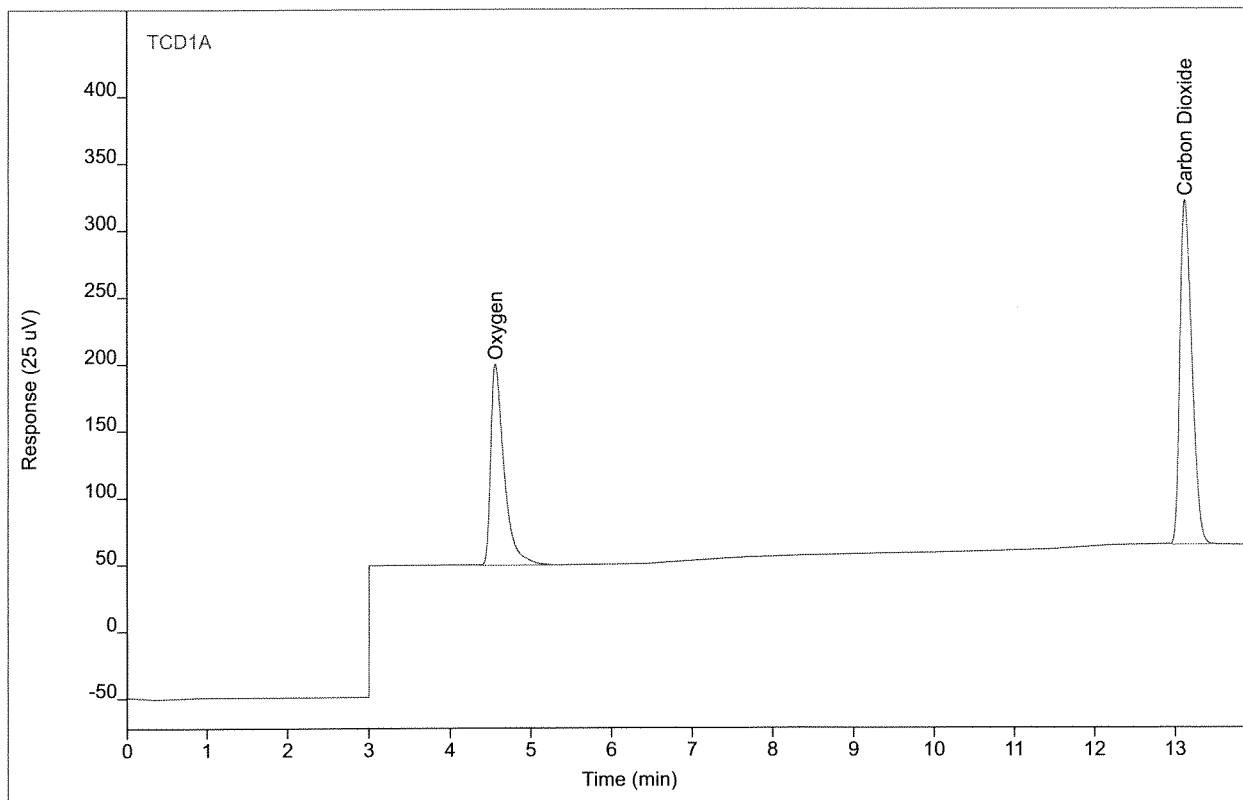
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Oxygen	BB	4.57	1739.71	150.765	5.01735	1	5.01735	%
Carbon Dioxide	BB	13.13	2629.40	258.086	4.96461	1	4.96461	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG3 ENV(1=374.56,2=391.07)
Sequence Name BETTYP338 ver.3
Data File 009F1202.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/9/2016 12:55 AM
File Modified 3/10/2016 1:45 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 2 of 3
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 3/10/2016 10:02 AM
Printed 3/10/2016 2:39 PM



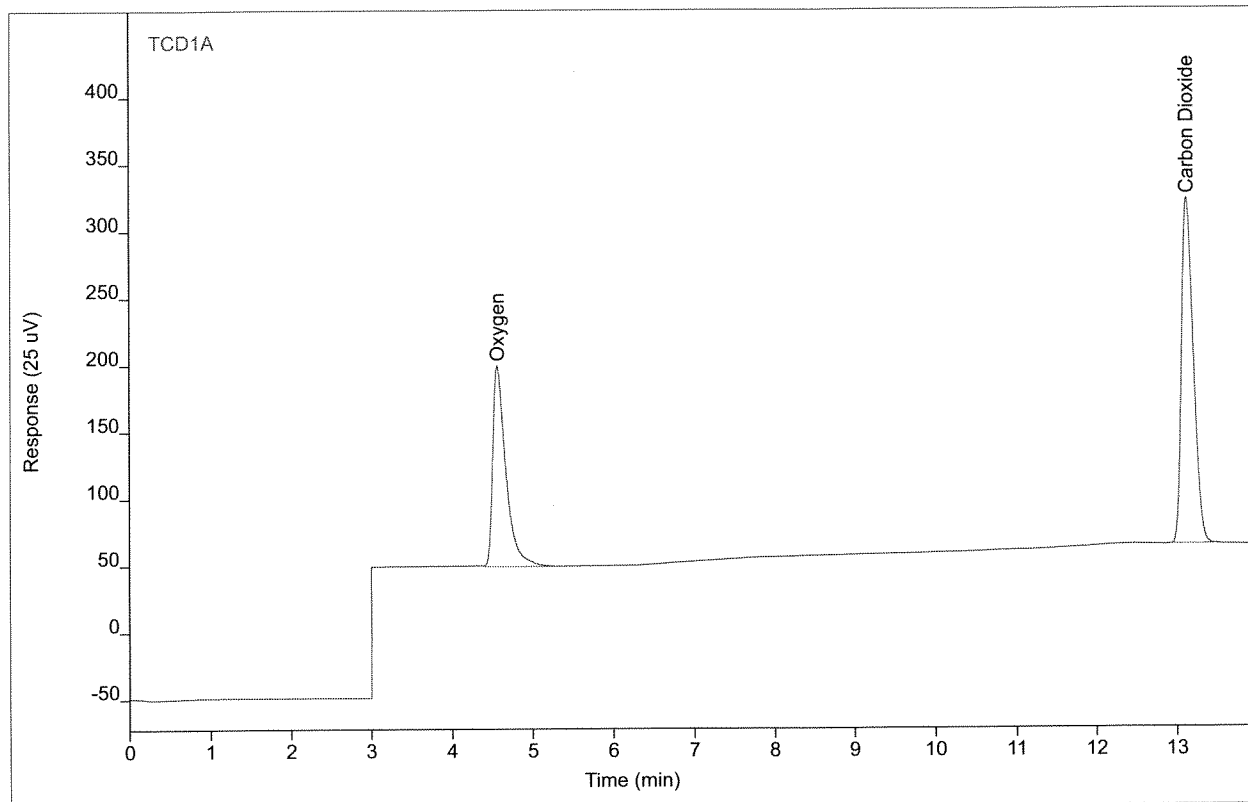
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Oxygen	BB	4.57	1738.50	150.539	5.01378	1	5.01378	%
Carbon Dioxide	BB	13.13	2620.32	257.299	4.94716	1	4.94716	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG3 ENV(1=374.56,2=391.07)
Sequence Name BETTYP338 ver.3
Data File 009F1203.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/9/2016 1:19 AM
File Modified 3/10/2016 1:45 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 3 of 3
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 3/10/2016 10:02 AM
Printed 3/10/2016 2:39 PM



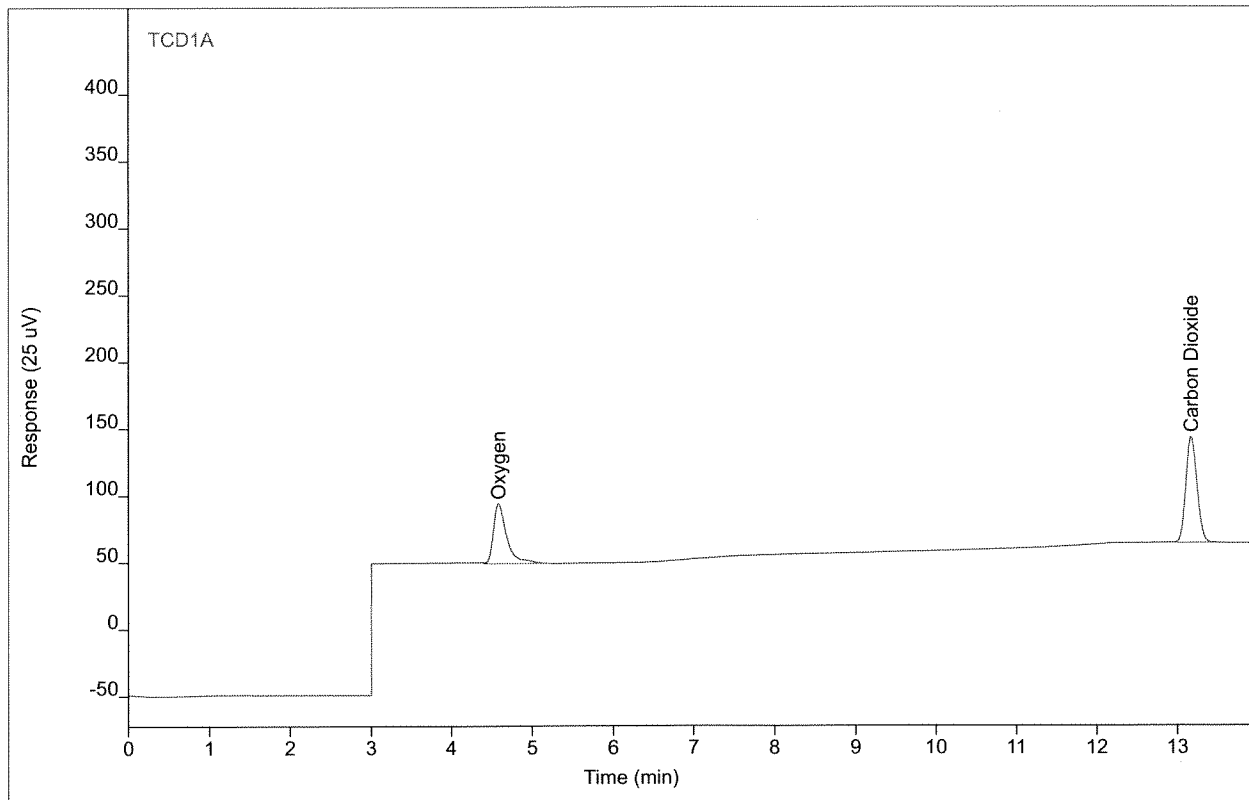
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Oxygen	BV	4.57	1730.16	150.425	4.98917	1	4.98917	%
Carbon Dioxide	BB	13.13	2635.38	258.129	4.97610	1	4.97610	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG2 ENV(1=1272.08,2=219.9)
Sequence Name BETTYP338 ver.3
Data File 009F1301.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/9/2016 1:42 AM
File Modified 3/10/2016 1:45 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 1 of 3
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 3/10/2016 10:02 AM
Printed 3/10/2016 2:39 PM



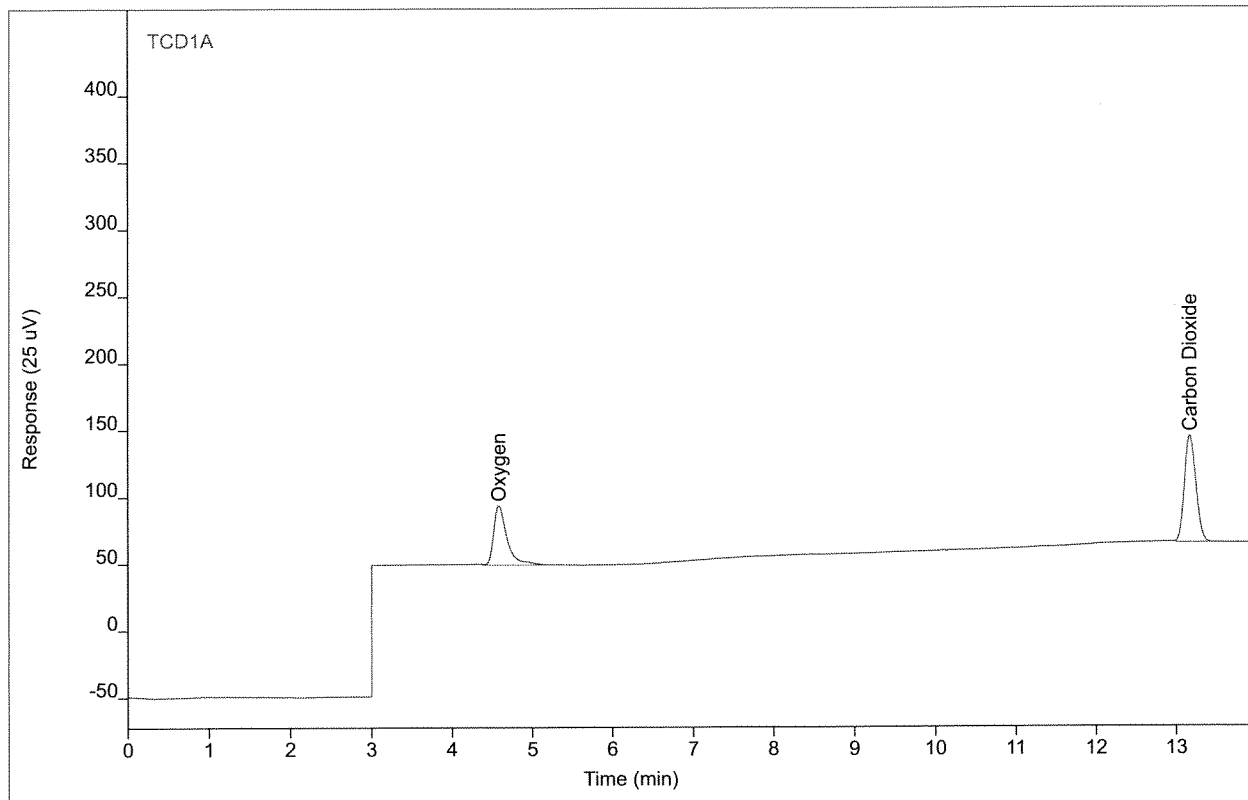
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Oxygen	BB	4.59	520.372	44.9374	1.41747	1	1.41747	%
Carbon Dioxide	BB	13.18	768.688	79.1765	1.38908	1	1.38908	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG2 ENV(1=1272.08,2=219.9)
Sequence Name BETTYP338 ver.3
Data File 009F1302.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/9/2016 2:06 AM
File Modified 3/10/2016 1:45 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 2 of 3
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 3/10/2016 10:02 AM
Printed 3/10/2016 2:39 PM



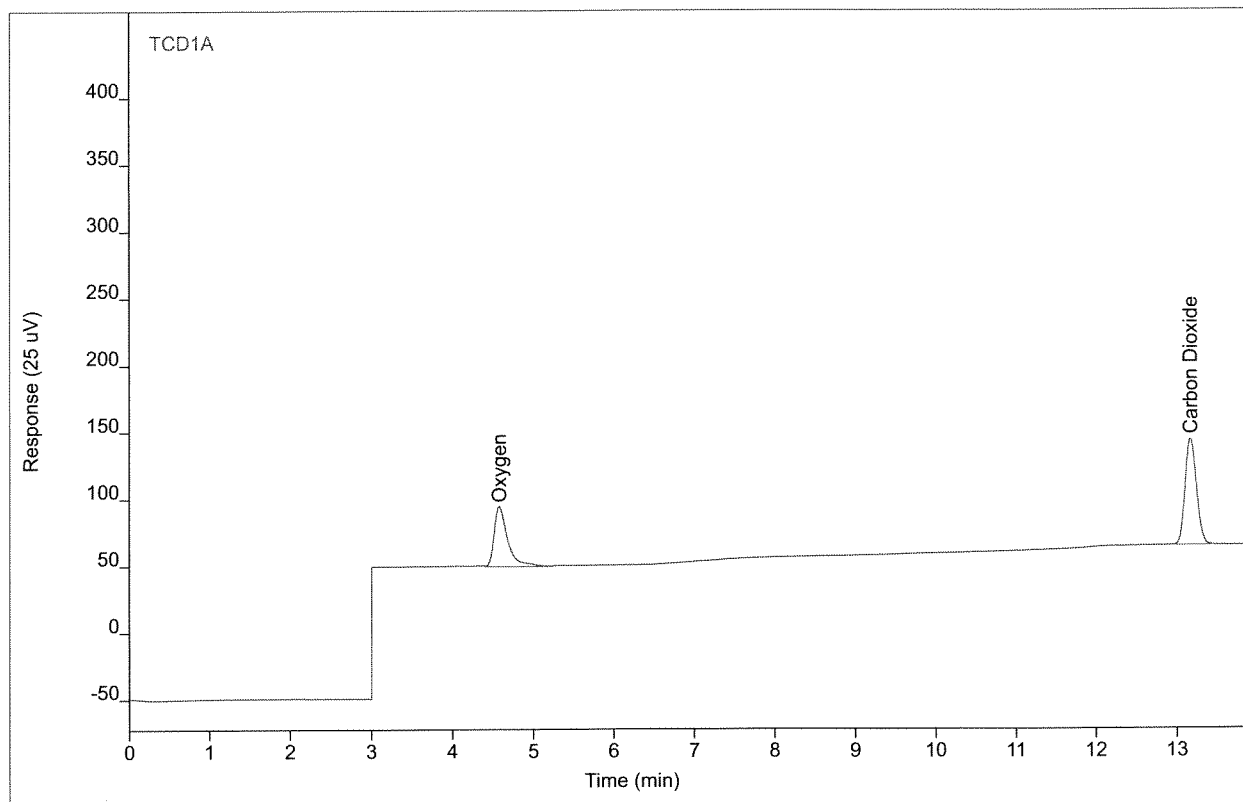
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Oxygen	BB	4.59	521.822	44.5866	1.42175	1	1.42175	%
Carbon Dioxide	BB	13.17	780.639	79.5744	1.41205	1	1.41205	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG2 ENV(1=1272.08,2=219.9)
Sequence Name BETTYP338 ver.3
Data File 009F1303.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/9/2016 2:29 AM
File Modified 3/10/2016 1:45 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 3 of 3
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 3/10/2016 10:02 AM
Printed 3/10/2016 2:39 PM



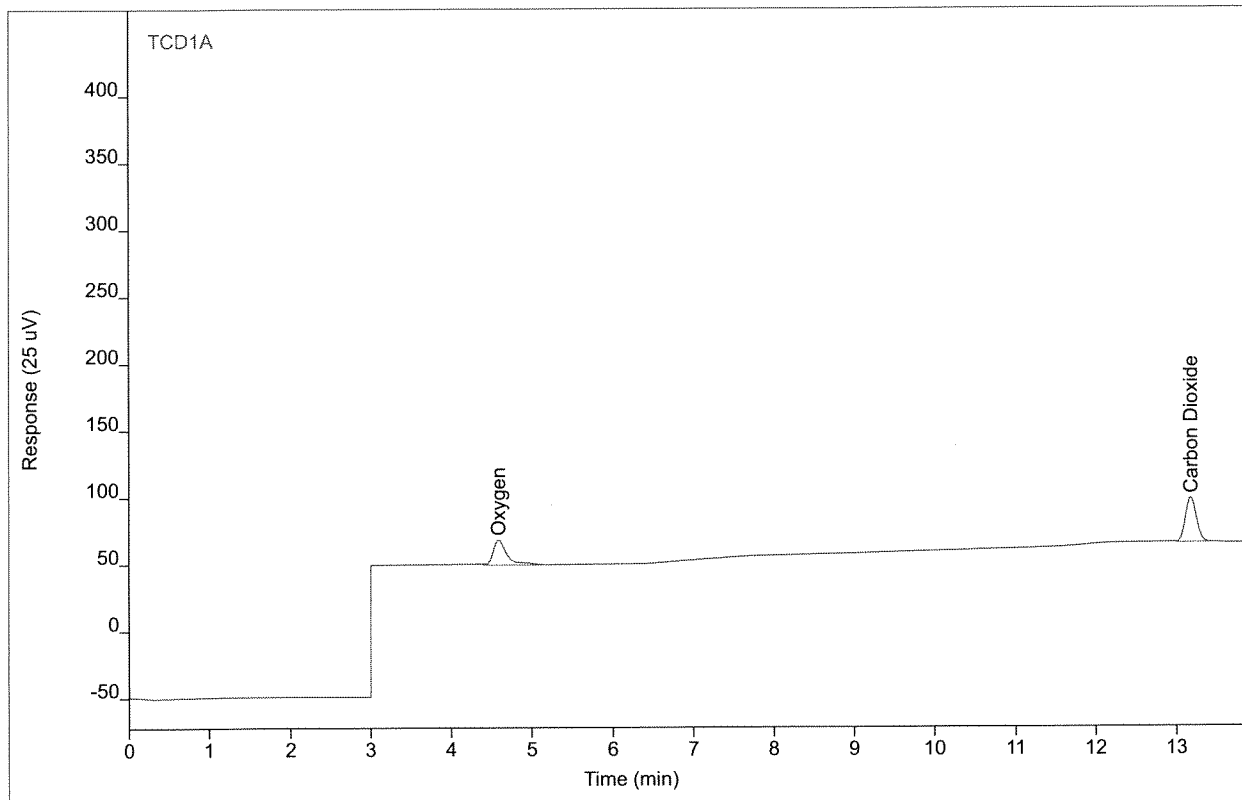
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Oxygen	BB	4.59	519.673	44.9618	1.41541	1	1.41541	%
Carbon Dioxide	BB	13.17	777.539	79.5533	1.40609	1	1.40609	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG1 ENV(1=3392.23,2=219.9)
Sequence Name BETTYP338 ver.3
Data File 009F1701.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/9/2016 9:57 AM
File Modified 3/10/2016 1:46 PM
Instrument Betty
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 1 of 3
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 3/10/2016 10:02 AM
Printed 3/10/2016 2:39 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Oxygen	MM R	4.59	220.948	18.8062	0.53518	1	0.53518	%
Carbon Dioxide	BB	13.19	323.812	33.2633	0.53544	1	0.53544	%

Analyst Peak Integration Comments

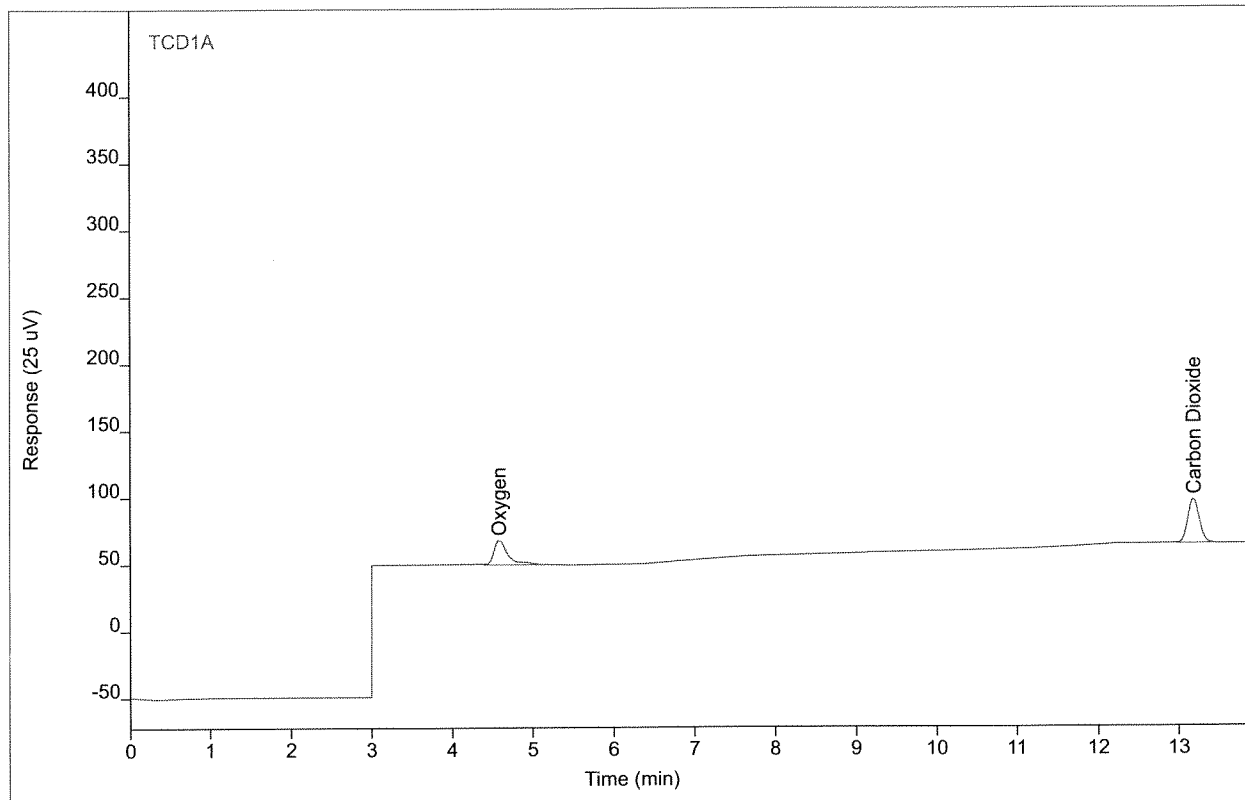
11:15:19 03/09/16 Justin Guenzler II-Baseline

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG1 ENV(1=3392.23,2=219.9)
Sequence Name BETTYP338 ver.3
Data File 009F1702.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/9/2016 10:21 AM
File Modified 3/10/2016 1:46 PM
Instrument Betty
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 2 of 3
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 3/10/2016 10:02 AM
Printed 3/10/2016 2:39 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Oxygen	MM R	4.59	219.311	18.7047	0.53122	1	0.53122	%
Carbon Dioxide	BB	13.19	321.107	33.0732	0.53096	1	0.53096	%

Analyst Peak Integration Comments

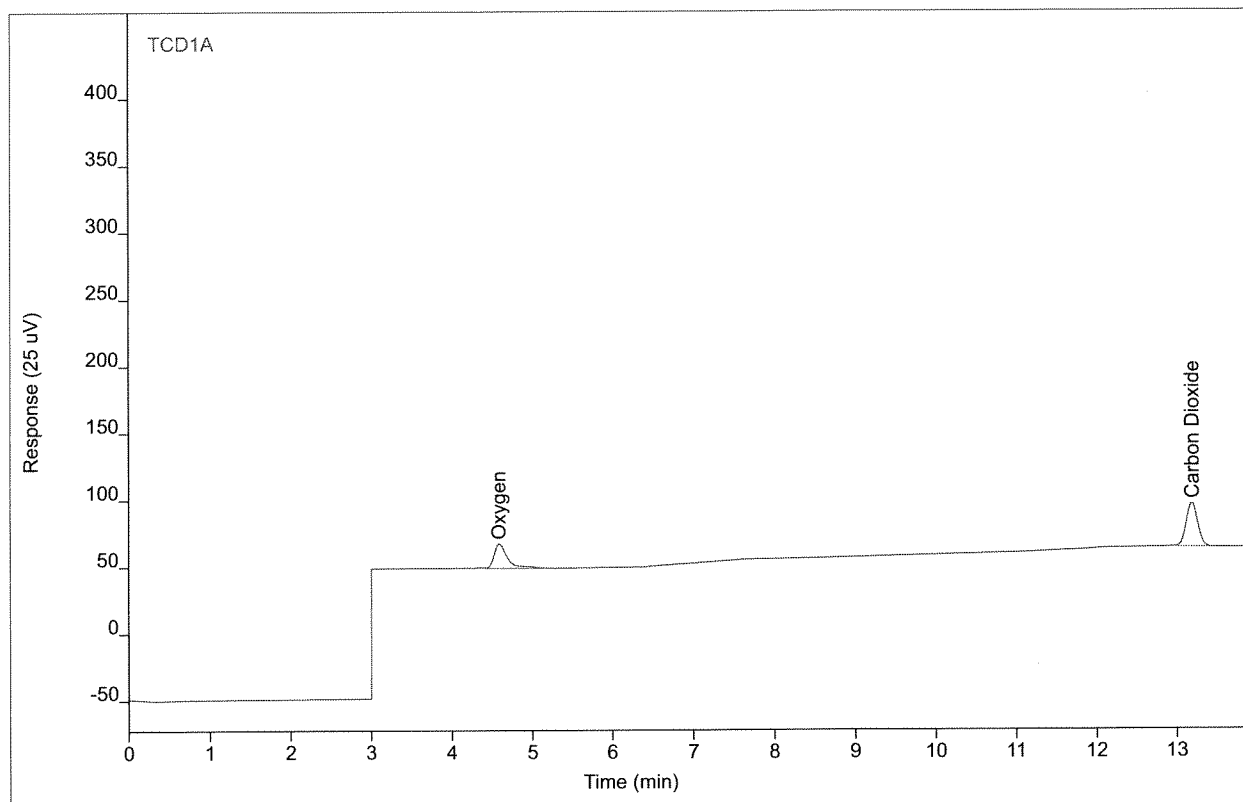
11:16:01 03/09/16 Justin Guenzler II-Baseline

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG1 ENV(1=3392.23,2=219.9)
Sequence Name BETTYP338 ver.3
Data File 009F1703.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/9/2016 10:44 AM
File Modified 3/10/2016 1:46 PM
Instrument Betty
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 3 of 3
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 3/10/2016 10:02 AM
Printed 3/10/2016 2:39 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Oxygen	MM R	4.58	215.514	18.5604	0.52202	1	0.52202	%
Carbon Dioxide	BB	13.19	319.110	32.6769	0.52766	1	0.52766	%

Analyst Peak Integration Comments

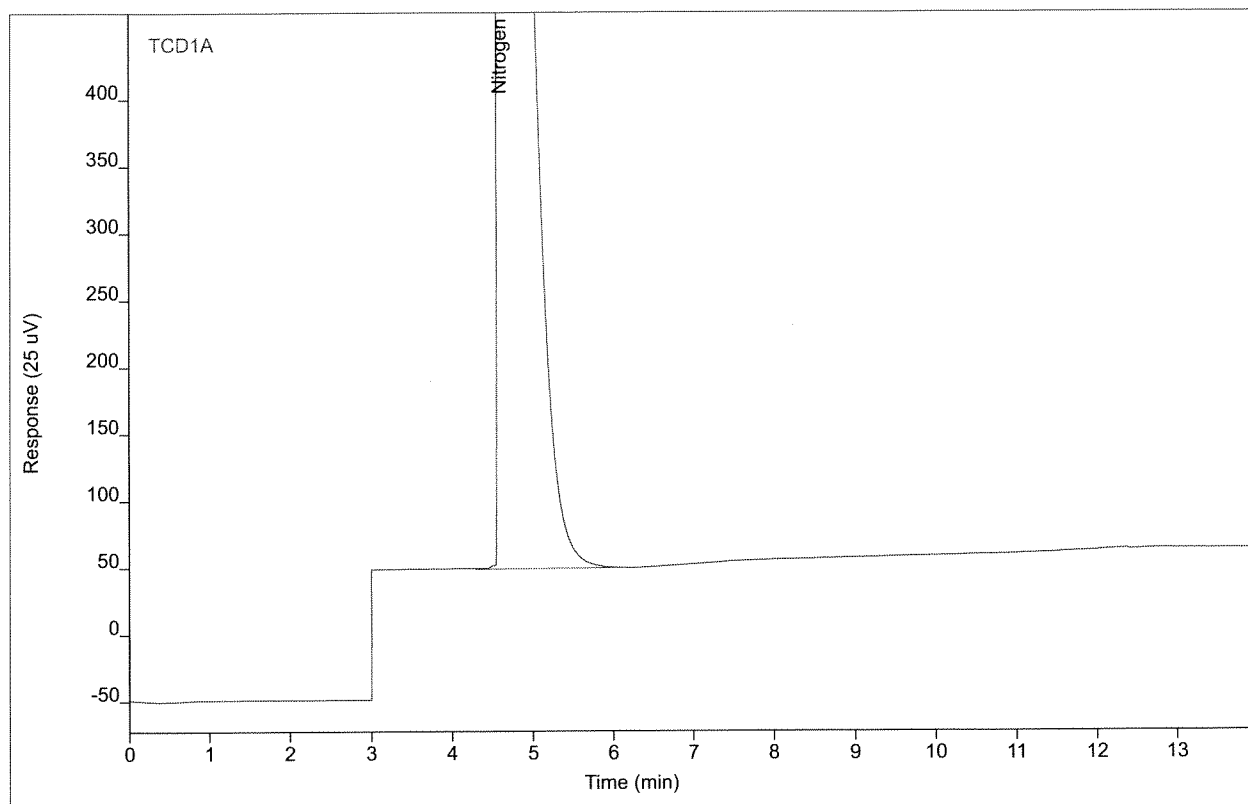
11:16:42 03/09/16 Justin Guenzler II-Baseline

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG22 ENV(1=0,5=450)
Sequence Name BETTYP338 ver.3
Data File 009F1802.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/9/2016 11:31 AM
File Modified 3/10/2016 2:29 PM
Instrument Betty
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 2 of 4
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 3/10/2016 10:02 AM
Printed 3/10/2016 2:39 PM



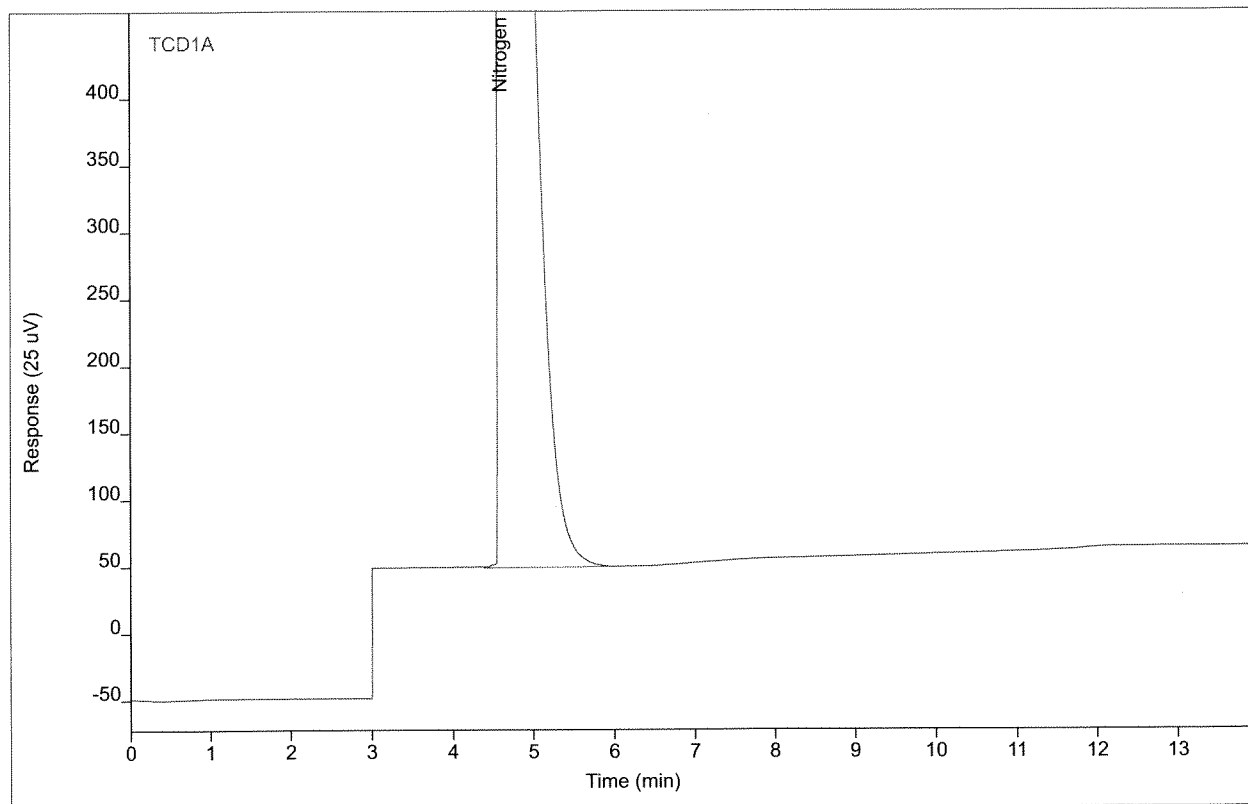
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Nitrogen	BB	4.60	34921.3	1683.94	91.0497	1	91.0497	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG22 ENV(1=0,5=450)
Sequence Name BETTYP338 ver.3
Data File 009F1803.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/9/2016 11:54 AM
File Modified 3/10/2016 2:29 PM
Instrument Betty
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 3 of 4
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 3/10/2016 10:02 AM
Printed 3/10/2016 2:39 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Nitrogen	MM	4.60	34690.7	1678.97	90.4477	1	90.4477	%

Analyst Peak Integration Comments

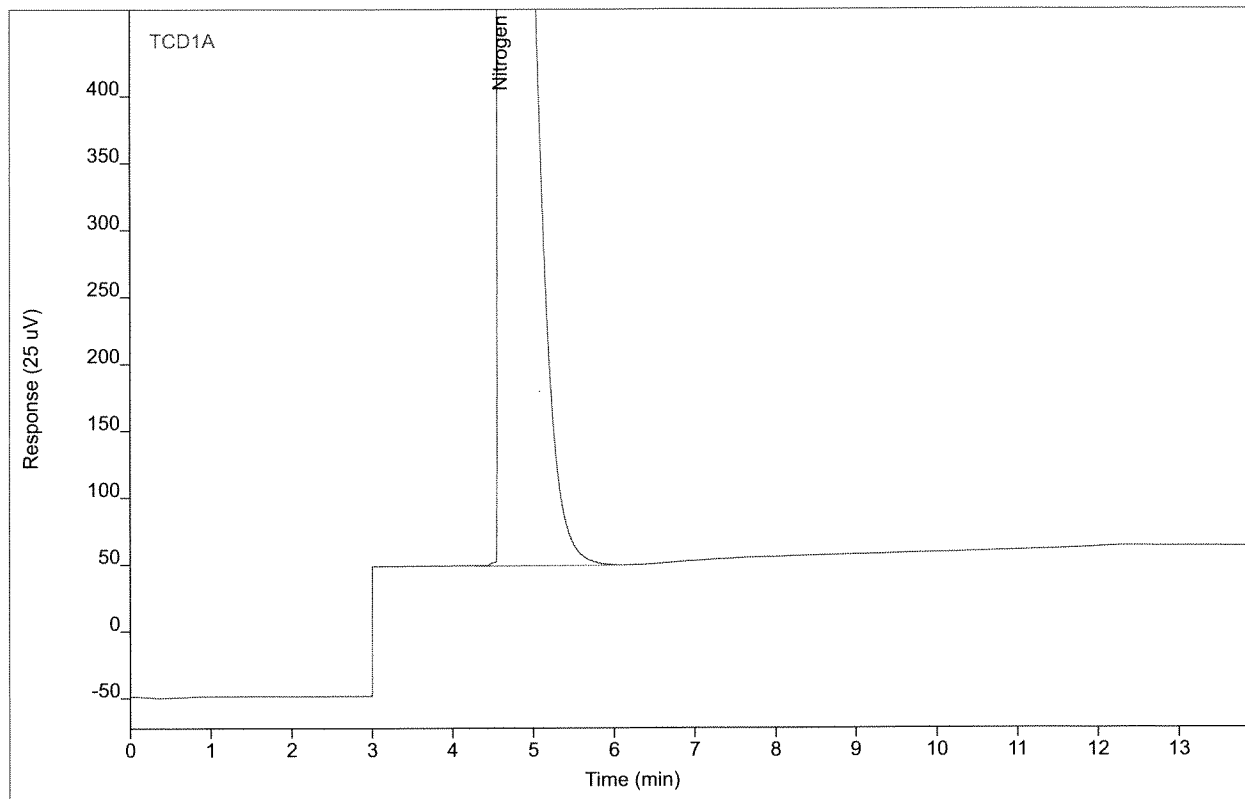
12:31:42 03/09/16 Nicholas Traversa II-Baseline
14:28:45 03/10/16 Nicholas Traversa II-Baseline

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG22 ENV(1=0,5=450)
Sequence Name BETTYP338 ver.3
Data File 009F1804.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/9/2016 12:18 PM
File Modified 3/10/2016 2:29 PM
Instrument Betty
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 4 of 4
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 3/10/2016 10:02 AM
Printed 3/10/2016 2:39 PM



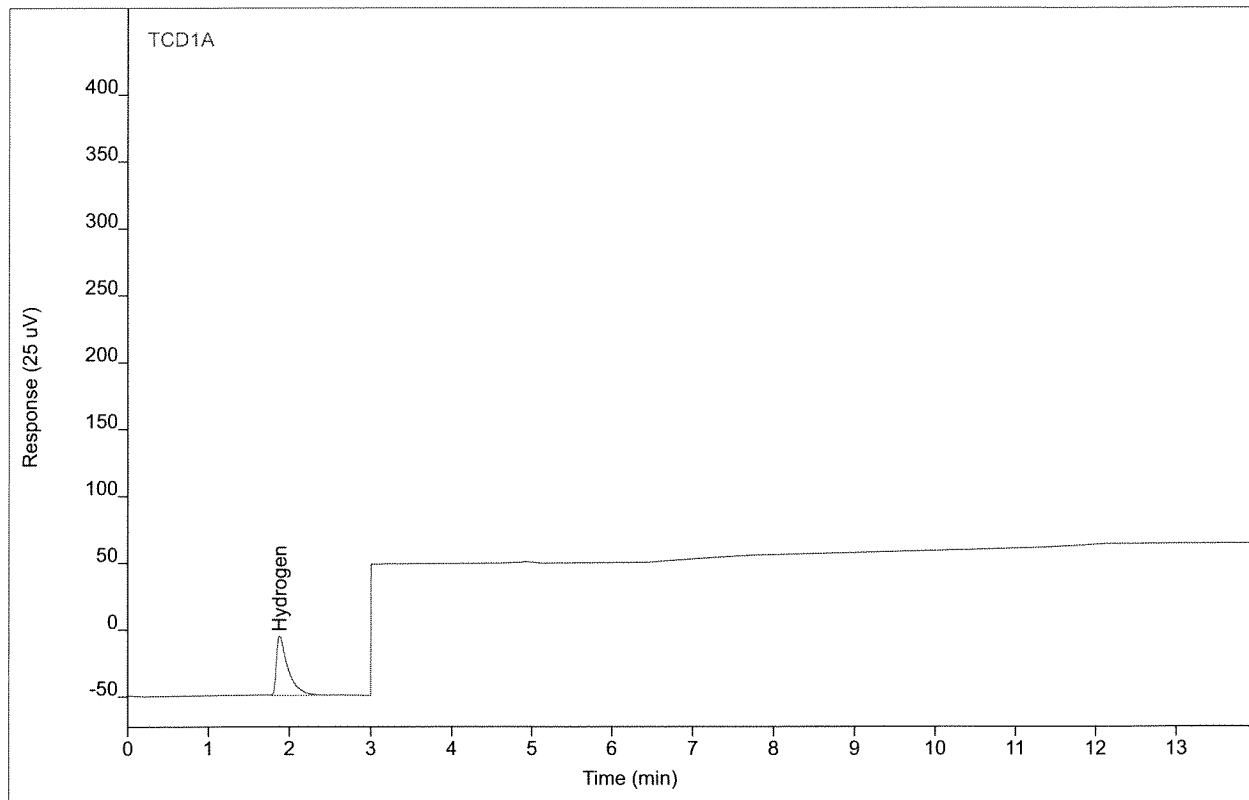
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Nitrogen	VB	4.60	34948.4	1686.87	91.1206	1	91.1206	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG29 ENV(1=706.66,6=396.04)
Sequence Name BETTYP338 ver.3
Data File 009F1903.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/9/2016 1:28 PM
File Modified 3/10/2016 1:46 PM
Instrument Betty
Operator Justin Guenzler

Sample Type
Vial Number
Injection Volume
Injection
Acquisition Method
Analysis Method
Method Modified
Printed
Calibration
Vial 9
250
3 of 4
GC142P133_CAL.M
BETTYP338_FGA.M
3/10/2016 10:02 AM
3/10/2016 2:39 PM



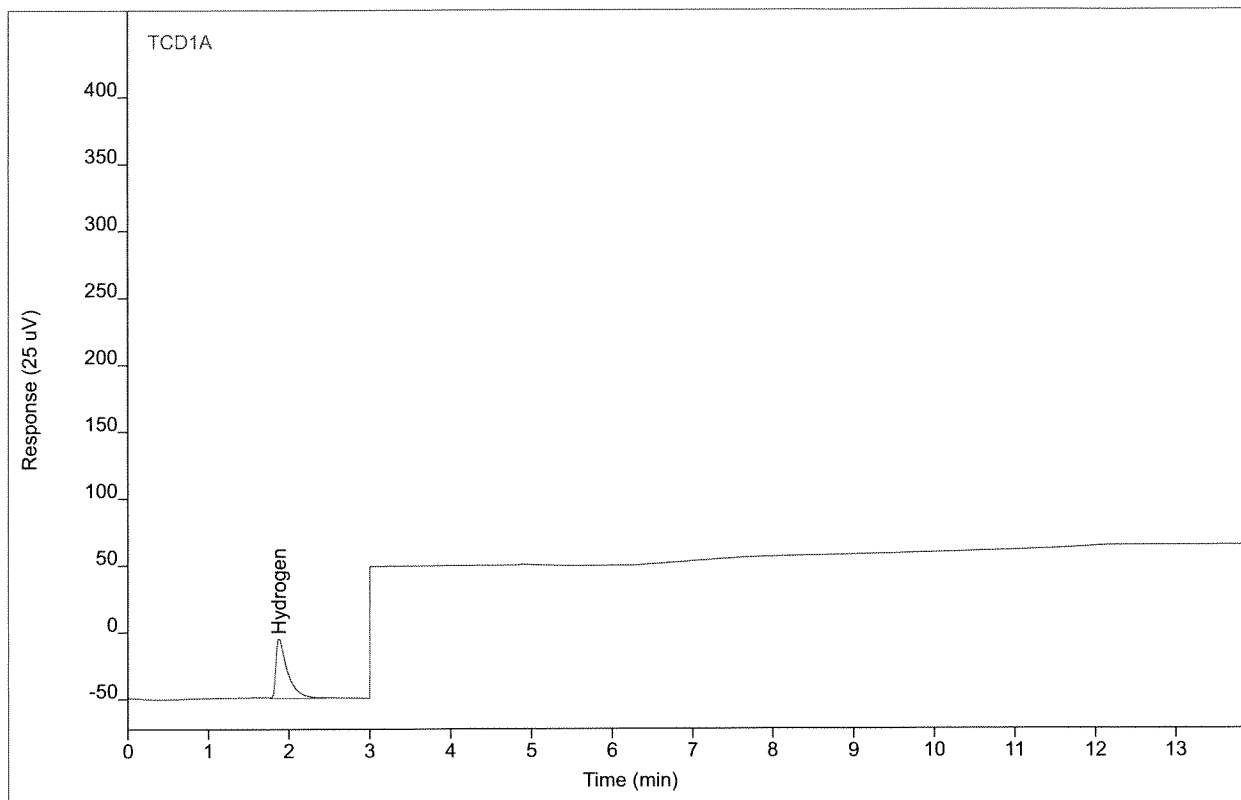
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	BB	1.88	437.560	44.7558	30.3235	1	30.3235	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG29 ENV(1=706.66,6=396.04)
Sequence Name BETTYP338 ver.3
Data File 009F1904.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/9/2016 1:52 PM
File Modified 3/10/2016 1:47 PM
Instrument Betty
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 4 of 4
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 3/10/2016 10:02 AM
Printed 3/10/2016 2:39 PM



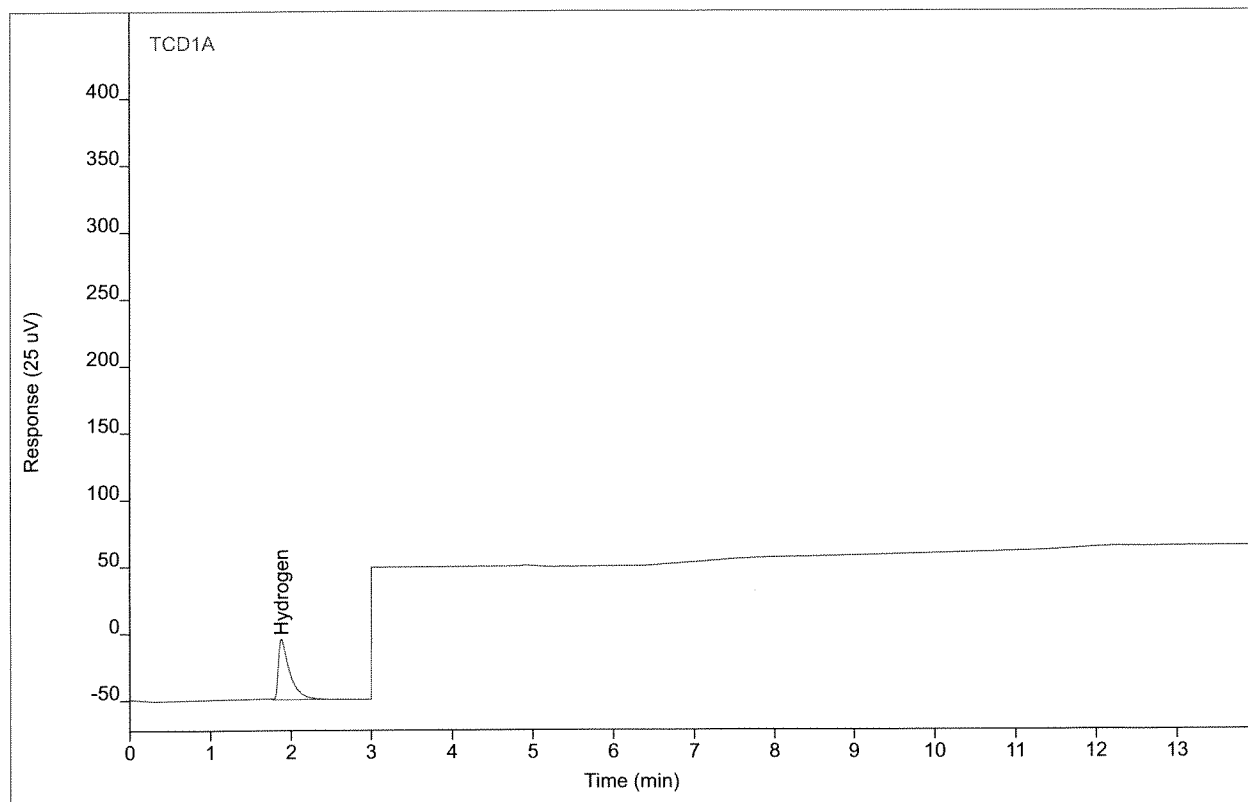
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	BB	1.88	441.824	44.9430	30.6195	1	30.6195	%

Chromatogram Report

Enthalpy Analytical

Sample Name BettyP300 #FG29 ENV(1=706.66,6=396.04)
Sequence Name BETTYP338 ver.3
Data File 009F2001.D
File Location GC/2016/Betty/Quarter 1
Injection Date 3/9/2016 2:16 PM
File Modified 3/10/2016 1:47 PM
Instrument Betty
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 9
Injection Volume 250
Injection 1 of 1
Acquisition Method GC142P133_CAL.M
Analysis Method BETTYP338_FGA.M
Method Modified 3/10/2016 10:02 AM
Printed 3/10/2016 2:39 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen	BB	1.88	442.603	45.1298	30.6735	1	30.6735	%



CERTIFICATE OF ANALYSIS
Grade of Product: PRIMARY STANDARD

Airgas USA, LLC

4822 Industry Lane

Durham, NC 27713

(919) 544-3772

www.airgas.com

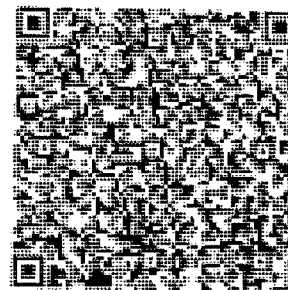
Part Number:	X03HE80P15A01P0	Reference Number:	132-400547915-1
Cylinder Number:	CC159401.	Cylinder Volume:	132.9 CF
Laboratory:	NWS - Durham - NC	Cylinder Pressure:	2014 PSIG
Analysis Date:	Jun 02, 2015	Valve Outlet:	590
Lot Number:	132-400547915-1		

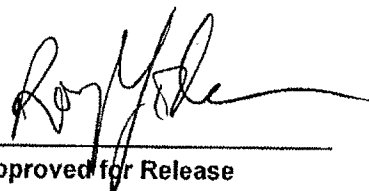
Expiration Date: Jun 02, 2018

Primary Standard Gas Mixtures are traceable to N.I.S.T. weights and/or N.I.S.T. Gas Mixture reference materials.

ANALYTICAL RESULTS

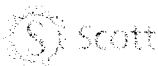
Component	Req Conc	Actual Concentration (Mole %)	Analytical Uncertainty
CARBON DIOXIDE	10.00 %	9.988 %	+/- 0.02% abs
OXYGEN	10.00 %	10.00 %	+/- 0.02% abs
HELIUM	Balance		




Approved for Release

E-489

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16-323A

**AIR LIQUIDE**Air Liquide America
Specialty Gases LLC**CERTIFIED MASTER CLASS**
Single-Certified Calibration Standard

6141 EASTON ROAD, BLDG 1, PLUMSTEADVILLE, PA 18949-0310

Phone: 800-331-4953 Fax: 215-766-7226

CERTIFICATE OF ACCURACY: Certified Master Class Calibration Standard**Product Information**Document #: 55814398-001
Item No.: MC500418-P-44
P.O. No.: 06181401Cylinder Number: NKA197
Cylinder Size: 44
Certification Date: 30Jun2014
Expiration Date: 01Jul2017
Lot Number: PLU0288940**Customer**ENTHALPY ANALYTICAL, INC.
GREG TATE
800-1 CAPITOLA DRIVE
DURHAM, NC 27703
US**CERTIFIED CONCENTRATION****Component Name****Concentration
(Moles)****Accuracy
(+/-%)**CARBON MONOXIDE
HYDROGEN
METHANE
NITROGEN
HELIUM10.0 %
8.2 %
8.0 %
10.0 %
BALANCE2
2
2
2**TRACEABILITY****Traceable To**

Scott Reference Standard

APPROVED BY:

LAMONT SHIELDS

DATE:

7.3.14

SPECIFICATIONS

Component Name	Requested Concentration (Moles)		Certified Concentration (Moles)		Blend Tolerance Result (+/- %)	Certified Accuracy Result (+/- %)
CARBON MONOXIDE	10.	%	10.0	%	.0	2.00
HYDROGEN	8.	%	8.2	%	2.5	2.00
METHANE	8.	%	8.0	%	.0	2.00
NITROGEN	10.	%	10.0	%	.0	2.00
HELIUM		BAL		BAL		

TRACEABILITY

Traceable To

Scott Reference Standard

PHYSICAL PROPERTIES

Cylinder Size: 44

Pressure: 2015 PSIG
Expiration Date: 01Jul2017

Valve Connection: CGA 350

SPECIAL HANDLING INSTRUCTIONS

Do not use or store cylinder at or below the stated dew point temperature. Possible condensation of heavier components could result. In the event the cylinder has been exposed to temperatures at or below the dew point, place cylinder in heated area for 24 hours and then roll cylinder for 15 minutes to re-mix.

Use of calibration standards at or below dew point temperature may result in calibration error.

Issue Date: 12-08-2014

To:

Attn:

Praxair Order Number:
Customer Order Number:
Customer Reference
Number:

Product Lot Number: 1124002724A1
Product Part Number: ME 5.0RS-G

CERTIFICATE OF ANALYSIS

(Methane 99.999%, Research)

Cylinder Serial Number	Analytes	Specification	
RA071907	Methane	99.999	%
RA072283	Ethane	ND < 0.1	ppm
*RA072293	Nitrogen	ND < 0.1	ppm
RA072328	Oxygen	0.1	ppm
	Moisture	0.3	ppm
	Other Hydrocarbons	ND < 0.1	ppm

Cylinder Style: G
Cylinder Pressure @70°F (21°C): 2000 PSI
Cylinder Volume: 40 Cubic Feet

Valve Outlet Connection: 350 CGA
Filling Method: Pressure

Approved Signer: _____

Patrick Philpot

This analysis of the product described herein was prepared by Praxair Distribution using instruments whose calibration is certified using Praxair Reference Materials. Praxair Reference Materials are prepared either by weights traceable to the National Institute of Standards and Technology (NIST), Measurement Canada or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted

*Key to Analytical Principle:

A. Flame Ionization with Methanizer	F. Gas Chromatography with Helium Ionization Detector	K. Gas Chromatography with Ultrasonic Detector	P. Electrochemical
B. Gas Chromatography with Discharge Ionization Detector	G. Gas Chromatography with Methanizer Carbonizer	L. Gravimetric Methods	Q. Total Hydrocarbon Analyzer
C. Gas Chromatography with Electrolytic Conductivity Detector	H. Gas Chromatography with Photoionization Detector	M. Infrared - FTIR or NDIR	R. Wet Chemical
D. Gas Chromatography with Flame Ionization Detector	I. Gas Chromatography with Reduction Gas Analyzer	N. Mass Spectrometry - MS or GC/MS	S. Detector Tube
E. Gas Chromatography with Flame Photometric Detector	J. Gas Chromatography with Thermal Conductivity Detector	O. Paramagnetic	T. Odor

IMPORTANT

The information contained herein has been prepared at your request by personnel within Praxair Distribution. While we believe the information is accurate within the limits of the analytical methods employed and is complete to the extent of the specific analyses performed, we make no warranty or representation as to the suitability of the use of the information for any particular purpose. The information is offered with the understanding that any use of the information is at the sole discretion and risk of the user. In no event shall liability of Praxair Distribution arising out of the use of the information contained herein exceed the fee established for providing such information.

=====

6890 GC METHOD

=====

OVEN

Initial temp: 40 C (On)	Maximum temp: 250 C
Initial time: 6.00 min	Equilibration time: 0.50 min
Ramps:	
# Rate Final temp Final time	CRYO (N2)
1 30.00 220 2.00	Cryo: Off
2 0 (Off)	Cryo fault: On
Post temp: 40 C	Cryo timeout: 40.00 min (On)
Post time: 0.00 min	Quick cryo cool: Off
Run time: 14.00 min	Ambient temp: 30 C

FRONT INLET (SPLIT/SPLITLESS)

Mode: Splitless
 Initial temp: 200 C (On)
 Pressure: 60.0 psi (On)
 Purge flow: 0.0 mL/min
 Purge time: 0.00 min
 Total flow: 12.3 mL/min
 Gas saver: Off
 Gas type: Helium

BACK INLET (SPLIT/SPLITLESS)

Mode: Split
 Initial temp: 200 C (On)
 Pressure: 11.6 psi (On)
 Split ratio: 5:1
 Split flow: 12.3 mL/min
 Total flow: 17.6 mL/min
 Gas saver: Off
 Gas type: Helium

COLUMN 1

Packed Column
 Model Number: 19808
 Description: Rt-ShinCarbon 2m x 1mm I
 Max temperature: 250 C
 Mode: constant pressure
 Pressure: 60.0 psi
 Inlet: Front Inlet
 Outlet: Front Detector
 Outlet pressure: ambient

COLUMN 2

Capillary Column
 Model Number: 10198
 Description: Rtx-1 30m x 0.32mm x 4um
 Max temperature: 250 C
 Nominal length: 30.0 m
 Nominal diameter: 320.00 um
 Nominal film thickness: 4.00 um
 Mode: constant flow
 Initial flow: 2.5 mL/min
 Nominal init pressure: 11.6 psi
 Average velocity: 39 cm/sec
 Inlet: Back Inlet
 Outlet: (other)
 Outlet pressure: ambient

FRONT DETECTOR (TCD)

Temperature: 275 C (On)
 Reference flow: 20.0 mL/min (On)
 Mode: Constant makeup flow
 Makeup flow: 10.0 mL/min (On)
 Makeup Gas Type: Helium
 Filament: On
 Negative polarity: On

BACK DETECTOR (FID)

Temperature: 250 C (On)
 Hydrogen flow: 60.0 mL/min (On)
 Air flow: 450.0 mL/min (On)
 Mode: Constant makeup flow
 Makeup flow: 40.0 mL/min (On)
 Makeup Gas Type: Nitrogen
 Flame: On
 Electrometer: On
 Lit offset: 2.0

SIGNAL 1

Data rate: 20 Hz
 Type: front detector
 Save Data: On

SIGNAL 2

Data rate: 20 Hz
 Type: back detector
 Save Data: On

THERMAL AUX 1

Use: Valve Box Heater
 Initial temp: 130 C (On)

VALVES

Valve 1 Gas Sampling
 Loop Volume: 0.250 mL

POST RUN

Post Time: 0.00 min

Modified on: 5/5/2014 at 7:51:02 AM
Load Time: 0.10 min
Inject Time: 0.50 min
Inlet: Front Inlet
Valve 2 Gas Sampling
Loop Volume: 0.250 mL
Load Time: 0.10 min
Inject Time: 0.50 min
Inlet: Front Inlet

TIME TABLE

Time(min)	Parameter & Setpoint	
3.00	Front Detector Polarity:	Off

**This Is The Last Page
Of This Report.**

APPENDIX F

Reference Method Monitors Data

Model 3 Thermal Combustor Outlet Stack
Carbon Monoxide
Concentration

Condition- Run <u>Number</u>	Measured <u>(ppm)</u>	Adjusted <u>(ppm*)</u>
I-1	0.25	0.28
I-2	0.12	0.17
I-3	0.27	0.26

*Calculated according to equation 7E-5.

Model 3 Thermal Combustor Outlet Stack
Total Hydrocarbons
Concentration

Condition- Run <u>Number</u>	Measured <u>(wet ppm)</u>
I-1	0.08
I-2	0.07
I-3	0.08

Model 3 Thermal Combustor Outlet Stack
Calibration Summary
Carbon Monoxide

Condition- Run Number	CO Calibration			CO Zero			Actual CO Calibration Value (ppm)	Actual CO Zero Value (ppm)
	Initial Drift Check (ppm)	Final Drift Check (ppm)	Average (ppm)	Initial Drift Check (ppm)	Final Drift Check (ppm)	Average (ppm)		
I-1	5.12	5.09	5.11	0.04	-0.12	-0.04	5.06	0.00
I-2	5.09	5.01	5.05	-0.12	0.02	-0.05	5.06	0.00
I-3	5.01	5.08	5.05	0.02	0.00	0.01	5.06	0.00

Model 3 Thermal Combustor Outlet Stack
System Calibration Bias and Drift Data
Carbon Monoxide
Calibration Span = 9.86 ppm

Condition- Run Number	Initial Response (ppm)	CO Calibration				Initial Response (ppm)	CO Zero				Analyzer Calibration Response Mid Level (ppm)	Analyzer Calibration Response Zero Level (ppm)
		Initial Bias (%*)	Final Response (ppm)	Final Bias (%*)	Drift (%*)		Initial Bias (%*)	Final Response (ppm)	Final Bias (%*)	Drift (%*)		
I-1	5.12	0.10	5.09	0.20	0.30	0.04	0.61	-0.12	1.01	1.62	5.11	-0.02
I-2	5.09	0.20	5.01	1.01	0.81	-0.12	1.01	0.02	0.41	1.42	5.11	-0.02
I-3	5.01	1.01	5.08	0.30	0.71	0.02	0.41	0.00	0.20	0.20	5.11	-0.02

* PERCENT OF CALIBRATION SPAN

Model 3 Thermal Combustor Outlet Stack
Analyzer Calibration Data
Carbon Monoxide

Date 09/21/16

Condition I

Calibration Span = 9.86 ppm

<u>Gas Range</u>	<u>Actual Calibration Value (ppm)</u>	<u>Analyzer Calibration Response (ppm)</u>	<u>Absolute Difference (ppm)</u>	<u>Difference (%*)</u>
Low	0.00	-0.02	0.02	0.20
Mid	5.06	5.11	0.05	0.51
High	9.86	9.91	0.05	0.51

* Percent of calibration span

Model 3 Thermal Combustor Outlet Stack
Analyzer Calibration Data
Total Hydrocarbons

Date 09/21/16

Condition I

Span = 10 ppm

<u>Gas Range</u>	<u>Actual Calibration Value (ppm)</u>	<u>Analyzer Calibration Response (ppm)</u>	<u>Absolute Difference (ppm)</u>	<u>Difference (%*)</u>
Zero	0.00	0.01	0.01	----
Low	3.13	3.13	0.00	0.00
Mid	5.01	5.03	0.02	0.40
High	8.48	8.49	0.01	----

* Percent of span gas

filename 9/21/2016 7:02:59
 testby1 METCO Environmental
 testby2 Baton Rouge Operations
 testby3 9
 testby4 Jeremiah Johnson
 testfor1 COMM Engineering
 testfor2 *
 testfor3 Unit 3
 testfor4 Lafayette, LA

CI

name	CO	THC				
sn	208845	1125748714				
offset	0.00	0.00				
fullscale	10.00	10.00				
train	1.00	1.00				
gastype	co 10	thc 25a				
dsg1	9/21/2016 7:03:15	0.68	1.23	EB0070656/cg1	N2	0.00 0.00
dsg1	9/21/2016 7:03:30	0.68	1.32	EB0070656/cg1	N2	0.00 0.00
dsg1	9/21/2016 7:03:45	0.78	1.12	EB0070656/cg1	N2	0.00 0.00
dsg1	9/21/2016 7:04:00	2.13	-0.05	EB0070656/cg1	N2	0.00 0.00
dsg1	9/21/2016 7:04:15	2.70	-0.10	EB0070656/cg1	N2	0.00 0.00
dsg1	9/21/2016 7:04:30	1.44	-0.11	EB0070656/cg1	N2	0.00 0.00
dsg1	9/21/2016 7:04:45	0.75	-0.11	EB0070656/cg1	N2	0.00 0.00
dsg1	9/21/2016 7:05:00	0.64	-0.11	EB0070656/cg1	N2	0.00 0.00
dsg1	9/21/2016 7:05:15	0.62	-0.11	EB0070656/cg1	N2	0.00 0.00
dsg1	9/21/2016 7:05:30	0.59	-0.10	EB0070656/cg1	N2	0.00 0.00
dsg1	9/21/2016 7:05:45	0.32	0.01	EB0070656/cg1	N2	0.00 0.00
dsg1	9/21/2016 7:06:00	0.02	0.00	EB0070656/cg1	N2	0.00 0.00
dsg1	9/21/2016 7:06:15	-0.02	0.01	EB0070656/cg1	N2	0.00 0.00
dsg1	9/21/2016 7:06:30	-0.02	0.00	EB0070656/cg1	N2	0.00 0.00
o2ezero1	9/21/2016 7:06:15	-0.02	0.01	EB0070656/cg1	N2	0.00 0.00
co2ezero1	9/21/2016 7:06:15	-0.02	0.01	EB0070656/cg1	N2	0.00 0.00
coezero1	9/21/2016 7:06:15	-0.02	0.01	EB0070656/cg1	N2	0.00 0.00
thcezero1	9/21/2016 7:06:15	-0.02	0.01	EB0070656/cg1	N2	0.00 0.00
dsg3	9/21/2016 7:06:45	-0.02	0.00	BLM000616/cg3	CO	9.86 0.00
dsg3	9/21/2016 7:07:00	-0.01	0.14	BLM000616/cg3	CO	9.86 0.00
dsg3	9/21/2016 7:07:15	-0.01	1.16	BLM000616/cg3	CO	9.86 0.00
dsg3	9/21/2016 7:07:30	0.04	1.39	BLM000616/cg3	CO	9.86 0.00
dsg3	9/21/2016 7:07:45	0.07	1.32	BLM000616/cg3	CO	9.86 0.00
dsg3	9/21/2016 7:08:00	0.09	1.42	BLM000616/cg3	CO	9.86 0.00
dsg3	9/21/2016 7:08:30	0.09	1.24	BLM000616/cg3	CO	9.86 0.00
dsg3	9/21/2016 7:08:45	0.10	1.36	BLM000616/cg3	CO	9.86 0.00
dsg3	9/21/2016 7:09:00	0.12	0.25	BLM000616/cg3	CO	9.86 0.00
dsg3	9/21/2016 7:09:15	1.51	0.00	BLM000616/cg3	CO	9.86 0.00
dsg3	9/21/2016 7:09:30	5.52	0.00	BLM000616/cg3	CO	9.86 0.00
dsg3	9/21/2016 7:09:45	7.98	0.00	BLM000616/cg3	CO	9.86 0.00
dsg3	9/21/2016 7:10:00	8.64	0.00	BLM000616/cg3	CO	9.86 0.00
dsg3	9/21/2016 7:10:15	8.71	0.00	BLM000616/cg3	CO	9.86 0.00
dsg3	9/21/2016 7:10:30	8.75	0.00	BLM000616/cg3	CO	9.86 0.00
dsg3	9/21/2016 7:10:45	9.09	0.00	BLM000616/cg3	CO	9.86 0.00
dsg3	9/21/2016 7:11:00	9.91	-0.01	BLM000616/cg3	CO	9.86 0.00
dsg3	9/21/2016 7:11:15	9.90	-0.02	BLM000616/cg3	CO	9.86 0.00
dsg3	9/21/2016 7:11:30	9.91	-0.02	BLM000616/cg3	CO	9.86 0.00
dsg3	9/21/2016 7:11:45	9.92	-0.02	BLM000616/cg3	CO	9.86 0.00
cohigh1	9/21/2016 7:11:30	9.91	-0.02	BLM000616/cg3	CO	9.86 0.00
dsg10	9/21/2016 7:12:00	9.94	-0.02	AAL021715/cg10	CO2	20.00 O2 19.90
dsg10	9/21/2016 7:12:15	9.91	0.08	AAL021715/cg10	CO2	20.00 O2 19.90
dsg10	9/21/2016 7:12:30	9.73	0.26	AAL021715/cg10	CO2	20.00 O2 19.90
dsg10	9/21/2016 7:12:45	7.61	0.29	AAL021715/cg10	CO2	20.00 O2 19.90
dsg10	9/21/2016 7:13:00	2.85	0.30	AAL021715/cg10	CO2	20.00 O2 19.90
dsg10	9/21/2016 7:13:15	0.39	0.29	AAL021715/cg10	CO2	20.00 O2 19.90
dsg10	9/21/2016 7:13:30	-0.53	0.30	AAL021715/cg10	CO2	20.00 O2 19.90
dsg10	9/21/2016 7:13:45	-0.53	0.30	AAL021715/cg10	CO2	20.00 O2 19.90
dsg10	9/21/2016 7:14:00	-0.53	0.30	AAL021715/cg10	CO2	20.00 O2 19.90
dsg10	9/21/2016 7:14:15	-0.53	0.32	AAL021715/cg10	CO2	20.00 O2 19.90
dsg10	9/21/2016 7:14:30	-0.53	0.31	AAL021715/cg10	CO2	20.00 O2 19.90
dsg10	9/21/2016 7:14:45	-0.53	0.32	AAL021715/cg10	CO2	20.00 O2 19.90
dsg10	9/21/2016 7:15:00	-0.53	0.31	AAL021715/cg10	CO2	20.00 O2 19.90
dsg10	9/21/2016 7:15:15	-0.53	0.30	AAL021715/cg10	CO2	20.00 O2 19.90
o2high1	9/21/2016 7:15:15	-0.53	0.30	AAL021715/cg10	CO2	20.00 O2 19.90
co2high1	9/21/2016 7:15:15	-0.53	0.30	AAL021715/cg10	CO2	20.00 O2 19.90
dsg4	9/21/2016 7:15:30	-0.53	0.30	ALM018547/cg4	CO	5.06 0.00
dsg4	9/21/2016 7:15:45	-0.53	0.30	ALM018547/cg4	CO	5.06 0.00
dsg4	9/21/2016 7:16:00	-0.53	0.54	ALM018547/cg4	CO	5.06 0.00
dsg4	9/21/2016 7:16:15	-0.48	0.09	ALM018547/cg4	CO	5.06 0.00
dsg4	9/21/2016 7:16:30	1.03	0.00	ALM018547/cg4	CO	5.06 0.00
dsg4	9/21/2016 7:16:45	3.22	0.00	ALM018547/cg4	CO	5.06 0.00
dsg4	9/21/2016 7:17:00	4.67	-0.01	ALM018547/cg4	CO	5.06 0.00
dsg4	9/21/2016 7:17:15	5.05	-0.02	ALM018547/cg4	CO	5.06 0.00
dsg4	9/21/2016 7:17:30	5.10	-0.01	ALM018547/cg4	CO	5.06 0.00

name			CO	THC			
dcg4	9/21/2016	7:17:45	5.11	-0.01 ALM018547/cg4	CO	5.06	0.00
dcg4	9/21/2016	7:18:00	5.08	-0.02 ALM018547/cg4	CO	5.06	0.00
dcg4	9/21/2016	7:18:15	5.09	-0.02 ALM018547/cg4	CO	5.06	0.00
dcg4	9/21/2016	7:18:30	5.11	-0.02 ALM018547/cg4	CO	5.06	0.00
comid1	9/21/2016	7:18:30	5.11	-0.02 ALM018547/cg4	CO	5.06	0.00
dcg9	9/21/2016	7:18:45	5.11	-0.02 EB0080791/cg9	CO2	10.96 O2	11.08
dcg9	9/21/2016	7:19:00	5.10	-0.03 EB0080791/cg9	CO2	10.96 O2	11.08
dcg9	9/21/2016	7:19:15	5.09	0.08 EB0080791/cg9	CO2	10.96 O2	11.08
dcg9	9/21/2016	7:19:30	4.72	0.14 EB0080791/cg9	CO2	10.96 O2	11.08
dcg9	9/21/2016	7:19:45	2.86	0.15 EB0080791/cg9	CO2	10.96 O2	11.08
dcg9	9/21/2016	7:20:00	0.43	0.15 EB0080791/cg9	CO2	10.96 O2	11.08
dcg9	9/21/2016	7:20:15	-0.37	0.17 EB0080791/cg9	CO2	10.96 O2	11.08
dcg9	9/21/2016	7:20:30	-0.47	0.17 EB0080791/cg9	CO2	10.96 O2	11.08
dcg9	9/21/2016	7:20:45	-0.45	0.17 EB0080791/cg9	CO2	10.96 O2	11.08
o2mid1	9/21/2016	7:20:45	-0.45	0.17 EB0080791/cg9	CO2	10.96 O2	11.08
co2mid1	9/21/2016	7:20:45	-0.45	0.17 EB0080791/cg9	CO2	10.96 O2	11.08
dcg11	9/21/2016	7:23:00	0.10	1.06 BLM005063/cg11	THC	3.13	0.00
dcg11	9/21/2016	7:23:15	0.11	1.20 BLM005063/cg11	THC	3.13	0.00
dcg11	9/21/2016	7:23:30	0.10	1.46 BLM005063/cg11	THC	3.13	0.00
dcg11	9/21/2016	7:23:45	0.03	2.97 BLM005063/cg11	THC	3.13	0.00
dcg11	9/21/2016	7:24:00	-0.04	3.07 BLM005063/cg11	THC	3.13	0.00
dcg11	9/21/2016	7:24:15	0.03	3.06 BLM005063/cg11	THC	3.13	0.00
dcg11	9/21/2016	7:24:30	0.14	3.07 BLM005063/cg11	THC	3.13	0.00
dcg11	9/21/2016	7:24:45	0.12	3.08 BLM005063/cg11	THC	3.13	0.00
dcg11	9/21/2016	7:25:00	0.14	3.12 BLM005063/cg11	THC	3.13	0.00
dcg11	9/21/2016	7:25:15	0.16	3.13 BLM005063/cg11	THC	3.13	0.00
dcg11	9/21/2016	7:25:30	0.16	3.13 BLM005063/cg11	THC	3.13	0.00
thclow1	9/21/2016	7:25:30	0.16	3.13 BLM005063/cg11	THC	3.13	0.00
dcg13	9/21/2016	7:27:00	0.16	1.31 ET0010859/cg13	THC	8.48	0.00
dcg13	9/21/2016	7:27:15	0.13	1.29 ET0010859/cg13	THC	8.48	0.00
dcg13	9/21/2016	7:27:30	0.14	1.34 ET0010859/cg13	THC	8.48	0.00
dcg13	9/21/2016	7:27:45	0.15	1.23 ET0010859/cg13	THC	8.48	0.00
dcg13	9/21/2016	7:28:00	0.15	1.31 ET0010859/cg13	THC	8.48	0.00
dcg13	9/21/2016	7:28:15	0.13	1.28 ET0010859/cg13	THC	8.48	0.00
dcg13	9/21/2016	7:28:30	0.13	1.23 ET0010859/cg13	THC	8.48	0.00
dcg13	9/21/2016	7:28:45	0.16	1.20 ET0010859/cg13	THC	8.48	0.00
dcg13	9/21/2016	7:29:00	0.15	1.21 ET0010859/cg13	THC	8.48	0.00
dcg13	9/21/2016	7:29:15	0.16	2.13 ET0010859/cg13	THC	8.48	0.00
dcg13	9/21/2016	7:29:30	0.17	7.97 ET0010859/cg13	THC	8.48	0.00
dcg13	9/21/2016	7:29:45	0.19	8.71 ET0010859/cg13	THC	8.48	0.00
dcg13	9/21/2016	7:30:00	0.12	8.73 ET0010859/cg13	THC	8.48	0.00
dcg13	9/21/2016	7:30:15	0.05	8.69 ET0010859/cg13	THC	8.48	0.00
dcg13	9/21/2016	7:30:30	0.01	8.48 ET0010859/cg13	THC	8.48	0.00
dcg13	9/21/2016	7:30:45	0.03	8.48 ET0010859/cg13	THC	8.48	0.00
dcg13	9/21/2016	7:31:00	0.06	8.49 ET0010859/cg13	THC	8.48	0.00
dcg13	9/21/2016	7:31:15	0.04	8.49 ET0010859/cg13	THC	8.48	0.00
thchigh1	9/21/2016	7:31:15	0.04	8.49 ET0010859/cg13	THC	8.48	0.00
dcg12	9/21/2016	7:32:30	0.13	1.17 ET0010875/cg12	THC	5.01	0.00
dcg12	9/21/2016	7:32:45	0.15	1.37 ET0010875/cg12	THC	5.01	0.00
dcg12	9/21/2016	7:33:00	0.16	4.42 ET0010875/cg12	THC	5.01	0.00
dcg12	9/21/2016	7:33:15	0.17	5.04 ET0010875/cg12	THC	5.01	0.00
dcg12	9/21/2016	7:33:30	0.10	5.03 ET0010875/cg12	THC	5.01	0.00
thcmid1	9/21/2016	7:33:30	0.10	5.03 ET0010875/cg12	THC	5.01	0.00
scg12	9/21/2016	7:34:00	0.01	5.01 ET0010875/cg12	THC	5.01	0.00
scg12	9/21/2016	7:34:15	0.05	4.09 ET0010875/cg12	THC	5.01	0.00
scg12	9/21/2016	7:34:30	0.05	3.55 ET0010875/cg12	THC	5.01	0.00
scg12	9/21/2016	7:34:45	0.09	5.01 ET0010875/cg12	THC	5.01	0.00
scg12	9/21/2016	7:35:00	0.06	5.01 ET0010875/cg12	THC	5.01	0.00
scg12	9/21/2016	7:35:15	0.04	5.00 ET0010875/cg12	THC	5.01	0.00
thcspan1	9/21/2016	7:35:15	0.04	5.00 ET0010875/cg12	THC	5.01	0.00
scg4	9/21/2016	7:35:45	0.05	5.00 ALM018547/cg4	CO	5.06	0.00
scg4	9/21/2016	7:36:00	0.02	4.12 ALM018547/cg4	CO	5.06	0.00
scg4	9/21/2016	7:36:15	0.07	0.56 ALM018547/cg4	CO	5.06	0.00
scg4	9/21/2016	7:36:30	1.30	-0.01 ALM018547/cg4	CO	5.06	0.00
scg4	9/21/2016	7:36:45	3.50	-0.03 ALM018547/cg4	CO	5.06	0.00
scg4	9/21/2016	7:37:00	4.83	-0.03 ALM018547/cg4	CO	5.06	0.00
scg4	9/21/2016	7:37:15	5.05	-0.03 ALM018547/cg4	CO	5.06	0.00
scg4	9/21/2016	7:37:30	5.12	-0.03 ALM018547/cg4	CO	5.06	0.00
scg4	9/21/2016	7:37:45	5.14	-0.03 ALM018547/cg4	CO	5.06	0.00
scg4	9/21/2016	7:38:00	5.12	-0.03 ALM018547/cg4	CO	5.06	0.00
scg4	9/21/2016	7:38:15	5.05	-0.03 ALM018547/cg4	CO	5.06	0.00
o2zero1	9/21/2016	7:38:15	5.05	-0.03 ALM018547/cg4	CO	5.06	0.00
co2zero1	9/21/2016	7:38:15	5.05	-0.03 ALM018547/cg4	CO	5.06	0.00
cospan1	9/21/2016	7:38:15	5.05	-0.03 ALM018547/cg4	CO	5.06	0.00
scg9	9/21/2016	7:38:30	5.01	-0.03 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/21/2016	7:38:45	5.05	-0.03 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/21/2016	7:39:00	5.05	0.07 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/21/2016	7:39:15	4.77	0.13 EB0080791/cg9	CO2	10.96 O2	11.08

name			CO	THC			
scg9	9/21/2016	7:39:30	2.62	0.14 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/21/2016	7:39:45	0.60	0.14 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/21/2016	7:40:00	-0.35	0.15 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/21/2016	7:40:15	-0.45	0.15 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/21/2016	7:40:30	-0.47	0.15 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/21/2016	7:40:45	-0.06	0.11 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/21/2016	7:41:00	0.01	0.00 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/21/2016	7:41:15	0.03	0.00 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/21/2016	7:41:30	0.03	0.00 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/21/2016	7:41:45	0.01	0.00 EB0080791/cg9	CO2	10.96 O2	11.08
cozero1	9/21/2016	7:41:45	0.01	0.00 EB0080791/cg9	CO2	10.96 O2	11.08
thczero1	9/21/2016	7:41:45	0.01	0.00 EB0080791/cg9	CO2	10.96 O2	11.08
o2span1	9/21/2016	7:41:45	0.01	0.00 EB0080791/cg9	CO2	10.96 O2	11.08
co2span1	9/21/2016	7:41:45	0.01	0.00 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/21/2016	8:40:15	0.53	0.62 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/21/2016	8:40:30	0.51	0.60 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/21/2016	8:40:45	0.52	0.48 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/21/2016	8:41:00	0.47	0.03 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/21/2016	8:41:15	0.37	-0.01 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/21/2016	8:41:30	-0.02	-0.02 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/21/2016	8:41:45	-0.11	-0.02 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/21/2016	8:42:00	-0.01	-0.02 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/21/2016	8:42:15	0.01	-0.01 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/21/2016	8:42:30	0.04	-0.02 EB0080791/cg9	CO2	10.96 O2	11.08
cozero1	9/21/2016	8:42:30	0.04	-0.02 EB0080791/cg9	CO2	10.96 O2	11.08
thczero1	9/21/2016	8:42:30	0.04	-0.02 EB0080791/cg9	CO2	10.96 O2	11.08
o2span1	9/21/2016	8:42:30	0.04	-0.02 EB0080791/cg9	CO2	10.96 O2	11.08
co2span1	9/21/2016	8:42:30	0.04	-0.02 EB0080791/cg9	CO2	10.96 O2	11.08
scg4	9/21/2016	8:42:45	0.04	-0.02 ALM018547/cg4	CO	5.06	0.00
scg4	9/21/2016	8:43:00	0.04	-0.02 ALM018547/cg4	CO	5.06	0.00
scg4	9/21/2016	8:43:15	0.02	0.07 ALM018547/cg4	CO	5.06	0.00
scg4	9/21/2016	8:43:30	0.07	-0.10 ALM018547/cg4	CO	5.06	0.00
scg4	9/21/2016	8:43:45	1.06	-0.18 ALM018547/cg4	CO	5.06	0.00
scg4	9/21/2016	8:44:00	3.53	-0.18 ALM018547/cg4	CO	5.06	0.00
scg4	9/21/2016	8:44:15	5.02	-0.18 ALM018547/cg4	CO	5.06	0.00
scg4	9/21/2016	8:44:30	5.51	-0.19 ALM018547/cg4	CO	5.06	0.00
scg4	9/21/2016	8:44:45	5.26	-0.18 ALM018547/cg4	CO	5.06	0.00
scg4	9/21/2016	8:45:00	5.11	-0.18 ALM018547/cg4	CO	5.06	0.00
scg4	9/21/2016	8:45:15	5.12	-0.18 ALM018547/cg4	CO	5.06	0.00
o2zero1	9/21/2016	8:45:15	5.12	-0.18 ALM018547/cg4	CO	5.06	0.00
co2zero1	9/21/2016	8:45:15	5.12	-0.18 ALM018547/cg4	CO	5.06	0.00
cospan1	9/21/2016	8:45:15	5.12	-0.18 ALM018547/cg4	CO	5.06	0.00
scg12	9/21/2016	8:45:30	5.12	-0.19 ET0010875/cg12	THC	5.01	0.00
scg12	9/21/2016	8:45:45	5.11	-0.19 ET0010875/cg12	THC	5.01	0.00
scg12	9/21/2016	8:46:00	5.13	0.53 ET0010875/cg12	THC	5.01	0.00
scg12	9/21/2016	8:46:15	5.04	4.55 ET0010875/cg12	THC	5.01	0.00
scg12	9/21/2016	8:46:30	3.80	4.97 ET0010875/cg12	THC	5.01	0.00
scg12	9/21/2016	8:46:45	2.00	4.98 ET0010875/cg12	THC	5.01	0.00
scg12	9/21/2016	8:47:00	0.76	4.98 ET0010875/cg12	THC	5.01	0.00
thczspan1	9/21/2016	8:47:00	0.76	4.98 ET0010875/cg12	THC	5.01	0.00
run1	9/21/2016	9:20:30	0.32	0.08			
run1	9/21/2016	9:20:45	0.31	0.08			
run1	9/21/2016	9:21:00	0.31	0.08			
run1	9/21/2016	9:21:15	0.30	0.08			
run1	9/21/2016	9:21:30	0.35	0.10			
run1	9/21/2016	9:21:45	0.36	0.10			
run1	9/21/2016	9:22:00	0.34	0.08			
run1	9/21/2016	9:22:15	0.32	0.09			
run1	9/21/2016	9:22:30	0.31	0.08			
run1	9/21/2016	9:22:45	0.34	0.08			
run1	9/21/2016	9:23:00	0.33	0.08			
run1	9/21/2016	9:23:15	0.32	0.08			
run1	9/21/2016	9:23:30	0.30	0.08			
run1	9/21/2016	9:23:45	0.30	0.08			
run1	9/21/2016	9:24:00	0.32	0.08			
run1	9/21/2016	9:24:15	0.33	0.09			
run1	9/21/2016	9:24:30	0.34	0.08			
run1	9/21/2016	9:24:45	0.36	0.08			
run1	9/21/2016	9:25:00	0.34	0.08			
run1	9/21/2016	9:25:15	0.33	0.08			
run1	9/21/2016	9:25:30	0.34	0.08			
run1	9/21/2016	9:25:45	0.34	0.07			
run1	9/21/2016	9:26:00	0.32	0.07			
run1	9/21/2016	9:26:15	0.30	0.08			
run1	9/21/2016	9:26:30	0.31	0.08			
run1	9/21/2016	9:26:45	0.31	0.08			
run1	9/21/2016	9:27:00	0.31	0.08			
run1	9/21/2016	9:27:15	0.29	0.07			

name			CO	THC
run1	9/21/2016	9:27:30	0.29	0.08
run1	9/21/2016	9:27:45	0.30	0.08
run1	9/21/2016	9:28:00	0.31	0.08
run1	9/21/2016	9:28:15	0.30	0.07
run1	9/21/2016	9:28:30	0.28	0.07
run1	9/21/2016	9:28:45	0.27	0.07
run1	9/21/2016	9:29:00	0.30	0.08
run1	9/21/2016	9:29:15	0.31	0.07
run1	9/21/2016	9:29:30	0.31	0.07
run1	9/21/2016	9:29:45	0.33	0.07
run1	9/21/2016	9:30:00	0.33	0.08
run1	9/21/2016	9:30:15	0.36	0.07
run1	9/21/2016	9:30:30	0.36	0.07
run1	9/21/2016	9:30:45	0.32	0.07
run1	9/21/2016	9:31:00	0.30	0.07
run1	9/21/2016	9:31:15	0.30	0.08
run1	9/21/2016	9:31:30	0.32	0.06
run1	9/21/2016	9:31:45	0.33	0.06
run1	9/21/2016	9:32:00	0.31	0.07
run1	9/21/2016	9:32:15	0.31	0.07
run1	9/21/2016	9:32:30	0.31	0.08
run1	9/21/2016	9:32:45	0.34	0.08
run1	9/21/2016	9:33:00	0.35	0.07
run1	9/21/2016	9:33:15	0.35	0.07
run1	9/21/2016	9:33:30	0.32	0.07
run1	9/21/2016	9:33:45	0.31	0.07
run1	9/21/2016	9:34:00	0.33	0.07
run1	9/21/2016	9:34:15	0.32	0.07
run1	9/21/2016	9:34:30	0.30	0.08
run1	9/21/2016	9:34:45	0.29	0.08
run1	9/21/2016	9:35:00	0.29	0.07
run1	9/21/2016	9:35:15	0.31	0.07
run1	9/21/2016	9:35:30	0.30	0.08
run1	9/21/2016	9:35:45	0.29	0.08
run1	9/21/2016	9:36:00	0.27	0.07
run1	9/21/2016	9:36:15	0.26	0.07
run1	9/21/2016	9:36:30	0.29	0.07
run1	9/21/2016	9:36:45	0.31	0.07
run1	9/21/2016	9:37:00	0.30	0.07
run1	9/21/2016	9:37:15	0.30	0.07
run1	9/21/2016	9:37:30	0.29	0.07
run1	9/21/2016	9:37:45	0.29	0.07
run1	9/21/2016	9:38:00	0.33	0.07
run1	9/21/2016	9:38:15	0.34	0.08
run1	9/21/2016	9:38:30	0.34	0.08
run1	9/21/2016	9:38:45	0.31	0.08
run1	9/21/2016	9:39:00	0.30	0.07
run1	9/21/2016	9:39:15	0.32	0.07
run1	9/21/2016	9:39:30	0.33	0.07
run1	9/21/2016	9:39:45	0.31	0.07
run1	9/21/2016	9:40:00	0.28	0.07
run1	9/21/2016	9:40:15	0.29	0.08
run1	9/21/2016	9:40:30	0.31	0.07
run1	9/21/2016	9:40:45	0.32	0.06
run1	9/21/2016	9:41:00	0.31	0.06
run1	9/21/2016	9:41:15	0.29	0.06
run1	9/21/2016	9:41:30	0.29	0.06
run1	9/21/2016	9:41:45	0.28	0.07
run1	9/21/2016	9:42:00	0.31	0.08
run1	9/21/2016	9:42:15	0.32	0.08
run1	9/21/2016	9:42:30	0.31	0.09
run1	9/21/2016	9:42:45	0.32	0.11
run1	9/21/2016	9:43:00	0.31	0.09
run1	9/21/2016	9:43:15	0.32	0.08
run1	9/21/2016	9:43:30	0.33	0.07
run1	9/21/2016	9:43:45	0.31	0.07
run1	9/21/2016	9:44:00	0.29	0.07
run1	9/21/2016	9:44:15	0.31	0.07
run1	9/21/2016	9:44:30	0.31	0.07
run1	9/21/2016	9:44:45	0.31	0.08
run1	9/21/2016	9:45:00	0.31	0.09
run1	9/21/2016	9:45:15	0.32	0.09
run1	9/21/2016	9:45:30	0.31	0.08
run1	9/21/2016	9:45:45	0.31	0.08
run1	9/21/2016	9:46:00	0.33	0.08
run1	9/21/2016	9:46:15	0.34	0.07
run1	9/21/2016	9:46:30	0.31	0.07
run1	9/21/2016	9:46:45	0.28	0.07

name			CO	THC
run1	9/21/2016	9:47:00	0.25	0.07
run1	9/21/2016	9:47:15	0.27	0.07
run1	9/21/2016	9:47:30	0.29	0.07
run1	9/21/2016	9:47:45	0.30	0.08
run1	9/21/2016	9:48:00	0.29	0.07
run1	9/21/2016	9:48:15	0.27	0.07
run1	9/21/2016	9:48:30	0.26	0.08
run1	9/21/2016	9:48:45	0.28	0.07
run1	9/21/2016	9:49:00	0.27	0.08
run1	9/21/2016	9:49:15	0.26	0.10
run1	9/21/2016	9:49:30	0.26	0.10
run1	9/21/2016	9:49:45	0.28	0.10
run1	9/21/2016	9:50:00	0.31	0.08
run1	9/21/2016	9:50:15	0.32	0.06
run1	9/21/2016	9:50:30	0.25	0.07
run1	9/21/2016	9:50:45	0.23	0.07
run1	9/21/2016	9:51:00	0.23	0.07
run1	9/21/2016	9:51:15	0.25	0.07
run1	9/21/2016	9:51:30	0.27	0.08
run1	9/21/2016	9:51:45	0.29	0.07
run1	9/21/2016	9:52:00	0.30	0.07
run1	9/21/2016	9:52:15	0.28	0.07
run1	9/21/2016	9:52:30	0.26	0.07
run1	9/21/2016	9:52:45	0.26	0.08
run1	9/21/2016	9:53:00	0.26	0.07
run1	9/21/2016	9:53:15	0.27	0.08
run1	9/21/2016	9:53:30	0.28	0.08
run1	9/21/2016	9:53:45	0.28	0.08
run1	9/21/2016	9:54:00	0.29	0.08
run1	9/21/2016	9:54:15	0.32	0.08
run1	9/21/2016	9:54:30	0.30	0.08
run1	9/21/2016	9:54:45	0.27	0.07
run1	9/21/2016	9:55:00	0.27	0.06
run1	9/21/2016	9:55:15	0.28	0.07
run1	9/21/2016	9:55:30	0.30	0.07
run1	9/21/2016	9:55:45	0.31	0.08
run1	9/21/2016	9:56:00	0.28	0.07
run1	9/21/2016	9:56:15	0.26	0.07
run1	9/21/2016	9:56:30	0.27	0.07
run1	9/21/2016	9:56:45	0.29	0.07
run1	9/21/2016	9:57:00	0.31	0.07
run1	9/21/2016	9:57:15	0.31	0.07
run1	9/21/2016	9:57:30	0.26	0.07
run1	9/21/2016	9:57:45	0.22	0.08
run1	9/21/2016	9:58:00	0.19	0.08
run1	9/21/2016	9:58:15	0.20	0.09
run1	9/21/2016	9:58:30	0.20	0.10
run1	9/21/2016	9:58:45	0.20	0.10
run1	9/21/2016	9:59:00	0.20	0.10
run1	9/21/2016	9:59:15	0.21	0.08
run1	9/21/2016	9:59:30	0.20	0.08
run1	9/21/2016	9:59:45	0.20	0.08
run1	9/21/2016	10:00:00	0.21	0.08
run1	9/21/2016	10:00:15	0.20	0.08
run1	9/21/2016	10:00:30	0.20	0.09
run1	9/21/2016	10:00:45	0.17	0.09
run1	9/21/2016	10:01:00	0.16	0.08
run1	9/21/2016	10:01:15	0.18	0.08
run1	9/21/2016	10:01:30	0.19	0.07
run1	9/21/2016	10:01:45	0.21	0.08
run1	9/21/2016	10:02:00	0.21	0.08
run1	9/21/2016	10:02:15	0.19	0.08
run1	9/21/2016	10:02:30	0.20	0.08
run1	9/21/2016	10:02:45	0.20	0.08
run1	9/21/2016	10:03:00	0.19	0.07
run1	9/21/2016	10:03:15	0.18	0.07
run1	9/21/2016	10:03:30	0.17	0.06
run1	9/21/2016	10:03:45	0.15	0.07
run1	9/21/2016	10:04:00	0.18	0.06
run1	9/21/2016	10:04:15	0.19	0.07
run1	9/21/2016	10:04:30	0.18	0.06
run1	9/21/2016	10:04:45	0.17	0.08
run1	9/21/2016	10:05:00	0.16	0.07
run1	9/21/2016	10:05:15	0.17	0.08
run1	9/21/2016	10:05:30	0.18	0.09
run1	9/21/2016	10:05:45	0.19	0.09
run1	9/21/2016	10:06:00	0.19	0.08
run1	9/21/2016	10:06:15	0.19	0.08

name			CO	THC
run1	9/21/2016	10:06:30	0.17	0.07
run1	9/21/2016	10:06:45	0.15	0.07
run1	9/21/2016	10:07:00	0.17	0.08
run1	9/21/2016	10:07:15	0.16	0.09
run1	9/21/2016	10:07:30	0.17	0.08
run1	9/21/2016	10:07:45	0.20	0.08
run1	9/21/2016	10:08:00	0.17	0.07
run1	9/21/2016	10:08:15	0.17	0.07
run1	9/21/2016	10:08:30	0.18	0.05
run1	9/21/2016	10:08:45	0.19	0.07
run1	9/21/2016	10:09:00	0.18	0.08
run1	9/21/2016	10:09:15	0.17	0.08
run1	9/21/2016	10:09:30	0.19	0.08
run1	9/21/2016	10:09:45	0.19	0.09
run1	9/21/2016	10:10:00	0.20	0.09
run1	9/21/2016	10:10:15	0.23	0.08
run1	9/21/2016	10:10:30	0.21	0.06
run1	9/21/2016	10:10:45	0.20	0.06
run1	9/21/2016	10:11:00	0.19	0.08
run1	9/21/2016	10:11:15	0.18	0.08
run1	9/21/2016	10:11:30	0.18	0.08
run1	9/21/2016	10:11:45	0.17	0.07
run1	9/21/2016	10:12:00	0.17	0.08
run1	9/21/2016	10:12:15	0.16	0.09
run1	9/21/2016	10:12:30	0.18	0.10
run1	9/21/2016	10:12:45	0.19	0.09
run1	9/21/2016	10:13:00	0.17	0.08
run1	9/21/2016	10:13:15	0.18	0.08
run1	9/21/2016	10:13:30	0.17	0.10
run1	9/21/2016	10:13:45	0.15	0.09
run1	9/21/2016	10:14:00	0.19	0.07
run1	9/21/2016	10:14:15	0.19	0.08
run1	9/21/2016	10:14:30	0.18	0.07
run1	9/21/2016	10:14:45	0.18	0.07
run1	9/21/2016	10:15:00	0.16	0.08
run1	9/21/2016	10:15:15	0.16	0.08
run1	9/21/2016	10:15:30	0.18	0.07
run1	9/21/2016	10:15:45	0.18	0.06
run1	9/21/2016	10:16:00	0.17	0.07
run1	9/21/2016	10:16:15	0.20	0.08
run1	9/21/2016	10:16:30	0.18	0.07
run1	9/21/2016	10:16:45	0.18	0.07
run1	9/21/2016	10:17:00	0.19	0.08
run1	9/21/2016	10:17:15	0.18	0.08
run1	9/21/2016	10:17:30	0.14	0.08
run1	9/21/2016	10:17:45	0.14	0.08
run1	9/21/2016	10:18:00	0.14	0.07
run1	9/21/2016	10:18:15	0.16	0.07
run1	9/21/2016	10:18:30	0.18	0.08
run1	9/21/2016	10:18:45	0.19	0.07
run1	9/21/2016	10:19:00	0.19	0.08
run1	9/21/2016	10:19:15	0.18	0.07
run1	9/21/2016	10:19:30	0.18	0.08
run1	9/21/2016	10:19:45	0.19	0.08
run1	9/21/2016	10:20:00	0.19	0.07
run1	9/21/2016	10:20:15	0.19	0.07
run1	9/21/2016	10:20:30	0.20	0.08
run1	9/21/2016	10:20:45	0.20	0.08
run1	9/21/2016	10:21:00	0.21	0.08
run1	9/21/2016	10:21:15	0.21	0.08
run1	9/21/2016	10:21:30	0.20	0.07
run1	9/21/2016	10:21:45	0.19	0.07
run1	9/21/2016	10:22:00	0.19	0.07
run1	9/21/2016	10:22:15	0.16	0.07
run1	9/21/2016	10:22:30	0.19	0.07
run1	9/21/2016	10:22:45	0.21	0.08
run1	9/21/2016	10:23:00	0.19	0.09
run1	9/21/2016	10:23:15	0.17	0.10
run1	9/21/2016	10:23:30	0.18	0.10
run1	9/21/2016	10:23:45	0.17	0.08
run1	9/21/2016	10:24:00	0.19	0.08
run1	9/21/2016	10:24:15	0.20	0.08
run1	9/21/2016	10:24:30	0.19	0.06
run1	9/21/2016	10:24:45	0.17	0.06
run1	9/21/2016	10:25:00	0.16	0.08
run1	9/21/2016	10:25:15	0.16	0.08
run1	9/21/2016	10:25:30	0.18	0.08
run1	9/21/2016	10:25:45	0.18	0.06

name			CO	THC			
averun1	9/21/2016	9:22:00	0.25	0.08	64		
scg12	9/21/2016	10:28:30	0.19	0.05	ET0010875/cg12	THC	5.01 0.00
scg12	9/21/2016	10:28:45	0.19	0.76	ET0010875/cg12	THC	5.01 0.00
scg12	9/21/2016	10:29:00	0.27	4.54	ET0010875/cg12	THC	5.01 0.00
scg12	9/21/2016	10:29:15	0.63	4.95	ET0010875/cg12	THC	5.01 0.00
scg12	9/21/2016	10:29:30	0.75	4.97	ET0010875/cg12	THC	5.01 0.00
scg12	9/21/2016	10:29:45	0.50	4.97	ET0010875/cg12	THC	5.01 0.00
scg12	9/21/2016	10:30:00	0.37	5.00	ET0010875/cg12	THC	5.01 0.00
thcspan1	9/21/2016	10:30:00	0.37	5.00	ET0010875/cg12	THC	5.01 0.00
scg9	9/21/2016	10:30:15	0.35	5.00	EB0080791/cg9	CO2	10.96 O2 11.08
scg9	9/21/2016	10:30:30	0.34	4.91	EB0080791/cg9	CO2	10.96 O2 11.08
scg9	9/21/2016	10:30:45	0.33	1.50	EB0080791/cg9	CO2	10.96 O2 11.08
scg9	9/21/2016	10:31:00	0.19	-0.02	EB0080791/cg9	CO2	10.96 O2 11.08
scg9	9/21/2016	10:31:15	-0.09	-0.02	EB0080791/cg9	CO2	10.96 O2 11.08
scg9	9/21/2016	10:31:30	-0.24	-0.01	EB0080791/cg9	CO2	10.96 O2 11.08
scg9	9/21/2016	10:31:45	-0.18	-0.01	EB0080791/cg9	CO2	10.96 O2 11.08
scg9	9/21/2016	10:32:00	-0.13	-0.01	EB0080791/cg9	CO2	10.96 O2 11.08
scg9	9/21/2016	10:32:15	-0.12	0.00	EB0080791/cg9	CO2	10.96 O2 11.08
scg9	9/21/2016	10:32:30	-0.12	-0.01	EB0080791/cg9	CO2	10.96 O2 11.08
cozero1	9/21/2016	10:32:30	-0.12	-0.01	EB0080791/cg9	CO2	10.96 O2 11.08
thczero1	9/21/2016	10:32:30	-0.12	-0.01	EB0080791/cg9	CO2	10.96 O2 11.08
o2span1	9/21/2016	10:32:30	-0.12	-0.01	EB0080791/cg9	CO2	10.96 O2 11.08
co2span1	9/21/2016	10:32:30	-0.12	-0.01	EB0080791/cg9	CO2	10.96 O2 11.08
scg4	9/21/2016	10:33:00	-0.11	-0.02	ALM018547/cg4	CO	5.06 0.00
scg4	9/21/2016	10:33:15	-0.11	0.03	ALM018547/cg4	CO	5.06 0.00
scg4	9/21/2016	10:33:30	-0.08	-0.06	ALM018547/cg4	CO	5.06 0.00
scg4	9/21/2016	10:33:45	0.56	-0.16	ALM018547/cg4	CO	5.06 0.00
scg4	9/21/2016	10:34:00	2.73	-0.17	ALM018547/cg4	CO	5.06 0.00
scg4	9/21/2016	10:34:15	4.28	-0.17	ALM018547/cg4	CO	5.06 0.00
scg4	9/21/2016	10:34:30	4.83	-0.18	ALM018547/cg4	CO	5.06 0.00
scg4	9/21/2016	10:34:45	4.89	-0.18	ALM018547/cg4	CO	5.06 0.00
scg4	9/21/2016	10:35:00	4.93	-0.19	ALM018547/cg4	CO	5.06 0.00
scg4	9/21/2016	10:35:15	4.99	-0.18	ALM018547/cg4	CO	5.06 0.00
scg4	9/21/2016	10:35:30	5.09	-0.19	ALM018547/cg4	CO	5.06 0.00
scg4	9/21/2016	10:35:45	5.09	-0.17	ALM018547/cg4	CO	5.06 0.00
o2zero1	9/21/2016	10:35:45	5.09	-0.17	ALM018547/cg4	CO	5.06 0.00
co2zero1	9/21/2016	10:35:45	5.09	-0.17	ALM018547/cg4	CO	5.06 0.00
cospan1	9/21/2016	10:35:45	5.09	-0.17	ALM018547/cg4	CO	5.06 0.00
run2	9/21/2016	10:45:00	0.07	0.08			
run2	9/21/2016	10:45:15	0.09	0.09			
run2	9/21/2016	10:45:30	0.09	0.09			
run2	9/21/2016	10:45:45	0.09	0.07			
run2	9/21/2016	10:46:00	0.08	0.07			
run2	9/21/2016	10:46:15	0.07	0.07			
run2	9/21/2016	10:46:30	0.09	0.07			
run2	9/21/2016	10:46:45	0.12	0.07			
run2	9/21/2016	10:47:00	0.11	0.07			
run2	9/21/2016	10:47:15	0.11	0.09			
run2	9/21/2016	10:47:30	0.08	0.08			
run2	9/21/2016	10:47:45	0.09	0.07			
run2	9/21/2016	10:48:00	0.09	0.07			
run2	9/21/2016	10:48:15	0.10	0.07			
run2	9/21/2016	10:48:30	0.10	0.05			
run2	9/21/2016	10:48:45	0.10	0.06			
run2	9/21/2016	10:49:00	0.10	0.07			
run2	9/21/2016	10:49:15	0.09	0.07			
run2	9/21/2016	10:49:30	0.09	0.07			
run2	9/21/2016	10:49:45	0.08	0.08			
run2	9/21/2016	10:50:00	0.08	0.08			
run2	9/21/2016	10:50:15	0.07	0.08			
run2	9/21/2016	10:50:30	0.09	0.07			
run2	9/21/2016	10:50:45	0.08	0.08			
run2	9/21/2016	10:51:00	0.08	0.08			
run2	9/21/2016	10:51:15	0.10	0.07			
run2	9/21/2016	10:51:30	0.08	0.07			
run2	9/21/2016	10:51:45	0.08	0.08			
run2	9/21/2016	10:52:00	0.10	0.07			
run2	9/21/2016	10:52:15	0.09	0.08			
run2	9/21/2016	10:52:30	0.09	0.07			
run2	9/21/2016	10:52:45	0.13	0.08			
run2	9/21/2016	10:53:00	0.10	0.06			
run2	9/21/2016	10:53:15	0.11	0.06			
run2	9/21/2016	10:53:30	0.08	0.07			
run2	9/21/2016	10:53:45	0.07	0.08			
run2	9/21/2016	10:54:00	0.07	0.08			
run2	9/21/2016	10:54:15	0.10	0.08			
run2	9/21/2016	10:54:30	0.10	0.07			
run2	9/21/2016	10:54:45	0.09	0.08			

name			CO	THC
run2	9/21/2016	10:55:00	0.09	0.07
run2	9/21/2016	10:55:15	0.10	0.07
run2	9/21/2016	10:55:30	0.09	0.07
run2	9/21/2016	10:55:45	0.10	0.07
run2	9/21/2016	10:56:00	0.10	0.07
run2	9/21/2016	10:56:15	0.08	0.07
run2	9/21/2016	10:56:30	0.08	0.06
run2	9/21/2016	10:56:45	0.07	0.07
run2	9/21/2016	10:57:00	0.08	0.07
run2	9/21/2016	10:57:15	0.08	0.07
run2	9/21/2016	10:57:30	0.10	0.06
run2	9/21/2016	10:57:45	0.09	0.07
run2	9/21/2016	10:58:00	0.07	0.08
run2	9/21/2016	10:58:15	0.05	0.09
run2	9/21/2016	10:58:30	0.08	0.09
run2	9/21/2016	10:58:45	0.10	0.08
run2	9/21/2016	10:59:00	0.10	0.07
run2	9/21/2016	10:59:15	0.09	0.07
run2	9/21/2016	10:59:30	0.10	0.06
run2	9/21/2016	10:59:45	0.10	0.06
run2	9/21/2016	11:00:00	0.08	0.07
run2	9/21/2016	11:00:15	0.10	0.07
run2	9/21/2016	11:00:30	0.11	0.08
run2	9/21/2016	11:00:45	0.10	0.07
run2	9/21/2016	11:01:00	0.09	0.07
run2	9/21/2016	11:01:15	0.11	0.07
run2	9/21/2016	11:01:30	0.10	0.08
run2	9/21/2016	11:01:45	0.10	0.08
run2	9/21/2016	11:02:00	0.11	0.09
run2	9/21/2016	11:02:15	0.10	0.09
run2	9/21/2016	11:02:30	0.11	0.09
run2	9/21/2016	11:02:45	0.11	0.08
run2	9/21/2016	11:03:00	0.11	0.09
run2	9/21/2016	11:03:15	0.08	0.08
run2	9/21/2016	11:03:30	0.10	0.08
run2	9/21/2016	11:03:45	0.12	0.07
run2	9/21/2016	11:04:00	0.11	0.08
run2	9/21/2016	11:04:15	0.10	0.08
run2	9/21/2016	11:04:30	0.10	0.06
run2	9/21/2016	11:04:45	0.08	0.07
run2	9/21/2016	11:05:00	0.10	0.07
run2	9/21/2016	11:05:15	0.09	0.07
run2	9/21/2016	11:05:30	0.09	0.07
run2	9/21/2016	11:05:45	0.10	0.05
run2	9/21/2016	11:06:00	0.10	0.05
run2	9/21/2016	11:06:15	0.09	0.06
run2	9/21/2016	11:06:30	0.11	0.07
run2	9/21/2016	11:06:45	0.13	0.07
run2	9/21/2016	11:07:00	0.14	0.06
run2	9/21/2016	11:07:15	0.12	0.07
run2	9/21/2016	11:07:30	0.11	0.06
run2	9/21/2016	11:07:45	0.12	0.06
run2	9/21/2016	11:08:00	0.12	0.06
run2	9/21/2016	11:08:15	0.11	0.06
run2	9/21/2016	11:08:30	0.11	0.06
run2	9/21/2016	11:08:45	0.09	0.06
run2	9/21/2016	11:09:00	0.11	0.06
run2	9/21/2016	11:09:15	0.09	0.06
run2	9/21/2016	11:09:30	0.11	0.07
run2	9/21/2016	11:09:45	0.11	0.09
run2	9/21/2016	11:10:00	0.11	0.09
run2	9/21/2016	11:10:15	0.12	0.08
run2	9/21/2016	11:10:30	0.13	0.07
run2	9/21/2016	11:10:45	0.11	0.07
run2	9/21/2016	11:11:00	0.08	0.06
run2	9/21/2016	11:11:15	0.11	0.05
run2	9/21/2016	11:11:30	0.12	0.05
run2	9/21/2016	11:11:45	0.10	0.06
run2	9/21/2016	11:12:00	0.08	0.06
run2	9/21/2016	11:12:15	0.08	0.07
run2	9/21/2016	11:12:30	0.08	0.07
run2	9/21/2016	11:12:45	0.10	0.07
run2	9/21/2016	11:13:00	0.10	0.07
run2	9/21/2016	11:13:15	0.11	0.06
run2	9/21/2016	11:13:30	0.12	0.06
run2	9/21/2016	11:13:45	0.11	0.06
run2	9/21/2016	11:14:00	0.10	0.06
run2	9/21/2016	11:14:15	0.12	0.06

name			CO	THC
run2	9/21/2016	11:14:30	0.10	0.06
run2	9/21/2016	11:14:45	0.09	0.07
run2	9/21/2016	11:15:00	0.12	0.07
run2	9/21/2016	11:15:15	0.14	0.07
run2	9/21/2016	11:15:30	0.13	0.07
run2	9/21/2016	11:15:45	0.10	0.07
run2	9/21/2016	11:16:00	0.10	0.08
run2	9/21/2016	11:16:15	0.09	0.07
run2	9/21/2016	11:16:30	0.10	0.06
run2	9/21/2016	11:16:45	0.10	0.06
run2	9/21/2016	11:17:00	0.10	0.06
run2	9/21/2016	11:17:15	0.13	0.06
run2	9/21/2016	11:17:30	0.13	0.06
run2	9/21/2016	11:17:45	0.15	0.07
run2	9/21/2016	11:18:00	0.13	0.06
run2	9/21/2016	11:18:15	0.12	0.06
run2	9/21/2016	11:18:30	0.11	0.05
run2	9/21/2016	11:18:45	0.10	0.07
run2	9/21/2016	11:19:00	0.11	0.06
run2	9/21/2016	11:19:15	0.11	0.06
run2	9/21/2016	11:19:30	0.10	0.06
run2	9/21/2016	11:19:45	0.14	0.06
run2	9/21/2016	11:20:00	0.13	0.06
run2	9/21/2016	11:20:15	0.14	0.07
run2	9/21/2016	11:20:30	0.12	0.06
run2	9/21/2016	11:20:45	0.14	0.06
run2	9/21/2016	11:21:00	0.15	0.05
run2	9/21/2016	11:21:15	0.15	0.05
run2	9/21/2016	11:21:30	0.14	0.05
run2	9/21/2016	11:21:45	0.13	0.06
run2	9/21/2016	11:22:00	0.11	0.07
run2	9/21/2016	11:22:15	0.11	0.07
run2	9/21/2016	11:22:30	0.13	0.07
run2	9/21/2016	11:22:45	0.13	0.08
run2	9/21/2016	11:23:00	0.10	0.08
run2	9/21/2016	11:23:15	0.11	0.07
run2	9/21/2016	11:23:30	0.11	0.07
run2	9/21/2016	11:23:45	0.11	0.08
run2	9/21/2016	11:24:00	0.12	0.07
run2	9/21/2016	11:24:15	0.13	0.07
run2	9/21/2016	11:24:30	0.11	0.07
run2	9/21/2016	11:24:45	0.09	0.08
run2	9/21/2016	11:25:00	0.06	0.08
run2	9/21/2016	11:25:15	0.07	0.08
run2	9/21/2016	11:25:30	0.08	0.07
run2	9/21/2016	11:25:45	0.09	0.08
run2	9/21/2016	11:26:00	0.09	0.07
run2	9/21/2016	11:26:15	0.11	0.06
run2	9/21/2016	11:26:30	0.11	0.06
run2	9/21/2016	11:26:45	0.07	0.07
run2	9/21/2016	11:27:00	0.06	0.08
run2	9/21/2016	11:27:15	0.07	0.07
run2	9/21/2016	11:27:30	0.08	0.07
run2	9/21/2016	11:27:45	0.07	0.06
run2	9/21/2016	11:28:00	0.06	0.05
run2	9/21/2016	11:28:15	0.09	0.05
run2	9/21/2016	11:28:30	0.07	0.06
run2	9/21/2016	11:28:45	0.09	0.07
run2	9/21/2016	11:29:00	0.08	0.07
run2	9/21/2016	11:29:15	0.08	0.08
run2	9/21/2016	11:29:30	0.09	0.06
run2	9/21/2016	11:29:45	0.08	0.06
run2	9/21/2016	11:30:00	0.06	0.08
run2	9/21/2016	11:30:15	0.06	0.07
run2	9/21/2016	11:30:30	0.10	0.07
run2	9/21/2016	11:30:45	0.10	0.07
run2	9/21/2016	11:31:00	0.09	0.07
run2	9/21/2016	11:31:15	0.10	0.08
run2	9/21/2016	11:31:30	0.09	0.08
run2	9/21/2016	11:31:45	0.08	0.06
run2	9/21/2016	11:32:00	0.08	0.06
run2	9/21/2016	11:32:15	0.08	0.06
run2	9/21/2016	11:32:30	0.07	0.06
run2	9/21/2016	11:32:45	0.08	0.05
run2	9/21/2016	11:33:00	0.10	0.06
run2	9/21/2016	11:33:15	0.06	0.07
run2	9/21/2016	11:33:30	0.08	0.06
run2	9/21/2016	11:33:45	0.10	0.06

name			CO	THC			
run2	9/21/2016	11:34:00	0.12	0.06			
run2	9/21/2016	11:34:15	0.10	0.06			
run2	9/21/2016	11:34:30	0.07	0.07			
run2	9/21/2016	11:34:45	0.08	0.05			
run2	9/21/2016	11:35:00	0.08	0.05			
run2	9/21/2016	11:35:15	0.09	0.05			
run2	9/21/2016	11:35:30	0.09	0.05			
run2	9/21/2016	11:35:45	0.10	0.05			
run2	9/21/2016	11:36:00	0.12	0.05			
run2	9/21/2016	11:36:15	0.14	0.05			
run2	9/21/2016	11:36:30	0.14	0.06			
run2	9/21/2016	11:36:45	0.15	0.06			
run2	9/21/2016	11:37:00	0.15	0.06			
run2	9/21/2016	11:37:15	0.14	0.06			
run2	9/21/2016	11:37:30	0.18	0.06			
run2	9/21/2016	11:37:45	0.21	0.06			
run2	9/21/2016	11:38:00	0.18	0.06			
run2	9/21/2016	11:38:15	0.20	0.04			
run2	9/21/2016	11:38:30	0.21	0.06			
run2	9/21/2016	11:38:45	0.21	0.06			
run2	9/21/2016	11:39:00	0.21	0.06			
run2	9/21/2016	11:39:15	0.21	0.06			
run2	9/21/2016	11:39:30	0.22	0.07			
run2	9/21/2016	11:39:45	0.20	0.07			
run2	9/21/2016	11:40:00	0.20	0.08			
run2	9/21/2016	11:40:15	0.24	0.08			
run2	9/21/2016	11:40:30	0.24	0.07			
run2	9/21/2016	11:40:45	0.23	0.06			
run2	9/21/2016	11:41:00	0.24	0.07			
run2	9/21/2016	11:41:15	0.24	0.08			
run2	9/21/2016	11:41:30	0.22	0.08			
run2	9/21/2016	11:41:45	0.23	0.07			
run2	9/21/2016	11:42:00	0.25	0.08			
run2	9/21/2016	11:42:15	0.24	0.08			
run2	9/21/2016	11:42:30	0.23	0.09			
run2	9/21/2016	11:42:45	0.23	0.08			
run2	9/21/2016	11:43:00	0.24	0.07			
run2	9/21/2016	11:43:15	0.24	0.05			
run2	9/21/2016	11:43:30	0.26	0.07			
run2	9/21/2016	11:43:45	0.27	0.06			
run2	9/21/2016	11:44:00	0.26	0.06			
run2	9/21/2016	11:44:15	0.25	0.07			
run2	9/21/2016	11:44:30	0.25	0.07			
run2	9/21/2016	11:44:45	0.23	0.07			
run2	9/21/2016	11:45:00	0.23	0.07			
run2	9/21/2016	11:45:15	0.25	0.07			
run2	9/21/2016	11:45:30	0.26	0.06			
run2	9/21/2016	11:45:45	0.24	0.06			
run2	9/21/2016	11:46:00	0.23	0.06			
run2	9/21/2016	11:46:15	0.23	0.08			
run2	9/21/2016	11:46:30	0.20	0.08			
run2	9/21/2016	11:46:45	0.21	0.07			
run2	9/21/2016	11:47:00	0.23	0.08			
run2	9/21/2016	11:47:15	0.24	0.08			
run2	9/21/2016	11:47:30	0.25	0.07			
run2	9/21/2016	11:47:45	0.26	0.08			
run2	9/21/2016	11:48:00	0.23	0.08			
run2	9/21/2016	11:48:15	0.21	0.07			
run2	9/21/2016	11:48:30	0.25	0.07			
run2	9/21/2016	11:48:45	0.25	0.07			
averun2	9/21/2016	10:45:00	0.12	0.07	64		
scg4	9/21/2016	11:50:45	0.26	0.07	ALM018547/cg4	CO	5.06 0.00
scg4	9/21/2016	11:51:00	0.24	0.08	ALM018547/cg4	CO	5.06 0.00
scg4	9/21/2016	11:51:15	0.27	0.13	ALM018547/cg4	CO	5.06 0.00
scg4	9/21/2016	11:51:30	1.38	-0.15	ALM018547/cg4	CO	5.06 0.00
scg4	9/21/2016	11:51:45	3.39	-0.16	ALM018547/cg4	CO	5.06 0.00
scg4	9/21/2016	11:52:00	4.75	-0.16	ALM018547/cg4	CO	5.06 0.00
scg4	9/21/2016	11:52:15	4.98	-0.16	ALM018547/cg4	CO	5.06 0.00
scg4	9/21/2016	11:52:30	5.01	-0.17	ALM018547/cg4	CO	5.06 0.00
scg4	9/21/2016	11:52:45	5.01	-0.16	ALM018547/cg4	CO	5.06 0.00
o2zero1	9/21/2016	11:52:45	5.01	-0.16	ALM018547/cg4	CO	5.06 0.00
co2zero1	9/21/2016	11:52:45	5.01	-0.16	ALM018547/cg4	CO	5.06 0.00
cospan1	9/21/2016	11:52:45	5.01	-0.16	ALM018547/cg4	CO	5.06 0.00
scg9	9/21/2016	11:53:00	5.01	-0.16	EB0080791/cg9	CO2	10.96 O2 11.08
scg9	9/21/2016	11:53:15	5.03	-0.14	EB0080791/cg9	CO2	10.96 O2 11.08
scg9	9/21/2016	11:53:30	5.00	0.02	EB0080791/cg9	CO2	10.96 O2 11.08
scg9	9/21/2016	11:53:45	4.25	0.11	EB0080791/cg9	CO2	10.96 O2 11.08
scg4	9/21/2016	11:54:00	2.03	0.07	ALM018547/cg4	CO	5.06 0.00

name			CO	THC			
scg12	9/21/2016	11:54:15	0.74	0.07 ET0010875/cg12	THC	5.01	0.00
scg12	9/21/2016	11:54:30	0.29	0.03 ET0010875/cg12	THC	5.01	0.00
scg12	9/21/2016	11:54:45	0.37	2.94 ET0010875/cg12	THC	5.01	0.00
scg12	9/21/2016	11:55:00	1.07	4.88 ET0010875/cg12	THC	5.01	0.00
scg12	9/21/2016	11:55:15	1.12	4.90 ET0010875/cg12	THC	5.01	0.00
scg12	9/21/2016	11:55:30	0.57	4.89 ET0010875/cg12	THC	5.01	0.00
thcspan1	9/21/2016	11:55:30	0.57	4.89 ET0010875/cg12	THC	5.01	0.00
scg9	9/21/2016	11:55:45	0.33	4.90 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/21/2016	11:56:00	0.29	4.90 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/21/2016	11:56:15	0.29	2.09 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/21/2016	11:56:30	0.21	0.78 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/21/2016	11:56:45	0.07	-0.01 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/21/2016	11:57:00	-0.14	-0.02 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/21/2016	11:57:15	-0.25	-0.01 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/21/2016	11:57:30	-0.21	-0.01 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/21/2016	11:57:45	-0.17	0.00 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/21/2016	11:58:00	-0.09	0.00 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/21/2016	11:58:15	0.00	-0.01 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/21/2016	11:58:30	-0.01	-0.01 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/21/2016	11:58:45	0.01	-0.02 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/21/2016	11:59:00	0.02	-0.01 EB0080791/cg9	CO2	10.96 O2	11.08
cozero1	9/21/2016	11:59:00	0.02	-0.01 EB0080791/cg9	CO2	10.96 O2	11.08
thczero1	9/21/2016	11:59:00	0.02	-0.01 EB0080791/cg9	CO2	10.96 O2	11.08
o2span1	9/21/2016	11:59:00	0.02	-0.01 EB0080791/cg9	CO2	10.96 O2	11.08
co2span1	9/21/2016	11:59:00	0.02	-0.01 EB0080791/cg9	CO2	10.96 O2	11.08
run3	9/21/2016	12:10:00	0.38	0.08			
run3	9/21/2016	12:10:15	0.37	0.07			
run3	9/21/2016	12:10:30	0.36	0.05			
run3	9/21/2016	12:10:45	0.35	0.06			
run3	9/21/2016	12:11:00	0.34	0.07			
run3	9/21/2016	12:11:15	0.34	0.08			
run3	9/21/2016	12:11:30	0.38	0.08			
run3	9/21/2016	12:11:45	0.38	0.08			
run3	9/21/2016	12:12:00	0.37	0.08			
run3	9/21/2016	12:12:15	0.37	0.07			
run3	9/21/2016	12:12:30	0.35	0.07			
run3	9/21/2016	12:12:45	0.36	0.08			
run3	9/21/2016	12:13:00	0.34	0.08			
run3	9/21/2016	12:13:15	0.33	0.08			
run3	9/21/2016	12:13:30	0.33	0.08			
run3	9/21/2016	12:13:45	0.33	0.07			
run3	9/21/2016	12:14:00	0.33	0.07			
run3	9/21/2016	12:14:15	0.33	0.07			
run3	9/21/2016	12:14:30	0.30	0.06			
run3	9/21/2016	12:14:45	0.31	0.07			
run3	9/21/2016	12:15:00	0.30	0.06			
run3	9/21/2016	12:15:15	0.30	0.06			
run3	9/21/2016	12:15:30	0.31	0.06			
run3	9/21/2016	12:15:45	0.31	0.07			
run3	9/21/2016	12:16:00	0.32	0.08			
run3	9/21/2016	12:16:15	0.34	0.08			
run3	9/21/2016	12:16:30	0.32	0.07			
run3	9/21/2016	12:16:45	0.33	0.07			
run3	9/21/2016	12:17:00	0.30	0.07			
run3	9/21/2016	12:17:15	0.31	0.07			
run3	9/21/2016	12:17:30	0.33	0.06			
run3	9/21/2016	12:17:45	0.31	0.07			
run3	9/21/2016	12:18:00	0.29	0.07			
run3	9/21/2016	12:18:15	0.30	0.06			
run3	9/21/2016	12:18:30	0.29	0.05			
run3	9/21/2016	12:18:45	0.29	0.06			
run3	9/21/2016	12:19:00	0.28	0.05			
run3	9/21/2016	12:19:15	0.29	0.05			
run3	9/21/2016	12:19:30	0.28	0.06			
run3	9/21/2016	12:19:45	0.28	0.06			
run3	9/21/2016	12:20:00	0.28	0.07			
run3	9/21/2016	12:20:15	0.29	0.08			
run3	9/21/2016	12:20:30	0.31	0.08			
run3	9/21/2016	12:20:45	0.30	0.08			
run3	9/21/2016	12:21:00	0.33	0.08			
run3	9/21/2016	12:21:15	0.33	0.08			
run3	9/21/2016	12:21:30	0.33	0.09			
run3	9/21/2016	12:21:45	0.29	0.08			
run3	9/21/2016	12:22:00	0.29	0.08			
run3	9/21/2016	12:22:15	0.30	0.08			
run3	9/21/2016	12:22:30	0.33	0.08			
run3	9/21/2016	12:22:45	0.32	0.08			
run3	9/21/2016	12:23:00	0.32	0.07			

name			CO	THC
run3	9/21/2016	12:23:15	0.33	0.08
run3	9/21/2016	12:23:30	0.34	0.08
run3	9/21/2016	12:23:45	0.33	0.08
run3	9/21/2016	12:24:00	0.34	0.09
run3	9/21/2016	12:24:15	0.34	0.10
run3	9/21/2016	12:24:30	0.32	0.07
run3	9/21/2016	12:24:45	0.32	0.07
run3	9/21/2016	12:25:00	0.29	0.07
run3	9/21/2016	12:25:15	0.29	0.08
run3	9/21/2016	12:25:30	0.27	0.07
run3	9/21/2016	12:25:45	0.26	0.07
run3	9/21/2016	12:26:00	0.26	0.07
run3	9/21/2016	12:26:15	0.27	0.07
run3	9/21/2016	12:26:30	0.29	0.08
run3	9/21/2016	12:26:45	0.29	0.08
run3	9/21/2016	12:27:00	0.30	0.08
run3	9/21/2016	12:27:15	0.31	0.07
run3	9/21/2016	12:27:30	0.31	0.07
run3	9/21/2016	12:27:45	0.32	0.07
run3	9/21/2016	12:28:00	0.31	0.08
run3	9/21/2016	12:28:15	0.31	0.08
run3	9/21/2016	12:28:30	0.28	0.08
run3	9/21/2016	12:28:45	0.27	0.08
run3	9/21/2016	12:29:00	0.28	0.07
run3	9/21/2016	12:29:15	0.29	0.07
run3	9/21/2016	12:29:30	0.28	0.07
run3	9/21/2016	12:29:45	0.28	0.07
run3	9/21/2016	12:30:00	0.30	0.07
run3	9/21/2016	12:30:15	0.32	0.08
run3	9/21/2016	12:30:30	0.31	0.09
run3	9/21/2016	12:30:45	0.33	0.09
run3	9/21/2016	12:31:00	0.31	0.07
run3	9/21/2016	12:31:15	0.29	0.07
run3	9/21/2016	12:31:30	0.28	0.08
run3	9/21/2016	12:31:45	0.30	0.07
run3	9/21/2016	12:32:00	0.27	0.07
run3	9/21/2016	12:32:15	0.26	0.07
run3	9/21/2016	12:32:30	0.29	0.09
run3	9/21/2016	12:32:45	0.29	0.09
run3	9/21/2016	12:33:00	0.30	0.08
run3	9/21/2016	12:33:15	0.30	0.08
run3	9/21/2016	12:33:30	0.29	0.07
run3	9/21/2016	12:33:45	0.30	0.08
run3	9/21/2016	12:34:00	0.32	0.07
run3	9/21/2016	12:34:15	0.30	0.07
run3	9/21/2016	12:34:30	0.30	0.06
run3	9/21/2016	12:34:45	0.29	0.06
run3	9/21/2016	12:35:00	0.29	0.07
run3	9/21/2016	12:35:15	0.29	0.07
run3	9/21/2016	12:35:30	0.30	0.07
run3	9/21/2016	12:35:45	0.34	0.08
run3	9/21/2016	12:36:00	0.33	0.08
run3	9/21/2016	12:36:15	0.31	0.07
run3	9/21/2016	12:36:30	0.30	0.07
run3	9/21/2016	12:36:45	0.27	0.08
run3	9/21/2016	12:37:00	0.27	0.07
run3	9/21/2016	12:37:15	0.29	0.07
run3	9/21/2016	12:37:30	0.33	0.07
run3	9/21/2016	12:37:45	0.33	0.08
run3	9/21/2016	12:38:00	0.32	0.08
run3	9/21/2016	12:38:15	0.32	0.07
run3	9/21/2016	12:38:30	0.33	0.07
run3	9/21/2016	12:38:45	0.33	0.08
run3	9/21/2016	12:39:00	0.35	0.08
run3	9/21/2016	12:39:15	0.35	0.09
run3	9/21/2016	12:39:30	0.33	0.08
run3	9/21/2016	12:39:45	0.31	0.08
run3	9/21/2016	12:40:00	0.32	0.07
run3	9/21/2016	12:40:15	0.35	0.07
run3	9/21/2016	12:40:30	0.35	0.07
run3	9/21/2016	12:40:45	0.33	0.06
run3	9/21/2016	12:41:00	0.32	0.06
run3	9/21/2016	12:41:15	0.28	0.07
run3	9/21/2016	12:41:30	0.30	0.07
run3	9/21/2016	12:41:45	0.30	0.08
run3	9/21/2016	12:42:00	0.31	0.08
run3	9/21/2016	12:42:15	0.32	0.09
run3	9/21/2016	12:42:30	0.31	0.08

name			CO	THC
run3	9/21/2016	12:42:45	0.31	0.07
run3	9/21/2016	12:43:00	0.31	0.08
run3	9/21/2016	12:43:15	0.31	0.09
run3	9/21/2016	12:43:30	0.28	0.09
run3	9/21/2016	12:43:45	0.25	0.09
run3	9/21/2016	12:44:00	0.20	0.09
run3	9/21/2016	12:44:15	0.20	0.09
run3	9/21/2016	12:44:30	0.23	0.08
run3	9/21/2016	12:44:45	0.23	0.08
run3	9/21/2016	12:45:00	0.23	0.08
run3	9/21/2016	12:45:15	0.23	0.07
run3	9/21/2016	12:45:30	0.25	0.08
run3	9/21/2016	12:45:45	0.25	0.07
run3	9/21/2016	12:46:00	0.22	0.08
run3	9/21/2016	12:46:15	0.21	0.07
run3	9/21/2016	12:46:30	0.23	0.07
run3	9/21/2016	12:46:45	0.22	0.08
run3	9/21/2016	12:47:00	0.24	0.08
run3	9/21/2016	12:47:15	0.24	0.08
run3	9/21/2016	12:47:30	0.23	0.07
run3	9/21/2016	12:47:45	0.23	0.07
run3	9/21/2016	12:48:00	0.21	0.07
run3	9/21/2016	12:48:15	0.24	0.06
run3	9/21/2016	12:48:30	0.24	0.06
run3	9/21/2016	12:48:45	0.23	0.07
run3	9/21/2016	12:49:00	0.20	0.08
run3	9/21/2016	12:49:15	0.20	0.08
run3	9/21/2016	12:49:30	0.20	0.09
run3	9/21/2016	12:49:45	0.22	0.10
run3	9/21/2016	12:50:00	0.22	0.08
run3	9/21/2016	12:50:15	0.22	0.08
run3	9/21/2016	12:50:30	0.23	0.08
run3	9/21/2016	12:50:45	0.24	0.08
run3	9/21/2016	12:51:00	0.25	0.08
run3	9/21/2016	12:51:15	0.25	0.08
run3	9/21/2016	12:51:30	0.26	0.09
run3	9/21/2016	12:51:45	0.23	0.07
run3	9/21/2016	12:52:00	0.21	0.06
run3	9/21/2016	12:52:15	0.23	0.08
run3	9/21/2016	12:52:30	0.22	0.08
run3	9/21/2016	12:52:45	0.20	0.09
run3	9/21/2016	12:53:00	0.22	0.09
run3	9/21/2016	12:53:15	0.22	0.09
run3	9/21/2016	12:53:30	0.23	0.10
run3	9/21/2016	12:53:45	0.23	0.09
run3	9/21/2016	12:54:00	0.19	0.09
run3	9/21/2016	12:54:15	0.21	0.08
run3	9/21/2016	12:54:30	0.21	0.08
run3	9/21/2016	12:54:45	0.22	0.09
run3	9/21/2016	12:55:00	0.25	0.09
run3	9/21/2016	12:55:15	0.30	0.09
run3	9/21/2016	12:55:30	0.30	0.08
run3	9/21/2016	12:55:45	0.25	0.08
run3	9/21/2016	12:56:00	0.20	0.08
run3	9/21/2016	12:56:15	0.22	0.07
run3	9/21/2016	12:56:30	0.20	0.08
run3	9/21/2016	12:56:45	0.20	0.10
run3	9/21/2016	12:57:00	0.20	0.09
run3	9/21/2016	12:57:15	0.22	0.07
run3	9/21/2016	12:57:30	0.24	0.07
run3	9/21/2016	12:57:45	0.25	0.08
run3	9/21/2016	12:58:00	0.26	0.07
run3	9/21/2016	12:58:15	0.25	0.07
run3	9/21/2016	12:58:30	0.24	0.07
run3	9/21/2016	12:58:45	0.22	0.08
run3	9/21/2016	12:59:00	0.22	0.09
run3	9/21/2016	12:59:15	0.21	0.07
run3	9/21/2016	12:59:30	0.21	0.06
run3	9/21/2016	12:59:45	0.20	0.05
run3	9/21/2016	13:00:00	0.22	0.05
run3	9/21/2016	13:00:15	0.21	0.06
run3	9/21/2016	13:00:30	0.21	0.07
run3	9/21/2016	13:00:45	0.23	0.08
run3	9/21/2016	13:01:00	0.21	0.09
run3	9/21/2016	13:01:15	0.21	0.08
run3	9/21/2016	13:01:30	0.20	0.07
run3	9/21/2016	13:01:45	0.21	0.06
run3	9/21/2016	13:02:00	0.24	0.06

name			CO	THC				
run3	9/21/2016	13:02:15	0.24	0.06				
run3	9/21/2016	13:02:30	0.23	0.07				
run3	9/21/2016	13:02:45	0.20	0.09				
run3	9/21/2016	13:03:00	0.19	0.08				
run3	9/21/2016	13:03:15	0.21	0.07				
run3	9/21/2016	13:03:30	0.21	0.07				
run3	9/21/2016	13:03:45	0.22	0.08				
run3	9/21/2016	13:04:00	0.24	0.08				
run3	9/21/2016	13:04:15	0.25	0.09				
run3	9/21/2016	13:04:30	0.24	0.08				
run3	9/21/2016	13:04:45	0.22	0.07				
run3	9/21/2016	13:05:00	0.21	0.07				
run3	9/21/2016	13:05:15	0.21	0.08				
run3	9/21/2016	13:05:30	0.21	0.07				
run3	9/21/2016	13:05:45	0.20	0.08				
run3	9/21/2016	13:06:00	0.22	0.09				
run3	9/21/2016	13:06:15	0.23	0.08				
run3	9/21/2016	13:06:30	0.22	0.07				
run3	9/21/2016	13:06:45	0.22	0.08				
run3	9/21/2016	13:07:00	0.23	0.08				
run3	9/21/2016	13:07:15	0.24	0.07				
run3	9/21/2016	13:07:30	0.23	0.07				
run3	9/21/2016	13:07:45	0.22	0.07				
run3	9/21/2016	13:08:00	0.24	0.07				
run3	9/21/2016	13:08:15	0.25	0.08				
run3	9/21/2016	13:08:30	0.22	0.07				
run3	9/21/2016	13:08:45	0.21	0.09				
run3	9/21/2016	13:09:00	0.23	0.08				
run3	9/21/2016	13:09:15	0.24	0.08				
run3	9/21/2016	13:09:30	0.22	0.08				
run3	9/21/2016	13:09:45	0.19	0.08				
run3	9/21/2016	13:10:00	0.20	0.08				
run3	9/21/2016	13:10:15	0.23	0.09				
run3	9/21/2016	13:10:30	0.23	0.09				
run3	9/21/2016	13:10:45	0.22	0.08				
run3	9/21/2016	13:11:00	0.22	0.09				
run3	9/21/2016	13:11:15	0.20	0.08				
run3	9/21/2016	13:11:30	0.20	0.07				
run3	9/21/2016	13:11:45	0.22	0.07				
run3	9/21/2016	13:12:00	0.23	0.07				
run3	9/21/2016	13:12:15	0.21	0.07				
run3	9/21/2016	13:12:30	0.21	0.08				
run3	9/21/2016	13:12:45	0.22	0.07				
run3	9/21/2016	13:13:00	0.22	0.08				
run3	9/21/2016	13:13:15	0.21	0.08				
run3	9/21/2016	13:13:30	0.23	0.06				
run3	9/21/2016	13:13:45	0.24	0.07				
averun3	9/21/2016	12:10:00	0.27	0.08	64			
scg9	9/21/2016	13:17:30	0.26	0.09	EB0080791/cg9	CO2	10.96	O2 11.08
scg9	9/21/2016	13:17:45	0.27	0.09	EB0080791/cg9	CO2	10.96	O2 11.08
scg9	9/21/2016	13:18:00	0.30	0.21	EB0080791/cg9	CO2	10.96	O2 11.08
scg9	9/21/2016	13:18:15	0.69	-0.01	EB0080791/cg9	CO2	10.96	O2 11.08
scg9	9/21/2016	13:18:30	0.65	0.00	EB0080791/cg9	CO2	10.96	O2 11.08
scg9	9/21/2016	13:18:45	0.22	-0.01	EB0080791/cg9	CO2	10.96	O2 11.08
scg9	9/21/2016	13:19:00	-0.02	-0.01	EB0080791/cg9	CO2	10.96	O2 11.08
scg9	9/21/2016	13:19:15	-0.05	-0.01	EB0080791/cg9	CO2	10.96	O2 11.08
scg9	9/21/2016	13:19:30	-0.06	-0.01	EB0080791/cg9	CO2	10.96	O2 11.08
scg9	9/21/2016	13:19:45	-0.03	-0.02	EB0080791/cg9	CO2	10.96	O2 11.08
scg9	9/21/2016	13:20:00	-0.01	-0.02	EB0080791/cg9	CO2	10.96	O2 11.08
scg9	9/21/2016	13:20:15	0.00	-0.01	EB0080791/cg9	CO2	10.96	O2 11.08
cozero1	9/21/2016	13:20:15	0.00	-0.01	EB0080791/cg9	CO2	10.96	O2 11.08
thczero1	9/21/2016	13:20:15	0.00	-0.01	EB0080791/cg9	CO2	10.96	O2 11.08
o2span1	9/21/2016	13:20:15	0.00	-0.01	EB0080791/cg9	CO2	10.96	O2 11.08
co2span1	9/21/2016	13:20:15	0.00	-0.01	EB0080791/cg9	CO2	10.96	O2 11.08
scg4	9/21/2016	13:20:30	-0.01	-0.01	ALM018547/cg4	CO	5.06	0.00
scg4	9/21/2016	13:20:45	-0.01	-0.01	ALM018547/cg4	CO	5.06	0.00
scg4	9/21/2016	13:21:00	0.01	0.01	ALM018547/cg4	CO	5.06	0.00
scg4	9/21/2016	13:21:15	0.12	-0.12	ALM018547/cg4	CO	5.06	0.00
scg4	9/21/2016	13:21:30	1.75	-0.15	ALM018547/cg4	CO	5.06	0.00
scg4	9/21/2016	13:21:45	3.73	-0.15	ALM018547/cg4	CO	5.06	0.00
scg4	9/21/2016	13:22:00	4.92	-0.15	ALM018547/cg4	CO	5.06	0.00
scg4	9/21/2016	13:22:15	5.14	-0.15	ALM018547/cg4	CO	5.06	0.00
scg4	9/21/2016	13:22:30	5.16	-0.15	ALM018547/cg4	CO	5.06	0.00
scg4	9/21/2016	13:22:45	5.18	-0.16	ALM018547/cg4	CO	5.06	0.00
scg4	9/21/2016	13:23:00	5.13	-0.16	ALM018547/cg4	CO	5.06	0.00
scg4	9/21/2016	13:23:15	5.08	-0.16	ALM018547/cg4	CO	5.06	0.00
o2zero1	9/21/2016	13:23:15	5.08	-0.16	ALM018547/cg4	CO	5.06	0.00
co2zero1	9/21/2016	13:23:15	5.08	-0.16	ALM018547/cg4	CO	5.06	0.00

name			CO	THC			
cospan1	9/21/2016	13:23:15	5.08	-0.16 ALM018547/cg4	CO	5.06	0.00
scg12	9/21/2016	13:23:30	5.08	-0.17 ET0010875/cg12	THC	5.01	0.00
scg12	9/21/2016	13:23:45	5.07	-0.15 ET0010875/cg12	THC	5.01	0.00
scg12	9/21/2016	13:24:00	5.07	1.15 ET0010875/cg12	THC	5.01	0.00
scg12	9/21/2016	13:24:15	4.70	4.77 ET0010875/cg12	THC	5.01	0.00
scg12	9/21/2016	13:24:30	2.92	4.92 ET0010875/cg12	THC	5.01	0.00
scg12	9/21/2016	13:24:45	1.30	4.92 ET0010875/cg12	THC	5.01	0.00
scg12	9/21/2016	13:25:00	0.54	4.93 ET0010875/cg12	THC	5.01	0.00
scg12	9/21/2016	13:25:15	0.46	4.92 ET0010875/cg12	THC	5.01	0.00
scg12	9/21/2016	13:25:30	0.44	4.93 ET0010875/cg12	THC	5.01	0.00
scg12	9/21/2016	13:25:45	0.43	4.99 ET0010875/cg12	THC	5.01	0.00
thcspan1	9/21/2016	13:25:45	0.43	4.99 ET0010875/cg12	THC	5.01	0.00

Model 3 Thermal Combustor Outlet Stack
Carbon Monoxide
Concentration

Condition- Run <u>Number</u>	Measured <u>(ppm)</u>	Adjusted <u>(ppm*)</u>
II-2	0.57	0.56
II-4	2.41	2.39
II-5	1.82	1.79

*Calculated according to equation 7E-5.

Model 3 Thermal Combustor Outlet Stack
Total Hydrocarbons
Concentration

Condition- Run <u>Number</u>	Measured <u>(wet ppm)</u>
II-2	0.06
II-4	0.06
II-5	0.07

Model 3 Thermal Combustor Outlet Stack
Calibration Summary
Carbon Monoxide

Condition- Run Number	CO Calibration			CO Zero			Actual CO Calibration Value (ppm)	Actual CO Zero Value (ppm)
	Initial Drift Check (ppm)	Final Drift Check (ppm)	Average (ppm)	Initial Drift Check (ppm)	Final Drift Check (ppm)	Average (ppm)		
II-2	5.06	5.06	5.06	0.03	-0.02	0.01	5.06	0.00
II-4	5.10	5.12	5.11	0.01	-0.01	0.00	5.06	0.00
II-5	5.12	5.09	5.11	-0.01	0.04	0.02	5.06	0.00

Model 3 Thermal Combustor Outlet Stack
System Calibration Bias and Drift Data
Carbon Monoxide
Calibration Span = 9.86 ppm

Condition- Run Number	Initial Response (ppm)	CO Calibration		Final Bias (%*)	Drift (%*)	Initial Response (ppm)	CO Zero		Final Bias (%*)	Drift (%*)	Analyzer Calibration Response Mid Level (ppm)	Analyzer Calibration Response Zero Level (ppm)
		Initial Bias (%*)	Final Response (ppm)				Initial Bias (%*)	Final Response (ppm)				
II-2	5.06	0.00	5.06	0.00	0.00	0.03	0.41	-0.02	0.10	0.51	5.06	-0.01
II-4	5.10	0.41	5.12	0.61	0.20	0.01	0.20	-0.01	0.00	0.20	5.06	-0.01
II-5	5.12	0.61	5.09	0.30	0.30	-0.01	0.00	0.04	0.51	0.51	5.06	-0.01

* PERCENT OF CALIBRATION SPAN

Model 3 Thermal Combustor Outlet Stack
Analyzer Calibration Data
Carbon Monoxide

Date 09/22/16

Condition II

Calibration Span = 9.86 ppm

<u>Gas Range</u>	<u>Actual Calibration Value (ppm)</u>	<u>Analyzer Calibration Response (ppm)</u>	<u>Absolute Difference (ppm)</u>	<u>Difference (%*)</u>
Low	0.00	-0.01	0.01	0.10
Mid	5.06	5.06	0.00	0.00
High	9.86	9.93	0.07	0.71

* Percent of calibration span

Model 3 Thermal Combustor Outlet Stack
Analyzer Calibration Data
Total Hydrocarbons

Date 09/22/16

Condition II

Span = 10 ppm

<u>Gas Range</u>	<u>Actual Calibration Value (ppm)</u>	<u>Analyzer Calibration Response (ppm)</u>	<u>Absolute Difference (ppm)</u>	<u>Difference (%*)</u>
Zero	0.00	0.00	0.00	----
Low	3.13	3.12	0.01	0.32
Mid	5.01	5.00	0.01	0.20
High	8.48	8.50	0.02	----

* Percent of span gas

filename 9/22/2016 7:12:09
 testby1 METCO Environmental
 testby2 Baton Rouge Operations
 testby3 9
 testby4 Jeremiah Johnson
 testfor1 COMM Engineering
 testfor2 *
 testfor3 Unit 3
 testfor4 Lafayette, LA

CV

name	CO	THC					
sn	208845	1125748714					
offset	0.00	0.00					
fullscale	10.10	10.00					
train	1.00	1.00					
gastype	co 10	thc 25a					
dsg1	9/22/2016 7:12:15	0.88	1.15	EB0070656/cg1	N2	0.00	0.00
dsg1	9/22/2016 7:14:45	0.92	1.07	EB0070656/cg1	N2	0.00	0.00
dsg1	9/22/2016 7:15:00	0.92	1.18	EB0070656/cg1	N2	0.00	0.00
dsg1	9/22/2016 7:15:15	1.03	1.39	EB0070656/cg1	N2	0.00	0.00
dsg1	9/22/2016 7:15:30	3.26	0.10	EB0070656/cg1	N2	0.00	0.00
dsg1	9/22/2016 7:15:45	5.50	-0.12	EB0070656/cg1	N2	0.00	0.00
dsg1	9/22/2016 7:16:00	3.39	-0.13	EB0070656/cg1	N2	0.00	0.00
dsg1	9/22/2016 7:16:15	1.27	-0.14	EB0070656/cg1	N2	0.00	0.00
dsg1	9/22/2016 7:16:30	0.83	-0.15	EB0070656/cg1	N2	0.00	0.00
dsg1	9/22/2016 7:16:45	0.73	-0.15	EB0070656/cg1	N2	0.00	0.00
dsg1	9/22/2016 7:17:00	-0.02	-0.09	EB0070656/cg1	N2	0.00	0.00
dsg1	9/22/2016 7:17:15	-0.01	0.01	EB0070656/cg1	N2	0.00	0.00
dsg1	9/22/2016 7:17:30	0.01	0.00	EB0070656/cg1	N2	0.00	0.00
dsg1	9/22/2016 7:17:45	-0.01	0.00	EB0070656/cg1	N2	0.00	0.00
o2ezero1	9/22/2016 7:17:45	-0.01	0.00	EB0070656/cg1	N2	0.00	0.00
co2ezero1	9/22/2016 7:17:45	-0.01	0.00	EB0070656/cg1	N2	0.00	0.00
coezero1	9/22/2016 7:17:45	-0.01	0.00	EB0070656/cg1	N2	0.00	0.00
thcezero1	9/22/2016 7:17:45	-0.01	0.00	EB0070656/cg1	N2	0.00	0.00
dsg10	9/22/2016 7:18:00	-0.04	0.01	AAL021715/cg10	CO2	20.00	O2 19.90
dsg10	9/22/2016 7:18:15	-0.03	0.02	AAL021715/cg10	CO2	20.00	O2 19.90
dsg10	9/22/2016 7:18:30	-0.01	0.35	AAL021715/cg10	CO2	20.00	O2 19.90
dsg10	9/22/2016 7:18:45	-0.05	0.25	AAL021715/cg10	CO2	20.00	O2 19.90
dsg10	9/22/2016 7:19:00	-0.35	0.29	AAL021715/cg10	CO2	20.00	O2 19.90
dsg10	9/22/2016 7:19:15	-0.53	0.31	AAL021715/cg10	CO2	20.00	O2 19.90
dsg10	9/22/2016 7:19:30	-0.53	0.31	AAL021715/cg10	CO2	20.00	O2 19.90
dsg10	9/22/2016 7:19:45	-0.53	0.32	AAL021715/cg10	CO2	20.00	O2 19.90
dsg10	9/22/2016 7:20:00	-0.53	0.31	AAL021715/cg10	CO2	20.00	O2 19.90
dsg10	9/22/2016 7:20:15	-0.53	0.31	AAL021715/cg10	CO2	20.00	O2 19.90
dsg10	9/22/2016 7:20:30	-0.53	0.31	AAL021715/cg10	CO2	20.00	O2 19.90
dsg10	9/22/2016 7:20:45	-0.53	0.31	AAL021715/cg10	CO2	20.00	O2 19.90
o2high1	9/22/2016 7:20:45	-0.53	0.31	AAL021715/cg10	CO2	20.00	O2 19.90
co2high1	9/22/2016 7:20:45	-0.53	0.31	AAL021715/cg10	CO2	20.00	O2 19.90
dsg3	9/22/2016 7:21:00	-0.53	0.31	BLM000616/cg3	CO	9.86	0.00
dsg3	9/22/2016 7:21:15	-0.53	0.31	BLM000616/cg3	CO	9.86	0.00
dsg3	9/22/2016 7:21:30	-0.53	0.79	BLM000616/cg3	CO	9.86	0.00
dsg3	9/22/2016 7:21:45	-0.41	0.20	BLM000616/cg3	CO	9.86	0.00
dsg3	9/22/2016 7:22:00	1.66	0.03	BLM000616/cg3	CO	9.86	0.00
dsg3	9/22/2016 7:22:15	5.25	0.02	BLM000616/cg3	CO	9.86	0.00
dsg3	9/22/2016 7:22:30	7.94	0.02	BLM000616/cg3	CO	9.86	0.00
dsg3	9/22/2016 7:22:45	8.63	0.01	BLM000616/cg3	CO	9.86	0.00
dsg3	9/22/2016 7:23:00	8.74	0.00	BLM000616/cg3	CO	9.86	0.00
dsg3	9/22/2016 7:23:15	8.77	0.00	BLM000616/cg3	CO	9.86	0.00
dsg3	9/22/2016 7:23:30	9.83	0.01	BLM000616/cg3	CO	9.86	0.00
dsg3	9/22/2016 7:23:45	9.90	0.01	BLM000616/cg3	CO	9.86	0.00
dsg3	9/22/2016 7:24:00	9.92	0.02	BLM000616/cg3	CO	9.86	0.00
dsg3	9/22/2016 7:24:15	9.93	0.02	BLM000616/cg3	CO	9.86	0.00
cohigh1	9/22/2016 7:24:15	9.93	0.02	BLM000616/cg3	CO	9.86	0.00
dsg9	9/22/2016 7:24:30	9.94	0.02	EB0080791/cg9	CO2	10.96	O2 11.08
dsg9	9/22/2016 7:24:45	9.93	0.05	EB0080791/cg9	CO2	10.96	O2 11.08
dsg9	9/22/2016 7:25:00	9.88	0.28	EB0080791/cg9	CO2	10.96	O2 11.08
dsg9	9/22/2016 7:25:15	8.95	0.16	EB0080791/cg9	CO2	10.96	O2 11.08
dsg9	9/22/2016 7:25:30	4.68	0.16	EB0080791/cg9	CO2	10.96	O2 11.08
dsg9	9/22/2016 7:25:45	1.16	0.16	EB0080791/cg9	CO2	10.96	O2 11.08
dsg9	9/22/2016 7:26:00	-0.26	0.16	EB0080791/cg9	CO2	10.96	O2 11.08
dsg9	9/22/2016 7:26:15	-0.44	0.17	EB0080791/cg9	CO2	10.96	O2 11.08
dsg9	9/22/2016 7:26:30	-0.45	0.17	EB0080791/cg9	CO2	10.96	O2 11.08
dsg9	9/22/2016 7:26:45	-0.46	0.16	EB0080791/cg9	CO2	10.96	O2 11.08
dsg9	9/22/2016 7:27:00	-0.48	0.16	EB0080791/cg9	CO2	10.96	O2 11.08
dsg9	9/22/2016 7:27:15	-0.48	0.16	EB0080791/cg9	CO2	10.96	O2 11.08
dsg9	9/22/2016 7:27:30	-0.46	0.15	EB0080791/cg9	CO2	10.96	O2 11.08
o2mid1	9/22/2016 7:27:30	-0.46	0.15	EB0080791/cg9	CO2	10.96	O2 11.08
co2mid1	9/22/2016 7:27:30	-0.46	0.15	EB0080791/cg9	CO2	10.96	O2 11.08
dsg4	9/22/2016 7:28:00	-0.47	0.15	ALM018547/cg4	CO	5.06	0.00

name			CO	THC			
dcg4	9/22/2016	7:28:15	-0.48	0.27 ALM018547/cg4	CO	5.06	0.00
dcg4	9/22/2016	7:28:30	-0.43	0.18 ALM018547/cg4	CO	5.06	0.00
dcg4	9/22/2016	7:28:45	0.52	0.00 ALM018547/cg4	CO	5.06	0.00
dcg4	9/22/2016	7:29:00	2.93	0.00 ALM018547/cg4	CO	5.06	0.00
dcg4	9/22/2016	7:29:15	4.48	0.00 ALM018547/cg4	CO	5.06	0.00
dcg4	9/22/2016	7:29:30	5.06	-0.01 ALM018547/cg4	CO	5.06	0.00
dcg4	9/22/2016	7:29:45	5.11	-0.01 ALM018547/cg4	CO	5.06	0.00
dcg4	9/22/2016	7:30:00	5.11	-0.01 ALM018547/cg4	CO	5.06	0.00
dcg4	9/22/2016	7:30:15	5.07	-0.01 ALM018547/cg4	CO	5.06	0.00
dcg4	9/22/2016	7:30:30	5.06	-0.01 ALM018547/cg4	CO	5.06	0.00
comid1	9/22/2016	7:30:30	5.06	-0.01 ALM018547/cg4	CO	5.06	0.00
dcg13	9/22/2016	7:30:45	5.07	0.00 ET0010859/cg13	THC	8.48	0.00
dcg13	9/22/2016	7:31:00	5.06	0.05 ET0010859/cg13	THC	8.48	0.00
dcg13	9/22/2016	7:31:15	5.02	1.50 ET0010859/cg13	THC	8.48	0.00
dcg13	9/22/2016	7:31:30	4.08	7.62 ET0010859/cg13	THC	8.48	0.00
dcg13	9/22/2016	7:31:45	2.42	8.50 ET0010859/cg13	THC	8.48	0.00
dcg13	9/22/2016	7:32:00	0.80	8.50 ET0010859/cg13	THC	8.48	0.00
dcg13	9/22/2016	7:32:15	0.19	8.50 ET0010859/cg13	THC	8.48	0.00
thchigh1	9/22/2016	7:32:15	0.19	8.50 ET0010859/cg13	THC	8.48	0.00
dcg11	9/22/2016	7:34:00	0.11	1.12 BLM005063/cg11	THC	3.13	0.00
dcg11	9/22/2016	7:34:15	0.13	1.19 BLM005063/cg11	THC	3.13	0.00
dcg11	9/22/2016	7:34:30	0.13	3.27 BLM005063/cg11	THC	3.13	0.00
dcg11	9/22/2016	7:34:45	0.11	3.07 BLM005063/cg11	THC	3.13	0.00
dcg11	9/22/2016	7:35:00	0.09	3.05 BLM005063/cg11	THC	3.13	0.00
dcg11	9/22/2016	7:35:15	0.13	3.06 BLM005063/cg11	THC	3.13	0.00
dcg11	9/22/2016	7:35:30	0.14	3.10 BLM005063/cg11	THC	3.13	0.00
dcg11	9/22/2016	7:35:45	0.13	3.12 BLM005063/cg11	THC	3.13	0.00
dcg11	9/22/2016	7:36:00	0.13	3.12 BLM005063/cg11	THC	3.13	0.00
thclow1	9/22/2016	7:36:00	0.13	3.12 BLM005063/cg11	THC	3.13	0.00
dcg12	9/22/2016	7:37:15	0.12	1.21 ET0010875/cg12	THC	5.01	0.00
dcg12	9/22/2016	7:37:30	0.13	1.20 ET0010875/cg12	THC	5.01	0.00
dcg12	9/22/2016	7:37:45	0.12	3.26 ET0010875/cg12	THC	5.01	0.00
dcg12	9/22/2016	7:38:00	0.13	8.43 ET0010875/cg12	THC	5.01	0.00
dcg12	9/22/2016	7:38:15	0.07	8.65 ET0010875/cg12	THC	5.01	0.00
dcg12	9/22/2016	7:38:30	0.01	8.61 ET0010875/cg12	THC	5.01	0.00
dcg12	9/22/2016	7:38:45	0.03	3.66 ET0010875/cg12	THC	5.01	0.00
dcg12	9/22/2016	7:39:00	0.05	4.39 ET0010875/cg12	THC	5.01	0.00
dcg12	9/22/2016	7:39:15	0.10	5.16 ET0010875/cg12	THC	5.01	0.00
dcg12	9/22/2016	7:39:30	0.07	5.09 ET0010875/cg12	THC	5.01	0.00
dcg12	9/22/2016	7:39:45	0.03	4.99 ET0010875/cg12	THC	5.01	0.00
dcg12	9/22/2016	7:40:00	0.03	5.00 ET0010875/cg12	THC	5.01	0.00
thcmid1	9/22/2016	7:40:00	0.03	5.00 ET0010875/cg12	THC	5.01	0.00
scg12	9/22/2016	8:16:45	0.04	0.94 ET0010875/cg12	THC	5.01	0.00
scg12	9/22/2016	8:17:00	0.05	1.50 ET0010875/cg12	THC	5.01	0.00
scg12	9/22/2016	8:17:15	0.08	4.65 ET0010875/cg12	THC	5.01	0.00
scg12	9/22/2016	8:17:30	0.26	4.98 ET0010875/cg12	THC	5.01	0.00
scg12	9/22/2016	8:17:45	0.20	4.98 ET0010875/cg12	THC	5.01	0.00
scg12	9/22/2016	8:18:00	0.07	4.99 ET0010875/cg12	THC	5.01	0.00
scg12	9/22/2016	8:18:15	0.01	4.99 ET0010875/cg12	THC	5.01	0.00
thcspan1	9/22/2016	8:18:15	0.01	4.99 ET0010875/cg12	THC	5.01	0.00
scg9	9/22/2016	8:18:30	0.01	5.00 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/22/2016	8:18:45	-0.01	4.88 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/22/2016	8:19:00	0.01	2.19 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/22/2016	8:19:15	-0.08	0.17 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/22/2016	8:19:30	-0.41	0.15 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/22/2016	8:19:45	-0.53	0.14 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/22/2016	8:20:00	-0.41	0.13 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/22/2016	8:20:15	0.04	0.12 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/22/2016	8:20:30	0.07	0.02 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/22/2016	8:20:45	0.04	0.01 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/22/2016	8:21:00	0.03	0.00 EB0080791/cg9	CO2	10.96 O2	11.08
cozero1	9/22/2016	8:21:00	0.03	0.00 EB0080791/cg9	CO2	10.96 O2	11.08
thczero1	9/22/2016	8:21:00	0.03	0.00 EB0080791/cg9	CO2	10.96 O2	11.08
o2span1	9/22/2016	8:21:00	0.03	0.00 EB0080791/cg9	CO2	10.96 O2	11.08
co2span1	9/22/2016	8:21:00	0.03	0.00 EB0080791/cg9	CO2	10.96 O2	11.08
scg4	9/22/2016	8:21:30	0.06	0.01 ALM018547/cg4	CO	5.06	0.00
scg4	9/22/2016	8:21:45	0.05	0.17 ALM018547/cg4	CO	5.06	0.00
scg4	9/22/2016	8:22:00	0.14	-0.02 ALM018547/cg4	CO	5.06	0.00
scg4	9/22/2016	8:22:15	1.28	-0.13 ALM018547/cg4	CO	5.06	0.00
scg4	9/22/2016	8:22:30	3.94	-0.15 ALM018547/cg4	CO	5.06	0.00
scg4	9/22/2016	8:22:45	5.26	-0.16 ALM018547/cg4	CO	5.06	0.00
scg4	9/22/2016	8:23:00	5.61	-0.16 ALM018547/cg4	CO	5.06	0.00
scg4	9/22/2016	8:23:15	5.65	-0.17 ALM018547/cg4	CO	5.06	0.00
scg4	9/22/2016	8:23:30	5.59	-0.17 ALM018547/cg4	CO	5.06	0.00
scg4	9/22/2016	8:23:45	5.07	-0.17 ALM018547/cg4	CO	5.06	0.00
scg4	9/22/2016	8:24:00	5.07	-0.17 ALM018547/cg4	CO	5.06	0.00
scg4	9/22/2016	8:24:15	5.06	-0.17 ALM018547/cg4	CO	5.06	0.00

name			CO	THC				
scg4	9/22/2016	8:24:30	5.06	-0.17	ALM018547/cg4	CO	5.06	0.00
o2zero1	9/22/2016	8:24:15	5.06	-0.17	ALM018547/cg4	CO	5.06	0.00
co2zero1	9/22/2016	8:24:30	5.06	-0.17	ALM018547/cg4	CO	5.06	0.00
cospan1	9/22/2016	8:24:30	5.06	-0.17	ALM018547/cg4	CO	5.06	0.00
run1	9/22/2016	8:40:00	3.39	0.08				
run1	9/22/2016	8:40:15	3.33	0.07				
run1	9/22/2016	8:40:30	3.03	0.06				
run1	9/22/2016	8:40:45	2.82	0.07				
run1	9/22/2016	8:41:00	2.79	0.07				
run1	9/22/2016	8:41:15	2.78	0.06				
run1	9/22/2016	8:41:30	2.42	0.05				
run1	9/22/2016	8:41:45	1.66	0.05				
run1	9/22/2016	8:42:00	1.10	0.06				
run1	9/22/2016	8:42:15	0.96	0.05				
run1	9/22/2016	8:42:30	0.82	0.05				
run1	9/22/2016	8:42:45	0.65	0.05				
run1	9/22/2016	8:43:00	0.55	0.06				
run1	9/22/2016	8:43:15	0.51	0.07				
run1	9/22/2016	8:43:30	0.45	0.06				
run1	9/22/2016	8:43:45	0.39	0.06				
run1	9/22/2016	8:44:00	0.35	0.06				
run1	9/22/2016	8:44:15	0.32	0.07				
run1	9/22/2016	8:44:30	0.34	0.07				
run1	9/22/2016	8:44:45	0.39	0.07				
run1	9/22/2016	8:45:00	0.41	0.08				
run1	9/22/2016	8:45:15	0.44	0.09				
run1	9/22/2016	8:45:30	0.50	0.09				
run1	9/22/2016	8:45:45	0.58	0.08				
run1	9/22/2016	8:46:00	0.64	0.08				
run1	9/22/2016	8:46:15	0.70	0.09				
run1	9/22/2016	8:46:30	0.67	0.09				
run1	9/22/2016	8:46:45	0.62	0.09				
run1	9/22/2016	8:47:00	0.60	0.09				
run1	9/22/2016	8:47:15	0.60	0.10				
run1	9/22/2016	8:47:30	0.68	0.08				
run1	9/22/2016	8:47:45	0.79	0.07				
run1	9/22/2016	8:48:00	0.78	0.07				
run1	9/22/2016	8:48:15	0.67	0.08				
run1	9/22/2016	8:48:30	0.58	0.08				
run1	9/22/2016	8:48:45	0.59	0.08				
run1	9/22/2016	8:49:00	0.57	0.08				
run1	9/22/2016	8:49:15	0.56	0.07				
run1	9/22/2016	8:49:30	0.56	0.07				
run1	9/22/2016	8:49:45	0.52	0.07				
run1	9/22/2016	8:50:00	0.49	0.08				
run1	9/22/2016	8:50:15	0.51	0.08				
run1	9/22/2016	8:50:30	0.54	0.08				
run1	9/22/2016	8:50:45	0.55	0.08				
run1	9/22/2016	8:51:00	0.54	0.08				
run1	9/22/2016	8:51:15	0.52	0.09				
run1	9/22/2016	8:51:30	0.50	0.08				
run1	9/22/2016	8:51:45	0.53	0.07				
run1	9/22/2016	8:52:00	0.52	0.07				
run1	9/22/2016	8:52:15	0.46	0.06				
run1	9/22/2016	8:52:30	0.41	0.05				
run1	9/22/2016	8:52:45	0.34	0.06				
run1	9/22/2016	8:53:00	0.29	0.07				
run1	9/22/2016	8:53:15	0.28	0.06				
run1	9/22/2016	8:53:30	0.25	0.06				
run1	9/22/2016	8:53:45	0.25	0.06				
run1	9/22/2016	8:54:00	0.25	0.05				
run1	9/22/2016	8:54:15	0.24	0.06				
run1	9/22/2016	8:54:30	0.24	0.05				
run1	9/22/2016	8:54:45	0.24	0.05				
run1	9/22/2016	8:55:00	0.31	0.06				
run1	9/22/2016	8:55:15	0.37	0.06				
run1	9/22/2016	8:55:30	0.43	0.06				
run1	9/22/2016	8:55:45	0.56	0.07				
run1	9/22/2016	8:56:00	0.92	0.07				
run1	9/22/2016	8:56:15	1.18	0.06				
run1	9/22/2016	8:56:30	1.20	0.06				
run1	9/22/2016	8:56:45	1.01	0.06				
run1	9/22/2016	8:57:00	0.76	0.06				
run1	9/22/2016	8:57:15	0.64	0.05				
run1	9/22/2016	8:57:30	0.48	0.04				
run1	9/22/2016	8:57:45	0.35	0.04				
run1	9/22/2016	8:58:00	0.22	0.05				

name			CO	THC
run1	9/22/2016	8:58:15	0.15	0.05
run1	9/22/2016	8:58:30	0.13	0.04
run1	9/22/2016	8:58:45	0.12	0.04
run1	9/22/2016	8:59:00	0.10	0.04
run1	9/22/2016	8:59:15	0.10	0.04
run1	9/22/2016	8:59:30	0.12	0.05
run1	9/22/2016	8:59:45	0.14	0.07
run1	9/22/2016	9:00:00	0.17	0.07
run1	9/22/2016	9:00:15	0.21	0.07
run1	9/22/2016	9:00:30	0.27	0.08
run1	9/22/2016	9:00:45	0.33	0.08
run1	9/22/2016	9:01:00	0.36	0.09
run1	9/22/2016	9:01:15	0.34	0.09
run1	9/22/2016	9:01:30	0.37	0.08
run1	9/22/2016	9:01:45	0.37	0.07
run1	9/22/2016	9:02:00	0.34	0.08
run1	9/22/2016	9:02:15	0.33	0.08
run1	9/22/2016	9:02:30	0.35	0.08
run1	9/22/2016	9:02:45	0.37	0.09
run1	9/22/2016	9:03:00	0.35	0.09
run1	9/22/2016	9:03:15	0.34	0.09
run1	9/22/2016	9:03:30	0.33	0.08
run1	9/22/2016	9:03:45	0.39	0.07
run1	9/22/2016	9:04:00	0.45	0.08
run1	9/22/2016	9:04:15	0.53	0.08
run1	9/22/2016	9:04:30	0.60	0.08
run1	9/22/2016	9:04:45	0.54	0.09
run1	9/22/2016	9:05:00	0.45	0.09
run1	9/22/2016	9:05:15	0.36	0.10
run1	9/22/2016	9:05:30	0.28	0.09
run1	9/22/2016	9:05:45	0.24	0.09
run1	9/22/2016	9:06:00	0.27	0.08
run1	9/22/2016	9:06:15	0.30	0.08
run1	9/22/2016	9:06:30	0.31	0.08
run1	9/22/2016	9:06:45	0.32	0.08
run1	9/22/2016	9:07:00	0.35	0.08
run1	9/22/2016	9:07:15	0.35	0.08
run1	9/22/2016	9:07:30	0.29	0.08
run1	9/22/2016	9:07:45	0.25	0.07
run1	9/22/2016	9:08:00	0.21	0.08
run1	9/22/2016	9:08:15	0.17	0.07
run1	9/22/2016	9:08:30	0.15	0.06
run1	9/22/2016	9:08:45	0.14	0.06
run1	9/22/2016	9:09:00	0.17	0.04
run1	9/22/2016	9:09:15	0.22	0.04
run1	9/22/2016	9:09:30	0.28	0.04
run1	9/22/2016	9:09:45	0.31	0.04
run1	9/22/2016	9:10:00	0.30	0.02
run1	9/22/2016	9:10:15	0.62	0.02
run1	9/22/2016	9:10:30	1.25	0.03
run1	9/22/2016	9:10:45	1.64	0.02
run1	9/22/2016	9:11:00	1.88	0.04
run1	9/22/2016	9:11:15	1.96	0.04
run1	9/22/2016	9:11:30	1.79	0.05
run1	9/22/2016	9:11:45	1.46	0.04
run1	9/22/2016	9:12:00	1.07	0.03
run1	9/22/2016	9:12:15	0.80	0.03
run1	9/22/2016	9:12:30	0.52	0.06
run1	9/22/2016	9:12:45	0.37	0.06
run1	9/22/2016	9:13:00	0.24	0.05
run1	9/22/2016	9:13:15	0.17	0.05
run1	9/22/2016	9:13:30	0.13	0.06
run1	9/22/2016	9:13:45	0.13	0.07
run1	9/22/2016	9:14:00	0.12	0.06
run1	9/22/2016	9:14:15	0.11	0.05
run1	9/22/2016	9:14:30	0.11	0.05
run1	9/22/2016	9:14:45	0.10	0.06
run1	9/22/2016	9:15:00	0.10	0.07
run1	9/22/2016	9:15:15	0.15	0.07
run1	9/22/2016	9:15:30	0.20	0.07
run1	9/22/2016	9:15:45	0.26	0.07
run1	9/22/2016	9:16:00	0.31	0.06
run1	9/22/2016	9:16:15	0.30	0.07
run1	9/22/2016	9:16:30	0.29	0.08
run1	9/22/2016	9:16:45	0.28	0.06
run1	9/22/2016	9:17:00	0.29	0.07
run1	9/22/2016	9:17:15	0.28	0.07

name			CO	THC
run1	9/22/2016	9:17:30	0.27	0.08
run1	9/22/2016	9:17:45	0.28	0.09
run1	9/22/2016	9:18:00	0.29	0.08
run1	9/22/2016	9:18:15	0.29	0.08
run1	9/22/2016	9:18:30	0.30	0.09
run1	9/22/2016	9:18:45	0.40	0.09
run1	9/22/2016	9:19:00	0.53	0.07
run1	9/22/2016	9:19:15	0.52	0.07
run1	9/22/2016	9:19:30	0.38	0.07
run1	9/22/2016	9:19:45	0.26	0.08
run1	9/22/2016	9:20:00	0.22	0.07
run1	9/22/2016	9:20:15	0.21	0.07
run1	9/22/2016	9:20:30	0.19	0.06
run1	9/22/2016	9:20:45	0.18	0.07
run1	9/22/2016	9:21:00	0.15	0.09
run1	9/22/2016	9:21:15	0.21	0.08
run1	9/22/2016	9:21:30	0.32	0.07
run1	9/22/2016	9:21:45	0.36	0.07
run1	9/22/2016	9:22:00	0.31	0.07
run1	9/22/2016	9:22:15	0.26	0.07
run1	9/22/2016	9:22:30	0.20	0.06
run1	9/22/2016	9:22:45	0.18	0.06
run1	9/22/2016	9:23:00	0.15	0.06
run1	9/22/2016	9:23:15	0.12	0.06
run1	9/22/2016	9:23:30	0.08	0.07
run1	9/22/2016	9:23:45	0.09	0.07
run1	9/22/2016	9:24:00	0.09	0.06
run1	9/22/2016	9:24:15	0.10	0.06
run1	9/22/2016	9:24:30	0.14	0.05
run1	9/22/2016	9:24:45	0.31	0.05
run1	9/22/2016	9:25:00	0.49	0.05
run1	9/22/2016	9:25:15	0.45	0.04
run1	9/22/2016	9:25:30	0.42	0.05
run1	9/22/2016	9:25:45	0.61	0.04
run1	9/22/2016	9:26:00	0.82	0.05
run1	9/22/2016	9:26:15	0.95	0.04
run1	9/22/2016	9:26:30	1.06	0.05
run1	9/22/2016	9:26:45	1.04	0.06
run1	9/22/2016	9:27:00	0.96	0.06
run1	9/22/2016	9:27:15	0.71	0.06
run1	9/22/2016	9:27:30	0.37	0.07
run1	9/22/2016	9:27:45	0.21	0.08
run1	9/22/2016	9:28:00	0.16	0.07
run1	9/22/2016	9:28:15	0.16	0.07
run1	9/22/2016	9:28:30	0.12	0.07
run1	9/22/2016	9:28:45	0.11	0.07
run1	9/22/2016	9:29:00	0.09	0.07
run1	9/22/2016	9:29:15	0.09	0.07
run1	9/22/2016	9:29:30	0.08	0.06
run1	9/22/2016	9:29:45	0.09	0.07
run1	9/22/2016	9:30:00	0.17	0.07
run1	9/22/2016	9:30:15	0.22	0.06
run1	9/22/2016	9:30:30	0.18	0.06
run1	9/22/2016	9:30:45	0.12	0.06
run1	9/22/2016	9:31:00	0.08	0.06
run1	9/22/2016	9:31:15	0.09	0.06
run1	9/22/2016	9:31:30	0.12	0.07
run1	9/22/2016	9:31:45	0.17	0.07
run1	9/22/2016	9:32:00	0.17	0.04
run1	9/22/2016	9:32:15	0.16	0.04
run1	9/22/2016	9:32:30	0.14	0.05
run1	9/22/2016	9:32:45	0.17	0.05
run1	9/22/2016	9:33:00	0.20	0.06
run1	9/22/2016	9:33:15	0.16	0.04
run1	9/22/2016	9:33:30	0.10	0.05
run1	9/22/2016	9:33:45	0.07	0.06
run1	9/22/2016	9:34:00	0.06	0.07
run1	9/22/2016	9:34:15	0.06	0.08
run1	9/22/2016	9:34:30	0.07	0.06
run1	9/22/2016	9:34:45	0.08	0.06
run1	9/22/2016	9:35:00	0.11	0.06
run1	9/22/2016	9:35:15	0.13	0.06
run1	9/22/2016	9:35:30	0.15	0.05
run1	9/22/2016	9:35:45	0.17	0.06
run1	9/22/2016	9:36:00	0.15	0.06
run1	9/22/2016	9:36:15	0.13	0.06
run1	9/22/2016	9:36:30	0.12	0.08

name			CO	THC			
run1	9/22/2016	9:36:45	0.39	0.05			
run1	9/22/2016	9:37:00	0.91	0.04			
run1	9/22/2016	9:37:15	2.22	0.04			
run1	9/22/2016	9:37:30	3.04	0.05			
run1	9/22/2016	9:37:45	2.75	0.05			
run1	9/22/2016	9:38:00	1.88	0.05			
run1	9/22/2016	9:38:15	1.24	0.05			
run1	9/22/2016	9:38:30	0.80	0.05			
run1	9/22/2016	9:38:45	0.41	0.04			
run1	9/22/2016	9:39:00	0.32	0.05			
run1	9/22/2016	9:39:15	0.87	0.04			
run1	9/22/2016	9:39:30	1.66	0.05			
run1	9/22/2016	9:39:45	1.90	0.05			
run1	9/22/2016	9:40:00	1.96	0.05			
run1	9/22/2016	9:40:15	1.55	0.04			
run1	9/22/2016	9:40:30	1.35	0.04			
run1	9/22/2016	9:40:45	1.50	0.04			
run1	9/22/2016	9:41:00	1.32	0.04			
run1	9/22/2016	9:41:15	1.07	0.04			
run1	9/22/2016	9:41:30	1.13	0.03			
run1	9/22/2016	9:41:45	1.49	0.04			
run1	9/22/2016	9:42:00	1.75	0.04			
run1	9/22/2016	9:42:15	1.45	0.03			
run1	9/22/2016	9:42:30	1.23	0.04			
run1	9/22/2016	9:42:45	1.14	0.04			
run1	9/22/2016	9:43:00	1.06	0.03			
run1	9/22/2016	9:43:15	0.93	0.04			
run1	9/22/2016	9:43:30	0.78	0.04			
run1	9/22/2016	9:43:45	0.76	0.04			
averun1	9/22/2016	8:40:00	0.57	0.06	64		
scg4	9/22/2016	9:46:45	3.81	0.05	ALM018547/cg4	CO	5.06 0.00
scg4	9/22/2016	9:47:00	2.14	0.06	ALM018547/cg4	CO	5.06 0.00
scg4	9/22/2016	9:47:15	2.46	0.18	ALM018547/cg4	CO	5.06 0.00
scg4	9/22/2016	9:47:30	5.64	-0.07	ALM018547/cg4	CO	5.06 0.00
scg4	9/22/2016	9:47:45	7.17	-0.15	ALM018547/cg4	CO	5.06 0.00
scg4	9/22/2016	9:48:00	6.19	-0.16	ALM018547/cg4	CO	5.06 0.00
scg4	9/22/2016	9:48:15	5.26	-0.15	ALM018547/cg4	CO	5.06 0.00
scg4	9/22/2016	9:48:30	5.02	-0.15	ALM018547/cg4	CO	5.06 0.00
scg4	9/22/2016	9:48:45	4.99	-0.15	ALM018547/cg4	CO	5.06 0.00
scg4	9/22/2016	9:49:00	5.06	-0.15	ALM018547/cg4	CO	5.06 0.00
scg4	9/22/2016	9:49:15	5.06	-0.14	ALM018547/cg4	CO	5.06 0.00
scg4	9/22/2016	9:49:30	5.04	-0.15	ALM018547/cg4	CO	5.06 0.00
scg4	9/22/2016	9:49:45	5.06	-0.16	ALM018547/cg4	CO	5.06 0.00
o2zero1	9/22/2016	9:49:45	5.06	-0.16	ALM018547/cg4	CO	5.06 0.00
co2zero1	9/22/2016	9:49:30	5.04	-0.15	ALM018547/cg4	CO	5.06 0.00
cospan1	9/22/2016	9:49:15	5.06	-0.14	ALM018547/cg4	CO	5.06 0.00
scg9	9/22/2016	9:50:00	5.07	-0.15	EB0080791/cg9	CO2	10.96 O2 11.08
scg9	9/22/2016	9:50:15	5.06	-0.04	EB0080791/cg9	CO2	10.96 O2 11.08
scg9	9/22/2016	9:50:30	5.07	0.52	EB0080791/cg9	CO2	10.96 O2 11.08
scg9	9/22/2016	9:50:45	4.59	0.00	EB0080791/cg9	CO2	10.96 O2 11.08
scg9	9/22/2016	9:51:00	2.55	0.01	EB0080791/cg9	CO2	10.96 O2 11.08
scg9	9/22/2016	9:51:15	0.81	0.02	EB0080791/cg9	CO2	10.96 O2 11.08
scg9	9/22/2016	9:51:30	0.07	0.02	EB0080791/cg9	CO2	10.96 O2 11.08
scg9	9/22/2016	9:51:45	0.00	0.02	EB0080791/cg9	CO2	10.96 O2 11.08
scg9	9/22/2016	9:52:00	-0.03	0.02	EB0080791/cg9	CO2	10.96 O2 11.08
scg9	9/22/2016	9:52:15	-0.01	0.02	EB0080791/cg9	CO2	10.96 O2 11.08
scg9	9/22/2016	9:52:30	-0.02	0.02	EB0080791/cg9	CO2	10.96 O2 11.08
cozero1	9/22/2016	9:52:30	-0.02	0.02	EB0080791/cg9	CO2	10.96 O2 11.08
thczero1	9/22/2016	9:52:30	-0.02	0.02	EB0080791/cg9	CO2	10.96 O2 11.08
o2span1	9/22/2016	9:52:30	-0.02	0.02	EB0080791/cg9	CO2	10.96 O2 11.08
co2span1	9/22/2016	9:52:30	-0.02	0.02	EB0080791/cg9	CO2	10.96 O2 11.08
scg12	9/22/2016	9:52:45	-0.02	0.02	ET0010875/cg12	THC	5.01 0.00
scg12	9/22/2016	9:53:00	-0.03	0.02	ET0010875/cg12	THC	5.01 0.00
scg12	9/22/2016	9:53:15	-0.04	0.93	ET0010875/cg12	THC	5.01 0.00
scg12	9/22/2016	9:53:30	-0.02	4.64	ET0010875/cg12	THC	5.01 0.00
scg12	9/22/2016	9:53:45	0.10	4.97	ET0010875/cg12	THC	5.01 0.00
scg12	9/22/2016	9:54:00	0.35	4.98	ET0010875/cg12	THC	5.01 0.00
scg12	9/22/2016	9:54:15	0.40	4.99	ET0010875/cg12	THC	5.01 0.00
scg12	9/22/2016	9:54:15	0.40	4.99	ET0010875/cg12	THC	5.01 0.00
thcspan1	9/22/2016	11:46:45	0.30	0.88	EB0080791/cg9	CO2	10.96 O2 11.08
scg9	9/22/2016	11:47:00	0.30	0.82	EB0080791/cg9	CO2	10.96 O2 11.08
scg9	9/22/2016	11:47:15	0.29	1.26	EB0080791/cg9	CO2	10.96 O2 11.08
scg9	9/22/2016	11:47:30	0.52	0.41	EB0080791/cg9	CO2	10.96 O2 11.08
scg9	9/22/2016	11:47:45	1.07	0.00	EB0080791/cg9	CO2	10.96 O2 11.08
scg9	9/22/2016	11:48:00	0.62	-0.01	EB0080791/cg9	CO2	10.96 O2 11.08
scg9	9/22/2016	11:48:15	0.04	0.00	EB0080791/cg9	CO2	10.96 O2 11.08
scg9	9/22/2016	11:48:30	-0.11	-0.01	EB0080791/cg9	CO2	10.96 O2 11.08

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name			CO	THC			
scg9	9/22/2016	11:48:45	-0.09	-0.01 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/22/2016	11:49:00	0.00	-0.02 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/22/2016	11:49:15	0.00	-0.01 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/22/2016	11:49:30	-0.01	0.00 EB0080791/cg9	CO2	10.96 O2	11.08
cozero1	9/22/2016	11:49:15	0.00	-0.01 EB0080791/cg9	CO2	10.96 O2	11.08
thczero1	9/22/2016	11:49:15	0.00	-0.01 EB0080791/cg9	CO2	10.96 O2	11.08
o2span1	9/22/2016	11:49:15	0.00	-0.01 EB0080791/cg9	CO2	10.96 O2	11.08
co2span1	9/22/2016	11:49:15	0.00	-0.01 EB0080791/cg9	CO2	10.96 O2	11.08
scg4	9/22/2016	11:49:45	-0.01	0.00 ALM018547/cg4	CO	5.06	0.00
scg4	9/22/2016	11:50:00	-0.03	0.06 ALM018547/cg4	CO	5.06	0.00
scg4	9/22/2016	11:50:15	0.01	-0.01 ALM018547/cg4	CO	5.06	0.00
scg4	9/22/2016	11:50:30	0.91	-0.13 ALM018547/cg4	CO	5.06	0.00
scg4	9/22/2016	11:50:45	2.94	-0.12 ALM018547/cg4	CO	5.06	0.00
scg4	9/22/2016	11:51:00	4.52	-0.14 ALM018547/cg4	CO	5.06	0.00
scg4	9/22/2016	11:51:15	4.95	-0.15 ALM018547/cg4	CO	5.06	0.00
scg4	9/22/2016	11:51:30	5.04	-0.15 ALM018547/cg4	CO	5.06	0.00
scg4	9/22/2016	11:51:45	5.06	-0.15 ALM018547/cg4	CO	5.06	0.00
scg4	9/22/2016	11:52:00	5.09	-0.15 ALM018547/cg4	CO	5.06	0.00
o2zero1	9/22/2016	11:52:00	5.09	-0.15 ALM018547/cg4	CO	5.06	0.00
co2zero1	9/22/2016	11:52:00	5.09	-0.15 ALM018547/cg4	CO	5.06	0.00
cospan1	9/22/2016	11:52:00	5.09	-0.15 ALM018547/cg4	CO	5.06	0.00
scg12	9/22/2016	11:52:15	5.08	-0.15 ET0010875/cg12	THC	5.01	0.00
scg12	9/22/2016	11:52:30	5.08	-0.14 ET0010875/cg12	THC	5.01	0.00
scg12	9/22/2016	11:52:45	5.08	0.30 ET0010875/cg12	THC	5.01	0.00
scg12	9/22/2016	11:53:00	5.06	4.39 ET0010875/cg12	THC	5.01	0.00
scg12	9/22/2016	11:53:15	4.14	4.97 ET0010875/cg12	THC	5.01	0.00
scg12	9/22/2016	11:53:30	1.95	4.97 ET0010875/cg12	THC	5.01	0.00
scg12	9/22/2016	11:53:45	0.80	4.98 ET0010875/cg12	THC	5.01	0.00
thcspan1	9/22/2016	11:53:45	0.80	4.98 ET0010875/cg12	THC	5.01	0.00
run2	9/22/2016	12:00:00	3.13	0.07			
run2	9/22/2016	12:00:15	2.76	0.07			
run2	9/22/2016	12:00:30	2.19	0.07			
run2	9/22/2016	12:00:45	1.70	0.07			
run2	9/22/2016	12:01:00	1.37	0.07			
run2	9/22/2016	12:01:15	1.29	0.07			
run2	9/22/2016	12:01:30	1.25	0.06			
run2	9/22/2016	12:01:45	1.18	0.07			
run2	9/22/2016	12:02:00	0.90	0.08			
run2	9/22/2016	12:02:15	0.64	0.07			
run2	9/22/2016	12:02:30	0.62	0.07			
run2	9/22/2016	12:02:45	0.64	0.08			
run2	9/22/2016	12:03:00	0.55	0.07			
run2	9/22/2016	12:03:15	0.37	0.06			
run2	9/22/2016	12:03:30	0.21	0.07			
run2	9/22/2016	12:03:45	0.14	0.08			
run2	9/22/2016	12:04:00	0.09	0.07			
run2	9/22/2016	12:04:15	0.09	0.08			
run2	9/22/2016	12:04:30	0.08	0.07			
run2l	9/22/2016	12:04:45	0.12	0.06			
run2l	9/22/2016	12:05:00	0.17	0.06			
run2l	9/22/2016	12:05:15	0.34	0.07			
run2l	9/22/2016	12:05:30	1.49	0.11			
run2l	9/22/2016	12:05:45	3.89	0.19			
run2l	9/22/2016	12:06:00	6.43	0.24			
run2l	9/22/2016	12:06:15	7.95	0.41			
scg12	9/22/2016	15:06:00	0.34	1.20 ET0010875/cg12	THC	5.01	0.00
scg12	9/22/2016	15:06:15	0.33	1.56 ET0010875/cg12	THC	5.01	0.00
scg12	9/22/2016	15:06:30	0.60	4.48 ET0010875/cg12	THC	5.01	0.00
scg12	9/22/2016	15:06:45	1.61	4.93 ET0010875/cg12	THC	5.01	0.00
scg12	9/22/2016	15:07:00	1.65	4.94 ET0010875/cg12	THC	5.01	0.00
scg12	9/22/2016	15:07:15	0.83	4.94 ET0010875/cg12	THC	5.01	0.00
scg12	9/22/2016	15:07:30	0.43	4.95 ET0010875/cg12	THC	5.01	0.00
scg12	9/22/2016	15:07:45	0.38	4.94 ET0010875/cg12	THC	5.01	0.00
scg12	9/22/2016	15:08:00	0.37	4.96 ET0010875/cg12	THC	5.01	0.00
scg12	9/22/2016	15:08:15	0.37	5.00 ET0010875/cg12	THC	5.01	0.00
scg12	9/22/2016	15:08:30	0.39	5.01 ET0010875/cg12	THC	5.01	0.00
thcspan1	9/22/2016	15:08:30	0.39	5.01 ET0010875/cg12	THC	5.01	0.00
scg9	9/22/2016	15:08:45	0.37	5.00 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/22/2016	15:09:00	0.37	6.37 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/22/2016	15:09:15	0.38	4.88 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/22/2016	15:09:30	0.34	0.01 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/22/2016	15:09:45	0.05	-0.01 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/22/2016	15:10:00	-0.17	-0.01 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/22/2016	15:10:15	-0.14	-0.01 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/22/2016	15:10:30	-0.08	0.00 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/22/2016	15:10:45	0.01	0.00 EB0080791/cg9	CO2	10.96 O2	11.08
cozero1	9/22/2016	15:10:45	0.01	0.00 EB0080791/cg9	CO2	10.96 O2	11.08

name			CO	THC				
thczero1	9/22/2016	15:10:45	0.01	0.00	EB0080791/cg9	CO2	10.96	O2 11.08
o2span1	9/22/2016	15:10:45	0.01	0.00	EB0080791/cg9	CO2	10.96	O2 11.08
co2span1	9/22/2016	15:10:45	0.01	0.00	EB0080791/cg9	CO2	10.96	O2 11.08
scg4	9/22/2016	15:11:15	0.00	-0.01	ALM018547/cg4	CO	5.06	0.00
scg4	9/22/2016	15:11:30	0.01	0.02	ALM018547/cg4	CO	5.06	0.00
scg4	9/22/2016	15:11:45	0.13	-0.08	ALM018547/cg4	CO	5.06	0.00
scg4	9/22/2016	15:12:00	1.44	-0.15	ALM018547/cg4	CO	5.06	0.00
scg4	9/22/2016	15:12:15	3.56	-0.15	ALM018547/cg4	CO	5.06	0.00
scg4	9/22/2016	15:12:30	4.73	-0.15	ALM018547/cg4	CO	5.06	0.00
scg4	9/22/2016	15:12:45	5.03	-0.14	ALM018547/cg4	CO	5.06	0.00
scg4	9/22/2016	15:13:00	5.09	-0.14	ALM018547/cg4	CO	5.06	0.00
scg4	9/22/2016	15:13:15	5.10	-0.14	ALM018547/cg4	CO	5.06	0.00
o2zero1	9/22/2016	15:13:15	5.10	-0.14	ALM018547/cg4	CO	5.06	0.00
co2zero1	9/22/2016	15:13:15	5.10	-0.14	ALM018547/cg4	CO	5.06	0.00
cospan1	9/22/2016	15:13:15	5.10	-0.14	ALM018547/cg4	CO	5.06	0.00
run3l	9/22/2016	15:30:00	3.73	0.05				
run3l	9/22/2016	15:30:15	3.80	0.04				
run3l	9/22/2016	15:30:30	3.68	0.04				
run3l	9/22/2016	15:30:45	3.63	0.04				
run3l	9/22/2016	15:31:00	3.42	0.04				
run3l	9/22/2016	15:31:15	3.01	0.05				
run3l	9/22/2016	15:31:30	2.74	0.05				
run3	9/22/2016	15:31:45	2.50	0.06				
run3	9/22/2016	15:32:00	2.00	0.07				
run3	9/22/2016	15:32:15	1.88	0.06				
run3	9/22/2016	15:32:30	2.05	0.04				
run3	9/22/2016	15:32:45	2.34	0.06				
run3	9/22/2016	15:33:00	2.31	0.07				
run3	9/22/2016	15:33:15	1.84	0.08				
run3	9/22/2016	15:33:30	1.41	0.07				
run3	9/22/2016	15:33:45	1.12	0.06				
run3	9/22/2016	15:34:00	0.88	0.06				
run3	9/22/2016	15:34:15	0.83	0.07				
run3	9/22/2016	15:34:30	0.89	0.07				
run3	9/22/2016	15:34:45	0.94	0.07				
run3	9/22/2016	15:35:00	0.93	0.06				
run3	9/22/2016	15:35:15	0.80	0.06				
run3	9/22/2016	15:35:30	0.71	0.06				
run3	9/22/2016	15:35:45	0.68	0.06				
run3	9/22/2016	15:36:00	0.69	0.06				
run3	9/22/2016	15:36:15	0.67	0.07				
run3	9/22/2016	15:36:30	0.93	0.07				
run3	9/22/2016	15:36:45	1.71	0.07				
run3	9/22/2016	15:37:00	2.48	0.07				
run3	9/22/2016	15:37:15	2.55	0.07				
run3	9/22/2016	15:37:30	2.38	0.08				
run3	9/22/2016	15:37:45	2.03	0.06				
run3	9/22/2016	15:38:00	1.86	0.07				
run3	9/22/2016	15:38:15	1.96	0.07				
run3	9/22/2016	15:38:30	1.95	0.07				
run3	9/22/2016	15:38:45	1.80	0.06				
run3	9/22/2016	15:39:00	1.37	0.06				
run3	9/22/2016	15:39:15	1.07	0.07				
run3	9/22/2016	15:39:30	0.99	0.08				
run3	9/22/2016	15:39:45	1.35	0.08				
run3	9/22/2016	15:40:00	1.72	0.08				
run3	9/22/2016	15:40:15	1.59	0.07				
run3	9/22/2016	15:40:30	1.27	0.07				
run3	9/22/2016	15:40:45	1.09	0.06				
run3	9/22/2016	15:41:00	1.31	0.06				
run3	9/22/2016	15:41:15	2.18	0.05				
run3	9/22/2016	15:41:30	2.46	0.06				
run3	9/22/2016	15:41:45	1.93	0.06				
run3	9/22/2016	15:42:00	1.60	0.05				
run3	9/22/2016	15:42:15	1.59	0.03				
run3	9/22/2016	15:42:30	2.19	0.08				
run3	9/22/2016	15:42:45	4.78	0.05				
run3	9/22/2016	15:43:00	7.13	0.04				
run3	9/22/2016	15:43:15	6.23	0.04				
run3	9/22/2016	15:43:30	4.74	0.05				
run3	9/22/2016	15:43:45	4.10	0.05				
run3	9/22/2016	15:44:00	3.99	0.06				
run3	9/22/2016	15:44:15	4.31	0.06				
run3	9/22/2016	15:44:30	4.34	0.06				
run3	9/22/2016	15:44:45	3.89	0.06				
run3	9/22/2016	15:45:00	3.75	0.06				
run3	9/22/2016	15:45:15	4.03	0.07				

name			CO	THC
run3	9/22/2016	15:45:30	4.25	0.07
run3	9/22/2016	15:45:45	4.32	0.07
run3	9/22/2016	15:46:00	5.13	0.06
run3	9/22/2016	15:46:15	5.48	0.07
run3	9/22/2016	15:46:30	5.06	0.06
run3	9/22/2016	15:46:45	4.48	0.07
run3	9/22/2016	15:47:00	3.90	0.06
run3	9/22/2016	15:47:15	3.69	0.06
run3	9/22/2016	15:47:30	3.73	0.07
run3	9/22/2016	15:47:45	3.69	0.06
run3	9/22/2016	15:48:00	3.47	0.06
run3	9/22/2016	15:48:15	3.34	0.05
run3	9/22/2016	15:48:30	3.12	0.05
run3	9/22/2016	15:48:45	2.83	0.06
run3	9/22/2016	15:49:00	2.26	0.06
run3	9/22/2016	15:49:15	1.96	0.06
run3	9/22/2016	15:49:30	1.81	0.06
run3	9/22/2016	15:49:45	1.69	0.05
run3	9/22/2016	15:50:00	1.52	0.05
run3	9/22/2016	15:50:15	1.36	0.05
run3	9/22/2016	15:50:30	1.21	0.06
run3	9/22/2016	15:50:45	1.30	0.06
run3	9/22/2016	15:51:00	1.61	0.06
run3	9/22/2016	15:51:15	1.76	0.06
run3	9/22/2016	15:51:30	1.81	0.06
run3	9/22/2016	15:51:45	1.69	0.06
run3	9/22/2016	15:52:00	1.34	0.06
run3	9/22/2016	15:52:15	1.35	0.05
run3	9/22/2016	15:52:30	1.94	0.05
run3	9/22/2016	15:52:45	2.45	0.06
run3	9/22/2016	15:53:00	2.36	0.06
run3	9/22/2016	15:53:15	1.93	0.07
run3	9/22/2016	15:53:30	1.37	0.06
run3	9/22/2016	15:53:45	1.30	0.06
run3	9/22/2016	15:54:00	1.86	0.07
run3	9/22/2016	15:54:15	2.02	0.07
run3	9/22/2016	15:54:30	1.92	0.06
run3	9/22/2016	15:54:45	1.91	0.06
run3	9/22/2016	15:55:00	1.44	0.07
run3	9/22/2016	15:55:15	1.09	0.06
run3	9/22/2016	15:55:30	1.00	0.06
run3	9/22/2016	15:55:45	1.10	0.07
run3	9/22/2016	15:56:00	1.12	0.07
run3	9/22/2016	15:56:15	1.04	0.06
run3	9/22/2016	15:56:30	1.15	0.07
run3	9/22/2016	15:56:45	1.54	0.07
run3	9/22/2016	15:57:00	1.58	0.06
run3	9/22/2016	15:57:15	1.44	0.07
run3	9/22/2016	15:57:30	1.41	0.06
run3	9/22/2016	15:57:45	1.54	0.06
run3	9/22/2016	15:58:00	1.67	0.07
run3	9/22/2016	15:58:15	1.82	0.06
run3	9/22/2016	15:58:30	1.98	0.07
run3	9/22/2016	15:58:45	2.14	0.08
run3	9/22/2016	15:59:00	2.33	0.06
run3	9/22/2016	15:59:15	2.61	0.06
run3	9/22/2016	15:59:30	3.20	0.06
run3	9/22/2016	15:59:45	3.68	0.05
run3	9/22/2016	16:00:00	3.54	0.04
run3	9/22/2016	16:00:15	3.38	0.04
run3	9/22/2016	16:00:30	3.96	0.05
run3	9/22/2016	16:00:45	4.29	0.05
run3	9/22/2016	16:01:00	4.31	0.05
run3	9/22/2016	16:01:15	4.72	0.07
run3	9/22/2016	16:01:30	5.26	0.06
run3	9/22/2016	16:01:45	5.18	0.06
run3	9/22/2016	16:02:00	4.78	0.06
run3	9/22/2016	16:02:15	4.47	0.06
run3	9/22/2016	16:02:30	4.01	0.08
run3	9/22/2016	16:02:45	3.56	0.07
run3	9/22/2016	16:03:00	3.39	0.07
run3	9/22/2016	16:03:15	3.27	0.07
run3	9/22/2016	16:03:30	3.07	0.07
run3	9/22/2016	16:03:45	3.04	0.07
run3	9/22/2016	16:04:00	2.84	0.07
run3	9/22/2016	16:04:15	2.55	0.07
run3	9/22/2016	16:04:30	2.38	0.07

name			CO	THC
run3	9/22/2016	16:04:45	2.07	0.07
run3	9/22/2016	16:05:00	1.70	0.06
run3	9/22/2016	16:05:15	1.48	0.06
run3	9/22/2016	16:05:30	1.26	0.06
run3	9/22/2016	16:05:45	1.16	0.07
run3	9/22/2016	16:06:00	1.14	0.06
run3	9/22/2016	16:06:15	1.18	0.06
run3	9/22/2016	16:06:30	1.67	0.07
run3	9/22/2016	16:06:45	1.96	0.06
run3	9/22/2016	16:07:00	1.76	0.06
run3	9/22/2016	16:07:15	1.64	0.07
run3	9/22/2016	16:07:30	1.81	0.07
run3	9/22/2016	16:07:45	1.66	0.06
run3	9/22/2016	16:08:00	1.25	0.07
run3	9/22/2016	16:08:15	1.26	0.07
run3	9/22/2016	16:08:30	1.56	0.07
run3	9/22/2016	16:08:45	1.61	0.07
run3	9/22/2016	16:09:00	1.33	0.07
run3	9/22/2016	16:09:15	1.07	0.07
run3	9/22/2016	16:09:30	1.44	0.07
run3	9/22/2016	16:09:45	2.26	0.07
run3	9/22/2016	16:10:00	2.40	0.05
run3	9/22/2016	16:10:15	2.12	0.05
run3	9/22/2016	16:10:30	2.75	0.05
run3	9/22/2016	16:10:45	3.37	0.06
run3	9/22/2016	16:11:00	2.80	0.06
run3	9/22/2016	16:11:15	1.90	0.07
run3	9/22/2016	16:11:30	1.61	0.07
run3	9/22/2016	16:11:45	1.50	0.06
run3	9/22/2016	16:12:00	1.36	0.07
run3	9/22/2016	16:12:15	1.33	0.05
run3	9/22/2016	16:12:30	1.33	0.05
run3	9/22/2016	16:12:45	1.40	0.06
run3	9/22/2016	16:13:00	1.40	0.07
run3	9/22/2016	16:13:15	1.31	0.08
run3	9/22/2016	16:13:30	1.29	0.09
run3	9/22/2016	16:13:45	1.36	0.08
run3	9/22/2016	16:14:00	1.44	0.07
run3	9/22/2016	16:14:15	1.45	0.07
run3	9/22/2016	16:14:30	1.45	0.07
run3	9/22/2016	16:14:45	1.77	0.06
run3	9/22/2016	16:15:00	2.25	0.06
run3	9/22/2016	16:15:15	2.84	0.06
run3	9/22/2016	16:15:30	3.41	0.06
run3	9/22/2016	16:15:45	3.64	0.08
run3	9/22/2016	16:16:00	4.17	0.08
run3	9/22/2016	16:16:15	4.38	0.08
run3	9/22/2016	16:16:30	4.05	0.07
run3	9/22/2016	16:16:45	3.73	0.06
run3	9/22/2016	16:17:00	3.60	0.08
run3	9/22/2016	16:17:15	3.39	0.07
run3	9/22/2016	16:17:30	3.37	0.08
run3	9/22/2016	16:17:45	3.53	0.07
run3	9/22/2016	16:18:00	3.52	0.07
run3	9/22/2016	16:18:15	3.29	0.07
run3	9/22/2016	16:18:30	2.83	0.07
run3	9/22/2016	16:18:45	2.29	0.07
run3	9/22/2016	16:19:00	1.82	0.09
run3	9/22/2016	16:19:15	1.57	0.08
run3	9/22/2016	16:19:30	1.42	0.07
run3	9/22/2016	16:19:45	1.25	0.07
run3	9/22/2016	16:20:00	1.12	0.07
run3	9/22/2016	16:20:15	1.07	0.07
run3	9/22/2016	16:20:30	1.05	0.07
run3	9/22/2016	16:20:45	1.04	0.07
run3	9/22/2016	16:21:00	0.93	0.05
run3	9/22/2016	16:21:15	1.08	0.07
run3	9/22/2016	16:21:30	2.02	0.05
run3	9/22/2016	16:21:45	2.10	0.03
run3	9/22/2016	16:22:00	1.31	0.04
run3	9/22/2016	16:22:15	0.86	0.05
run3	9/22/2016	16:22:30	0.77	0.05
run3	9/22/2016	16:22:45	0.76	0.06
run3	9/22/2016	16:23:00	1.26	0.07
run3	9/22/2016	16:23:15	1.89	0.05
run3	9/22/2016	16:23:30	1.63	0.04
run3	9/22/2016	16:23:45	1.08	0.03

name			CO	THC			
run3	9/22/2016	16:24:00	1.24	0.05			
run3	9/22/2016	16:24:15	2.07	0.06			
run3	9/22/2016	16:24:30	2.86	0.04			
run3	9/22/2016	16:24:45	3.27	0.05			
run3	9/22/2016	16:25:00	3.25	0.05			
run3	9/22/2016	16:25:15	2.29	0.05			
run3	9/22/2016	16:25:30	1.01	0.05			
run3	9/22/2016	16:25:45	0.55	0.05			
run3	9/22/2016	16:26:00	0.43	0.04			
run3	9/22/2016	16:26:15	0.44	0.04			
run3	9/22/2016	16:26:30	0.58	0.05			
run3	9/22/2016	16:26:45	0.66	0.06			
run3	9/22/2016	16:27:00	0.62	0.05			
run3	9/22/2016	16:27:15	0.64	0.06			
run3	9/22/2016	16:27:30	0.77	0.06			
run3	9/22/2016	16:27:45	0.96	0.06			
run3	9/22/2016	16:28:00	1.17	0.06			
run3	9/22/2016	16:28:15	1.25	0.07			
run3	9/22/2016	16:28:30	1.27	0.06			
run3	9/22/2016	16:28:45	1.44	0.06			
run3	9/22/2016	16:29:00	1.52	0.06			
run3	9/22/2016	16:29:15	1.54	0.05			
run3	9/22/2016	16:29:30	1.79	0.07			
run3	9/22/2016	16:29:45	2.26	0.08			
run3	9/22/2016	16:30:00	2.66	0.07			
run3	9/22/2016	16:30:15	2.82	0.06			
run3	9/22/2016	16:30:30	3.24	0.06			
run3	9/22/2016	16:30:45	4.59	0.07			
run3	9/22/2016	16:31:00	6.09	0.08			
run3	9/22/2016	16:31:15	6.36	0.07			
run3	9/22/2016	16:31:30	5.64	0.06			
run3	9/22/2016	16:31:45	5.15	0.06			
run3	9/22/2016	16:32:00	5.10	0.05			
run3	9/22/2016	16:32:15	4.98	0.04			
run3	9/22/2016	16:32:30	5.17	0.05			
run3	9/22/2016	16:32:45	5.33	0.05			
run3	9/22/2016	16:33:00	5.25	0.05			
run3	9/22/2016	16:33:15	5.23	0.05			
run3	9/22/2016	16:33:30	5.41	0.05			
run3	9/22/2016	16:33:45	5.58	0.05			
run3	9/22/2016	16:34:00	5.09	0.05			
run3	9/22/2016	16:34:15	4.84	0.05			
run3	9/22/2016	16:34:30	5.01	0.05			
run3	9/22/2016	16:34:45	4.55	0.05			
run3	9/22/2016	16:35:00	3.76	0.05			
run3	9/22/2016	16:35:15	3.55	0.04			
run3	9/22/2016	16:35:30	3.75	0.04			
run3	9/22/2016	16:35:45	4.06	0.04			
averun3	9/22/2016	15:32:00	2.41	0.06	64		
scg4	9/22/2016	16:36:45	4.52	0.04	ALM018547/cg4	CO	5.06 0.00
scg4	9/22/2016	16:37:00	4.76	0.07	ALM018547/cg4	CO	5.06 0.00
scg4	9/22/2016	16:37:15	7.12	0.19	ALM018547/cg4	CO	5.06 0.00
scg4	9/22/2016	16:37:30	10.10	-0.10	ALM018547/cg4	CO	5.06 0.00
scg4	9/22/2016	16:37:45	9.70	-0.14	ALM018547/cg4	CO	5.06 0.00
scg4	9/22/2016	16:38:00	7.05	-0.15	ALM018547/cg4	CO	5.06 0.00
scg4	9/22/2016	16:38:15	5.54	-0.15	ALM018547/cg4	CO	5.06 0.00
scg4	9/22/2016	16:38:30	5.17	-0.15	ALM018547/cg4	CO	5.06 0.00
scg4	9/22/2016	16:38:45	5.13	-0.14	ALM018547/cg4	CO	5.06 0.00
scg4	9/22/2016	16:39:00	5.11	-0.15	ALM018547/cg4	CO	5.06 0.00
scg4	9/22/2016	16:39:15	5.12	-0.15	ALM018547/cg4	CO	5.06 0.00
o2zero1	9/22/2016	16:39:15	5.12	-0.15	ALM018547/cg4	CO	5.06 0.00
co2zero1	9/22/2016	16:39:15	5.12	-0.15	ALM018547/cg4	CO	5.06 0.00
cospan1	9/22/2016	16:39:15	5.12	-0.15	ALM018547/cg4	CO	5.06 0.00
scg9	9/22/2016	16:39:30	5.10	-0.16	EB0080791/cg9	CO2	10.96 O2 11.08
scg9	9/22/2016	16:39:45	5.10	-0.17	EB0080791/cg9	CO2	10.96 O2 11.08
scg9	9/22/2016	16:40:00	5.11	-0.08	EB0080791/cg9	CO2	10.96 O2 11.08
scg9	9/22/2016	16:40:15	5.11	-0.04	EB0080791/cg9	CO2	10.96 O2 11.08
scg9	9/22/2016	16:40:30	3.80	-0.02	EB0080791/cg9	CO2	10.96 O2 11.08
scg9	9/22/2016	16:40:45	1.59	-0.02	EB0080791/cg9	CO2	10.96 O2 11.08
scg9	9/22/2016	16:41:00	0.23	-0.01	EB0080791/cg9	CO2	10.96 O2 11.08
scg9	9/22/2016	16:41:15	0.03	-0.01	EB0080791/cg9	CO2	10.96 O2 11.08
scg9	9/22/2016	16:41:30	0.00	-0.01	EB0080791/cg9	CO2	10.96 O2 11.08
scg9	9/22/2016	16:41:45	0.01	-0.02	EB0080791/cg9	CO2	10.96 O2 11.08
scg9	9/22/2016	16:42:00	0.01	-0.01	EB0080791/cg9	CO2	10.96 O2 11.08
scg9	9/22/2016	16:42:15	-0.01	-0.02	EB0080791/cg9	CO2	10.96 O2 11.08
scg9	9/22/2016	16:42:30	-0.01	-0.02	EB0080791/cg9	CO2	10.96 O2 11.08
cozero1	9/22/2016	16:42:15	-0.01	-0.02	EB0080791/cg9	CO2	10.96 O2 11.08

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10.12.16

name			CO	THC				
thczero1	9/22/2016	16:42:15	-0.01	-0.02	EB0080791/cg9	CO2	10.96	O2 11.08
o2span1	9/22/2016	16:42:30	-0.01	-0.02	EB0080791/cg9	CO2	10.96	O2 11.08
co2span1	9/22/2016	16:42:15	-0.01	-0.02	EB0080791/cg9	CO2	10.96	O2 11.08
scg12	9/22/2016	16:42:45	0.00	-0.02	ET0010875/cg12	THC	5.01	0.00
scg12	9/22/2016	16:43:00	0.00	0.01	ET0010875/cg12	THC	5.01	0.00
scg12	9/22/2016	16:43:15	0.15	0.76	ET0010875/cg12	THC	5.01	0.00
scg12	9/22/2016	16:43:30	2.51	4.36	ET0010875/cg12	THC	5.01	0.00
scg12	9/22/2016	16:43:45	4.65	5.01	ET0010875/cg12	THC	5.01	0.00
scg12	9/22/2016	16:44:00	2.91	5.02	ET0010875/cg12	THC	5.01	0.00
scg12	9/22/2016	16:44:15	1.09	5.02	ET0010875/cg12	THC	5.01	0.00
thcspan1	9/22/2016	16:44:15	1.09	5.02	ET0010875/cg12	THC	5.01	0.00
run4	9/22/2016	17:00:00	1.52	0.05				
run4	9/22/2016	17:00:15	1.64	0.04				
run4	9/22/2016	17:00:30	1.76	0.05				
run4	9/22/2016	17:00:45	1.86	0.05				
run4	9/22/2016	17:01:00	1.86	0.05				
run4	9/22/2016	17:01:15	1.75	0.05				
run4	9/22/2016	17:01:30	1.69	0.05				
run4	9/22/2016	17:01:45	1.75	0.05				
run4	9/22/2016	17:02:00	1.85	0.04				
run4	9/22/2016	17:02:15	1.84	0.04				
run4	9/22/2016	17:02:30	1.68	4.24				
run4	9/22/2016	17:02:45	7.85	4.23				
run4	9/22/2016	17:03:00	6.92	0.07				
run4	9/22/2016	17:03:15	9.78	0.04				
run4	9/22/2016	17:03:30	10.28	0.04				
run4	9/22/2016	17:03:45	10.28	0.03				
run4	9/22/2016	17:04:00	10.28	0.04				
run4	9/22/2016	17:04:15	10.28	0.04				
run4	9/22/2016	17:04:30	9.96	0.04				
run4	9/22/2016	17:04:45	7.94	0.05				
run4	9/22/2016	17:05:00	5.68	0.05				
run4	9/22/2016	17:05:15	4.66	0.06				
run4	9/22/2016	17:05:30	4.01	0.10				
run4	9/22/2016	17:05:45	4.05	0.10				
run4	9/22/2016	17:06:00	4.40	0.08				
run4	9/22/2016	17:06:15	4.59	0.06				
run4	9/22/2016	17:06:30	4.36	0.05				
run4	9/22/2016	17:06:45	3.99	0.05				
run4	9/22/2016	17:07:00	3.66	0.05				
run4	9/22/2016	17:07:15	3.44	0.05				
run4	9/22/2016	17:07:30	3.19	0.05				
run4	9/22/2016	17:07:45	2.91	0.06				
run4	9/22/2016	17:08:00	2.59	0.06				
run4	9/22/2016	17:08:15	2.30	0.07				
run4	9/22/2016	17:08:30	2.07	0.05				
run4	9/22/2016	17:08:45	1.86	0.06				
run4	9/22/2016	17:09:00	1.65	0.05				
run4	9/22/2016	17:09:15	1.50	0.04				
run4	9/22/2016	17:09:30	1.46	0.05				
run4	9/22/2016	17:09:45	1.45	0.04				
run4	9/22/2016	17:10:00	1.39	0.05				
run4	9/22/2016	17:10:15	1.26	0.06				
run4	9/22/2016	17:10:30	1.15	0.06				
run4	9/22/2016	17:10:45	1.14	0.05				
run4	9/22/2016	17:11:00	1.14	0.06				
run4	9/22/2016	17:11:15	1.15	0.05				
run4	9/22/2016	17:11:30	1.18	0.06				
run4	9/22/2016	17:11:45	1.29	0.05				
run4	9/22/2016	17:12:00	1.39	0.04				
run4	9/22/2016	17:12:15	1.38	0.05				
run4	9/22/2016	17:12:30	1.36	0.04				
run4	9/22/2016	17:12:45	1.51	0.03				
run4	9/22/2016	17:13:00	1.80	0.03				
run4	9/22/2016	17:13:15	2.07	0.03				
run4	9/22/2016	17:13:30	2.39	0.04				
run4	9/22/2016	17:13:45	2.64	0.04				
run4	9/22/2016	17:14:00	2.67	0.03				
run4	9/22/2016	17:14:15	2.67	0.03				
run4	9/22/2016	17:14:30	2.78	0.03				
run4	9/22/2016	17:14:45	2.81	0.03				
run4	9/22/2016	17:15:00	2.87	0.03				
run4	9/22/2016	17:15:15	3.16	0.04				
run4	9/22/2016	17:15:30	3.17	0.04				
run4	9/22/2016	17:15:45	2.33	0.05				
run4	9/22/2016	17:16:00	1.51	0.03				
run4	9/22/2016	17:16:15	1.18	0.04				

name			CO	THC
run4	9/22/2016	17:16:30	0.97	0.03
run4	9/22/2016	17:16:45	0.85	0.03
run4	9/22/2016	17:17:00	0.77	0.03
run4	9/22/2016	17:17:15	0.69	0.03
run4	9/22/2016	17:17:30	0.66	0.03
run4	9/22/2016	17:17:45	0.65	0.04
run4	9/22/2016	17:18:00	0.60	0.05
run4	9/22/2016	17:18:15	0.54	0.04
run4	9/22/2016	17:18:30	0.54	0.05
run4	9/22/2016	17:18:45	0.54	0.05
run4	9/22/2016	17:19:00	0.56	0.06
run4	9/22/2016	17:19:15	0.60	0.06
run4	9/22/2016	17:19:30	0.71	0.06
run4	9/22/2016	17:19:45	0.79	0.06
run4	9/22/2016	17:20:00	0.80	0.05
run4	9/22/2016	17:20:15	0.84	0.06
run4	9/22/2016	17:20:30	0.87	0.05
run4	9/22/2016	17:20:45	0.82	0.05
run4	9/22/2016	17:21:00	0.83	0.04
run4	9/22/2016	17:21:15	0.89	0.04
run4	9/22/2016	17:21:30	1.08	0.04
run4	9/22/2016	17:21:45	1.28	0.04
run4	9/22/2016	17:22:00	1.32	0.04
run4	9/22/2016	17:22:15	1.24	0.04
run4	9/22/2016	17:22:30	1.20	0.05
run4	9/22/2016	17:22:45	1.17	0.03
run4	9/22/2016	17:23:00	1.06	0.03
run4	9/22/2016	17:23:15	1.19	0.04
run4	9/22/2016	17:23:30	1.34	0.04
run4	9/22/2016	17:23:45	1.55	0.05
run4	9/22/2016	17:24:00	1.95	0.05
run4	9/22/2016	17:24:15	1.88	0.06
run4	9/22/2016	17:24:30	1.79	0.07
run4	9/22/2016	17:24:45	1.87	0.05
run4	9/22/2016	17:25:00	1.73	0.05
run4	9/22/2016	17:25:15	1.39	0.05
run4	9/22/2016	17:25:30	0.97	0.05
run4	9/22/2016	17:25:45	0.89	0.05
run4	9/22/2016	17:26:00	1.52	0.06
run4	9/22/2016	17:26:15	1.60	0.04
run4	9/22/2016	17:26:30	1.04	0.04
run4	9/22/2016	17:26:45	0.72	0.04
run4	9/22/2016	17:27:00	0.64	0.04
run4	9/22/2016	17:27:15	0.62	0.03
run4	9/22/2016	17:27:30	0.61	0.03
run4	9/22/2016	17:27:45	0.65	0.03
run4	9/22/2016	17:28:00	0.70	0.03
run4	9/22/2016	17:28:15	0.78	0.04
run4	9/22/2016	17:28:30	1.04	0.03
run4	9/22/2016	17:28:45	1.32	0.04
run4	9/22/2016	17:29:00	1.46	0.04
run4	9/22/2016	17:29:15	1.27	0.03
run4	9/22/2016	17:29:30	1.11	0.03
run4	9/22/2016	17:29:45	1.39	0.03
run4	9/22/2016	17:30:00	1.76	0.03
run4	9/22/2016	17:30:15	1.60	0.03
run4	9/22/2016	17:30:30	1.52	0.03
run4	9/22/2016	17:30:45	1.71	0.03
run4	9/22/2016	17:31:00	1.91	0.02
run4	9/22/2016	17:31:15	1.93	0.03
run4	9/22/2016	17:31:30	2.12	0.03
run4	9/22/2016	17:31:45	2.36	0.03
run4	9/22/2016	17:32:00	2.12	0.04
run4	9/22/2016	17:32:15	1.76	0.03
run4	9/22/2016	17:32:30	1.60	0.03
run4	9/22/2016	17:32:45	1.88	0.05
run4	9/22/2016	17:33:00	2.07	0.04
run4	9/22/2016	17:33:15	1.95	0.04
run4	9/22/2016	17:33:30	1.65	0.04
run4	9/22/2016	17:33:45	1.31	0.04
run4	9/22/2016	17:34:00	1.20	0.02
run4	9/22/2016	17:34:15	1.07	0.02
run4	9/22/2016	17:34:30	0.92	0.02
run4	9/22/2016	17:34:45	0.90	0.03
run4	9/22/2016	17:35:00	0.83	0.02
run4	9/22/2016	17:35:15	0.71	0.03
run4	9/22/2016	17:35:30	0.64	0.04

name			CO	THC
run4	9/22/2016	17:35:45	0.62	0.04
run4	9/22/2016	17:36:00	0.71	0.04
run4	9/22/2016	17:36:15	0.79	0.05
run4	9/22/2016	17:36:30	0.69	0.04
run4	9/22/2016	17:36:45	0.74	0.04
run4	9/22/2016	17:37:00	1.05	0.04
run4	9/22/2016	17:37:15	1.15	0.04
run4	9/22/2016	17:37:30	1.18	0.04
run4	9/22/2016	17:37:45	1.26	0.04
run4	9/22/2016	17:38:00	1.24	0.04
run4	9/22/2016	17:38:15	1.23	0.04
run4	9/22/2016	17:38:30	1.40	0.04
run4	9/22/2016	17:38:45	1.63	0.04
run4	9/22/2016	17:39:00	1.83	0.07
run4	9/22/2016	17:39:15	1.82	0.07
run4	9/22/2016	17:39:30	1.37	0.05
run4	9/22/2016	17:39:45	0.99	0.04
run4	9/22/2016	17:40:00	1.21	0.04
run4	9/22/2016	17:40:15	1.67	0.04
run4	9/22/2016	17:40:30	1.81	0.05
run4	9/22/2016	17:40:45	1.61	0.06
run4	9/22/2016	17:41:00	1.40	0.06
run4	9/22/2016	17:41:15	1.13	0.04
run4	9/22/2016	17:41:30	0.84	0.04
run4	9/22/2016	17:41:45	0.71	0.05
run4	9/22/2016	17:42:00	0.67	0.05
run4	9/22/2016	17:42:15	0.63	0.04
run4	9/22/2016	17:42:30	0.67	0.04
run4	9/22/2016	17:42:45	0.74	0.04
run4	9/22/2016	17:43:00	0.99	0.04
run4	9/22/2016	17:43:15	1.27	0.04
run4	9/22/2016	17:43:30	1.37	0.03
run4	9/22/2016	17:43:45	1.36	0.03
run4	9/22/2016	17:44:00	1.31	0.04
run4	9/22/2016	17:44:15	1.29	0.04
run4	9/22/2016	17:44:30	1.31	0.04
run4	9/22/2016	17:44:45	1.47	0.04
run4	9/22/2016	17:45:00	1.85	0.03
run4	9/22/2016	17:45:15	1.91	0.02
run4	9/22/2016	17:45:30	1.84	0.03
run4	9/22/2016	17:45:45	2.00	0.03
run4	9/22/2016	17:46:00	2.14	0.04
run4	9/22/2016	17:46:15	2.16	0.04
run4	9/22/2016	17:46:30	1.96	0.04
run4	9/22/2016	17:46:45	1.76	0.03
run4	9/22/2016	17:47:00	1.58	0.03
run4	9/22/2016	17:47:15	1.49	0.03
run4	9/22/2016	17:47:30	1.53	0.03
run4	9/22/2016	17:47:45	1.44	0.04
run4	9/22/2016	17:48:00	1.20	0.04
run4	9/22/2016	17:48:15	1.06	0.04
run4	9/22/2016	17:48:30	1.02	0.04
run4	9/22/2016	17:48:45	1.06	0.04
run4	9/22/2016	17:49:00	0.93	0.04
run4	9/22/2016	17:49:15	0.76	0.04
run4	9/22/2016	17:49:30	0.67	0.04
run4	9/22/2016	17:49:45	0.62	0.04
run4	9/22/2016	17:50:00	0.59	0.04
run4	9/22/2016	17:50:15	0.57	0.04
run4	9/22/2016	17:50:30	0.69	0.05
run4	9/22/2016	17:50:45	0.88	0.06
run4	9/22/2016	17:51:00	0.97	0.05
run4	9/22/2016	17:51:15	1.05	0.04
run4	9/22/2016	17:51:30	1.04	0.04
run4	9/22/2016	17:51:45	1.00	0.04
run4	9/22/2016	17:52:00	1.04	0.04
run4	9/22/2016	17:52:15	1.08	0.04
run4	9/22/2016	17:52:30	1.15	0.05
run4	9/22/2016	17:52:45	1.21	0.05
run4	9/22/2016	17:53:00	1.20	0.04
run4	9/22/2016	17:53:15	1.20	0.04
run4	9/22/2016	17:53:30	1.25	0.04
run4	9/22/2016	17:53:45	1.32	0.05
run4	9/22/2016	17:54:00	1.43	0.04
run4	9/22/2016	17:54:15	1.39	0.04
run4	9/22/2016	17:54:30	1.39	0.04
run4	9/22/2016	17:54:45	1.38	0.04

name			CO	THC				
run4	9/22/2016	17:55:00	1.11	0.04				
run4	9/22/2016	17:55:15	0.82	0.04				
run4	9/22/2016	17:55:30	0.68	0.04				
run4	9/22/2016	17:55:45	0.77	0.04				
run4	9/22/2016	17:56:00	1.10	0.04				
run4	9/22/2016	17:56:15	1.10	0.03				
run4	9/22/2016	17:56:30	0.89	0.05				
run4	9/22/2016	17:56:45	0.79	0.06				
run4	9/22/2016	17:57:00	0.75	0.05				
run4	9/22/2016	17:57:15	0.76	0.05				
run4	9/22/2016	17:57:30	0.85	0.04				
run4	9/22/2016	17:57:45	0.93	0.04				
run4	9/22/2016	17:58:00	0.96	0.03				
run4	9/22/2016	17:58:15	1.12	0.03				
run4	9/22/2016	17:58:30	1.38	0.04				
run4	9/22/2016	17:58:45	1.52	0.05				
run4	9/22/2016	17:59:00	1.60	0.04				
run4	9/22/2016	17:59:15	1.79	0.04				
run4	9/22/2016	17:59:30	2.00	0.04				
run4	9/22/2016	17:59:45	2.01	0.03				
run4	9/22/2016	18:00:00	2.25	0.02				
run4	9/22/2016	18:00:15	2.56	0.02				
run4	9/22/2016	18:00:30	2.78	0.02				
run4	9/22/2016	18:00:45	3.19	0.03				
run4	9/22/2016	18:01:00	3.65	0.04				
run4	9/22/2016	18:01:15	3.61	0.04				
run4	9/22/2016	18:01:30	3.14	0.03				
run4	9/22/2016	18:01:45	2.99	0.04				
run4	9/22/2016	18:02:00	2.83	0.04				
run4	9/22/2016	18:02:15	2.83	0.04				
run4	9/22/2016	18:02:30	2.81	0.04				
run4	9/22/2016	18:02:45	2.52	0.04				
run4	9/22/2016	18:03:00	2.20	0.04				
run4	9/22/2016	18:03:15	2.00	0.05				
run4	9/22/2016	18:03:30	1.81	0.04				
run4	9/22/2016	18:03:45	1.69	0.04				
averun4	9/22/2016	17:00:00	1.82	0.07	64			
scg12	9/22/2016	18:05:30	1.11	0.06	ET0010875/cg12	THC	5.01	0.00
scg12	9/22/2016	18:05:45	1.09	0.19	ET0010875/cg12	THC	5.01	0.00
scg12	9/22/2016	18:06:00	1.07	3.71	ET0010875/cg12	THC	5.01	0.00
scg12	9/22/2016	18:06:15	1.31	5.03	ET0010875/cg12	THC	5.01	0.00
scg12	9/22/2016	18:06:30	1.29	5.03	ET0010875/cg12	THC	5.01	0.00
thcspan1	9/22/2016	18:06:30	1.29	5.03	ET0010875/cg12	THC	5.01	0.00
scg9	9/22/2016	18:06:45	0.84	5.04	EB0080791/cg9	CO2	10.96	O2 11.08
scg9	9/22/2016	18:07:00	0.57	5.03	EB0080791/cg9	CO2	10.96	O2 11.08
scg9	9/22/2016	18:07:15	0.51	3.68	EB0080791/cg9	CO2	10.96	O2 11.08
scg9	9/22/2016	18:07:30	0.48	0.16	EB0080791/cg9	CO2	10.96	O2 11.08
scg9	9/22/2016	18:07:45	0.27	-0.01	EB0080791/cg9	CO2	10.96	O2 11.08
scg9	9/22/2016	18:08:00	-0.01	0.00	EB0080791/cg9	CO2	10.96	O2 11.08
scg9	9/22/2016	18:08:15	-0.03	0.00	EB0080791/cg9	CO2	10.96	O2 11.08
scg9	9/22/2016	18:08:30	0.04	-0.01	EB0080791/cg9	CO2	10.96	O2 11.08
cozero1	9/22/2016	18:08:30	0.04	-0.01	EB0080791/cg9	CO2	10.96	O2 11.08
thczero1	9/22/2016	18:08:30	0.04	-0.01	EB0080791/cg9	CO2	10.96	O2 11.08
o2span1	9/22/2016	18:08:30	0.04	-0.01	EB0080791/cg9	CO2	10.96	O2 11.08
co2span1	9/22/2016	18:08:30	0.04	-0.01	EB0080791/cg9	CO2	10.96	O2 11.08
scg4	9/22/2016	18:08:45	0.07	0.00	ALM018547/cg4	CO	5.06	0.00
scg4	9/22/2016	18:09:00	0.08	-0.01	ALM018547/cg4	CO	5.06	0.00
scg4	9/22/2016	18:09:15	0.09	0.06	ALM018547/cg4	CO	5.06	0.00
scg4	9/22/2016	18:09:30	0.22	-0.11	ALM018547/cg4	CO	5.06	0.00
scg4	9/22/2016	18:09:45	1.64	-0.14	ALM018547/cg4	CO	5.06	0.00
scg4	9/22/2016	18:10:00	3.84	-0.15	ALM018547/cg4	CO	5.06	0.00
scg4	9/22/2016	18:10:15	4.85	-0.16	ALM018547/cg4	CO	5.06	0.00
scg4	9/22/2016	18:10:30	5.14	-0.16	ALM018547/cg4	CO	5.06	0.00
scg4	9/22/2016	18:10:45	5.17	-0.16	ALM018547/cg4	CO	5.06	0.00
scg4	9/22/2016	18:11:00	5.12	-0.16	ALM018547/cg4	CO	5.06	0.00
scg4	9/22/2016	18:11:15	5.09	-0.17	ALM018547/cg4	CO	5.06	0.00
o2zero1	9/22/2016	18:11:15	5.09	-0.17	ALM018547/cg4	CO	5.06	0.00
co2zero1	9/22/2016	18:11:15	5.09	-0.17	ALM018547/cg4	CO	5.06	0.00
cospan1	9/22/2016	18:11:15	5.09	-0.17	ALM018547/cg4	CO	5.06	0.00
End								

5
TK
10-12-16

Model 3 Thermal Combustor Outlet Stack
Carbon Monoxide
Concentration

Condition- Run <u>Number</u>	Measured <u>(ppm)</u>	Adjusted <u>(ppm*)</u>
III-1	0.13	0.10
III-2	1.13	1.14
III-3	1.07	1.12

*Calculated according to equation 7E-5.

Model 3 Thermal Combustor Outlet Stack
Total Hydrocarbons
Concentration

Condition- Run <u>Number</u>	Measured <u>(wet ppm)</u>
III-1	0.06
III-2	0.09
III-3	0.11

Model 3 Thermal Combustor Outlet Stack
Calibration Summary
Carbon Monoxide

Condition- Run Number	CO Calibration			CO Zero			Actual CO Calibration Value (ppm)	Actual CO Zero Value (ppm)
	Initial Drift Check (ppm)	Final Drift Check (ppm)	Average (ppm)	Initial Drift Check (ppm)	Final Drift Check (ppm)	Average (ppm)		
III-1	5.13	5.10	5.12	0.03	0.03	0.03	5.06	0.00
III-2	5.10	5.03	5.07	0.03	-0.07	-0.02	5.06	0.00
III-3	5.03	4.95	4.99	-0.07	-0.02	-0.05	5.06	0.00

Model 3 Thermal Combustor Outlet Stack
System Calibration Bias and Drift Data
Carbon Monoxide
Calibration Span = 9.86 ppm

Condition- Run Number	Initial Response (ppm)	CO Calibration				Initial Response (ppm)	CO Zero			Drift (%*)	Analyzer Calibration	Analyzer
		Initial Bias (%*)	Final Response (ppm)	Final Bias (%*)	Drift (%*)		Initial Bias (%*)	Final Response (ppm)	Final Bias (%*)		Response Mid Level (ppm)	Response Zero Level (ppm)
III-1	5.13	0.30	5.10	0.00	0.30	0.03	0.41	0.03	0.41	0.00	5.10	-0.01
III-2	5.10	0.00	5.03	0.71	0.71	0.03	0.41	-0.07	0.61	1.01	5.10	-0.01
III-3	5.03	0.71	4.95	1.52	0.81	-0.07	0.61	-0.02	0.10	0.51	5.10	-0.01

* PERCENT OF CALIBRATION SPAN

Model 3 Thermal Combustor Outlet Stack
Analyzer Calibration Data
Carbon Monoxide

Date 09/23/16

Condition III

Calibration Span = 9.86 ppm

<u>Gas Range</u>	<u>Actual Calibration Value (ppm)</u>	<u>Analyzer Calibration Response (ppm)</u>	<u>Absolute Difference (ppm)</u>	<u>Difference (%*)</u>
Low	0.00	-0.01	0.01	0.10
Mid	5.06	5.10	0.04	0.41
High	9.86	9.91	0.05	0.51

* Percent of calibration span

Model 3 Thermal Combustor Outlet Stack
Analyzer Calibration Data
Total Hydrocarbons

Date 09/23/16

Condition III

Span = 10 ppm

<u>Gas Range</u>	<u>Actual Calibration Value (ppm)</u>	<u>Analyzer Calibration Response (ppm)</u>	<u>Absolute Difference (ppm)</u>	<u>Difference (%*)</u>
Zero	0.00	0.00	0.00	----
Low	3.13	3.05	0.08	2.56
Mid	5.01	5.04	0.03	0.60
High	8.48	8.49	0.01	----

* Percent of span gas

filename 9/23/2016 7:02:35
testby1 METCO Environmental
testby2 Baton Rouge Operations
testby3 9
testby4 Jeremiah Johnson
testfor1 COMM Engineering
testfor2 *
testfor3 Unit 3
testfor4 Lafayette, LA

CTH

name	CO	THC					
sn	208845	1125748714					
offset	0.00	0.00					
fullscale	10.10	10.00					
train	1.00	1.00					
gastype	co 10	thc 25a					
dgc1	9/23/2016 7:05:45	0.76	1.21	EB0070656/cg1	N2	0.00	0.00
dgc1	9/23/2016 7:06:00	0.74	1.20	EB0070656/cg1	N2	0.00	0.00
dgc1	9/23/2016 7:06:15	1.01	0.63	EB0070656/cg1	N2	0.00	0.00
dgc1	9/23/2016 7:06:30	3.62	-0.09	EB0070656/cg1	N2	0.00	0.00
dgc1	9/23/2016 7:06:45	4.62	-0.12	EB0070656/cg1	N2	0.00	0.00
dgc1	9/23/2016 7:07:00	2.31	-0.13	EB0070656/cg1	N2	0.00	0.00
dgc1	9/23/2016 7:07:15	0.95	-0.13	EB0070656/cg1	N2	0.00	0.00
dgc1	9/23/2016 7:07:30	0.69	-0.13	EB0070656/cg1	N2	0.00	0.00
dgc1	9/23/2016 7:07:45	0.65	-0.13	EB0070656/cg1	N2	0.00	0.00
dgc1	9/23/2016 7:08:00	0.67	-0.13	EB0070656/cg1	N2	0.00	0.00
dgc1	9/23/2016 7:08:15	0.40	-0.14	EB0070656/cg1	N2	0.00	0.00
dgc1	9/23/2016 7:08:30	0.01	-0.10	EB0070656/cg1	N2	0.00	0.00
dgc1	9/23/2016 7:08:45	-0.01	0.00	EB0070656/cg1	N2	0.00	0.00
dgc1	9/23/2016 7:09:00	-0.01	0.00	EB0070656/cg1	N2	0.00	0.00
o2ezero1	9/23/2016 7:09:00	-0.01	0.00	EB0070656/cg1	N2	0.00	0.00
co2ezero1	9/23/2016 7:09:00	-0.01	0.00	EB0070656/cg1	N2	0.00	0.00
coezero1	9/23/2016 7:09:00	-0.01	0.00	EB0070656/cg1	N2	0.00	0.00
thcezero1	9/23/2016 7:09:00	-0.01	0.00	EB0070656/cg1	N2	0.00	0.00
dgc3	9/23/2016 7:09:15	0.01	0.00	BLM000616/cg3	CO	9.86	0.00
dgc3	9/23/2016 7:09:30	0.01	0.00	BLM000616/cg3	CO	9.86	0.00
dgc3	9/23/2016 7:09:45	0.00	0.28	BLM000616/cg3	CO	9.86	0.00
dgc3	9/23/2016 7:10:00	0.41	0.03	BLM000616/cg3	CO	9.86	0.00
dgc3	9/23/2016 7:10:15	3.36	0.01	BLM000616/cg3	CO	9.86	0.00
dgc3	9/23/2016 7:10:30	7.07	0.01	BLM000616/cg3	CO	9.86	0.00
dgc3	9/23/2016 7:10:45	8.36	0.02	BLM000616/cg3	CO	9.86	0.00
dgc3	9/23/2016 7:11:00	8.62	0.02	BLM000616/cg3	CO	9.86	0.00
dgc3	9/23/2016 7:11:15	8.66	0.01	BLM000616/cg3	CO	9.86	0.00
dgc3	9/23/2016 7:11:30	9.40	0.01	BLM000616/cg3	CO	9.86	0.00
dgc3	9/23/2016 7:11:45	9.91	0.01	BLM000616/cg3	CO	9.86	0.00
dgc3	9/23/2016 7:12:00	9.91	0.00	BLM000616/cg3	CO	9.86	0.00
cohigh1	9/23/2016 7:12:00	9.91	0.00	BLM000616/cg3	CO	9.86	0.00
dgc10	9/23/2016 7:12:30	9.90	0.02	AAL021715/cg10	CO2	20.00	O2 19.90
dgc10	9/23/2016 7:12:45	9.90	0.24	AAL021715/cg10	CO2	20.00	O2 19.90
dgc10	9/23/2016 7:13:00	9.65	0.34	AAL021715/cg10	CO2	20.00	O2 19.90
dgc10	9/23/2016 7:13:15	7.43	0.26	AAL021715/cg10	CO2	20.00	O2 19.90
dgc10	9/23/2016 7:13:30	3.07	0.27	AAL021715/cg10	CO2	20.00	O2 19.90
dgc10	9/23/2016 7:13:45	0.46	0.28	AAL021715/cg10	CO2	20.00	O2 19.90
dgc10	9/23/2016 7:14:00	-0.48	0.29	AAL021715/cg10	CO2	20.00	O2 19.90
dgc10	9/23/2016 7:14:15	-0.53	0.29	AAL021715/cg10	CO2	20.00	O2 19.90
dgc10	9/23/2016 7:14:30	-0.53	0.28	AAL021715/cg10	CO2	20.00	O2 19.90
dgc10	9/23/2016 7:14:45	-0.53	0.27	AAL021715/cg10	CO2	20.00	O2 19.90
dgc10	9/23/2016 7:15:00	-0.53	0.28	AAL021715/cg10	CO2	20.00	O2 19.90
dgc10	9/23/2016 7:15:15	-0.53	0.28	AAL021715/cg10	CO2	20.00	O2 19.90
dgc10	9/23/2016 7:15:30	-0.53	0.28	AAL021715/cg10	CO2	20.00	O2 19.90
o2high1	9/23/2016 7:15:30	-0.53	0.28	AAL021715/cg10	CO2	20.00	O2 19.90
co2high1	9/23/2016 7:15:30	-0.53	0.28	AAL021715/cg10	CO2	20.00	O2 19.90
dgc4	9/23/2016 7:15:45	-0.53	0.27	ALM018547/cg4	CO	5.06	0.00
dgc4	9/23/2016 7:16:00	-0.53	0.28	ALM018547/cg4	CO	5.06	0.00
dgc4	9/23/2016 7:16:15	-0.53	0.62	ALM018547/cg4	CO	5.06	0.00
dgc4	9/23/2016 7:16:30	-0.39	0.07	ALM018547/cg4	CO	5.06	0.00
dgc4	9/23/2016 7:16:45	1.21	0.00	ALM018547/cg4	CO	5.06	0.00
dgc4	9/23/2016 7:17:00	3.44	0.00	ALM018547/cg4	CO	5.06	0.00
dgc4	9/23/2016 7:17:15	4.67	0.00	ALM018547/cg4	CO	5.06	0.00
dgc4	9/23/2016 7:17:30	5.08	-0.01	ALM018547/cg4	CO	5.06	0.00
dgc4	9/23/2016 7:17:45	5.11	-0.01	ALM018547/cg4	CO	5.06	0.00
dgc4	9/23/2016 7:18:00	5.07	0.00	ALM018547/cg4	CO	5.06	0.00
dgc4	9/23/2016 7:18:15	5.10	0.01	ALM018547/cg4	CO	5.06	0.00
comid1	9/23/2016 7:18:15	5.10	0.01	ALM018547/cg4	CO	5.06	0.00
dgc9	9/23/2016 7:18:30	5.12	0.01	EB0080791/cg9	CO2	10.96	O2 11.08
dgc9	9/23/2016 7:18:45	5.08	0.01	EB0080791/cg9	CO2	10.96	O2 11.08
dgc9	9/23/2016 7:19:00	5.10	0.19	EB0080791/cg9	CO2	10.96	O2 11.08
dgc9	9/23/2016 7:19:15	4.78	0.14	EB0080791/cg9	CO2	10.96	O2 11.08
dgc9	9/23/2016 7:19:30	3.07	0.15	EB0080791/cg9	CO2	10.96	O2 11.08

dcg9	9/23/2016	7:19:45	0.84	0.16	EB0080791/cg9	CO2	10.96	O2	11.08
dcg9	9/23/2016	7:20:00	-0.28	0.16	EB0080791/cg9	CO2	10.96	O2	11.08
dcg9	9/23/2016	7:20:15	-0.09	0.15	EB0080791/cg9	CO2	10.96	O2	11.08
dcg9	9/23/2016	7:20:30	0.02	0.15	EB0080791/cg9	CO2	10.96	O2	11.08
dcg9	9/23/2016	7:20:45	0.03	0.15	EB0080791/cg9	CO2	10.96	O2	11.08
o2mid1	9/23/2016	7:20:45	0.03	0.15	EB0080791/cg9	CO2	10.96	O2	11.08
co2mid1	9/23/2016	7:20:45	0.03	0.15	EB0080791/cg9	CO2	10.96	O2	11.08
dcg11	9/23/2016	7:21:00	0.02	0.14	BLM005063/cg11	THC	3.13		0.00
dcg11	9/23/2016	7:21:15	0.01	0.14	BLM005063/cg11	THC	3.13		0.00
dcg11	9/23/2016	7:21:30	0.01	0.39	BLM005063/cg11	THC	3.13		0.00
dcg11	9/23/2016	7:21:45	0.04	2.63	BLM005063/cg11	THC	3.13		0.00
dcg11	9/23/2016	7:22:00	0.21	3.05	BLM005063/cg11	THC	3.13		0.00
dcg11	9/23/2016	7:22:15	0.51	3.06	BLM005063/cg11	THC	3.13		0.00
dcg11	9/23/2016	7:22:30	0.62	3.06	BLM005063/cg11	THC	3.13		0.00
dcg11	9/23/2016	7:22:45	0.63	3.05	BLM005063/cg11	THC	3.13		0.00
dcg11	9/23/2016	7:23:00	0.64	3.06	BLM005063/cg11	THC	3.13		0.00
thclow1	9/23/2016	7:22:45	0.63	3.05	BLM005063/cg11	THC	3.13		0.00
dcg13	9/23/2016	7:25:00	0.58	1.20	ET0010859/cg13	THC	8.48		0.00
dcg13	9/23/2016	7:25:15	0.60	1.33	ET0010859/cg13	THC	8.48		0.00
dcg13	9/23/2016	7:25:30	0.61	6.18	ET0010859/cg13	THC	8.48		0.00
dcg13	9/23/2016	7:25:45	0.62	8.46	ET0010859/cg13	THC	8.48		0.00
dcg13	9/23/2016	7:26:00	0.54	8.49	ET0010859/cg13	THC	8.48		0.00
dcg13	9/23/2016	7:26:15	0.52	8.49	ET0010859/cg13	THC	8.48		0.00
dcg13	9/23/2016	7:26:30	0.53	8.49	ET0010859/cg13	THC	8.48		0.00
dcg13	9/23/2016	7:26:45	0.53	8.49	ET0010859/cg13	THC	8.48		0.00
thchigh1	9/23/2016	7:26:45	0.53	8.49	ET0010859/cg13	THC	8.48		0.00
dcg12	9/23/2016	7:28:15	0.62	1.24	ET0010875/cg12	THC	5.01		0.00
dcg12	9/23/2016	7:28:30	0.61	1.82	ET0010875/cg12	THC	5.01		0.00
dcg12	9/23/2016	7:28:45	0.63	4.98	ET0010875/cg12	THC	5.01		0.00
dcg12	9/23/2016	7:29:00	0.61	5.03	ET0010875/cg12	THC	5.01		0.00
dcg12	9/23/2016	7:29:15	0.55	5.04	ET0010875/cg12	THC	5.01		0.00
thcmid1	9/23/2016	7:29:15	0.55	5.04	ET0010875/cg12	THC	5.01		0.00
scg12	9/23/2016	8:21:30	0.53	0.99	ET0010875/cg12	THC	5.01		0.00
scg12	9/23/2016	8:21:45	0.53	1.00	ET0010875/cg12	THC	5.01		0.00
scg12	9/23/2016	8:22:00	0.53	2.95	ET0010875/cg12	THC	5.01		0.00
scg12	9/23/2016	8:22:15	0.72	5.00	ET0010875/cg12	THC	5.01		0.00
scg12	9/23/2016	8:22:30	0.92	5.03	ET0010875/cg12	THC	5.01		0.00
scg12	9/23/2016	8:22:45	0.70	5.03	ET0010875/cg12	THC	5.01		0.00
scg12	9/23/2016	8:23:00	0.51	5.04	ET0010875/cg12	THC	5.01		0.00
scg12	9/23/2016	8:23:15	0.45	5.05	ET0010875/cg12	THC	5.01		0.00
thcspan1	9/23/2016	8:23:15	0.45	5.05	ET0010875/cg12	THC	5.01		0.00
scg9	9/23/2016	8:23:30	0.47	5.05	EB0080791/cg9	CO2	10.96	O2	11.08
scg9	9/23/2016	8:23:45	0.47	5.05	EB0080791/cg9	CO2	10.96	O2	11.08
scg9	9/23/2016	8:24:00	0.46	3.82	EB0080791/cg9	CO2	10.96	O2	11.08
scg9	9/23/2016	8:24:15	0.42	0.30	EB0080791/cg9	CO2	10.96	O2	11.08
scg9	9/23/2016	8:24:30	0.11	0.13	EB0080791/cg9	CO2	10.96	O2	11.08
scg9	9/23/2016	8:24:45	-0.16	0.13	EB0080791/cg9	CO2	10.96	O2	11.08
scg9	9/23/2016	8:25:00	-0.18	0.13	EB0080791/cg9	CO2	10.96	O2	11.08
scg9	9/23/2016	8:25:15	-0.07	0.13	EB0080791/cg9	CO2	10.96	O2	11.08
scg9	9/23/2016	8:25:30	-0.01	0.13	EB0080791/cg9	CO2	10.96	O2	11.08
scg9	9/23/2016	8:25:45	0.03	0.06	EB0080791/cg9	CO2	10.96	O2	11.08
cozero1	9/23/2016	8:25:45	0.03	0.06	EB0080791/cg9	CO2	10.96	O2	11.08
thczero1	9/23/2016	8:25:45	0.03	0.06	EB0080791/cg9	CO2	10.96	O2	11.08
o2span1	9/23/2016	8:25:45	0.03	0.06	EB0080791/cg9	CO2	10.96	O2	11.08
co2span1	9/23/2016	8:25:45	0.03	0.06	EB0080791/cg9	CO2	10.96	O2	11.08
scg4	9/23/2016	8:26:15	0.01	0.00	ALM018547/cg4	CO	5.06		0.00
scg4	9/23/2016	8:26:30	0.01	1.37	ALM018547/cg4	CO	5.06		0.00
scg4	9/23/2016	8:26:45	0.12	0.62	ALM018547/cg4	CO	5.06		0.00
scg4	9/23/2016	8:27:00	1.54	-0.14	ALM018547/cg4	CO	5.06		0.00
scg4	9/23/2016	8:27:15	3.84	-0.15	ALM018547/cg4	CO	5.06		0.00
scg4	9/23/2016	8:27:30	5.32	-0.15	ALM018547/cg4	CO	5.06		0.00
scg4	9/23/2016	8:27:45	5.41	-0.14	ALM018547/cg4	CO	5.06		0.00
scg4	9/23/2016	8:28:00	5.11	-0.14	ALM018547/cg4	CO	5.06		0.00
scg4	9/23/2016	8:28:15	5.12	-0.13	ALM018547/cg4	CO	5.06		0.00
scg4	9/23/2016	8:28:30	5.13	-0.13	ALM018547/cg4	CO	5.06		0.00
scg4	9/23/2016	8:28:45	5.14	-0.13	ALM018547/cg4	CO	5.06		0.00
o2zero1	9/23/2016	8:28:30	5.13	-0.13	ALM018547/cg4	CO	5.06		0.00
co2zero1	9/23/2016	8:28:30	5.13	-0.13	ALM018547/cg4	CO	5.06		0.00
cospan1	9/23/2016	8:28:30	5.13	-0.13	ALM018547/cg4	CO	5.06		0.00
run1	9/23/2016	8:50:00	0.22	0.08					
run1	9/23/2016	8:50:15	0.23	0.08					
run1	9/23/2016	8:50:30	0.24	0.07					
run1	9/23/2016	8:50:45	0.22	0.09					
run1	9/23/2016	8:51:00	0.16	0.09					
run1	9/23/2016	8:51:15	0.12	0.08					
run1	9/23/2016	8:51:30	0.12	0.11					
run1	9/23/2016	8:51:45	0.21	0.08					
run1	9/23/2016	8:52:00	0.25	0.11					

run1	9/23/2016	8:52:15	0.23	0.09
run1	9/23/2016	8:52:30	0.24	0.09
run1	9/23/2016	8:52:45	0.18	0.10
run1	9/23/2016	8:53:00	0.11	0.09
run1	9/23/2016	8:53:15	0.09	0.08
run1	9/23/2016	8:53:30	0.10	0.07
run1	9/23/2016	8:53:45	0.15	0.08
run1	9/23/2016	8:54:00	0.16	0.09
run1	9/23/2016	8:54:15	0.18	0.09
run1	9/23/2016	8:54:30	0.22	0.09
run1	9/23/2016	8:54:45	0.28	0.11
run1	9/23/2016	8:55:00	0.28	0.10
run1	9/23/2016	8:55:15	0.23	0.09
run1	9/23/2016	8:55:30	0.18	0.09
run1	9/23/2016	8:55:45	0.15	0.10
run1	9/23/2016	8:56:00	0.15	0.10
run1	9/23/2016	8:56:15	0.16	0.11
run1	9/23/2016	8:56:30	0.17	0.10
run1	9/23/2016	8:56:45	0.16	0.11
run1	9/23/2016	8:57:00	0.18	0.10
run1	9/23/2016	8:57:15	0.21	0.08
run1	9/23/2016	8:57:30	0.23	0.09
run1	9/23/2016	8:57:45	0.27	0.09
run1	9/23/2016	8:58:00	0.35	0.09
run1	9/23/2016	8:58:15	0.46	0.08
run1	9/23/2016	8:58:30	0.47	0.08
run1	9/23/2016	8:58:45	0.37	0.08
run1	9/23/2016	8:59:00	0.23	0.08
run1	9/23/2016	8:59:15	0.16	0.07
run1	9/23/2016	8:59:30	0.13	0.07
run1	9/23/2016	8:59:45	0.13	0.07
run1	9/23/2016	9:00:00	0.12	0.07
run1	9/23/2016	9:00:15	0.14	0.07
run1	9/23/2016	9:00:30	0.14	0.06
run1	9/23/2016	9:00:45	0.15	0.05
run1	9/23/2016	9:01:00	0.14	0.06
run1	9/23/2016	9:01:15	0.12	0.07
run1	9/23/2016	9:01:30	0.16	0.07
run1	9/23/2016	9:01:45	0.22	0.07
run1	9/23/2016	9:02:00	0.29	0.07
run1	9/23/2016	9:02:15	0.32	0.06
run1	9/23/2016	9:02:30	0.31	0.06
run1	9/23/2016	9:02:45	0.28	0.06
run1	9/23/2016	9:03:00	0.27	0.06
run1	9/23/2016	9:03:15	0.23	0.08
run1	9/23/2016	9:03:30	0.21	0.08
run1	9/23/2016	9:03:45	0.20	0.07
run1	9/23/2016	9:04:00	0.24	0.06
run1	9/23/2016	9:04:15	0.30	0.05
run1	9/23/2016	9:04:30	0.24	0.06
run1	9/23/2016	9:04:45	0.17	0.05
run1	9/23/2016	9:05:00	0.12	0.05
run1	9/23/2016	9:05:15	0.11	0.05
run1	9/23/2016	9:05:30	0.11	0.05
run1	9/23/2016	9:05:45	0.11	0.05
run1	9/23/2016	9:06:00	0.08	0.06
run1	9/23/2016	9:06:15	0.05	0.07
run1	9/23/2016	9:06:30	0.09	0.06
run1	9/23/2016	9:06:45	0.11	0.06
run1	9/23/2016	9:07:00	0.09	0.06
run1	9/23/2016	9:07:15	0.06	0.05
run1	9/23/2016	9:07:30	0.06	0.06
run1	9/23/2016	9:07:45	0.09	0.06
run1	9/23/2016	9:08:00	0.09	0.06
run1	9/23/2016	9:08:15	0.08	0.06
run1	9/23/2016	9:08:30	0.04	0.07
run1	9/23/2016	9:08:45	0.04	0.07
run1	9/23/2016	9:09:00	0.07	0.06
run1	9/23/2016	9:09:15	0.09	0.06
run1	9/23/2016	9:09:30	0.06	0.06
run1	9/23/2016	9:09:45	0.06	0.07
run1	9/23/2016	9:10:00	0.08	0.06
run1	9/23/2016	9:10:15	0.10	0.06
run1	9/23/2016	9:10:30	0.09	0.06
run1	9/23/2016	9:10:45	0.10	0.06
run1	9/23/2016	9:11:00	0.09	0.06
run1	9/23/2016	9:11:15	0.11	0.06
run1	9/23/2016	9:11:30	0.12	0.06

run1	9/23/2016	9:11:45	0.12	0.06
run1	9/23/2016	9:12:00	0.12	0.06
run1	9/23/2016	9:12:15	0.12	0.07
run1	9/23/2016	9:12:30	0.13	0.07
run1	9/23/2016	9:12:45	0.12	0.06
run1	9/23/2016	9:13:00	0.12	0.07
run1	9/23/2016	9:13:15	0.14	0.07
run1	9/23/2016	9:13:30	0.21	0.06
run1	9/23/2016	9:13:45	0.24	0.06
run1	9/23/2016	9:14:00	0.22	0.06
run1	9/23/2016	9:14:15	0.16	0.07
run1	9/23/2016	9:14:30	0.14	0.07
run1	9/23/2016	9:14:45	0.15	0.07
run1	9/23/2016	9:15:00	0.14	0.08
run1	9/23/2016	9:15:15	0.14	0.08
run1	9/23/2016	9:15:30	0.12	0.08
run1	9/23/2016	9:15:45	0.12	0.07
run1	9/23/2016	9:16:00	0.18	0.08
run1	9/23/2016	9:16:15	0.22	0.07
run1	9/23/2016	9:16:30	0.21	0.07
run1	9/23/2016	9:16:45	0.11	0.07
run1	9/23/2016	9:17:00	0.08	0.07
run1	9/23/2016	9:17:15	0.12	0.08
run1	9/23/2016	9:17:30	0.09	0.06
run1	9/23/2016	9:17:45	0.05	0.07
run1	9/23/2016	9:18:00	0.06	0.06
run1	9/23/2016	9:18:15	0.07	0.06
run1	9/23/2016	9:18:30	0.07	0.06
run1	9/23/2016	9:18:45	0.05	0.06
run1	9/23/2016	9:19:00	0.06	0.06
run1	9/23/2016	9:19:15	0.07	0.06
run1	9/23/2016	9:19:30	0.09	0.04
run1	9/23/2016	9:19:45	0.13	0.04
run1	9/23/2016	9:20:00	0.15	0.04
run1	9/23/2016	9:20:15	0.09	0.05
run1	9/23/2016	9:20:30	0.12	0.04
run1	9/23/2016	9:20:45	0.17	0.03
run1	9/23/2016	9:21:00	0.13	0.05
run1	9/23/2016	9:21:15	0.10	0.06
run1	9/23/2016	9:21:30	0.07	0.08
run1	9/23/2016	9:21:45	0.16	0.07
run1	9/23/2016	9:22:00	0.24	0.07
run1	9/23/2016	9:22:15	0.14	0.06
run1	9/23/2016	9:22:30	0.08	0.06
run1	9/23/2016	9:22:45	0.05	0.05
run1	9/23/2016	9:23:00	0.06	0.07
run1	9/23/2016	9:23:15	0.07	0.08
run1	9/23/2016	9:23:30	0.10	0.06
run1	9/23/2016	9:23:45	0.12	0.06
run1	9/23/2016	9:24:00	0.14	0.07
run1	9/23/2016	9:24:15	0.12	0.06
run1	9/23/2016	9:24:30	0.09	0.07
run1	9/23/2016	9:24:45	0.12	0.06
run1	9/23/2016	9:25:00	0.16	0.06
run1	9/23/2016	9:25:15	0.13	0.06
run1	9/23/2016	9:25:30	0.12	0.07
run1	9/23/2016	9:25:45	0.12	0.06
run1	9/23/2016	9:26:00	0.14	0.04
run1	9/23/2016	9:26:15	0.15	0.04
run1	9/23/2016	9:26:30	0.12	0.05
run1	9/23/2016	9:26:45	0.10	0.05
run1	9/23/2016	9:27:00	0.10	0.06
run1	9/23/2016	9:27:15	0.07	0.06
run1	9/23/2016	9:27:30	0.05	0.06
run1	9/23/2016	9:27:45	0.06	0.06
run1	9/23/2016	9:28:00	0.09	0.06
run1	9/23/2016	9:28:15	0.10	0.06
run1	9/23/2016	9:28:30	0.08	0.06
run1	9/23/2016	9:28:45	0.06	0.05
run1	9/23/2016	9:29:00	0.07	0.05
run1	9/23/2016	9:29:15	0.08	0.06
run1	9/23/2016	9:29:30	0.08	0.05
run1	9/23/2016	9:29:45	0.06	0.06
run1	9/23/2016	9:30:00	0.04	0.05
run1	9/23/2016	9:30:15	0.07	0.06
run1	9/23/2016	9:30:30	0.08	0.06
run1	9/23/2016	9:30:45	0.07	0.06
run1	9/23/2016	9:31:00	0.06	0.07

run1	9/23/2016	9:31:15	0.09	0.08
run1	9/23/2016	9:31:30	0.14	0.07
run1	9/23/2016	9:31:45	0.09	0.06
run1	9/23/2016	9:32:00	0.11	0.06
run1	9/23/2016	9:32:15	0.09	0.05
run1	9/23/2016	9:32:30	0.09	0.05
run1	9/23/2016	9:32:45	0.08	0.04
run1	9/23/2016	9:33:00	0.07	0.04
run1	9/23/2016	9:33:15	0.05	0.03
run1	9/23/2016	9:33:30	0.05	0.06
run1	9/23/2016	9:33:45	0.06	0.09
run1	9/23/2016	9:34:00	0.14	0.07
run1	9/23/2016	9:34:15	0.18	0.06
run1	9/23/2016	9:34:30	0.16	0.07
run1	9/23/2016	9:34:45	0.13	0.07
run1	9/23/2016	9:35:00	0.08	0.04
run1	9/23/2016	9:35:15	0.10	0.04
run1	9/23/2016	9:35:30	0.12	0.05
run1	9/23/2016	9:35:45	0.09	0.06
run1	9/23/2016	9:36:00	0.10	0.05
run1	9/23/2016	9:36:15	0.10	0.04
run1	9/23/2016	9:36:30	0.09	0.04
run1	9/23/2016	9:36:45	0.07	0.04
run1	9/23/2016	9:37:00	0.06	0.05
run1	9/23/2016	9:37:15	0.07	0.07
run1	9/23/2016	9:37:30	0.13	0.08
run1	9/23/2016	9:37:45	0.12	0.07
run1	9/23/2016	9:38:00	0.11	0.07
run1	9/23/2016	9:38:15	0.13	0.08
run1	9/23/2016	9:38:30	0.15	0.07
run1	9/23/2016	9:38:45	0.14	0.06
run1	9/23/2016	9:39:00	0.12	0.06
run1	9/23/2016	9:39:15	0.10	0.06
run1	9/23/2016	9:39:30	0.05	0.07
run1	9/23/2016	9:39:45	0.08	0.06
run1	9/23/2016	9:40:00	0.12	0.06
run1	9/23/2016	9:40:15	0.14	0.06
run1	9/23/2016	9:40:30	0.12	0.06
run1	9/23/2016	9:40:45	0.09	0.05
run1	9/23/2016	9:41:00	0.08	0.06
run1	9/23/2016	9:41:15	0.10	0.05
run1	9/23/2016	9:41:30	0.09	0.05
run1	9/23/2016	9:41:45	0.09	0.06
run1	9/23/2016	9:42:00	0.08	0.06
run1	9/23/2016	9:42:15	0.08	0.06
run1	9/23/2016	9:42:30	0.10	0.06
run1	9/23/2016	9:42:45	0.09	0.07
run1	9/23/2016	9:43:00	0.08	0.08
run1	9/23/2016	9:43:15	0.06	0.08
run1	9/23/2016	9:43:30	0.08	0.08
run1	9/23/2016	9:43:45	0.09	0.08
run1	9/23/2016	9:44:00	0.11	0.07
run1	9/23/2016	9:44:15	0.08	0.06
run1	9/23/2016	9:44:30	0.05	0.06
run1	9/23/2016	9:44:45	0.04	0.06
run1	9/23/2016	9:45:00	0.07	0.06
run1	9/23/2016	9:45:15	0.06	0.06
run1	9/23/2016	9:45:30	0.05	0.06
run1	9/23/2016	9:45:45	0.03	0.06
run1	9/23/2016	9:46:00	0.04	0.05
run1	9/23/2016	9:46:15	0.10	0.06
run1	9/23/2016	9:46:30	0.12	0.07
run1	9/23/2016	9:46:45	0.10	0.06
run1	9/23/2016	9:47:00	0.07	0.04
run1	9/23/2016	9:47:15	0.11	0.05
run1	9/23/2016	9:47:30	0.09	0.05
run1	9/23/2016	9:47:45	0.06	0.05
run1	9/23/2016	9:48:00	0.06	0.04
run1	9/23/2016	9:48:15	0.06	0.03
run1	9/23/2016	9:48:30	0.08	0.03
run1	9/23/2016	9:48:45	0.17	0.05
run1	9/23/2016	9:49:00	0.23	0.06
run1	9/23/2016	9:49:15	0.16	0.06
run1	9/23/2016	9:49:30	0.08	0.04
run1	9/23/2016	9:49:45	0.08	0.05
run1	9/23/2016	9:50:00	0.07	0.04
run1	9/23/2016	9:50:15	0.08	0.04
run1	9/23/2016	9:50:30	0.09	0.04

run1	9/23/2016	9:50:45	0.14	0.03				
run1	9/23/2016	9:51:00	0.12	0.04				
run1	9/23/2016	9:51:15	0.09	0.05				
run1	9/23/2016	9:51:30	0.07	0.08				
run1	9/23/2016	9:51:45	0.09	0.07				
run1	9/23/2016	9:52:00	0.18	0.06				
run1	9/23/2016	9:52:15	0.18	0.07				
run1	9/23/2016	9:52:30	0.15	0.08				
run1	9/23/2016	9:52:45	0.09	0.08				
run1	9/23/2016	9:53:00	0.05	0.09				
run1	9/23/2016	9:53:15	0.08	0.09				
run1	9/23/2016	9:53:30	0.08	0.09				
run1	9/23/2016	9:53:45	0.09	0.07				
averun1	9/23/2016	8:50:00	0.13	0.06	64			
scg4	9/23/2016	9:55:15	0.10	0.08	ALM018547/cg4	CO	5.06	0.00
scg4	9/23/2016	9:55:30	0.10	0.11	ALM018547/cg4	CO	5.06	0.00
scg4	9/23/2016	9:55:45	0.39	-0.04	ALM018547/cg4	CO	5.06	0.00
scg4	9/23/2016	9:56:00	2.38	-0.12	ALM018547/cg4	CO	5.06	0.00
scg4	9/23/2016	9:56:15	4.31	-0.12	ALM018547/cg4	CO	5.06	0.00
scg4	9/23/2016	9:56:30	4.99	-0.14	ALM018547/cg4	CO	5.06	0.00
scg4	9/23/2016	9:56:45	5.07	-0.13	ALM018547/cg4	CO	5.06	0.00
scg4	9/23/2016	9:57:00	5.10	-0.13	ALM018547/cg4	CO	5.06	0.00
o2zero1	9/23/2016	9:57:00	5.10	-0.13	ALM018547/cg4	CO	5.06	0.00
co2zero1	9/23/2016	9:57:00	5.10	-0.13	ALM018547/cg4	CO	5.06	0.00
cospan1	9/23/2016	9:57:00	5.10	-0.13	ALM018547/cg4	CO	5.06	0.00
scg9	9/23/2016	9:57:15	5.12	-0.13	EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/23/2016	9:57:30	5.11	-0.12	EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/23/2016	9:57:45	5.15	-0.06	EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/23/2016	9:58:00	5.00	0.00	EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/23/2016	9:58:15	3.04	0.00	EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/23/2016	9:58:30	0.91	0.00	EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/23/2016	9:58:45	0.17	0.39	EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/23/2016	9:59:00	0.02	0.12	EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/23/2016	9:59:15	0.01	0.00	EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/23/2016	9:59:30	0.03	0.00	EB0080791/cg9	CO2	10.96 O2	11.08
cozero1	9/23/2016	9:59:30	0.03	0.00	EB0080791/cg9	CO2	10.96 O2	11.08
thczero1	9/23/2016	9:59:30	0.03	0.00	EB0080791/cg9	CO2	10.96 O2	11.08
o2span1	9/23/2016	9:59:30	0.03	0.00	EB0080791/cg9	CO2	10.96 O2	11.08
co2span1	9/23/2016	9:59:30	0.03	0.00	EB0080791/cg9	CO2	10.96 O2	11.08
scg12	9/23/2016	9:59:45	0.03	0.00	ET0010875/cg12	THC	5.01	0.00
scg12	9/23/2016	10:00:00	0.02	0.01	ET0010875/cg12	THC	5.01	0.00
scg12	9/23/2016	10:00:15	0.01	0.56	ET0010875/cg12	THC	5.01	0.00
scg12	9/23/2016	10:00:30	0.02	4.67	ET0010875/cg12	THC	5.01	0.00
scg12	9/23/2016	10:00:45	0.14	5.16	ET0010875/cg12	THC	5.01	0.00
scg12	9/23/2016	10:01:00	0.40	5.11	ET0010875/cg12	THC	5.01	0.00
scg12	9/23/2016	10:01:15	0.45	5.03	ET0010875/cg12	THC	5.01	0.00
scg12	9/23/2016	10:01:30	0.41	5.03	ET0010875/cg12	THC	5.01	0.00
thcspan1	9/23/2016	10:01:30	0.41	5.03	ET0010875/cg12	THC	5.01	0.00
run2	9/23/2016	10:15:00	1.54	0.07				
run2	9/23/2016	10:15:15	1.46	0.07				
run2	9/23/2016	10:15:30	1.38	0.07				
run2	9/23/2016	10:15:45	1.50	0.07				
run2	9/23/2016	10:16:00	1.80	0.06				
run2	9/23/2016	10:16:15	2.02	0.09				
run2	9/23/2016	10:16:30	2.19	0.08				
run2	9/23/2016	10:16:45	2.35	0.09				
run2	9/23/2016	10:17:00	2.40	0.08				
run2	9/23/2016	10:17:15	2.52	0.09				
run2	9/23/2016	10:17:30	2.81	0.10				
run2	9/23/2016	10:17:45	2.96	0.12				
run2	9/23/2016	10:18:00	2.96	0.10				
run2	9/23/2016	10:18:15	2.92	0.12				
run2	9/23/2016	10:18:30	2.96	0.10				
run2	9/23/2016	10:18:45	3.22	0.08				
run2	9/23/2016	10:19:00	3.69	0.08				
run2	9/23/2016	10:19:15	4.72	0.11				
run2	9/23/2016	10:19:30	6.43	0.11				
run2	9/23/2016	10:19:45	7.53	0.11				
run2	9/23/2016	10:20:00	7.75	0.11				
run2	9/23/2016	10:20:15	6.71	0.52				
run2	9/23/2016	10:20:30	3.86	0.19				
run2	9/23/2016	10:20:45	6.36	0.13				
run2	9/23/2016	10:21:00	4.72	0.11				
run2	9/23/2016	10:21:15	5.24	0.11				
run2	9/23/2016	10:21:30	7.57	0.11				
run2	9/23/2016	10:21:45	6.16	0.10				
run2	9/23/2016	10:22:00	6.51	0.10				
run2	9/23/2016	10:22:15	6.73	0.08				

run2	9/23/2016	10:22:30	6.93	0.08
run2	9/23/2016	10:22:45	7.07	0.09
run2	9/23/2016	10:23:00	5.71	0.08
run2	9/23/2016	10:23:15	4.18	0.07
run2	9/23/2016	10:23:30	3.56	0.07
run2	9/23/2016	10:23:45	3.06	0.07
run2	9/23/2016	10:24:00	2.60	0.06
run2	9/23/2016	10:24:15	2.38	0.07
run2	9/23/2016	10:24:30	2.30	0.08
run2	9/23/2016	10:24:45	2.31	0.07
run2	9/23/2016	10:25:00	2.38	0.07
run2	9/23/2016	10:25:15	2.34	0.08
run2	9/23/2016	10:25:30	2.14	0.08
run2	9/23/2016	10:25:45	1.81	0.08
run2	9/23/2016	10:26:00	1.46	0.08
run2	9/23/2016	10:26:15	1.23	0.54
run2	9/23/2016	10:26:30	1.10	0.08
run2	9/23/2016	10:26:45	1.02	0.06
run2	9/23/2016	10:27:00	0.96	0.07
run2	9/23/2016	10:27:15	1.02	0.07
run2	9/23/2016	10:27:30	1.19	0.06
run2	9/23/2016	10:27:45	1.29	0.06
run2	9/23/2016	10:28:00	1.33	0.05
run2	9/23/2016	10:28:15	1.31	0.06
run2	9/23/2016	10:28:30	1.22	0.08
run2	9/23/2016	10:28:45	1.11	0.08
run2	9/23/2016	10:29:00	1.04	0.07
run2	9/23/2016	10:29:15	1.12	0.07
run2	9/23/2016	10:29:30	1.21	0.07
run2	9/23/2016	10:29:45	1.28	0.06
run2	9/23/2016	10:30:00	1.19	0.07
run2	9/23/2016	10:30:15	0.92	0.10
run2	9/23/2016	10:30:30	0.77	0.07
run2	9/23/2016	10:30:45	0.73	0.09
run2	9/23/2016	10:31:00	0.71	0.07
run2	9/23/2016	10:31:15	0.64	0.06
run2	9/23/2016	10:31:30	0.49	0.07
run2	9/23/2016	10:31:45	0.38	0.07
run2	9/23/2016	10:32:00	0.38	0.07
run2	9/23/2016	10:32:15	0.43	0.36
run2	9/23/2016	10:32:30	0.40	0.27
run2	9/23/2016	10:32:45	0.49	0.10
run2	9/23/2016	10:33:00	0.52	0.08
run2	9/23/2016	10:33:15	0.52	0.07
run2	9/23/2016	10:33:30	0.57	0.09
run2	9/23/2016	10:33:45	0.59	0.10
run2	9/23/2016	10:34:00	0.59	0.10
run2	9/23/2016	10:34:15	0.65	0.09
run2	9/23/2016	10:34:30	0.64	0.08
run2	9/23/2016	10:34:45	0.63	0.09
run2	9/23/2016	10:35:00	0.64	0.09
run2	9/23/2016	10:35:15	0.65	0.09
run2	9/23/2016	10:35:30	0.67	0.09
run2	9/23/2016	10:35:45	0.65	0.08
run2	9/23/2016	10:36:00	0.61	0.08
run2	9/23/2016	10:36:15	0.58	0.08
run2	9/23/2016	10:36:30	0.58	0.08
run2	9/23/2016	10:36:45	0.57	0.08
run2	9/23/2016	10:37:00	0.62	0.08
run2	9/23/2016	10:37:15	0.68	0.07
run2	9/23/2016	10:37:30	0.75	0.07
run2	9/23/2016	10:37:45	0.77	0.08
run2	9/23/2016	10:38:00	0.79	0.08
run2	9/23/2016	10:38:15	0.76	0.25
run2	9/23/2016	10:38:30	0.69	0.36
run2	9/23/2016	10:38:45	0.63	0.08
run2	9/23/2016	10:39:00	0.57	0.07
run2	9/23/2016	10:39:15	0.52	0.06
run2	9/23/2016	10:39:30	0.48	0.07
run2	9/23/2016	10:39:45	0.44	0.07
run2	9/23/2016	10:40:00	0.41	0.08
run2	9/23/2016	10:40:15	0.37	0.07
run2	9/23/2016	10:40:30	0.37	0.07
run2	9/23/2016	10:40:45	0.39	0.08
run2	9/23/2016	10:41:00	0.41	0.07
run2	9/23/2016	10:41:15	0.51	0.08
run2	9/23/2016	10:41:30	0.60	0.07
run2	9/23/2016	10:41:45	0.63	0.07

run2	9/23/2016	10:42:00	0.56	0.07
run2	9/23/2016	10:42:15	0.51	0.07
run2	9/23/2016	10:42:30	0.53	0.06
run2	9/23/2016	10:42:45	0.48	0.07
run2	9/23/2016	10:43:00	0.42	0.07
run2	9/23/2016	10:43:15	0.36	0.07
run2	9/23/2016	10:43:30	0.35	0.07
run2	9/23/2016	10:43:45	0.39	0.07
run2	9/23/2016	10:44:00	0.41	0.52
run2	9/23/2016	10:44:15	0.39	0.09
run2	9/23/2016	10:44:30	0.29	0.11
run2	9/23/2016	10:44:45	0.26	0.10
run2	9/23/2016	10:45:00	0.29	0.08
run2	9/23/2016	10:45:15	0.28	0.07
run2	9/23/2016	10:45:30	0.22	0.07
run2	9/23/2016	10:45:45	0.18	0.06
run2	9/23/2016	10:46:00	0.19	0.07
run2	9/23/2016	10:46:15	0.21	0.07
run2	9/23/2016	10:46:30	0.16	0.07
run2	9/23/2016	10:46:45	0.12	0.07
run2	9/23/2016	10:47:00	0.11	0.07
run2	9/23/2016	10:47:15	0.13	0.09
run2	9/23/2016	10:47:30	0.21	0.09
run2	9/23/2016	10:47:45	0.24	0.09
run2	9/23/2016	10:48:00	0.23	0.09
run2	9/23/2016	10:48:15	0.24	0.08
run2	9/23/2016	10:48:30	0.23	0.08
run2	9/23/2016	10:48:45	0.25	0.08
run2	9/23/2016	10:49:00	0.24	0.07
run2	9/23/2016	10:49:15	0.23	0.07
run2	9/23/2016	10:49:30	0.24	0.07
run2	9/23/2016	10:49:45	0.36	0.07
run2	9/23/2016	10:50:00	0.51	0.07
run2	9/23/2016	10:50:15	0.55	0.23
run2	9/23/2016	10:50:30	0.48	0.35
run2	9/23/2016	10:50:45	0.50	0.08
run2	9/23/2016	10:51:00	0.70	0.07
run2	9/23/2016	10:51:15	1.00	0.07
run2	9/23/2016	10:51:30	1.34	0.07
run2	9/23/2016	10:51:45	1.46	0.07
run2	9/23/2016	10:52:00	1.28	0.06
run2	9/23/2016	10:52:15	0.99	0.06
run2	9/23/2016	10:52:30	0.86	0.07
run2	9/23/2016	10:52:45	0.87	0.08
run2	9/23/2016	10:53:00	1.06	0.08
run2	9/23/2016	10:53:15	1.30	0.08
run2	9/23/2016	10:53:30	1.35	0.08
run2	9/23/2016	10:53:45	1.34	0.07
run2	9/23/2016	10:54:00	1.44	0.08
run2	9/23/2016	10:54:15	1.40	0.07
run2	9/23/2016	10:54:30	1.22	0.07
run2	9/23/2016	10:54:45	1.14	0.08
run2	9/23/2016	10:55:00	1.15	0.07
run2	9/23/2016	10:55:15	1.19	0.06
run2	9/23/2016	10:55:30	1.25	0.06
run2	9/23/2016	10:55:45	1.30	0.35
run2	9/23/2016	10:56:00	1.19	0.23
run2	9/23/2016	10:56:15	1.13	0.07
run2	9/23/2016	10:56:30	1.21	0.07
run2	9/23/2016	10:56:45	1.25	0.08
run2	9/23/2016	10:57:00	1.23	0.07
run2	9/23/2016	10:57:15	1.14	0.06
run2	9/23/2016	10:57:30	1.05	0.06
run2	9/23/2016	10:57:45	1.03	0.06
run2	9/23/2016	10:58:00	1.05	0.05
run2	9/23/2016	10:58:15	0.99	0.05
run2	9/23/2016	10:58:30	0.88	0.05
run2	9/23/2016	10:58:45	0.77	0.06
run2	9/23/2016	10:59:00	0.73	0.06
run2	9/23/2016	10:59:15	0.68	0.07
run2	9/23/2016	10:59:30	0.55	0.06
run2	9/23/2016	10:59:45	0.42	0.06
run2	9/23/2016	11:00:00	0.33	0.08
run2	9/23/2016	11:00:15	0.38	0.08
run2	9/23/2016	11:00:30	0.45	0.08
run2	9/23/2016	11:00:45	0.36	0.08
run2	9/23/2016	11:01:00	0.28	0.07
run2	9/23/2016	11:01:15	0.21	0.06

run2	9/23/2016	11:01:30	0.23	0.07				
run2	9/23/2016	11:01:45	0.30	0.07				
run2	9/23/2016	11:02:00	0.38	0.47				
run2	9/23/2016	11:02:15	0.35	0.14				
run2	9/23/2016	11:02:30	0.30	0.10				
run2	9/23/2016	11:02:45	0.26	0.09				
run2	9/23/2016	11:03:00	0.32	0.08				
run2	9/23/2016	11:03:15	0.38	0.10				
run2	9/23/2016	11:03:30	0.39	0.12				
run2	9/23/2016	11:03:45	0.43	0.07				
run2	9/23/2016	11:04:00	0.44	0.07				
run2	9/23/2016	11:04:15	0.45	0.08				
run2	9/23/2016	11:04:30	0.41	0.08				
run2	9/23/2016	11:04:45	0.32	0.10				
run2	9/23/2016	11:05:00	0.21	0.09				
run2	9/23/2016	11:05:15	0.18	0.08				
run2	9/23/2016	11:05:30	0.21	0.08				
run2	9/23/2016	11:05:45	0.29	0.07				
run2	9/23/2016	11:06:00	0.31	0.06				
run2	9/23/2016	11:06:15	0.30	0.06				
run2	9/23/2016	11:06:30	0.32	0.07				
run2	9/23/2016	11:06:45	0.37	0.07				
run2	9/23/2016	11:07:00	0.39	0.09				
run2	9/23/2016	11:07:15	0.37	0.09				
run2	9/23/2016	11:07:30	0.38	0.09				
run2	9/23/2016	11:07:45	0.37	0.09				
run2	9/23/2016	11:08:00	0.42	0.54				
run2	9/23/2016	11:08:15	0.48	0.10				
run2	9/23/2016	11:08:30	0.52	0.07				
run2	9/23/2016	11:08:45	0.44	0.06				
run2	9/23/2016	11:09:00	0.29	0.07				
run2	9/23/2016	11:09:15	0.19	0.08				
run2	9/23/2016	11:09:30	0.16	0.08				
run2	9/23/2016	11:09:45	0.12	0.07				
run2	9/23/2016	11:10:00	0.11	0.07				
run2	9/23/2016	11:10:15	0.11	0.07				
run2	9/23/2016	11:10:30	0.10	0.07				
run2	9/23/2016	11:10:45	0.15	0.07				
run2	9/23/2016	11:11:00	0.24	0.07				
run2	9/23/2016	11:11:15	0.32	0.07				
run2	9/23/2016	11:11:30	0.42	0.06				
run2	9/23/2016	11:11:45	0.47	0.07				
run2	9/23/2016	11:12:00	0.51	0.07				
run2	9/23/2016	11:12:15	0.56	0.06				
run2	9/23/2016	11:12:30	0.52	0.07				
run2	9/23/2016	11:12:45	0.53	0.08				
run2	9/23/2016	11:13:00	0.53	0.07				
run2	9/23/2016	11:13:15	0.54	0.05				
run2	9/23/2016	11:13:30	0.51	0.04				
run2	9/23/2016	11:13:45	0.43	0.04				
run2	9/23/2016	11:14:00	0.33	0.04				
run2	9/23/2016	11:14:15	0.25	0.27				
run2	9/23/2016	11:14:30	0.19	0.22				
run2	9/23/2016	11:14:45	0.21	0.06				
run2	9/23/2016	11:15:00	0.23	0.05				
run2	9/23/2016	11:15:15	0.21	0.05				
run2	9/23/2016	11:15:30	0.16	0.04				
run2	9/23/2016	11:15:45	0.12	0.04				
run2	9/23/2016	11:16:00	0.14	0.06				
run2	9/23/2016	11:16:15	0.19	0.07				
run2	9/23/2016	11:16:30	0.18	0.07				
run2	9/23/2016	11:16:45	0.14	0.07				
run2	9/23/2016	11:17:00	0.12	0.08				
run2	9/23/2016	11:17:15	0.14	0.07				
run2	9/23/2016	11:17:30	0.14	0.08				
run2	9/23/2016	11:17:45	0.12	0.08				
run2	9/23/2016	11:18:00	0.14	0.08				
run2	9/23/2016	11:18:15	0.16	0.08				
run2	9/23/2016	11:18:30	0.18	0.10				
run2	9/23/2016	11:18:45	0.25	0.09				
averun2	9/23/2016	10:15:00	1.13	0.09	64			
scg12	9/23/2016	11:19:30	0.11	0.08	ET0010875/cg12	THC	5.01	0.00
scg12	9/23/2016	11:19:45	0.12	0.43	ET0010875/cg12	THC	5.01	0.00
scg12	9/23/2016	11:20:00	0.24	4.24	ET0010875/cg12	THC	5.01	0.00
scg12	9/23/2016	11:20:15	0.78	5.03	ET0010875/cg12	THC	5.01	0.00
scg12	9/23/2016	11:20:30	0.96	5.03	ET0010875/cg12	THC	5.01	0.00
thcspan1	9/23/2016	11:20:30	0.96	5.03	ET0010875/cg12	THC	5.01	0.00
scg9	9/23/2016	11:20:45	0.61	5.03	EB0080791/cg9	CO2	10.96 O2	11.08

scg9	9/23/2016	11:21:00	0.40	5.01	EB0080791/cg9	CO2	10.96	O2	11.08
scg9	9/23/2016	11:21:15	0.39	2.90	EB0080791/cg9	CO2	10.96	O2	11.08
scg9	9/23/2016	11:21:30	0.32	0.07	EB0080791/cg9	CO2	10.96	O2	11.08
scg9	9/23/2016	11:21:45	0.06	0.00	EB0080791/cg9	CO2	10.96	O2	11.08
scg9	9/23/2016	11:22:00	-0.15	0.00	EB0080791/cg9	CO2	10.96	O2	11.08
scg9	9/23/2016	11:22:15	-0.14	0.00	EB0080791/cg9	CO2	10.96	O2	11.08
scg9	9/23/2016	11:22:30	-0.07	0.00	EB0080791/cg9	CO2	10.96	O2	11.08
cozero1	9/23/2016	11:22:30	-0.07	0.00	EB0080791/cg9	CO2	10.96	O2	11.08
thczero1	9/23/2016	11:22:30	-0.07	0.00	EB0080791/cg9	CO2	10.96	O2	11.08
o2span1	9/23/2016	11:22:30	-0.07	0.00	EB0080791/cg9	CO2	10.96	O2	11.08
co2span1	9/23/2016	11:22:30	-0.07	0.00	EB0080791/cg9	CO2	10.96	O2	11.08
scg4	9/23/2016	11:22:45	-0.05	0.00	ALM018547/cg4	CO	5.06		0.00
scg4	9/23/2016	11:23:00	-0.06	0.02	ALM018547/cg4	CO	5.06		0.00
scg4	9/23/2016	11:23:15	-0.06	0.02	ALM018547/cg4	CO	5.06		0.00
scg4	9/23/2016	11:23:30	0.15	-0.10	ALM018547/cg4	CO	5.06		0.00
scg4	9/23/2016	11:23:45	1.61	-0.11	ALM018547/cg4	CO	5.06		0.00
scg4	9/23/2016	11:24:00	3.81	-0.11	ALM018547/cg4	CO	5.06		0.00
scg4	9/23/2016	11:24:15	4.77	-0.11	ALM018547/cg4	CO	5.06		0.00
scg4	9/23/2016	11:24:30	4.96	-0.12	ALM018547/cg4	CO	5.06		0.00
scg4	9/23/2016	11:24:45	4.97	-0.14	ALM018547/cg4	CO	5.06		0.00
scg4	9/23/2016	11:25:00	5.00	-0.12	ALM018547/cg4	CO	5.06		0.00
scg4	9/23/2016	11:25:15	5.02	-0.13	ALM018547/cg4	CO	5.06		0.00
scg4	9/23/2016	11:25:30	5.03	-0.13	ALM018547/cg4	CO	5.06		0.00
scg4	9/23/2016	11:25:45	5.02	-0.12	ALM018547/cg4	CO	5.06		0.00
o2zero1	9/23/2016	11:25:30	5.03	-0.13	ALM018547/cg4	CO	5.06		0.00
co2zero1	9/23/2016	11:25:30	5.03	-0.13	ALM018547/cg4	CO	5.06		0.00
cospan1	9/23/2016	11:25:30	5.03	-0.13	ALM018547/cg4	CO	5.06		0.00
run3	9/23/2016	11:40:00	4.41	0.14					
run3	9/23/2016	11:40:15	3.60	0.16					
run3	9/23/2016	11:40:30	3.10	0.13					
run3	9/23/2016	11:40:45	3.14	0.13					
run3	9/23/2016	11:41:00	3.07	0.15					
run3	9/23/2016	11:41:15	3.04	0.19					
run3	9/23/2016	11:41:30	3.38	0.21					
run3	9/23/2016	11:41:45	3.76	0.16					
run3	9/23/2016	11:42:00	4.39	0.13					
run3	9/23/2016	11:42:15	5.62	0.12					
run3	9/23/2016	11:42:30	7.17	0.15					
run3	9/23/2016	11:42:45	8.56	0.15					
run3	9/23/2016	11:43:00	3.36	0.12					
run3	9/23/2016	11:43:15	3.43	0.12					
run3	9/23/2016	11:43:30	3.12	0.13					
run3	9/23/2016	11:43:45	5.91	0.15					
run3	9/23/2016	11:44:00	7.05	0.14					
run3	9/23/2016	11:44:15	7.73	0.14					
run3	9/23/2016	11:44:30	7.12	0.14					
run3	9/23/2016	11:44:45	7.28	0.12					
run3	9/23/2016	11:45:00	7.07	0.11					
run3	9/23/2016	11:45:15	7.81	0.12					
run3	9/23/2016	11:45:30	6.57	0.14					
run3	9/23/2016	11:45:45	5.42	0.15					
run3	9/23/2016	11:46:00	4.95	0.12					
run3	9/23/2016	11:46:15	5.07	0.11					
run3	9/23/2016	11:46:30	5.48	0.11					
run3	9/23/2016	11:46:45	5.60	0.15					
run3	9/23/2016	11:47:00	4.93	0.51					
run3	9/23/2016	11:47:15	3.76	0.11					
run3	9/23/2016	11:47:30	2.83	0.09					
run3	9/23/2016	11:47:45	2.65	0.09					
run3	9/23/2016	11:48:00	2.71	0.09					
run3	9/23/2016	11:48:15	2.52	0.10					
run3	9/23/2016	11:48:30	2.05	0.10					
run3	9/23/2016	11:48:45	1.60	0.11					
run3	9/23/2016	11:49:00	1.21	0.10					
run3	9/23/2016	11:49:15	0.96	0.10					
run3	9/23/2016	11:49:30	0.77	0.10					
run3	9/23/2016	11:49:45	0.64	0.11					
run3	9/23/2016	11:50:00	0.55	0.10					
run3	9/23/2016	11:50:15	0.48	0.10					
run3	9/23/2016	11:50:30	0.44	0.11					
run3	9/23/2016	11:50:45	0.47	0.10					
run3	9/23/2016	11:51:00	0.63	0.08					
run3	9/23/2016	11:51:15	0.97	0.08					
run3	9/23/2016	11:51:30	1.28	0.08					
run3	9/23/2016	11:51:45	1.28	0.08					
run3	9/23/2016	11:52:00	1.25	0.08					
run3	9/23/2016	11:52:15	1.21	0.07					
run3	9/23/2016	11:52:30	0.99	0.07					

run3	9/23/2016	11:52:45	0.67	0.08
run3	9/23/2016	11:53:00	0.44	0.09
run3	9/23/2016	11:53:15	0.39	0.08
run3	9/23/2016	11:53:30	0.42	0.08
run3	9/23/2016	11:53:45	0.48	0.39
run3	9/23/2016	11:54:00	0.50	0.18
run3	9/23/2016	11:54:15	0.50	0.10
run3	9/23/2016	11:54:30	0.53	0.11
run3	9/23/2016	11:54:45	0.60	0.09
run3	9/23/2016	11:55:00	0.67	0.08
run3	9/23/2016	11:55:15	0.63	0.11
run3	9/23/2016	11:55:30	0.49	0.10
run3	9/23/2016	11:55:45	0.45	0.11
run3	9/23/2016	11:56:00	0.39	0.12
run3	9/23/2016	11:56:15	0.40	0.10
run3	9/23/2016	11:56:30	0.36	0.11
run3	9/23/2016	11:56:45	0.38	0.11
run3	9/23/2016	11:57:00	0.44	0.11
run3	9/23/2016	11:57:15	0.39	0.10
run3	9/23/2016	11:57:30	0.40	0.10
run3	9/23/2016	11:57:45	0.40	0.11
run3	9/23/2016	11:58:00	0.42	0.10
run3	9/23/2016	11:58:15	0.45	0.10
run3	9/23/2016	11:58:30	0.48	0.11
run3	9/23/2016	11:58:45	0.46	0.09
run3	9/23/2016	11:59:00	0.40	0.10
run3	9/23/2016	11:59:15	0.36	0.11
run3	9/23/2016	11:59:30	0.33	0.10
run3	9/23/2016	11:59:45	0.32	0.11
run3	9/23/2016	12:00:00	0.35	0.11
run3	9/23/2016	12:00:15	0.42	0.12
run3	9/23/2016	12:00:30	0.50	0.11
run3	9/23/2016	12:00:45	0.59	0.11
run3	9/23/2016	12:01:00	0.77	0.10
run3	9/23/2016	12:01:15	1.02	0.11
run3	9/23/2016	12:01:30	1.28	0.11
run3	9/23/2016	12:01:45	1.61	0.11
run3	9/23/2016	12:02:00	1.89	0.54
run3	9/23/2016	12:02:15	1.90	0.10
run3	9/23/2016	12:02:30	1.80	0.09
run3	9/23/2016	12:02:45	1.61	0.10
run3	9/23/2016	12:03:00	1.35	0.10
run3	9/23/2016	12:03:15	1.09	0.10
run3	9/23/2016	12:03:30	0.92	0.12
run3	9/23/2016	12:03:45	0.93	0.11
run3	9/23/2016	12:04:00	0.96	0.10
run3	9/23/2016	12:04:15	0.89	0.10
run3	9/23/2016	12:04:30	0.86	0.11
run3	9/23/2016	12:04:45	0.90	0.11
run3	9/23/2016	12:05:00	1.00	0.10
run3	9/23/2016	12:05:15	1.06	0.10
run3	9/23/2016	12:05:30	1.08	0.09
run3	9/23/2016	12:05:45	1.02	0.07
run3	9/23/2016	12:06:00	1.01	0.07
run3	9/23/2016	12:06:15	1.55	0.08
run3	9/23/2016	12:06:30	1.86	0.08
run3	9/23/2016	12:06:45	1.18	0.09
run3	9/23/2016	12:07:00	0.51	0.10
run3	9/23/2016	12:07:15	0.36	0.10
run3	9/23/2016	12:07:30	0.41	0.10
run3	9/23/2016	12:07:45	0.38	0.09
run3	9/23/2016	12:08:00	0.32	0.09
run3	9/23/2016	12:08:15	0.28	0.10
run3	9/23/2016	12:08:30	0.23	0.10
run3	9/23/2016	12:08:45	0.22	0.33
run3	9/23/2016	12:09:00	0.24	0.29
run3	9/23/2016	12:09:15	0.25	0.10
run3	9/23/2016	12:09:30	0.25	0.09
run3	9/23/2016	12:09:45	0.26	0.11
run3	9/23/2016	12:10:00	0.24	0.11
run3	9/23/2016	12:10:15	0.22	0.07
run3	9/23/2016	12:10:30	0.17	0.07
run3	9/23/2016	12:10:45	0.11	0.07
run3	9/23/2016	12:11:00	0.13	0.08
run3	9/23/2016	12:11:15	0.18	0.09
run3	9/23/2016	12:11:30	0.20	0.10
run3	9/23/2016	12:11:45	0.18	0.09
run3	9/23/2016	12:12:00	0.23	0.12

run3	9/23/2016	12:12:15	0.20	0.12
run3	9/23/2016	12:12:30	0.16	0.12
run3	9/23/2016	12:12:45	0.12	0.14
run3	9/23/2016	12:13:00	0.12	0.12
run3	9/23/2016	12:13:15	0.21	0.12
run3	9/23/2016	12:13:30	0.31	0.14
run3	9/23/2016	12:13:45	0.29	0.13
run3	9/23/2016	12:14:00	0.28	0.11
run3	9/23/2016	12:14:15	0.28	0.10
run3	9/23/2016	12:14:30	0.26	0.11
run3	9/23/2016	12:14:45	0.25	0.11
run3	9/23/2016	12:15:00	0.21	0.10
run3	9/23/2016	12:15:15	0.14	0.11
run3	9/23/2016	12:15:30	0.06	0.12
run3	9/23/2016	12:15:45	0.02	0.11
run3	9/23/2016	12:16:00	0.04	0.11
run3	9/23/2016	12:16:15	0.06	0.10
run3	9/23/2016	12:16:30	0.05	0.09
run3	9/23/2016	12:16:45	0.03	0.09
run3	9/23/2016	12:17:00	0.03	0.09
run3	9/23/2016	12:17:15	0.00	0.22
run3	9/23/2016	12:17:30	0.02	0.40
run3	9/23/2016	12:17:45	0.02	0.10
run3	9/23/2016	12:18:00	0.00	0.11
run3	9/23/2016	12:18:15	0.00	0.10
run3	9/23/2016	12:18:30	0.00	0.09
run3	9/23/2016	12:18:45	-0.03	0.09
run3	9/23/2016	12:19:00	-0.02	0.09
run3	9/23/2016	12:19:15	-0.01	0.09
run3	9/23/2016	12:19:30	-0.01	0.09
run3	9/23/2016	12:19:45	0.00	0.08
run3	9/23/2016	12:20:00	0.00	0.08
run3	9/23/2016	12:20:15	0.00	0.09
run3	9/23/2016	12:20:30	0.02	0.07
run3	9/23/2016	12:20:45	0.04	0.06
run3	9/23/2016	12:21:00	0.01	0.07
run3	9/23/2016	12:21:15	0.03	0.07
run3	9/23/2016	12:21:30	-0.02	0.06
run3	9/23/2016	12:21:45	-0.02	0.07
run3	9/23/2016	12:22:00	0.03	0.08
run3	9/23/2016	12:22:15	0.05	0.07
run3	9/23/2016	12:22:30	0.02	0.09
run3	9/23/2016	12:22:45	0.03	0.08
run3	9/23/2016	12:23:00	0.04	0.08
run3	9/23/2016	12:23:15	0.02	0.09
run3	9/23/2016	12:23:30	0.00	0.11
run3	9/23/2016	12:23:45	-0.02	0.10
run3	9/23/2016	12:24:00	0.03	0.11
run3	9/23/2016	12:24:15	0.08	0.10
run3	9/23/2016	12:24:30	0.11	0.10
run3	9/23/2016	12:24:45	0.13	0.06
run3	9/23/2016	12:25:00	0.13	0.07
run3	9/23/2016	12:25:15	0.12	0.07
run3	9/23/2016	12:25:30	0.13	0.07
run3	9/23/2016	12:25:45	0.08	0.41
run3	9/23/2016	12:26:00	0.06	0.14
run3	9/23/2016	12:26:15	0.03	0.11
run3	9/23/2016	12:26:30	0.09	0.08
run3	9/23/2016	12:26:45	0.11	0.08
run3	9/23/2016	12:27:00	0.03	0.08
run3	9/23/2016	12:27:15	0.00	0.14
run3	9/23/2016	12:27:30	0.02	0.13
run3	9/23/2016	12:27:45	0.02	0.11
run3	9/23/2016	12:28:00	0.01	0.11
run3	9/23/2016	12:28:15	0.03	0.10
run3	9/23/2016	12:28:30	0.02	0.11
run3	9/23/2016	12:28:45	0.02	0.11
run3	9/23/2016	12:29:00	0.04	0.11
run3	9/23/2016	12:29:15	0.03	0.10
run3	9/23/2016	12:29:30	0.01	0.09
run3	9/23/2016	12:29:45	0.01	0.10
run3	9/23/2016	12:30:00	-0.01	0.10
run3	9/23/2016	12:30:15	0.01	0.09
run3	9/23/2016	12:30:30	0.03	0.09
run3	9/23/2016	12:30:45	0.03	0.08
run3	9/23/2016	12:31:00	0.00	0.08
run3	9/23/2016	12:31:15	-0.01	0.08
run3	9/23/2016	12:31:30	-0.02	0.08

run3	9/23/2016	12:31:45	-0.01	0.07			
run3	9/23/2016	12:32:00	0.00	0.08			
run3	9/23/2016	12:32:15	-0.02	0.09			
run3	9/23/2016	12:32:30	-0.03	0.10			
run3	9/23/2016	12:32:45	-0.04	0.10			
run3	9/23/2016	12:33:00	-0.03	0.10			
run3	9/23/2016	12:33:15	0.02	0.25			
run3	9/23/2016	12:33:30	0.02	0.35			
run3	9/23/2016	12:33:45	0.00	0.09			
run3	9/23/2016	12:34:00	-0.01	0.09			
run3	9/23/2016	12:34:15	-0.01	0.08			
run3	9/23/2016	12:34:30	0.00	0.08			
run3	9/23/2016	12:34:45	0.03	0.08			
run3	9/23/2016	12:35:00	0.04	0.10			
run3	9/23/2016	12:35:15	0.02	0.09			
run3	9/23/2016	12:35:30	0.02	0.09			
run3	9/23/2016	12:35:45	0.05	0.07			
run3	9/23/2016	12:36:00	0.12	0.07			
run3	9/23/2016	12:36:15	0.16	0.08			
run3	9/23/2016	12:36:30	0.10	0.09			
run3	9/23/2016	12:36:45	0.07	0.08			
run3	9/23/2016	12:37:00	0.05	0.06			
run3	9/23/2016	12:37:15	0.04	0.07			
run3	9/23/2016	12:37:30	0.03	0.08			
run3	9/23/2016	12:37:45	0.05	0.10			
run3	9/23/2016	12:38:00	0.04	0.09			
run3	9/23/2016	12:38:15	0.03	0.09			
run3	9/23/2016	12:38:30	0.01	0.09			
run3	9/23/2016	12:38:45	0.02	0.07			
run3	9/23/2016	12:39:00	0.05	0.07			
run3	9/23/2016	12:39:15	0.08	0.07			
run3	9/23/2016	12:39:30	0.09	0.09			
run3	9/23/2016	12:39:45	0.01	0.11			
run3	9/23/2016	12:40:00	0.04	0.08			
run3	9/23/2016	12:40:15	0.09	0.08			
run3	9/23/2016	12:40:30	0.06	0.10			
run3	9/23/2016	12:40:45	0.04	0.09			
run3	9/23/2016	12:41:00	0.03	0.11			
run3	9/23/2016	12:41:15	0.03	0.11			
run3	9/23/2016	12:41:30	0.02	0.12			
run3	9/23/2016	12:41:45	0.04	0.14			
run3	9/23/2016	12:42:00	0.08	0.15			
run3	9/23/2016	12:42:15	0.12	0.15			
run3	9/23/2016	12:42:30	0.11	0.15			
run3	9/23/2016	12:42:45	0.06	0.15			
run3	9/23/2016	12:43:00	0.03	0.55			
run3	9/23/2016	12:43:15	0.00	0.10			
run3	9/23/2016	12:43:30	-0.03	0.11			
run3	9/23/2016	12:43:45	-0.03	0.11			
averun3	9/23/2016	11:40:00	1.07	0.11	64		
scg4	9/23/2016	12:50:15	2.15	0.28	ALM018547/cg4	CO	5.06 0.00
scg4	9/23/2016	12:50:30	3.01	0.30	ALM018547/cg4	CO	5.06 0.00
scg4	9/23/2016	12:50:45	4.13	0.08	ALM018547/cg4	CO	5.06 0.00
scg4	9/23/2016	12:51:00	5.12	-0.13	ALM018547/cg4	CO	5.06 0.00
scg4	9/23/2016	12:51:15	5.39	-0.14	ALM018547/cg4	CO	5.06 0.00
scg4	9/23/2016	12:51:30	5.13	-0.14	ALM018547/cg4	CO	5.06 0.00
scg4	9/23/2016	12:51:45	4.96	-0.14	ALM018547/cg4	CO	5.06 0.00
scg4	9/23/2016	12:52:00	4.94	-0.12	ALM018547/cg4	CO	5.06 0.00
scg4	9/23/2016	12:52:15	4.95	-0.11	ALM018547/cg4	CO	5.06 0.00
scg4	9/23/2016	12:52:30	4.95	-0.12	ALM018547/cg4	CO	5.06 0.00
scg4	9/23/2016	12:52:45	4.95	-0.11	ALM018547/cg4	CO	5.06 0.00
scg4	9/23/2016	12:53:00	4.97	-0.10	ALM018547/cg4	CO	5.06 0.00
scg4	9/23/2016	12:53:15	4.93	-0.11	ALM018547/cg4	CO	5.06 0.00
scg4	9/23/2016	12:53:30	4.96	-0.10	ALM018547/cg4	CO	5.06 0.00
scg4	9/23/2016	12:53:45	4.95	-0.11	ALM018547/cg4	CO	5.06 0.00
scg4	9/23/2016	12:54:00	4.95	-0.11	ALM018547/cg4	CO	5.06 0.00
scg4	9/23/2016	12:54:15	4.95	-0.12	ALM018547/cg4	CO	5.06 0.00
scg4	9/23/2016	12:54:30	4.95	-0.13	ALM018547/cg4	CO	5.06 0.00
scg4	9/23/2016	12:54:45	4.93	-0.13	ALM018547/cg4	CO	5.06 0.00
o2zero1	9/23/2016	12:54:45	4.93	-0.13	ALM018547/cg4	CO	5.06 0.00
co2zero1	9/23/2016	12:54:45	4.93	-0.13	ALM018547/cg4	CO	5.06 0.00
cospan1	9/23/2016	12:54:00	4.95	-0.11	ALM018547/cg4	CO	5.06 0.00
scg9	9/23/2016	12:55:00	4.94	-0.13	EB0080791/cg9	CO2	10.96 O2 11.08
scg9	9/23/2016	12:55:15	4.95	-0.13	EB0080791/cg9	CO2	10.96 O2 11.08
scg9	9/23/2016	12:55:30	4.96	-0.11	EB0080791/cg9	CO2	10.96 O2 11.08
scg9	9/23/2016	12:55:45	4.84	-0.02	EB0080791/cg9	CO2	10.96 O2 11.08
scg9	9/23/2016	12:56:00	3.40	0.02	EB0080791/cg9	CO2	10.96 O2 11.08
scg9	9/23/2016	12:56:15	1.31	0.02	EB0080791/cg9	CO2	10.96 O2 11.08

scg9	9/23/2016	12:56:30	0.12	0.02 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/23/2016	12:56:45	-0.10	0.01 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/23/2016	12:57:00	-0.13	0.01 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/23/2016	12:57:15	-0.13	0.01 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/23/2016	12:57:30	-0.07	0.02 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/23/2016	12:57:45	-0.02	0.02 EB0080791/cg9	CO2	10.96 O2	11.08
cozero1	9/23/2016	12:57:45	-0.02	0.02 EB0080791/cg9	CO2	10.96 O2	11.08
thczero1	9/23/2016	12:57:45	-0.02	0.02 EB0080791/cg9	CO2	10.96 O2	11.08
o2span1	9/23/2016	12:57:45	-0.02	0.02 EB0080791/cg9	CO2	10.96 O2	11.08
co2span1	9/23/2016	12:57:45	-0.02	0.02 EB0080791/cg9	CO2	10.96 O2	11.08
scg12	9/23/2016	12:58:00	-0.01	0.03 ET0010875/cg12	THC	5.01	0.00
scg12	9/23/2016	12:58:15	0.00	0.04 ET0010875/cg12	THC	5.01	0.00
scg12	9/23/2016	12:58:30	0.00	1.78 ET0010875/cg12	THC	5.01	0.00
scg12	9/23/2016	12:58:45	0.02	4.95 ET0010875/cg12	THC	5.01	0.00
scg12	9/23/2016	12:59:00	0.21	5.03 ET0010875/cg12	THC	5.01	0.00
scg12	9/23/2016	12:59:15	0.37	5.05 ET0010875/cg12	THC	5.01	0.00
scg12	9/23/2016	12:59:30	0.43	5.04 ET0010875/cg12	THC	5.01	0.00
thcspan1	9/23/2016	12:59:30	0.43	5.04 ET0010875/cg12	THC	5.01	0.00

Model 3 Thermal Combustor Outlet Stack
Carbon Monoxide
Concentration

Condition- Run <u>Number</u>	Measured <u>(ppm)</u>	Adjusted <u>(ppm*)</u>
IV-1	1.07	1.08
IV-2	1.37	1.34
IV-3	1.20	1.17

*Calculated according to equation 7E-5.

Model 3 Thermal Combustor Outlet Stack
Total Hydrocarbons
Concentration

Condition- Run <u>Number</u>	Measured <u>(wet ppm)</u>
IV-1	< 0.01
IV-2	0.15
IV-3	0.20

Model 3 Thermal Combustor Outlet Stack
Calibration Summary
Carbon Monoxide

Condition- Run Number	CO Calibration			CO Zero			Actual CO Calibration Value (ppm)	Actual CO Zero Value (ppm)
	Initial Drift Check (ppm)	Final Drift Check (ppm)	Average (ppm)	Initial Drift Check (ppm)	Final Drift Check (ppm)	Average (ppm)		
IV-1	4.95	5.12	5.04	-0.02	0.00	-0.01	5.06	0.00
IV-2	5.12	5.10	5.11	0.00	0.03	0.02	5.06	0.00
IV-3	5.10	5.06	5.08	0.03	0.03	0.03	5.06	0.00

Model 3 Thermal Combustor Outlet Stack
System Calibration Bias and Drift Data
Carbon Monoxide
Calibration Span = 9.86 ppm

Condition- Run Number	Initial Response (ppm)	CO Calibration				Initial Response (ppm)	CO Zero				Analyzer Calibration Response Mid Level (ppm)	Analyzer Calibration Response Zero Level (ppm)
		Initial Bias (%*)	Final Response (ppm)	Final Bias (%*)	Drift (%*)		Initial Bias (%*)	Final Response (ppm)	Final Bias (%*)	Drift (%*)		
IV-1	4.95	1.52	5.12	0.20	1.72	-0.02	0.10	0.00	0.10	0.20	5.10	-0.01
IV-2	5.12	0.20	5.10	0.00	0.20	0.00	0.10	0.03	0.41	0.30	5.10	-0.01
IV-3	5.10	0.00	5.06	0.41	0.41	0.03	0.41	0.03	0.41	0.00	5.10	-0.01

* PERCENT OF CALIBRATION SPAN

Model 3 Thermal Combustor Outlet Stack
Analyzer Calibration Data
Carbon Monoxide

Date 09/23/16

Condition IV

Calibration Span = 9.86 ppm

<u>Gas Range</u>	<u>Actual Calibration Value (ppm)</u>	<u>Analyzer Calibration Response (ppm)</u>	<u>Absolute Difference (ppm)</u>	<u>Difference (%*)</u>
Low	0.00	-0.01	0.01	0.10
Mid	5.06	5.10	0.04	0.41
High	9.86	9.91	0.05	0.51

* Percent of calibration span

Model 3 Thermal Combustor Outlet Stack
Analyzer Calibration Data
Total Hydrocarbons

Date 09/23/16

Condition IV

Span = 10 ppm

<u>Gas Range</u>	<u>Actual Calibration Value (ppm)</u>	<u>Analyzer Calibration Response (ppm)</u>	<u>Absolute Difference (ppm)</u>	<u>Difference (%*)</u>
Zero	0.00	0.00	0.00	----
Low	3.13	3.05	0.08	2.56
Mid	5.01	5.04	0.03	0.60
High	8.48	8.49	0.01	----

* Percent of span gas

filename 9/23/2016 7:02:35
testby1 METCO Environmental
testby2 Baton Rouge Operations
testby3 9
testby4 Jeremiah Johnson
testfor1 COMM Engineering
testfor2 *
testfor3 Unit 3
testfor4 Lafayette, LA

name	CO	THC					
sn	208845	1125748714					
offset	0.00	0.00					
fullscale	10.10	10.00					
train	1.00	1.00					
gastype	co 10	thc 25a					
dgc1	9/23/2016 7:05:45	0.76	1.21	EB0070656/cg1	N2	0.00	0.00
dgc1	9/23/2016 7:06:00	0.74	1.20	EB0070656/cg1	N2	0.00	0.00
dgc1	9/23/2016 7:06:15	1.01	0.63	EB0070656/cg1	N2	0.00	0.00
dgc1	9/23/2016 7:06:30	3.62	-0.09	EB0070656/cg1	N2	0.00	0.00
dgc1	9/23/2016 7:06:45	4.62	-0.12	EB0070656/cg1	N2	0.00	0.00
dgc1	9/23/2016 7:07:00	2.31	-0.13	EB0070656/cg1	N2	0.00	0.00
dgc1	9/23/2016 7:07:15	0.95	-0.13	EB0070656/cg1	N2	0.00	0.00
dgc1	9/23/2016 7:07:30	0.69	-0.13	EB0070656/cg1	N2	0.00	0.00
dgc1	9/23/2016 7:07:45	0.65	-0.13	EB0070656/cg1	N2	0.00	0.00
dgc1	9/23/2016 7:08:00	0.67	-0.13	EB0070656/cg1	N2	0.00	0.00
dgc1	9/23/2016 7:08:15	0.40	-0.14	EB0070656/cg1	N2	0.00	0.00
dgc1	9/23/2016 7:08:30	0.01	-0.10	EB0070656/cg1	N2	0.00	0.00
dgc1	9/23/2016 7:08:45	-0.01	0.00	EB0070656/cg1	N2	0.00	0.00
dgc1	9/23/2016 7:09:00	-0.01	0.00	EB0070656/cg1	N2	0.00	0.00
o2ezero1	9/23/2016 7:09:00	-0.01	0.00	EB0070656/cg1	N2	0.00	0.00
co2ezero1	9/23/2016 7:09:00	-0.01	0.00	EB0070656/cg1	N2	0.00	0.00
coezero1	9/23/2016 7:09:00	-0.01	0.00	EB0070656/cg1	N2	0.00	0.00
thcezero1	9/23/2016 7:09:00	-0.01	0.00	EB0070656/cg1	N2	0.00	0.00
dgc3	9/23/2016 7:09:15	0.01	0.00	BLM000616/cg3	CO	9.86	0.00
dgc3	9/23/2016 7:09:30	0.01	0.00	BLM000616/cg3	CO	9.86	0.00
dgc3	9/23/2016 7:09:45	0.00	0.28	BLM000616/cg3	CO	9.86	0.00
dgc3	9/23/2016 7:10:00	0.41	0.03	BLM000616/cg3	CO	9.86	0.00
dgc3	9/23/2016 7:10:15	3.36	0.01	BLM000616/cg3	CO	9.86	0.00
dgc3	9/23/2016 7:10:30	7.07	0.01	BLM000616/cg3	CO	9.86	0.00
dgc3	9/23/2016 7:10:45	8.36	0.02	BLM000616/cg3	CO	9.86	0.00
dgc3	9/23/2016 7:11:00	8.62	0.02	BLM000616/cg3	CO	9.86	0.00
dgc3	9/23/2016 7:11:15	8.66	0.01	BLM000616/cg3	CO	9.86	0.00
dgc3	9/23/2016 7:11:30	9.40	0.01	BLM000616/cg3	CO	9.86	0.00
dgc3	9/23/2016 7:11:45	9.91	0.01	BLM000616/cg3	CO	9.86	0.00
dgc3	9/23/2016 7:12:00	9.91	0.00	BLM000616/cg3	CO	9.86	0.00
cohigh1	9/23/2016 7:12:00	9.91	0.00	BLM000616/cg3	CO	9.86	0.00
dgc10	9/23/2016 7:12:30	9.90	0.02	AAL021715/cg10	CO2	20.00	O2 19.90
dgc10	9/23/2016 7:12:45	9.90	0.24	AAL021715/cg10	CO2	20.00	O2 19.90
dgc10	9/23/2016 7:13:00	9.65	0.34	AAL021715/cg10	CO2	20.00	O2 19.90
dgc10	9/23/2016 7:13:15	7.43	0.26	AAL021715/cg10	CO2	20.00	O2 19.90
dgc10	9/23/2016 7:13:30	3.07	0.27	AAL021715/cg10	CO2	20.00	O2 19.90
dgc10	9/23/2016 7:13:45	0.46	0.28	AAL021715/cg10	CO2	20.00	O2 19.90
dgc10	9/23/2016 7:14:00	-0.48	0.29	AAL021715/cg10	CO2	20.00	O2 19.90
dgc10	9/23/2016 7:14:15	-0.53	0.29	AAL021715/cg10	CO2	20.00	O2 19.90
dgc10	9/23/2016 7:14:30	-0.53	0.28	AAL021715/cg10	CO2	20.00	O2 19.90
dgc10	9/23/2016 7:14:45	-0.53	0.27	AAL021715/cg10	CO2	20.00	O2 19.90
dgc10	9/23/2016 7:15:00	-0.53	0.28	AAL021715/cg10	CO2	20.00	O2 19.90
dgc10	9/23/2016 7:15:15	-0.53	0.28	AAL021715/cg10	CO2	20.00	O2 19.90
dgc10	9/23/2016 7:15:30	-0.53	0.28	AAL021715/cg10	CO2	20.00	O2 19.90
o2high1	9/23/2016 7:15:30	-0.53	0.28	AAL021715/cg10	CO2	20.00	O2 19.90
co2high1	9/23/2016 7:15:30	-0.53	0.28	AAL021715/cg10	CO2	20.00	O2 19.90
dgc4	9/23/2016 7:15:45	-0.53	0.27	ALM018547/cg4	CO	5.06	0.00
dgc4	9/23/2016 7:16:00	-0.53	0.28	ALM018547/cg4	CO	5.06	0.00
dgc4	9/23/2016 7:16:15	-0.53	0.62	ALM018547/cg4	CO	5.06	0.00
dgc4	9/23/2016 7:16:30	-0.39	0.07	ALM018547/cg4	CO	5.06	0.00
dgc4	9/23/2016 7:16:45	1.21	0.00	ALM018547/cg4	CO	5.06	0.00
dgc4	9/23/2016 7:17:00	3.44	0.00	ALM018547/cg4	CO	5.06	0.00
dgc4	9/23/2016 7:17:15	4.67	0.00	ALM018547/cg4	CO	5.06	0.00
dgc4	9/23/2016 7:17:30	5.08	-0.01	ALM018547/cg4	CO	5.06	0.00
dgc4	9/23/2016 7:17:45	5.11	-0.01	ALM018547/cg4	CO	5.06	0.00
dgc4	9/23/2016 7:18:00	5.07	0.00	ALM018547/cg4	CO	5.06	0.00
dgc4	9/23/2016 7:18:15	5.10	0.01	ALM018547/cg4	CO	5.06	0.00
comid1	9/23/2016 7:18:15	5.10	0.01	ALM018547/cg4	CO	5.06	0.00
dgc9	9/23/2016 7:18:30	5.12	0.01	EB0080791/cg9	CO2	10.96	O2 11.08
dgc9	9/23/2016 7:18:45	5.08	0.01	EB0080791/cg9	CO2	10.96	O2 11.08
dgc9	9/23/2016 7:19:00	5.10	0.19	EB0080791/cg9	CO2	10.96	O2 11.08
dgc9	9/23/2016 7:19:15	4.78	0.14	EB0080791/cg9	CO2	10.96	O2 11.08
dgc9	9/23/2016 7:19:30	3.07	0.15	EB0080791/cg9	CO2	10.96	O2 11.08

dsg9	9/23/2016	7:19:45	0.84	0.16 EB0080791/cg9	CO2	10.96	O2	11.08
dsg9	9/23/2016	7:20:00	-0.28	0.16 EB0080791/cg9	CO2	10.96	O2	11.08
dsg9	9/23/2016	7:20:15	-0.09	0.15 EB0080791/cg9	CO2	10.96	O2	11.08
dsg9	9/23/2016	7:20:30	0.02	0.15 EB0080791/cg9	CO2	10.96	O2	11.08
dsg9	9/23/2016	7:20:45	0.03	0.15 EB0080791/cg9	CO2	10.96	O2	11.08
o2mid1	9/23/2016	7:20:45	0.03	0.15 EB0080791/cg9	CO2	10.96	O2	11.08
co2mid1	9/23/2016	7:20:45	0.03	0.15 EB0080791/cg9	CO2	10.96	O2	11.08
dsg11	9/23/2016	7:21:00	0.02	0.14 BLM005063/cg11	THC	3.13		0.00
dsg11	9/23/2016	7:21:15	0.01	0.14 BLM005063/cg11	THC	3.13		0.00
dsg11	9/23/2016	7:21:30	0.01	0.39 BLM005063/cg11	THC	3.13		0.00
dsg11	9/23/2016	7:21:45	0.04	2.63 BLM005063/cg11	THC	3.13		0.00
dsg11	9/23/2016	7:22:00	0.21	3.05 BLM005063/cg11	THC	3.13		0.00
dsg11	9/23/2016	7:22:15	0.51	3.06 BLM005063/cg11	THC	3.13		0.00
dsg11	9/23/2016	7:22:30	0.62	3.06 BLM005063/cg11	THC	3.13		0.00
dsg11	9/23/2016	7:22:45	0.63	3.05 BLM005063/cg11	THC	3.13		0.00
dsg11	9/23/2016	7:23:00	0.64	3.06 BLM005063/cg11	THC	3.13		0.00
thclow1	9/23/2016	7:22:45	0.63	3.05 BLM005063/cg11	THC	3.13		0.00
dsg13	9/23/2016	7:25:00	0.58	1.20 ET0010859/cg13	THC	8.48		0.00
dsg13	9/23/2016	7:25:15	0.60	1.33 ET0010859/cg13	THC	8.48		0.00
dsg13	9/23/2016	7:25:30	0.61	6.18 ET0010859/cg13	THC	8.48		0.00
dsg13	9/23/2016	7:25:45	0.62	8.46 ET0010859/cg13	THC	8.48		0.00
dsg13	9/23/2016	7:26:00	0.54	8.49 ET0010859/cg13	THC	8.48		0.00
dsg13	9/23/2016	7:26:15	0.52	8.49 ET0010859/cg13	THC	8.48		0.00
dsg13	9/23/2016	7:26:30	0.53	8.49 ET0010859/cg13	THC	8.48		0.00
dsg13	9/23/2016	7:26:45	0.53	8.49 ET0010859/cg13	THC	8.48		0.00
thchigh1	9/23/2016	7:26:45	0.53	8.49 ET0010859/cg13	THC	8.48		0.00
dsg12	9/23/2016	7:28:15	0.62	1.24 ET0010875/cg12	THC	5.01		0.00
dsg12	9/23/2016	7:28:30	0.61	1.82 ET0010875/cg12	THC	5.01		0.00
dsg12	9/23/2016	7:28:45	0.63	4.98 ET0010875/cg12	THC	5.01		0.00
dsg12	9/23/2016	7:29:00	0.61	5.03 ET0010875/cg12	THC	5.01		0.00
dsg12	9/23/2016	7:29:15	0.55	5.04 ET0010875/cg12	THC	5.01		0.00
thcmid1	9/23/2016	7:29:15	0.55	5.04 ET0010875/cg12	THC	5.01		0.00
scg4	9/23/2016	12:50:15	2.15	0.28 ALM018547/cg4	CO	5.06		0.00
scg4	9/23/2016	12:50:30	3.01	0.30 ALM018547/cg4	CO	5.06		0.00
scg4	9/23/2016	12:50:45	4.13	0.08 ALM018547/cg4	CO	5.06		0.00
scg4	9/23/2016	12:51:00	5.12	-0.13 ALM018547/cg4	CO	5.06		0.00
scg4	9/23/2016	12:51:15	5.39	-0.14 ALM018547/cg4	CO	5.06		0.00
scg4	9/23/2016	12:51:30	5.13	-0.14 ALM018547/cg4	CO	5.06		0.00
scg4	9/23/2016	12:51:45	4.96	-0.14 ALM018547/cg4	CO	5.06		0.00
scg4	9/23/2016	12:52:00	4.94	-0.12 ALM018547/cg4	CO	5.06		0.00
scg4	9/23/2016	12:52:15	4.95	-0.11 ALM018547/cg4	CO	5.06		0.00
scg4	9/23/2016	12:52:30	4.95	-0.12 ALM018547/cg4	CO	5.06		0.00
scg4	9/23/2016	12:52:45	4.95	-0.11 ALM018547/cg4	CO	5.06		0.00
scg4	9/23/2016	12:53:00	4.97	-0.10 ALM018547/cg4	CO	5.06		0.00
scg4	9/23/2016	12:53:15	4.93	-0.11 ALM018547/cg4	CO	5.06		0.00
scg4	9/23/2016	12:53:30	4.96	-0.10 ALM018547/cg4	CO	5.06		0.00
scg4	9/23/2016	12:53:45	4.95	-0.11 ALM018547/cg4	CO	5.06		0.00
scg4	9/23/2016	12:54:00	4.95	-0.11 ALM018547/cg4	CO	5.06		0.00
scg4	9/23/2016	12:54:15	4.95	-0.12 ALM018547/cg4	CO	5.06		0.00
scg4	9/23/2016	12:54:30	4.95	-0.13 ALM018547/cg4	CO	5.06		0.00
scg4	9/23/2016	12:54:45	4.93	-0.13 ALM018547/cg4	CO	5.06		0.00
o2zero1	9/23/2016	12:54:45	4.93	-0.13 ALM018547/cg4	CO	5.06		0.00
co2zero1	9/23/2016	12:54:45	4.93	-0.13 ALM018547/cg4	CO	5.06		0.00
cospan1	9/23/2016	12:54:00	4.95	-0.11 ALM018547/cg4	CO	5.06		0.00
scg9	9/23/2016	12:55:00	4.94	-0.13 EB0080791/cg9	CO2	10.96	O2	11.08
scg9	9/23/2016	12:55:15	4.95	-0.13 EB0080791/cg9	CO2	10.96	O2	11.08
scg9	9/23/2016	12:55:30	4.96	-0.11 EB0080791/cg9	CO2	10.96	O2	11.08
scg9	9/23/2016	12:55:45	4.84	-0.02 EB0080791/cg9	CO2	10.96	O2	11.08
scg9	9/23/2016	12:56:00	3.40	0.02 EB0080791/cg9	CO2	10.96	O2	11.08
scg9	9/23/2016	12:56:15	1.31	0.02 EB0080791/cg9	CO2	10.96	O2	11.08
scg9	9/23/2016	12:56:30	0.12	0.02 EB0080791/cg9	CO2	10.96	O2	11.08
scg9	9/23/2016	12:56:45	-0.10	0.01 EB0080791/cg9	CO2	10.96	O2	11.08
scg9	9/23/2016	12:57:00	-0.13	0.01 EB0080791/cg9	CO2	10.96	O2	11.08
scg9	9/23/2016	12:57:15	-0.13	0.01 EB0080791/cg9	CO2	10.96	O2	11.08
scg9	9/23/2016	12:57:30	-0.07	0.02 EB0080791/cg9	CO2	10.96	O2	11.08
scg9	9/23/2016	12:57:45	-0.02	0.02 EB0080791/cg9	CO2	10.96	O2	11.08
cozero1	9/23/2016	12:57:45	-0.02	0.02 EB0080791/cg9	CO2	10.96	O2	11.08
thczero1	9/23/2016	12:57:45	-0.02	0.02 EB0080791/cg9	CO2	10.96	O2	11.08
o2span1	9/23/2016	12:57:45	-0.02	0.02 EB0080791/cg9	CO2	10.96	O2	11.08
co2span1	9/23/2016	12:57:45	-0.02	0.02 EB0080791/cg9	CO2	10.96	O2	11.08
scg12	9/23/2016	12:58:00	-0.01	0.03 ET0010875/cg12	THC	5.01		0.00
scg12	9/23/2016	12:58:15	0.00	0.04 ET0010875/cg12	THC	5.01		0.00
scg12	9/23/2016	12:58:30	0.00	1.78 ET0010875/cg12	THC	5.01		0.00
scg12	9/23/2016	12:58:45	0.02	4.95 ET0010875/cg12	THC	5.01		0.00
scg12	9/23/2016	12:59:00	0.21	5.03 ET0010875/cg12	THC	5.01		0.00
scg12	9/23/2016	12:59:15	0.37	5.05 ET0010875/cg12	THC	5.01		0.00
scg12	9/23/2016	12:59:30	0.43	5.04 ET0010875/cg12	THC	5.01		0.00
thcspan1	9/23/2016	12:59:30	0.43	5.04 ET0010875/cg12	THC	5.01		0.00

run4	9/23/2016	14:40:00	1.85	0.00
run4	9/23/2016	14:40:15	1.78	0.00
run4	9/23/2016	14:40:30	1.67	-0.01
run4	9/23/2016	14:40:45	1.88	0.37
run4	9/23/2016	14:41:00	5.92	0.38
run4	9/23/2016	14:41:15	5.40	-0.01
run4	9/23/2016	14:41:30	4.50	0.00
run4	9/23/2016	14:41:45	4.82	-0.01
run4	9/23/2016	14:42:00	1.83	-0.02
run4	9/23/2016	14:42:15	2.47	-0.02
run4	9/23/2016	14:42:30	3.08	-0.02
run4	9/23/2016	14:42:45	3.05	-0.02
run4	9/23/2016	14:43:00	3.00	0.01
run4	9/23/2016	14:43:15	2.95	-0.01
run4	9/23/2016	14:43:30	2.89	-0.01
run4	9/23/2016	14:43:45	2.83	-0.01
run4	9/23/2016	14:44:00	2.78	-0.01
run4	9/23/2016	14:44:15	2.73	0.00
run4	9/23/2016	14:44:30	2.70	-0.01
run4	9/23/2016	14:44:45	2.66	-0.01
run4	9/23/2016	14:45:00	2.63	0.00
run4	9/23/2016	14:45:15	2.61	-0.01
run4	9/23/2016	14:45:30	2.60	-0.02
run4	9/23/2016	14:45:45	2.60	-0.03
run4	9/23/2016	14:46:00	2.47	-0.02
run4	9/23/2016	14:46:15	1.98	-0.02
run4	9/23/2016	14:46:30	1.51	-0.03
run4	9/23/2016	14:46:45	1.35	-0.02
run4	9/23/2016	14:47:00	1.34	-0.01
run4	9/23/2016	14:47:15	1.36	-0.02
run4	9/23/2016	14:47:30	1.39	-0.03
run4	9/23/2016	14:47:45	1.42	-0.03
run4	9/23/2016	14:48:00	1.45	0.00
run4	9/23/2016	14:48:15	1.50	-0.01
run4	9/23/2016	14:48:30	1.55	-0.01
run4	9/23/2016	14:48:45	1.59	-0.02
run4	9/23/2016	14:49:00	1.62	-0.02
run4	9/23/2016	14:49:15	1.64	-0.02
run4	9/23/2016	14:49:30	1.66	-0.02
run4	9/23/2016	14:49:45	1.67	-0.02
run4	9/23/2016	14:50:00	1.68	-0.02
run4	9/23/2016	14:50:15	1.69	-0.01
run4	9/23/2016	14:50:30	1.68	-0.01
run4	9/23/2016	14:50:45	1.65	0.00
run4	9/23/2016	14:51:00	1.61	-0.01
run4	9/23/2016	14:51:15	1.55	-0.01
run4	9/23/2016	14:51:30	1.50	-0.02
run4	9/23/2016	14:51:45	1.45	-0.03
run4	9/23/2016	14:52:00	1.41	-0.02
run4	9/23/2016	14:52:15	1.38	-0.02
run4	9/23/2016	14:52:30	1.37	-0.02
run4	9/23/2016	14:52:45	1.37	0.00
run4	9/23/2016	14:53:00	1.37	-0.02
run4	9/23/2016	14:53:15	1.35	-0.02
run4	9/23/2016	14:53:30	1.33	-0.01
run4	9/23/2016	14:53:45	1.31	-0.01
run4	9/23/2016	14:54:00	1.29	0.00
run4	9/23/2016	14:54:15	1.28	-0.01
run4	9/23/2016	14:54:30	1.27	-0.03
run4	9/23/2016	14:54:45	1.25	-0.01
run4	9/23/2016	14:55:00	1.22	-0.01
run4	9/23/2016	14:55:15	1.20	0.01
run4	9/23/2016	14:55:30	1.18	0.02
run4	9/23/2016	14:55:45	1.18	-0.02
run4	9/23/2016	14:56:00	1.17	0.00
run4	9/23/2016	14:56:15	1.16	0.03
run4	9/23/2016	14:56:30	1.16	0.05
run4	9/23/2016	14:56:45	1.15	0.20
run4	9/23/2016	14:57:00	1.24	0.00
run4	9/23/2016	14:57:15	1.48	-0.02
run4	9/23/2016	14:57:30	1.64	-0.02
run4	9/23/2016	14:57:45	1.64	-0.02
run4	9/23/2016	14:58:00	1.60	-0.03
run4	9/23/2016	14:58:15	1.55	-0.02
run4	9/23/2016	14:58:30	1.52	-0.03
run4	9/23/2016	14:58:45	1.49	-0.02
run4	9/23/2016	14:59:00	1.46	-0.04
run4	9/23/2016	14:59:15	1.43	-0.02

run4	9/23/2016	14:59:30	1.39	-0.03
run4	9/23/2016	14:59:45	1.36	-0.01
run4	9/23/2016	15:00:00	1.34	-0.03
run4	9/23/2016	15:00:15	1.31	-0.02
run4	9/23/2016	15:00:30	1.28	-0.03
run4	9/23/2016	15:00:45	1.25	-0.02
run4	9/23/2016	15:01:00	1.23	-0.03
run4	9/23/2016	15:01:15	1.21	-0.02
run4	9/23/2016	15:01:30	1.19	-0.01
run4	9/23/2016	15:01:45	1.18	-0.02
run4	9/23/2016	15:02:00	1.06	-0.02
run4	9/23/2016	15:02:15	0.80	-0.02
run4	9/23/2016	15:02:30	0.59	-0.02
run4	9/23/2016	15:02:45	0.54	-0.02
run4	9/23/2016	15:03:00	0.52	-0.01
run4	9/23/2016	15:03:15	0.51	-0.01
run4	9/23/2016	15:03:30	0.50	0.00
run4	9/23/2016	15:03:45	0.49	0.00
run4	9/23/2016	15:04:00	0.48	0.00
run4	9/23/2016	15:04:15	0.49	-0.02
run4	9/23/2016	15:04:30	0.49	-0.02
run4	9/23/2016	15:04:45	0.50	-0.01
run4	9/23/2016	15:05:00	0.50	-0.02
run4	9/23/2016	15:05:15	0.50	-0.02
run4	9/23/2016	15:05:30	0.50	-0.02
run4	9/23/2016	15:05:45	0.50	-0.01
run4	9/23/2016	15:06:00	0.49	0.00
run4	9/23/2016	15:06:15	0.49	0.00
run4	9/23/2016	15:06:30	0.48	-0.01
run4	9/23/2016	15:06:45	0.46	0.03
run4	9/23/2016	15:07:00	0.44	0.01
run4	9/23/2016	15:07:15	0.43	-0.04
run4	9/23/2016	15:07:30	0.43	-0.02
run4	9/23/2016	15:07:45	0.43	-0.03
run4	9/23/2016	15:08:00	0.42	-0.04
run4	9/23/2016	15:08:15	0.42	-0.04
run4	9/23/2016	15:08:30	0.41	-0.03
run4	9/23/2016	15:08:45	0.40	-0.02
run4	9/23/2016	15:09:00	0.40	-0.02
run4	9/23/2016	15:09:15	0.39	-0.03
run4	9/23/2016	15:09:30	0.39	-0.02
run4	9/23/2016	15:09:45	0.38	-0.03
run4	9/23/2016	15:10:00	0.38	-0.02
run4	9/23/2016	15:10:15	0.39	-0.03
run4	9/23/2016	15:10:30	0.40	-0.02
run4	9/23/2016	15:10:45	0.40	-0.03
run4	9/23/2016	15:11:00	0.40	-0.02
run4	9/23/2016	15:11:15	0.41	0.16
run4	9/23/2016	15:11:30	0.54	-0.01
run4	9/23/2016	15:11:45	0.78	-0.01
run4	9/23/2016	15:12:00	0.94	-0.03
run4	9/23/2016	15:12:15	0.98	-0.04
run4	9/23/2016	15:12:30	0.98	-0.04
run4	9/23/2016	15:12:45	0.99	-0.03
run4	9/23/2016	15:13:00	0.99	-0.03
run4	9/23/2016	15:13:15	1.00	-0.02
run4	9/23/2016	15:13:30	1.01	-0.02
run4	9/23/2016	15:13:45	1.01	-0.02
run4	9/23/2016	15:14:00	1.02	-0.04
run4	9/23/2016	15:14:15	1.03	-0.04
run4	9/23/2016	15:14:30	1.04	-0.01
run4	9/23/2016	15:14:45	1.06	-0.01
run4	9/23/2016	15:15:00	1.08	-0.03
run4	9/23/2016	15:15:15	1.09	-0.02
run4	9/23/2016	15:15:30	1.09	-0.03
run4	9/23/2016	15:15:45	1.10	-0.04
run4	9/23/2016	15:16:00	1.12	-0.04
run4	9/23/2016	15:16:15	1.13	-0.03
run4	9/23/2016	15:16:30	1.04	-0.03
run4	9/23/2016	15:16:45	0.81	-0.03
run4	9/23/2016	15:17:00	0.68	-0.05
run4	9/23/2016	15:17:15	0.65	-0.04
run4	9/23/2016	15:17:30	0.66	-0.02
run4	9/23/2016	15:17:45	0.67	-0.04
run4	9/23/2016	15:18:00	0.68	-0.04
run4	9/23/2016	15:18:15	0.69	-0.03
run4	9/23/2016	15:18:30	0.70	-0.02
run4	9/23/2016	15:18:45	0.70	-0.01

run4	9/23/2016	15:19:00	0.71	-0.03
run4	9/23/2016	15:19:15	0.71	-0.03
run4	9/23/2016	15:19:30	0.71	-0.05
run4	9/23/2016	15:19:45	0.70	-0.05
run4	9/23/2016	15:20:00	0.69	-0.04
run4	9/23/2016	15:20:15	0.68	-0.05
run4	9/23/2016	15:20:30	0.67	-0.05
run4	9/23/2016	15:20:45	0.65	-0.06
run4	9/23/2016	15:21:00	0.63	-0.03
run4	9/23/2016	15:21:15	0.61	0.02
run4	9/23/2016	15:21:30	0.60	-0.04
run4	9/23/2016	15:21:45	0.59	-0.05
run4	9/23/2016	15:22:00	0.57	-0.05
run4	9/23/2016	15:22:15	0.55	-0.04
run4	9/23/2016	15:22:30	0.55	-0.03
run4	9/23/2016	15:22:45	0.54	-0.04
run4	9/23/2016	15:23:00	0.53	-0.05
run4	9/23/2016	15:23:15	0.53	-0.05
run4	9/23/2016	15:23:30	0.53	-0.05
run4	9/23/2016	15:23:45	0.53	-0.04
run4	9/23/2016	15:24:00	0.52	-0.02
run4	9/23/2016	15:24:15	0.52	-0.02
run4	9/23/2016	15:24:30	0.51	-0.04
run4	9/23/2016	15:24:45	0.50	-0.04
run4	9/23/2016	15:25:00	0.49	-0.05
run4	9/23/2016	15:25:15	0.49	-0.05
run4	9/23/2016	15:25:30	0.49	-0.04
run4	9/23/2016	15:25:45	0.49	-0.05
run4	9/23/2016	15:26:00	0.49	-0.05
run4	9/23/2016	15:26:15	0.49	0.20
run4	9/23/2016	15:26:30	0.58	0.10
run4	9/23/2016	15:26:45	0.93	-0.04
run4	9/23/2016	15:27:00	1.26	-0.03
run4	9/23/2016	15:27:15	1.37	-0.04
run4	9/23/2016	15:27:30	1.40	-0.04
run4	9/23/2016	15:27:45	1.40	0.00
run4	9/23/2016	15:28:00	1.40	-0.02
run4	9/23/2016	15:28:15	1.40	-0.05
run4	9/23/2016	15:28:30	1.39	-0.04
run4	9/23/2016	15:28:45	1.38	-0.04
run4	9/23/2016	15:29:00	1.37	-0.02
run4	9/23/2016	15:29:15	1.36	-0.02
run4	9/23/2016	15:29:30	1.35	-0.03
run4	9/23/2016	15:29:45	1.34	-0.04
run4	9/23/2016	15:30:00	1.33	-0.05
run4	9/23/2016	15:30:15	1.32	-0.04
run4	9/23/2016	15:30:30	1.32	-0.05
run4	9/23/2016	15:30:45	1.31	-0.04
run4	9/23/2016	15:31:00	1.29	-0.05
run4	9/23/2016	15:31:15	1.28	-0.04
run4	9/23/2016	15:31:30	1.18	-0.03
run4	9/23/2016	15:31:45	0.83	-0.04
run4	9/23/2016	15:32:00	0.49	-0.05
run4	9/23/2016	15:32:15	0.39	-0.04
run4	9/23/2016	15:32:30	0.36	-0.04
run4	9/23/2016	15:32:45	0.36	-0.05
run4	9/23/2016	15:33:00	0.35	-0.02
run4	9/23/2016	15:33:15	0.35	-0.05
run4	9/23/2016	15:33:30	0.35	-0.04
run4	9/23/2016	15:33:45	0.35	-0.04
run4	9/23/2016	15:34:00	0.35	-0.03
run4	9/23/2016	15:34:15	0.34	-0.03
run4	9/23/2016	15:34:30	0.34	-0.04
run4	9/23/2016	15:34:45	0.35	-0.04
run4	9/23/2016	15:35:00	0.35	-0.02
run4	9/23/2016	15:35:15	0.35	-0.01
run4	9/23/2016	15:35:30	0.35	-0.04
run4	9/23/2016	15:35:45	0.34	-0.05
run4	9/23/2016	15:36:00	0.34	-0.03
run4	9/23/2016	15:36:15	0.33	-0.04
run4	9/23/2016	15:36:30	0.32	-0.04
run4	9/23/2016	15:36:45	0.31	-0.05
run4	9/23/2016	15:37:00	0.30	-0.03
run4	9/23/2016	15:37:15	0.29	-0.03
run4	9/23/2016	15:37:30	0.30	-0.04
run4	9/23/2016	15:37:45	0.30	-0.05
run4	9/23/2016	15:38:00	0.30	-0.04
run4	9/23/2016	15:38:15	0.30	-0.02

run4	9/23/2016	15:38:30	0.30	-0.03				
run4	9/23/2016	15:38:45	0.30	-0.01				
run4	9/23/2016	15:39:00	0.30	-0.01				
run4	9/23/2016	15:39:15	0.31	-0.03				
run4	9/23/2016	15:39:30	0.31	-0.03				
run4	9/23/2016	15:39:45	0.31	-0.02				
run4	9/23/2016	15:40:00	0.30	-0.02				
run4	9/23/2016	15:40:15	0.31	-0.02				
run4	9/23/2016	15:40:30	0.31	-0.03				
run4	9/23/2016	15:40:45	0.32	-0.04				
run4	9/23/2016	15:41:00	0.32	-0.03				
run4	9/23/2016	15:41:15	0.33	0.12				
run4	9/23/2016	15:41:30	0.46	-0.01				
run4	9/23/2016	15:41:45	0.68	-0.03				
run4	9/23/2016	15:42:00	0.83	-0.02				
run4	9/23/2016	15:42:15	0.86	-0.03				
run4	9/23/2016	15:42:30	0.86	-0.03				
run4	9/23/2016	15:42:45	0.85	-0.02				
run4	9/23/2016	15:43:00	0.85	-0.03				
run4	9/23/2016	15:43:15	0.84	-0.05				
run4	9/23/2016	15:43:30	0.36	-0.05				
run4	9/23/2016	15:43:45	0.27	-0.04				
averun4	9/23/2016	14:40:00	1.07	-0.02	64			
scg12	9/23/2016	15:45:15	0.27	-0.04	ET0010875/cg12	THC	5.01	0.00
scg12	9/23/2016	15:45:30	0.27	-0.04	ET0010875/cg12	THC	5.01	0.00
scg12	9/23/2016	15:45:45	0.25	1.36	ET0010875/cg12	THC	5.01	0.00
scg12	9/23/2016	15:46:00	0.83	3.53	ET0010875/cg12	THC	5.01	0.00
scg12	9/23/2016	15:46:15	1.79	3.59	ET0010875/cg12	THC	5.01	0.00
scg12	9/23/2016	15:46:30	1.39	3.59	ET0010875/cg12	THC	5.01	0.00
scg12	9/23/2016	15:46:45	0.65	3.61	ET0010875/cg12	THC	5.01	0.00
scg12	9/23/2016	15:47:00	0.40	3.62	ET0010875/cg12	THC	5.01	0.00
scg12	9/23/2016	15:47:15	0.38	4.26	ET0010875/cg12	THC	5.01	0.00
scg12	9/23/2016	15:47:30	0.37	4.98	ET0010875/cg12	THC	5.01	0.00
scg12	9/23/2016	15:47:45	0.38	4.99	ET0010875/cg12	THC	5.01	0.00
scg12	9/23/2016	15:47:45	0.38	4.99	ET0010875/cg12	THC	5.01	0.00
thcspan1	9/23/2016	15:48:00	0.40	4.98	EB0080791/cg9	CO2	10.96	O2 11.08
scg9	9/23/2016	15:48:15	0.40	4.98	EB0080791/cg9	CO2	10.96	O2 11.08
scg9	9/23/2016	15:48:30	0.39	3.99	EB0080791/cg9	CO2	10.96	O2 11.08
scg9	9/23/2016	15:48:45	0.33	0.07	EB0080791/cg9	CO2	10.96	O2 11.08
scg9	9/23/2016	15:49:00	0.10	-0.20	EB0080791/cg9	CO2	10.96	O2 11.08
scg9	9/23/2016	15:49:15	-0.14	-0.20	EB0080791/cg9	CO2	10.96	O2 11.08
scg9	9/23/2016	15:49:30	-0.02	-0.20	EB0080791/cg9	CO2	10.96	O2 11.08
scg9	9/23/2016	15:49:45	0.10	-0.10	EB0080791/cg9	CO2	10.96	O2 11.08
scg9	9/23/2016	15:50:00	0.08	0.02	EB0080791/cg9	CO2	10.96	O2 11.08
scg9	9/23/2016	15:50:15	0.00	0.03	EB0080791/cg9	CO2	10.96	O2 11.08
cozero1	9/23/2016	15:50:15	0.00	0.03	EB0080791/cg9	CO2	10.96	O2 11.08
thczero1	9/23/2016	15:50:15	0.00	0.03	EB0080791/cg9	CO2	10.96	O2 11.08
o2span1	9/23/2016	15:50:15	0.00	0.03	EB0080791/cg9	CO2	10.96	O2 11.08
co2span1	9/23/2016	15:50:15	0.00	0.03	EB0080791/cg9	CO2	10.96	O2 11.08
scg4	9/23/2016	15:50:30	-0.01	0.02	ALM018547/cg4	CO	5.06	0.00
scg4	9/23/2016	15:50:45	0.00	0.02	ALM018547/cg4	CO	5.06	0.00
scg4	9/23/2016	15:51:00	0.00	0.07	ALM018547/cg4	CO	5.06	0.00
scg4	9/23/2016	15:51:15	0.29	-0.03	ALM018547/cg4	CO	5.06	0.00
scg4	9/23/2016	15:51:30	1.93	-0.04	ALM018547/cg4	CO	5.06	0.00
scg4	9/23/2016	15:51:45	3.85	-0.06	ALM018547/cg4	CO	5.06	0.00
scg4	9/23/2016	15:52:00	4.87	-0.07	ALM018547/cg4	CO	5.06	0.00
scg4	9/23/2016	15:52:15	5.06	-0.06	ALM018547/cg4	CO	5.06	0.00
scg4	9/23/2016	15:52:30	5.09	-0.06	ALM018547/cg4	CO	5.06	0.00
scg4	9/23/2016	15:52:45	5.10	-0.07	ALM018547/cg4	CO	5.06	0.00
scg4	9/23/2016	15:53:00	5.12	-0.07	ALM018547/cg4	CO	5.06	0.00
o2zero1	9/23/2016	15:53:00	5.12	-0.07	ALM018547/cg4	CO	5.06	0.00
co2zero1	9/23/2016	15:53:00	5.12	-0.07	ALM018547/cg4	CO	5.06	0.00
cospan1	9/23/2016	15:53:00	5.12	-0.07	ALM018547/cg4	CO	5.06	0.00
run5	9/23/2016	15:57:00	0.53	0.14				
run5	9/23/2016	15:57:15	0.49	0.17				
run5	9/23/2016	15:57:30	0.35	0.18				
run5	9/23/2016	15:57:45	0.54	0.44				
run5	9/23/2016	15:58:00	1.93	0.16				
run5	9/23/2016	15:58:15	1.23	0.15				
run5	9/23/2016	15:58:30	1.64	0.17				
run5	9/23/2016	15:58:45	1.73	0.17				
run5	9/23/2016	15:59:00	1.72	0.24				
run5	9/23/2016	15:59:15	1.70	0.18				
run5	9/23/2016	15:59:30	1.71	0.15				
run5	9/23/2016	15:59:45	1.69	0.15				
run5	9/23/2016	16:00:00	1.43	0.14				
run5	9/23/2016	16:00:15	0.85	0.15				
run5	9/23/2016	16:00:30	0.43	0.15				

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run5	9/23/2016	16:00:45	0.32	0.15
run5	9/23/2016	16:01:00	0.30	0.17
run5	9/23/2016	16:01:15	0.28	0.15
run5	9/23/2016	16:01:30	0.28	0.15
run5	9/23/2016	16:01:45	0.27	0.15
run5	9/23/2016	16:02:00	0.27	0.15
run5	9/23/2016	16:02:15	0.29	0.17
run5	9/23/2016	16:02:30	0.31	0.17
run5	9/23/2016	16:02:45	0.32	0.15
run5	9/23/2016	16:03:00	0.35	0.17
run5	9/23/2016	16:03:15	0.37	0.14
run5	9/23/2016	16:03:30	0.38	0.13
run5	9/23/2016	16:03:45	0.37	0.13
run5	9/23/2016	16:04:00	0.36	0.15
run5	9/23/2016	16:04:15	0.36	0.14
run5	9/23/2016	16:04:30	0.36	0.15
run5	9/23/2016	16:04:45	0.36	0.15
run5	9/23/2016	16:05:00	0.35	0.16
run5	9/23/2016	16:05:15	0.35	0.14
run5	9/23/2016	16:05:30	0.36	0.15
run5	9/23/2016	16:05:45	0.37	0.15
run5	9/23/2016	16:06:00	0.38	0.15
run5	9/23/2016	16:06:15	0.39	0.13
run5	9/23/2016	16:06:30	0.39	0.13
run5	9/23/2016	16:06:45	0.39	0.12
run5	9/23/2016	16:07:00	0.37	0.13
run5	9/23/2016	16:07:15	0.34	0.12
run5	9/23/2016	16:07:30	0.31	0.14
run5	9/23/2016	16:07:45	0.29	0.12
run5	9/23/2016	16:08:00	0.28	0.13
run5	9/23/2016	16:08:15	0.26	0.12
run5	9/23/2016	16:08:30	0.24	0.12
run5	9/23/2016	16:08:45	0.22	0.12
run5	9/23/2016	16:09:00	0.21	0.13
run5	9/23/2016	16:09:15	0.21	0.15
run5	9/23/2016	16:09:30	0.20	0.13
run5	9/23/2016	16:09:45	0.21	0.11
run5	9/23/2016	16:10:00	0.23	0.15
run5	9/23/2016	16:10:15	0.24	0.14
run5	9/23/2016	16:10:30	0.27	0.14
run5	9/23/2016	16:10:45	0.30	0.13
run5	9/23/2016	16:11:00	0.34	0.14
run5	9/23/2016	16:11:15	0.37	0.14
run5	9/23/2016	16:11:30	0.39	0.14
run5	9/23/2016	16:11:45	0.40	0.12
run5	9/23/2016	16:12:00	0.40	0.12
run5	9/23/2016	16:12:15	0.40	0.12
run5	9/23/2016	16:12:30	0.37	0.13
run5	9/23/2016	16:12:45	0.35	0.11
run5	9/23/2016	16:13:00	0.33	0.12
run5	9/23/2016	16:13:15	0.33	0.12
run5	9/23/2016	16:13:30	0.33	0.21
run5	9/23/2016	16:13:45	0.44	0.34
run5	9/23/2016	16:14:00	1.88	0.19
run5	9/23/2016	16:14:15	5.20	0.12
run5	9/23/2016	16:14:30	7.96	0.11
run5	9/23/2016	16:14:45	4.14	0.16
run5	9/23/2016	16:15:00	3.65	0.19
run5	9/23/2016	16:15:15	3.68	0.14
run5	9/23/2016	16:15:30	3.69	0.12
run5	9/23/2016	16:15:45	3.69	0.13
run5	9/23/2016	16:16:00	3.68	0.18
run5	9/23/2016	16:16:15	3.67	0.20
run5	9/23/2016	16:16:30	3.67	0.15
run5	9/23/2016	16:16:45	3.68	0.11
run5	9/23/2016	16:17:00	3.68	0.10
run5	9/23/2016	16:17:15	3.67	0.11
run5	9/23/2016	16:17:30	3.67	0.12
run5	9/23/2016	16:17:45	3.67	0.15
run5	9/23/2016	16:18:00	3.66	0.15
run5	9/23/2016	16:18:15	3.66	0.13
run5	9/23/2016	16:18:30	3.65	0.12
run5	9/23/2016	16:18:45	3.59	0.14
run5	9/23/2016	16:19:00	2.95	0.16
run5	9/23/2016	16:19:15	1.72	0.14
run5	9/23/2016	16:19:30	0.73	0.15
run5	9/23/2016	16:19:45	0.42	0.12
run5	9/23/2016	16:20:00	0.35	0.13

run5	9/23/2016	16:20:15	0.32	0.15
run5	9/23/2016	16:20:30	0.30	0.14
run5	9/23/2016	16:20:45	0.29	0.14
run5	9/23/2016	16:21:00	0.29	0.14
run5	9/23/2016	16:21:15	0.29	0.14
run5	9/23/2016	16:21:30	0.28	0.13
run5	9/23/2016	16:21:45	0.27	0.14
run5	9/23/2016	16:22:00	0.26	0.15
run5	9/23/2016	16:22:15	0.26	0.13
run5	9/23/2016	16:22:30	0.27	0.14
run5	9/23/2016	16:22:45	0.27	0.15
run5	9/23/2016	16:23:00	0.27	0.13
run5	9/23/2016	16:23:15	0.26	0.15
run5	9/23/2016	16:23:30	0.26	0.13
run5	9/23/2016	16:23:45	0.27	0.12
run5	9/23/2016	16:24:00	0.28	0.13
run5	9/23/2016	16:24:15	0.28	0.12
run5	9/23/2016	16:24:30	0.27	0.12
run5	9/23/2016	16:24:45	0.27	0.13
run5	9/23/2016	16:25:00	0.27	0.14
run5	9/23/2016	16:25:15	0.27	0.14
run5	9/23/2016	16:25:30	0.27	0.11
run5	9/23/2016	16:25:45	0.27	0.10
run5	9/23/2016	16:26:00	0.27	0.13
run5	9/23/2016	16:26:15	0.27	0.15
run5	9/23/2016	16:26:30	0.28	0.15
run5	9/23/2016	16:26:45	0.29	0.13
run5	9/23/2016	16:27:00	0.34	0.22
run5	9/23/2016	16:27:15	1.87	0.22
run5	9/23/2016	16:27:30	1.10	0.10
run5	9/23/2016	16:27:45	1.26	0.09
run5	9/23/2016	16:28:00	1.28	0.08
run5	9/23/2016	16:28:15	1.29	0.09
run5	9/23/2016	16:28:30	1.29	0.14
run5	9/23/2016	16:28:45	1.29	1.00
run5	9/23/2016	16:29:00	1.29	0.33
run5	9/23/2016	16:29:15	1.28	0.19
run5	9/23/2016	16:29:30	1.27	0.13
run5	9/23/2016	16:29:45	1.27	0.13
run5	9/23/2016	16:30:00	1.27	0.13
run5	9/23/2016	16:30:15	1.27	0.10
run5	9/23/2016	16:30:30	1.27	0.10
run5	9/23/2016	16:30:45	1.28	0.14
run5l	9/23/2016	16:31:00	1.28	0.14
run5l	9/23/2016	16:31:15	5.91	0.14
run5l	9/23/2016	16:31:30	0.37	0.14
run5	9/23/2016	16:31:45	0.25	0.13
run5	9/23/2016	16:32:00	0.18	0.12
run5	9/23/2016	16:32:15	0.19	0.17
run5	9/23/2016	16:32:30	0.26	0.17
run5	9/23/2016	16:32:45	0.36	0.19
run5	9/23/2016	16:33:00	0.36	0.15
run5	9/23/2016	16:33:15	0.26	0.17
run5	9/23/2016	16:33:30	0.19	0.22
run5	9/23/2016	16:33:45	0.35	0.14
run5	9/23/2016	16:34:00	0.56	0.11
run5	9/23/2016	16:34:15	0.49	0.15
run5	9/23/2016	16:34:30	0.42	0.13
run5	9/23/2016	16:34:45	0.39	0.12
run5	9/23/2016	16:35:00	0.37	0.11
run5	9/23/2016	16:35:15	0.36	0.11
run5	9/23/2016	16:35:30	0.35	0.13
run5	9/23/2016	16:35:45	0.33	0.14
run5	9/23/2016	16:36:00	0.32	0.13
run5	9/23/2016	16:36:15	0.31	0.13
run5	9/23/2016	16:36:30	0.30	0.20
run5	9/23/2016	16:36:45	0.30	0.13
run5	9/23/2016	16:37:00	0.30	0.12
run5	9/23/2016	16:37:15	0.31	0.14
run5	9/23/2016	16:37:30	0.30	0.15
run5	9/23/2016	16:37:45	0.29	0.18
run5	9/23/2016	16:38:00	0.29	0.19
run5	9/23/2016	16:38:15	0.29	0.15
run5	9/23/2016	16:38:30	0.30	0.16
run5	9/23/2016	16:38:45	0.29	0.13
run5	9/23/2016	16:39:00	0.27	0.14
run5	9/23/2016	16:39:15	0.26	0.14
run5	9/23/2016	16:39:30	0.25	0.11

run5	9/23/2016	16:39:45	0.25	0.12
run5	9/23/2016	16:40:00	0.24	0.12
run5	9/23/2016	16:40:15	0.23	0.13
run5	9/23/2016	16:40:30	0.23	0.14
run5	9/23/2016	16:40:45	0.23	0.14
run5	9/23/2016	16:41:00	0.23	0.14
run5	9/23/2016	16:41:15	0.23	0.11
run5	9/23/2016	16:41:30	0.24	0.13
run5	9/23/2016	16:41:45	0.23	0.17
run5	9/23/2016	16:42:00	0.23	0.14
run5	9/23/2016	16:42:15	0.23	0.11
run5	9/23/2016	16:42:30	0.24	0.15
run5	9/23/2016	16:42:45	0.24	0.12
run5	9/23/2016	16:43:00	0.23	0.15
run5	9/23/2016	16:43:15	0.22	0.27
run5	9/23/2016	16:43:30	0.22	0.68
run5	9/23/2016	16:43:45	0.34	0.42
run5	9/23/2016	16:44:00	0.75	0.23
run5	9/23/2016	16:44:15	1.10	0.15
run5	9/23/2016	16:44:30	1.26	0.12
run5	9/23/2016	16:44:45	1.28	0.14
run5	9/23/2016	16:45:00	1.29	0.12
run5	9/23/2016	16:45:15	1.29	0.12
run5	9/23/2016	16:45:30	1.29	0.12
run5	9/23/2016	16:45:45	1.29	0.11
run5	9/23/2016	16:46:00	1.28	0.12
run5	9/23/2016	16:46:15	1.27	0.14
run5	9/23/2016	16:46:30	1.27	0.12
run5	9/23/2016	16:46:45	1.27	0.12
run5	9/23/2016	16:47:00	1.27	0.12
run5	9/23/2016	16:47:15	1.27	0.11
run5	9/23/2016	16:47:30	1.26	0.13
run5	9/23/2016	16:47:45	1.27	0.11
run5	9/23/2016	16:48:00	1.27	0.10
run5	9/23/2016	16:48:15	1.28	0.11
run5	9/23/2016	16:48:30	1.27	0.12
run5	9/23/2016	16:48:45	1.13	0.13
run5	9/23/2016	16:49:00	0.70	0.12
run5	9/23/2016	16:49:15	0.35	0.14
run5	9/23/2016	16:49:30	0.20	0.14
run5	9/23/2016	16:49:45	0.17	0.11
run5	9/23/2016	16:50:00	0.16	0.15
run5	9/23/2016	16:50:15	0.16	0.17
run5	9/23/2016	16:50:30	0.16	0.17
run5	9/23/2016	16:50:45	0.17	0.14
run5	9/23/2016	16:51:00	0.18	0.06
run5	9/23/2016	16:51:15	0.21	0.08
run5	9/23/2016	16:51:30	0.28	0.13
run5	9/23/2016	16:51:45	0.32	0.15
run5	9/23/2016	16:52:00	0.34	0.15
run5	9/23/2016	16:52:15	0.35	0.15
run5	9/23/2016	16:52:30	0.36	0.10
run5	9/23/2016	16:52:45	0.37	0.09
run5	9/23/2016	16:53:00	0.37	0.11
run5	9/23/2016	16:53:15	0.36	0.12
run5	9/23/2016	16:53:30	0.37	0.12
run5	9/23/2016	16:53:45	0.37	0.10
run5	9/23/2016	16:54:00	0.38	0.12
run5	9/23/2016	16:54:15	0.38	0.13
run5	9/23/2016	16:54:30	0.39	0.13
run5	9/23/2016	16:54:45	0.39	0.11
run5	9/23/2016	16:55:00	0.39	0.10
run5	9/23/2016	16:55:15	0.39	0.11
run5	9/23/2016	16:55:30	0.39	0.13
run5	9/23/2016	16:55:45	0.39	0.17
run5	9/23/2016	16:56:00	0.39	0.14
run5	9/23/2016	16:56:15	0.37	0.09
run5	9/23/2016	16:56:30	0.32	0.10
run5	9/23/2016	16:56:45	0.29	0.10
run5	9/23/2016	16:57:00	0.27	0.09
run5	9/23/2016	16:57:15	0.27	0.13
run5	9/23/2016	16:57:30	0.26	0.15
run5	9/23/2016	16:57:45	0.25	0.13
run5	9/23/2016	16:58:00	0.24	0.10
run5	9/23/2016	16:58:15	0.15	0.15
run5	9/23/2016	16:58:30	0.52	1.53
run5	9/23/2016	16:58:45	6.72	0.29
run5	9/23/2016	16:59:00	6.28	0.25

run5	9/23/2016	16:59:15	6.45	0.29				
run5	9/23/2016	16:59:30	1.64	0.18				
run5	9/23/2016	16:59:45	0.68	0.15				
run5	9/23/2016	17:00:00	0.35	0.12				
run5	9/23/2016	17:00:15	0.99	0.12				
run5	9/23/2016	17:00:30	3.34	0.12				
run5	9/23/2016	17:00:45	2.64	0.10				
run5	9/23/2016	17:01:00	1.35	0.08				
run5	9/23/2016	17:01:15	0.56	0.08				
run5	9/23/2016	17:01:30	0.28	0.09				
run5	9/23/2016	17:01:45	0.20	0.11				
averun6	9/23/2016	15:57:15	1.37	0.15	64			
scg4	9/23/2016	17:02:15	0.23	0.10	ALM018547/cg4	CO	5.06	0.00
scg4	9/23/2016	17:02:30	0.24	0.09	ALM018547/cg4	CO	5.06	0.00
scg4	9/23/2016	17:02:45	0.18	0.13	ALM018547/cg4	CO	5.06	0.00
scg4	9/23/2016	17:03:00	0.76	-0.06	ALM018547/cg4	CO	5.06	0.00
scg4	9/23/2016	17:03:15	2.84	-0.09	ALM018547/cg4	CO	5.06	0.00
scg4	9/23/2016	17:03:30	4.63	-0.08	ALM018547/cg4	CO	5.06	0.00
scg4	9/23/2016	17:03:45	5.03	-0.09	ALM018547/cg4	CO	5.06	0.00
scg4	9/23/2016	17:04:00	5.10	-0.09	ALM018547/cg4	CO	5.06	0.00
scg4	9/23/2016	17:04:15	5.12	-0.10	ALM018547/cg4	CO	5.06	0.00
scg4	9/23/2016	17:04:30	5.11	-0.09	ALM018547/cg4	CO	5.06	0.00
scg4	9/23/2016	17:04:45	5.10	-0.08	ALM018547/cg4	CO	5.06	0.00
o2zero1	9/23/2016	17:04:45	5.10	-0.08	ALM018547/cg4	CO	5.06	0.00
co2zero1	9/23/2016	17:04:45	5.10	-0.08	ALM018547/cg4	CO	5.06	0.00
cospan1	9/23/2016	17:04:45	5.10	-0.08	ALM018547/cg4	CO	5.06	0.00
scg9	9/23/2016	17:05:15	5.09	-0.09	EB0080791/cg9	CO2	10.96	02 11.08
scg9	9/23/2016	17:05:30	5.11	-0.09	EB0080791/cg9	CO2	10.96	02 11.08
scg9	9/23/2016	17:05:45	4.99	-0.04	EB0080791/cg9	CO2	10.96	02 11.08
scg9	9/23/2016	17:06:00	3.64	-0.02	EB0080791/cg9	CO2	10.96	02 11.08
scg9	9/23/2016	17:06:15	1.41	-0.02	EB0080791/cg9	CO2	10.96	02 11.08
scg9	9/23/2016	17:06:30	0.25	-0.02	EB0080791/cg9	CO2	10.96	02 11.08
scg9	9/23/2016	17:06:45	0.03	-0.03	EB0080791/cg9	CO2	10.96	02 11.08
scg9	9/23/2016	17:07:00	0.03	-0.03	EB0080791/cg9	CO2	10.96	02 11.08
scg9	9/23/2016	17:07:15	0.02	-0.03	EB0080791/cg9	CO2	10.96	02 11.08
cozero1	9/23/2016	17:07:00	0.03	-0.03	EB0080791/cg9	CO2	10.96	02 11.08
thczero1	9/23/2016	17:07:00	0.03	-0.03	EB0080791/cg9	CO2	10.96	02 11.08
o2span1	9/23/2016	17:07:15	0.02	-0.03	EB0080791/cg9	CO2	10.96	02 11.08
co2span1	9/23/2016	17:07:00	0.03	-0.03	EB0080791/cg9	CO2	10.96	02 11.08
scg12	9/23/2016	17:07:30	0.01	-0.01	ET0010875/cg12	THC	5.01	0.00
scg12	9/23/2016	17:07:45	0.01	0.01	ET0010875/cg12	THC	5.01	0.00
scg12	9/23/2016	17:08:00	-0.01	2.22	ET0010875/cg12	THC	5.01	0.00
scg12	9/23/2016	17:08:15	0.07	4.93	ET0010875/cg12	THC	5.01	0.00
scg12	9/23/2016	17:08:30	0.30	4.96	ET0010875/cg12	THC	5.01	0.00
scg12	9/23/2016	17:08:45	0.44	4.96	ET0010875/cg12	THC	5.01	0.00
scg12	9/23/2016	17:09:00	0.44	4.97	ET0010875/cg12	THC	5.01	0.00
thcspan1	9/23/2016	17:09:00	0.44	4.97	ET0010875/cg12	THC	5.01	0.00
run6	9/23/2016	17:15:00	1.28	0.38				
run6	9/23/2016	17:15:15	1.28	1.93				
run6	9/23/2016	17:15:30	1.03	6.44				
run6	9/23/2016	17:15:45	1.28	0.26				
run6	9/23/2016	17:16:00	1.28	0.68				
run6	9/23/2016	17:16:15	1.28	0.31				
run6	9/23/2016	17:16:30	1.28	0.16				
run6	9/23/2016	17:16:45	1.28	0.15				
run6	9/23/2016	17:17:00	2.71	0.16				
run6	9/23/2016	17:17:15	0.97	0.16				
run6	9/23/2016	17:17:30	2.96	0.17				
run6	9/23/2016	17:17:45	2.72	0.19				
run6	9/23/2016	17:18:00	3.55	0.19				
run6	9/23/2016	17:18:15	3.11	0.14				
run6	9/23/2016	17:18:30	2.75	0.18				
run6	9/23/2016	17:18:45	2.43	0.15				
run6	9/23/2016	17:19:00	2.05	0.18				
run6	9/23/2016	17:19:15	1.75	0.21				
run6	9/23/2016	17:19:30	1.60	0.19				
run6	9/23/2016	17:19:45	1.48	0.16				
run6	9/23/2016	17:20:00	1.26	0.16				
run6	9/23/2016	17:20:15	1.10	0.19				
run6	9/23/2016	17:20:30	1.05	0.16				
run6	9/23/2016	17:20:45	0.93	0.16				
run6	9/23/2016	17:21:00	0.69	0.15				
run6	9/23/2016	17:21:15	0.59	0.15				
run6	9/23/2016	17:21:30	0.56	0.16				
run6	9/23/2016	17:21:45	0.58	0.16				
run6	9/23/2016	17:22:00	0.62	0.19				
run6	9/23/2016	17:22:15	0.59	0.20				
run6	9/23/2016	17:22:30	0.63	0.16				

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run6	9/23/2016	17:22:45	0.58	0.16
run6	9/23/2016	17:23:00	0.47	0.18
run6	9/23/2016	17:23:15	0.52	0.15
run6	9/23/2016	17:23:30	0.56	0.15
run6	9/23/2016	17:23:45	0.56	0.20
run6	9/23/2016	17:24:00	0.54	0.16
run6	9/23/2016	17:24:15	0.57	0.16
run6	9/23/2016	17:24:30	0.66	0.13
run6	9/23/2016	17:24:45	0.55	0.16
run6	9/23/2016	17:25:00	0.45	0.14
run6	9/23/2016	17:25:15	0.44	0.11
run6	9/23/2016	17:25:30	0.38	0.12
run6	9/23/2016	17:25:45	0.31	0.13
run6	9/23/2016	17:26:00	0.31	0.12
run6	9/23/2016	17:26:15	0.34	0.12
run6	9/23/2016	17:26:30	0.32	0.13
run6	9/23/2016	17:26:45	0.32	0.14
run6	9/23/2016	17:27:00	0.35	0.15
run6	9/23/2016	17:27:15	0.37	0.12
run6	9/23/2016	17:27:30	0.44	0.12
run6	9/23/2016	17:27:45	0.44	0.13
run6	9/23/2016	17:28:00	0.43	0.17
run6	9/23/2016	17:28:15	0.42	0.11
run6	9/23/2016	17:28:30	0.42	0.11
run6	9/23/2016	17:28:45	0.42	0.13
run6	9/23/2016	17:29:00	0.41	0.12
run6	9/23/2016	17:29:15	0.40	0.12
run6	9/23/2016	17:29:30	0.38	0.15
run6	9/23/2016	17:29:45	0.36	0.14
run6	9/23/2016	17:30:00	0.35	0.14
run6	9/23/2016	17:30:15	0.34	0.17
run6	9/23/2016	17:30:30	0.34	0.24
run6	9/23/2016	17:30:45	0.36	0.89
run6	9/23/2016	17:31:00	0.63	0.19
run6	9/23/2016	17:31:15	1.06	0.16
run6	9/23/2016	17:31:30	1.34	0.14
run6	9/23/2016	17:31:45	1.39	0.10
run6	9/23/2016	17:32:00	1.40	0.12
run6	9/23/2016	17:32:15	1.40	0.16
run6	9/23/2016	17:32:30	1.39	0.12
run6	9/23/2016	17:32:45	1.39	0.09
run6	9/23/2016	17:33:00	1.38	0.14
run6	9/23/2016	17:33:15	1.37	0.21
run6	9/23/2016	17:33:30	1.36	0.16
run6	9/23/2016	17:33:45	1.34	0.16
run6	9/23/2016	17:34:00	1.34	0.15
run6	9/23/2016	17:34:15	1.34	0.17
run6	9/23/2016	17:34:30	1.34	0.18
run6	9/23/2016	17:34:45	1.35	0.18
run6	9/23/2016	17:35:00	1.35	0.23
run6	9/23/2016	17:35:15	1.35	0.20
run6	9/23/2016	17:35:30	1.35	0.21
run6	9/23/2016	17:35:45	1.32	0.24
run6	9/23/2016	17:36:00	1.04	0.21
run6	9/23/2016	17:36:15	0.60	0.13
run6	9/23/2016	17:36:30	0.35	0.09
run6	9/23/2016	17:36:45	0.29	0.10
run6	9/23/2016	17:37:00	0.28	0.07
run6	9/23/2016	17:37:15	0.27	0.12
run6	9/23/2016	17:37:30	0.27	0.11
run6	9/23/2016	17:37:45	0.27	0.09
run6	9/23/2016	17:38:00	0.27	0.11
run6	9/23/2016	17:38:15	0.27	0.09
run6	9/23/2016	17:38:30	0.28	0.11
run6	9/23/2016	17:38:45	0.27	0.11
run6	9/23/2016	17:39:00	0.26	0.12
run6	9/23/2016	17:39:15	0.25	0.12
run6	9/23/2016	17:39:30	0.25	0.11
run6	9/23/2016	17:39:45	0.24	0.13
run6	9/23/2016	17:40:00	0.24	0.11
run6	9/23/2016	17:40:15	0.24	0.12
run6	9/23/2016	17:40:30	0.23	0.12
run6	9/23/2016	17:40:45	0.22	0.13
run6	9/23/2016	17:41:00	0.22	0.12
run6	9/23/2016	17:41:15	0.21	0.12
run6	9/23/2016	17:41:30	0.20	0.11
run6	9/23/2016	17:41:45	0.20	0.11
run6	9/23/2016	17:42:00	0.20	0.11

run6	9/23/2016	17:42:15	0.19	0.13
run6	9/23/2016	17:42:30	0.19	0.12
run6	9/23/2016	17:42:45	0.19	0.08
run6	9/23/2016	17:43:00	0.20	0.07
run6	9/23/2016	17:43:15	0.20	0.09
run6	9/23/2016	17:43:30	0.20	0.08
run6	9/23/2016	17:43:45	0.20	0.06
run6	9/23/2016	17:44:00	0.21	0.08
run6	9/23/2016	17:44:15	0.21	0.09
run6	9/23/2016	17:44:30	0.22	0.08
run6	9/23/2016	17:44:45	0.22	0.09
run6	9/23/2016	17:45:00	0.22	0.12
run6	9/23/2016	17:45:15	0.22	0.10
run6	9/23/2016	17:45:30	0.23	0.22
run6	9/23/2016	17:45:45	0.25	1.46
run6	9/23/2016	17:46:00	0.51	0.24
run6	9/23/2016	17:46:15	1.01	0.12
run6	9/23/2016	17:46:30	1.38	0.11
run6	9/23/2016	17:46:45	1.48	0.13
run6	9/23/2016	17:47:00	1.49	0.11
run6	9/23/2016	17:47:15	1.50	0.11
run6	9/23/2016	17:47:30	1.50	0.11
run6	9/23/2016	17:47:45	1.50	0.12
run6	9/23/2016	17:48:00	1.49	0.16
run6	9/23/2016	17:48:15	1.50	0.20
run6	9/23/2016	17:48:30	1.51	0.14
run6	9/23/2016	17:48:45	1.54	0.13
run6	9/23/2016	17:49:00	1.56	0.14
run6	9/23/2016	17:49:15	1.56	0.15
run6	9/23/2016	17:49:30	1.56	0.12
run6	9/23/2016	17:49:45	1.57	0.12
run6	9/23/2016	17:50:00	1.57	0.16
run6	9/23/2016	17:50:15	1.57	0.14
run6	9/23/2016	17:50:30	1.57	0.12
run6	9/23/2016	17:50:45	1.56	0.13
run6	9/23/2016	17:51:00	1.29	0.11
run6	9/23/2016	17:51:15	0.79	0.11
run6	9/23/2016	17:51:30	0.44	0.14
run6	9/23/2016	17:51:45	0.36	0.13
run6	9/23/2016	17:52:00	0.36	0.12
run6	9/23/2016	17:52:15	0.36	0.12
run6	9/23/2016	17:52:30	0.37	0.14
run6	9/23/2016	17:52:45	0.37	0.21
run6	9/23/2016	17:53:00	0.37	0.14
run6	9/23/2016	17:53:15	0.38	0.14
run6	9/23/2016	17:53:30	0.37	0.15
run6	9/23/2016	17:53:45	0.35	0.15
run6	9/23/2016	17:54:00	0.32	0.14
run6	9/23/2016	17:54:15	0.33	0.12
run6	9/23/2016	17:54:30	0.33	0.11
run6	9/23/2016	17:54:45	0.33	0.10
run6	9/23/2016	17:55:00	0.32	0.11
run6	9/23/2016	17:55:15	0.32	0.12
run6	9/23/2016	17:55:30	0.32	0.12
run6	9/23/2016	17:55:45	0.32	0.15
run6	9/23/2016	17:56:00	0.32	0.12
run6	9/23/2016	17:56:15	0.32	0.09
run6	9/23/2016	17:56:30	0.32	0.11
run6	9/23/2016	17:56:45	0.31	0.14
run6	9/23/2016	17:57:00	0.30	0.11
run6	9/23/2016	17:57:15	0.30	0.08
run6	9/23/2016	17:57:30	0.30	0.10
run6	9/23/2016	17:57:45	0.30	0.12
run6	9/23/2016	17:58:00	0.29	0.12
run6	9/23/2016	17:58:15	0.29	0.09
run6	9/23/2016	17:58:30	0.30	0.12
run6	9/23/2016	17:58:45	0.30	0.08
run6	9/23/2016	17:59:00	0.30	0.08
run6	9/23/2016	17:59:15	0.30	0.11
run6	9/23/2016	17:59:30	0.29	0.13
run6	9/23/2016	17:59:45	0.29	0.11
run6	9/23/2016	18:00:00	0.30	0.13
run6	9/23/2016	18:00:15	0.30	0.19
run6	9/23/2016	18:00:30	0.30	0.19
run6	9/23/2016	18:00:45	0.32	1.08
run6	9/23/2016	18:01:00	0.62	0.24
run6	9/23/2016	18:01:15	1.25	0.29
run6	9/23/2016	18:01:30	1.96	2.94

run6	9/23/2016	18:01:45	4.32	0.23				
run6	9/23/2016	18:02:00	8.26	0.16				
run6	9/23/2016	18:02:15	8.47	0.19				
run6	9/23/2016	18:02:30	6.21	0.18				
run6	9/23/2016	18:02:45	6.47	0.15				
run6	9/23/2016	18:03:00	4.42	0.14				
run6	9/23/2016	18:03:15	2.10	0.13				
run6	9/23/2016	18:03:30	1.51	0.15				
run6	9/23/2016	18:03:45	1.07	0.16				
run6	9/23/2016	18:04:00	0.89	0.14				
run6	9/23/2016	18:04:15	0.76	0.13				
run6	9/23/2016	18:04:30	0.62	0.11				
run6	9/23/2016	18:04:45	0.55	0.11				
run6	9/23/2016	18:05:00	0.50	0.12				
run6	9/23/2016	18:05:15	0.50	0.12				
run6	9/23/2016	18:05:30	0.48	0.12				
run6	9/23/2016	18:05:45	0.42	0.10				
run6	9/23/2016	18:06:00	0.40	0.10				
run6	9/23/2016	18:06:15	0.41	0.11				
run6	9/23/2016	18:06:30	0.32	0.15				
run6	9/23/2016	18:06:45	0.33	0.12				
run6	9/23/2016	18:07:00	0.42	0.12				
run6	9/23/2016	18:07:15	0.38	0.17				
run6	9/23/2016	18:07:30	0.35	0.14				
run6	9/23/2016	18:07:45	0.39	0.12				
run6	9/23/2016	18:08:00	0.39	0.13				
run6	9/23/2016	18:08:15	0.29	0.15				
run6	9/23/2016	18:08:30	0.35	0.14				
run6	9/23/2016	18:08:45	0.42	0.13				
run6	9/23/2016	18:09:00	0.38	0.12				
run6	9/23/2016	18:09:15	0.28	0.15				
run6	9/23/2016	18:09:30	0.22	0.15				
run6	9/23/2016	18:09:45	0.26	0.10				
run6	9/23/2016	18:10:00	0.26	0.10				
run6	9/23/2016	18:10:15	0.20	0.08				
run6	9/23/2016	18:10:30	0.22	0.09				
run6	9/23/2016	18:10:45	0.17	0.10				
run6	9/23/2016	18:11:00	0.25	0.09				
run6	9/23/2016	18:11:15	0.30	0.09				
run6	9/23/2016	18:11:30	0.22	0.09				
run6	9/23/2016	18:11:45	0.16	0.10				
run6	9/23/2016	18:12:00	0.16	0.08				
run6	9/23/2016	18:12:15	0.20	0.08				
run6	9/23/2016	18:12:30	0.27	0.08				
run6	9/23/2016	18:12:45	0.21	0.08				
run6	9/23/2016	18:13:00	0.16	0.09				
run6	9/23/2016	18:13:15	0.20	0.08				
run6	9/23/2016	18:13:30	0.25	0.07				
run6	9/23/2016	18:13:45	0.29	0.08				
run6	9/23/2016	18:14:00	0.29	0.10				
run6	9/23/2016	18:14:15	0.31	0.08				
run6	9/23/2016	18:14:30	0.31	0.10				
run6	9/23/2016	18:14:45	0.29	0.12				
run6	9/23/2016	18:15:00	0.36	0.11				
run6	9/23/2016	18:15:15	0.42	0.11				
run6	9/23/2016	18:15:30	0.44	0.11				
run6	9/23/2016	18:15:45	0.48	0.66				
run6	9/23/2016	18:16:00	4.65	0.26				
run6	9/23/2016	18:16:15	5.25	0.15				
run6	9/23/2016	18:16:30	1.26	0.12				
run6	9/23/2016	18:16:45	1.41	0.17				
run6	9/23/2016	18:17:00	1.45	0.09				
run6	9/23/2016	18:17:15	1.46	0.11				
run6	9/23/2016	18:17:30	1.47	0.24				
run6	9/23/2016	18:17:45	1.49	0.24				
run6	9/23/2016	18:18:00	1.50	0.24				
run6	9/23/2016	18:18:15	1.80	0.23				
run6	9/23/2016	18:18:30	3.46	0.11				
run6	9/23/2016	18:18:45	6.40	0.09				
run6	9/23/2016	17:15:00	1.20	0.20				
averun6	9/23/2016	18:22:15	0.23	0.09	ET0010875/cg12	THC	5.01	0.00
scg12	9/23/2016	18:22:30	0.10	0.20	ET0010875/cg12	THC	5.01	0.00
scg12	9/23/2016	18:22:45	0.12	3.59	ET0010875/cg12	THC	5.01	0.00
scg12	9/23/2016	18:23:00	0.56	4.94	ET0010875/cg12	THC	5.01	0.00
scg12	9/23/2016	18:23:15	0.93	4.96	ET0010875/cg12	THC	5.01	0.00
scg12	9/23/2016	18:23:30	0.72	4.98	ET0010875/cg12	THC	5.01	0.00
scg12	9/23/2016	18:23:45	0.52	4.98	ET0010875/cg12	THC	5.01	0.00
scg12	9/23/2016	18:24:00	0.47	4.97	ET0010875/cg12	THC	5.01	0.00

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thcspan1	9/23/2016	18:24:00	0.47	4.97 ET0010875/cg12	THC	5.01	0.00
scg9	9/23/2016	18:24:15	0.47	4.96 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/23/2016	18:24:30	0.48	4.94 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/23/2016	18:24:45	0.48	2.65 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/23/2016	18:25:00	0.37	0.03 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/23/2016	18:25:15	0.08	0.00 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/23/2016	18:25:30	-0.11	0.01 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/23/2016	18:25:45	-0.05	0.01 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/23/2016	18:26:00	0.01	0.00 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/23/2016	18:26:15	0.03	-0.03 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/23/2016	18:26:30	0.03	-0.02 EB0080791/cg9	CO2	10.96 O2	11.08
scg9	9/23/2016	18:26:45	0.03	0.00 EB0080791/cg9	CO2	10.96 O2	11.08
cozero1	9/23/2016	18:26:45	0.03	0.00 EB0080791/cg9	CO2	10.96 O2	11.08
thczero1	9/23/2016	18:26:45	0.03	0.00 EB0080791/cg9	CO2	10.96 O2	11.08
o2span1	9/23/2016	18:26:45	0.03	0.00 EB0080791/cg9	CO2	10.96 O2	11.08
co2span1	9/23/2016	18:26:45	0.03	0.00 EB0080791/cg9	CO2	10.96 O2	11.08
scg4	9/23/2016	18:27:00	0.04	-0.02 ALM018547/cg4	CO	5.06	0.00
scg4	9/23/2016	18:27:15	0.04	0.42 ALM018547/cg4	CO	5.06	0.00
scg4	9/23/2016	18:27:30	0.85	4.05 ALM018547/cg4	CO	5.06	0.00
scg4	9/23/2016	18:27:45	8.39	0.04 ALM018547/cg4	CO	5.06	0.00
scg4	9/23/2016	18:28:00	10.28	-0.07 ALM018547/cg4	CO	5.06	0.00
scg4	9/23/2016	18:28:15	9.93	-0.06 ALM018547/cg4	CO	5.06	0.00
scg4	9/23/2016	18:28:30	6.54	-0.08 ALM018547/cg4	CO	5.06	0.00
scg4	9/23/2016	18:28:45	5.31	-0.09 ALM018547/cg4	CO	5.06	0.00
scg4	9/23/2016	18:29:00	5.17	-0.09 ALM018547/cg4	CO	5.06	0.00
scg4	9/23/2016	18:29:15	5.07	-0.10 ALM018547/cg4	CO	5.06	0.00
scg4	9/23/2016	18:29:30	5.06	-0.09 ALM018547/cg4	CO	5.06	0.00
o2zero1	9/23/2016	18:29:30	5.06	-0.09 ALM018547/cg4	CO	5.06	0.00
co2zero1	9/23/2016	18:29:30	5.06	-0.09 ALM018547/cg4	CO	5.06	0.00
cospan1	9/23/2016	18:29:30	5.06	-0.09 ALM018547/cg4	CO	5.06	0.00

Daily Log							
Date				Total Time		10:00	
Time Log (Facility Time Only)				Run Times			
Description (select)	Start	Stop	Remarks	Run #	Start	Stop	Methods
Loadout	7:00	10:00					
Travel	10:00	11:15					
Move on	11:15	15:00					
Travel	15:00	16:30					
Loadout	16:30	17:00					
	17:00						
Notable Comments							

Date				Total Time		14:00	
Time Log (Facility Time Only)				Run Times			
Description (select)	Start	Stop	Remarks	Run #	Start	Stop	Methods
Travel	5:30	7:00					
Set up/cal	7:00	8:00					
Standby Plant	8:00	18:00	flow meter problems				
Travel	18:00	19:30					
	19:30						
Notable Comments							

Date				Total Time		12:15	
Time Log (Facility Time Only)				Run Times			
Description (select)	Start	Stop	Remarks	Run #	Start	Stop	Methods
Travel	5:30	7:00		R1C1	9:22	10:26	
Set up/cal	7:00	7:45		R2C1	10:45	11:49	
Standby Plant	7:45	9:15	Wait for unit to get to condition	R3C1	12:10	13:14	
Testing	9:15	14:00	UNIT 3				
Standby Plant	14:00	15:30	Fuel Issues	R1C2	13:50	XXXX	
Testing	15:30	16:15					
Travel	16:15	17:45					
	17:45						
Notable Comments							
Run 1 Cond 2 paused at 13:56 due to plant fuel problems, testing resumed at 15:42, run was aborted at 15:48 due to fuel problems.							

Date				9/22/2016		Total Time		14:30	
Time Log (Facility Time Only)						Run Times			
Description (select)	Start	Stop	Remarks	Run #	Start	Stop	Methods		
Travel	5:30	7:00		R2C2	8:40	9:44			
Set up/cal	7:00	8:30		R3C2	12:00	XXXXX			
Testing	8:30	9:45		R4C2	15:30	16:34			
Standby Plant	9:45	15:30	Fuel Issues	R5C2	17:00	18:04			
Testing	15:30	18:30							
Travel	18:30	20:00							
	20:00								
Notable Comments									
Run 3 Condition 2 was aborted at 12:04 p.m. due to plant fuel problems.									

Date				9/23/2016		Total Time		14:45	
Time Log (Facility Time Only)						Run Times			
Description (select)	Start	Stop	Remarks	Run #	Start	Stop	Methods		
Travel	5:30	7:00		R1C3	8:50	9:54			
Set up/cal	7:00	8:45		R2C3	10:15	11:19			
Testing	8:45	12:45		R3C3	11:40	12:44			
Standby Plant	12:45	14:30	Flow Meter Problems						
Testing	14:30	18:45		R1C4	14:40	15:44			
Travel	18:45	20:15		R2C4	15:57	17:01			
	20:15			R3C4	17:15	18:19			
Notable Comments									

Date				9/26/2016		Total Time		12:00		
Time Log (Facility Time Only)							Run Times		Methods	
Description (select)	Start	Stop	Remarks		Run #	Start	Stop			
Travel	5:30	7:00			R1C1	11:15	12:19			
Set up/cal	7:00	8:00			R2C1	12:34	13:38			
Standby Plant	8:00	11:15	Setup on Unit 2		R3C1	13:55	14:59			
Testing	11:15	15:30								
Travel	15:30	17:00								
Other	17:00	17:30	Pack/Ship Samples							
	17:30									
Notable Comments										

Date				Total Time			
9/27/2016				14:15			
Time Log (Facility Time Only)				Run Times			Methods
Description (select)	Start	Stop	Remarks	Run #	Start	Stop	
Travel	5:30	7:00		R1C2	14:22	15:26	
Set up/cal	7:00	8:00		R2C2	15:40	16:44	
Standby Plant	8:00	14:15	Fuel Valve/Regulator Issues	R3C2	16:57	18:01	
Testing	14:15	18:15					
Travel	18:15	19:45					
	19:45						
Notable Comments							

Date				Total Time			
9/28/2016				13:00			
Time Log (Facility Time Only)				Run Times			Methods
Description (select)	Start	Stop	Remarks	Run #	Start	Stop	
Travel	5:30	7:00		R1C3	8:52	9:54	
Set up/cal	7:00	8:45		R2C3	10:10	11:14	
Testing	8:45	17:00		R3C3	11:26	12:30	
Travel	17:00	18:30					
	18:30			R1C4	13:02	14:06	
				R2C4	14:20	15:24	
				R3C4	15:36	16:40	
Notable Comments							

Date				Total Time			
9/29/2016				8:00			
Time Log (Facility Time Only)				Run Times			Methods
Description (select)	Start	Stop	Remarks	Run #	Start	Stop	
Standby Plant	8:00	16:00	No Testing, Plant Setup on Unit 4				
Notable Comments							

Date				Total Time			
9/30/2016				15:00			
Time Log (Facility Time Only)				Run Times			Methods
Description (select)	Start	Stop	Remarks	Run #	Start	Stop	
Travel	5:30	7:00		R1C1	9:00	10:04	
Set up/cal	7:00	9:00	Unit 4	R2C1	10:18	11:22	
Testing	9:00	13:30		R3C1	12:25	13:29	
Standby Plant	13:30	14:45	Fuel Leak				
Testing	14:45	19:00		R1C2	14:57	16:01	
Travel	19:00	20:30		R2C2	16:15	17:19	
	20:30			R3C2	17:35	18:39	
Notable Comments							

Date				Total Time			
10/3/2016				15:15			
Time Log (Facility Time Only)				Run Times			Methods
Description (select)	Start	Stop	Remarks	Run #	Start	Stop	
Travel	5:30	7:00		R1C3	9:42	10:46	
Set up/cal	7:00	8:00		R2C3	11:25	12:29	
Standby Plant	8:00	9:30	Plant Setup	R3C3	13:01	14:05	
Testing	9:30	19:15					
	19:15	20:45		R1C4	15:05	16:09	
	20:45			R2C4	16:30	17:34	
				R3C4	17:50	18:54	
Notable Comments							

Date				Total Time			
10/4/2016				8:00			
Time Log (Facility Time Only)				Run Times			Methods
Description (select)	Start	Stop	Remarks	Run #	Start	Stop	
Travel	8:00	9:30					
Move off	9:30	11:00					
Travel	11:00	12:30					
Unload/clean	12:30	16:00					
Notable Comments							

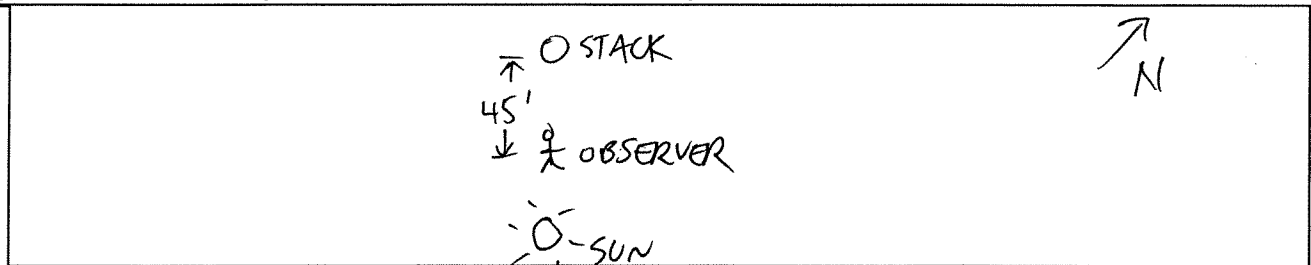
APPENDIX G

Visible Emission Data

FUGITIVE OR SMOKE EMISSION INSPECTION OUTDOOR LOCATION	
COMPANY <u>Comm</u>	OBSERVER <u>A. Bienvenu / J. Scheider</u>
LOCATION _____	AFFILIATION <u>Comm</u>
COMPANY REPRESENTATIVE _____	DATE <u>9-21-16</u>
Sky Conditions <u>Clear</u>	Wind Direction <u>NNE</u>
Precipitation <u>0</u>	Wind Speed <u>6 mph</u>
INDUSTRY _____	PROCESS UNIT <u>Model 3-Rw1A</u>

100%

Sketch process unit; indicate observer position relative to source and sun; indicate potential emission points and/or actual emission points.



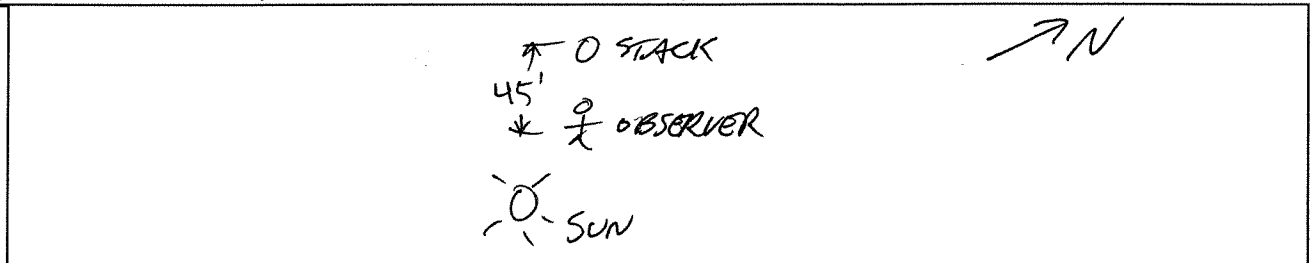
OBSERVATIONS	CLOCK TIME	OBSERVATION PERIOD DURATION, MIN:SEC	ACCUMULATED EMISSION, TIME, MIN:SEC
Begin Observation	AB 9:22-0942	20 mins	00:00
	SMS 9:42-1002	20 mins	00:00
	AB 10:02-1022	20 mins	00:00
	SMS 10:22	4 mins	00:00
	_____	_____	_____
	_____	_____	_____
	_____	_____	_____
	_____	_____	_____
End Observation	10:26 am	64:00	00:00

QA/QC Check ☒ Legibility ☒ Accuracy ☒ Specifications ☒ Reasonableness ☒

Checked by: [Signature]

FUGITIVE OR SMOKE EMISSION INSPECTION OUTDOOR LOCATION	
COMPANY <u>Comm</u>	OBSERVER <u>A. Bienvenu / J. Scheider</u>
LOCATION _____	AFFILIATION <u>Comm</u>
COMPANY REPRESENTATIVE _____	DATE <u>9-21-16</u>
Sky Conditions <u>Clear</u>	Wind Direction <u>ENE</u>
Precipitation <u>0</u>	Wind Speed <u>4 mph</u>
INDUSTRY _____	PROCESS UNIT <u>Model 3 - Run 1B</u>

Sketch process unit; indicate observer position relative to source and sun; indicate potential emission points and/or actual emission points.



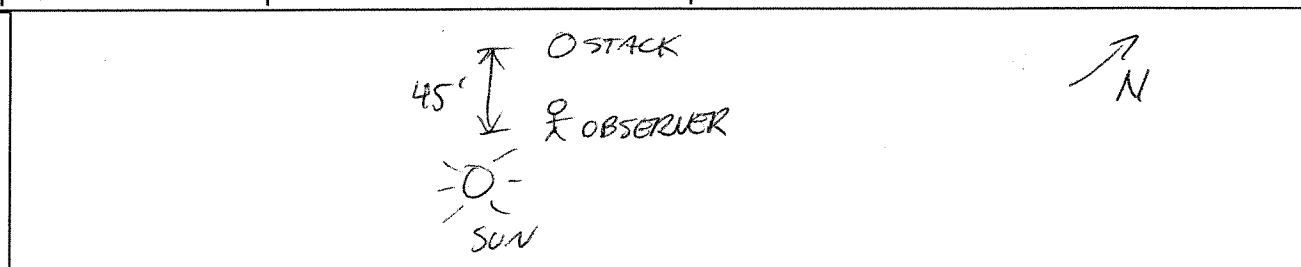
OBSERVATIONS	CLOCK TIME	OBSERVATION PERIOD DURATION, MIN:SEC	ACCUMULATED EMISSION, TIME, MIN:SEC
Begin Observation	AB 10:45-11:05	20:00	00:00
	JS 11:05-11:25	20:00	00:00
	AB 11:25-11:45	20:00	00:00
	JS 11:45	4:00	00:00
End Observation	11:49 a.m.	64:00	00:00

QA/QC Check
Completeness ☒ Legibility ☒ Accuracy ☒ Specifications ☒ Reasonableness ☒

Checked by: [Signature]

FUGITIVE OR SMOKE EMISSION INSPECTION OUTDOOR LOCATION	
COMPANY <u>Comm</u>	OBSERVER <u>A. Bienvenu / J. Scheider</u>
LOCATION _____	AFFILIATION <u>Comm</u>
COMPANY REPRESENTATIVE _____	DATE <u>9-21-16</u>
Sky Conditions <u>Clear</u>	Wind Direction <u>E</u>
Precipitation <u>0</u>	Wind Speed <u>7 mph</u>
INDUSTRY _____	PROCESS UNIT <u>Model 3-Run 1C</u>

Sketch process unit; indicate observer position relative to source and sun; indicate potential emission points and/or actual emission points.



OBSERVATIONS	CLOCK TIME	OBSERVATION PERIOD DURATION, MIN:SEC	ACCUMULATED EMISSION, TIME, MIN:SEC
Begin Observation	<u>AB 12:10-12:30</u>	<u>20:00</u>	<u>00:00</u>
	<u>JS 12:30-12:50</u>	<u>20:00</u>	<u>00:00</u>
	<u>AB 12:50-1:10</u>	<u>20:00</u>	<u>00:00</u>
	<u>JS 1:10</u>	<u>4:00</u>	<u>00:00</u>
	_____	_____	_____
	_____	_____	_____
	_____	_____	_____
	_____	_____	_____
End Observation	<u>1:14 p.m.</u>	<u>64:00</u>	<u>00:00</u>

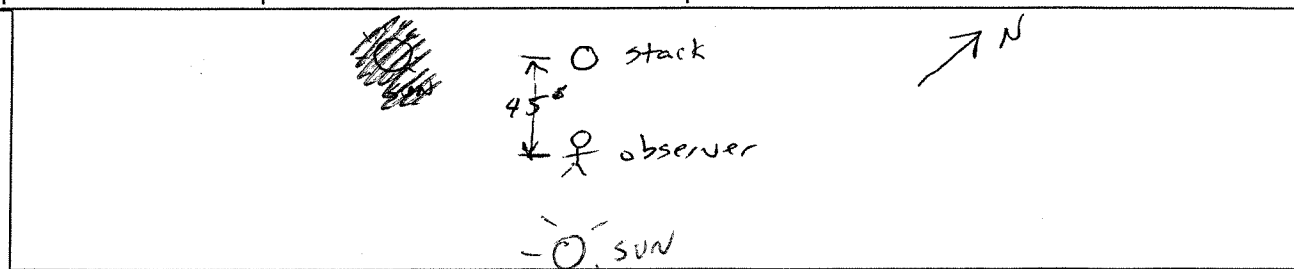
QA/QC Check
Completeness ✓ Legibility ✓ Accuracy ✓ Specifications ✓ Reasonableness ✓

Checked by: [Signature]

FUGITIVE OR SMOKE EMISSION INSPECTION OUTDOOR LOCATION	
COMPANY <u>Comm</u>	OBSERVER <u>A. Bienvenu / J. Schneider</u>
LOCATION _____	AFFILIATION <u>Comm</u>
COMPANY REPRESENTATIVE _____	DATE <u>9-22-16</u>
Sky Conditions <u>Clear</u>	Wind Direction <u>ENE</u>
Precipitation <u>0</u>	Wind Speed <u>14 mph</u>
INDUSTRY _____	PROCESS UNIT <u>Model 3 - Run 2A</u>

70-100-707

Sketch process unit; indicate observer position relative to source and sun; indicate potential emission points and/or actual emission points.



OBSERVATIONS	CLOCK TIME	OBSERVATION PERIOD DURATION, MIN:SEC	ACCUMULATED EMISSION, TIME, MIN:SEC
Begin Observation	<u>SMS 8:40-9:00</u>	<u>20:00</u>	<u>0:00</u>
	<u>AB 9:00-9:20</u>	<u>20:00</u>	<u>0:00</u>
	<u>SMS 9:20-9:40</u>	<u>20:00</u>	<u>0:00</u>
	<u>AB 9:40-10:00</u>	<u>20:00</u>	<u>0:00</u>
	<u>9:44</u>	<u>4:00</u>	
End Observation	<u>9:44 a.m.</u>	<u>64:00</u>	<u>0:00</u>

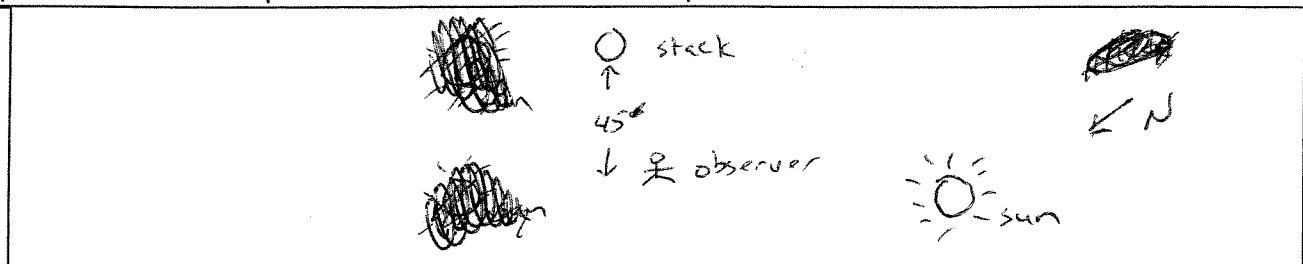
QA/QC Check
Completeness ☒ Legibility ☒ Accuracy ☒ Specifications ☒ Reasonableness ☒

Checked by: [Signature]

FUGITIVE OR SMOKE EMISSION INSPECTION OUTDOOR LOCATION	
COMPANY <u>COMM</u>	OBSERVER <u>A. Biersmann / J. Schneider</u>
LOCATION _____	AFFILIATION <u>Comm</u>
COMPANY REPRESENTATIVE _____	DATE <u>9/22/2014</u>
Sky Conditions <u>Clear Partly Cloudy</u>	Wind Direction <u>SE</u>
Precipitation <u>0°</u>	Wind Speed <u>4mph</u>
INDUSTRY _____	PROCESS UNIT <u>Model 3 - Run 2B</u>

70-100-701

Sketch process unit; indicate observer position relative to source and sun; indicate potential emission points and/or actual emission points.



OBSERVATIONS	CLOCK TIME	OBSERVATION PERIOD DURATION, MIN:SEC	ACCUMULATED EMISSION, TIME, MIN:SEC
Begin Observation	SMS 3:30	20:00	0:00
	AB 3:50	20:00	0:00
	SMS 4:10	20:00	0:00
	AB 4:30	4:00	0:00
End Observation	4:34 p.m.	64:00	0:00

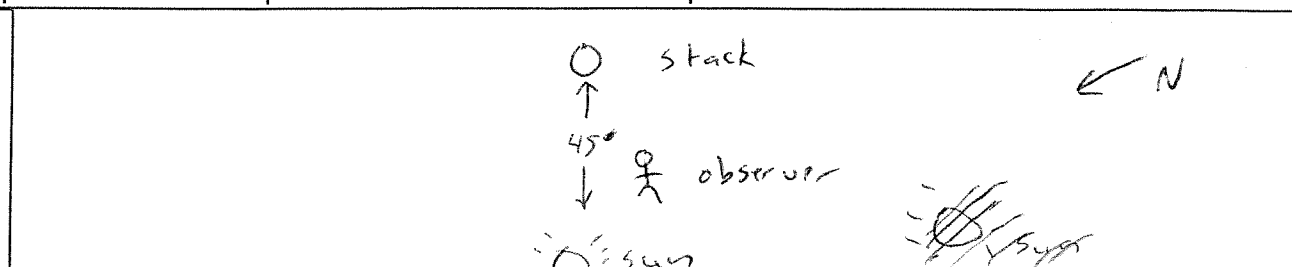
QA/QC Check
 Completeness ☒ Legibility ☒ Accuracy ☒ Specifications ☒ Reasonableness ☒

Checked by: [Signature]

FUGITIVE OR SMOKE EMISSION INSPECTION OUTDOOR LOCATION	
COMPANY <u>Comm</u>	OBSERVER <u>A. Bienvenero / J. Schneider</u>
LOCATION _____	AFFILIATION <u>comm</u>
COMPANY REPRESENTATIVE _____	DATE <u>9-22-10</u>
Sky Conditions <u>Partly Cloudy</u>	Wind Direction <u>5</u>
Precipitation <u>0</u>	Wind Speed <u>6 mph</u>
INDUSTRY _____	PROCESS UNIT <u>Modul 3-Run 2C</u>

70-100-701

Sketch process unit; indicate observer position relative to source and sun; indicate potential emission points and/or actual emission points.



OBSERVATIONS	CLOCK TIME	OBSERVATION PERIOD DURATION, MIN:SEC	ACCUMULATED EMISSION, TIME, MIN:SEC
Begin Observation	<u>5:00</u>	<u>20:00</u>	<u>0:00</u>
<u>Sms</u>	<u>5:20</u>	<u>20:00</u>	<u>0:00</u>
<u>AB</u>	<u>5:40</u>	<u>20:00</u>	<u>0:00</u>
<u>Sms</u>	<u>6:00</u>	<u>4:00</u>	<u>0:00</u>
<u>AB</u>			
End Observation	<u>6:04 p.m.</u>	<u>64:00</u>	<u>0:00</u>

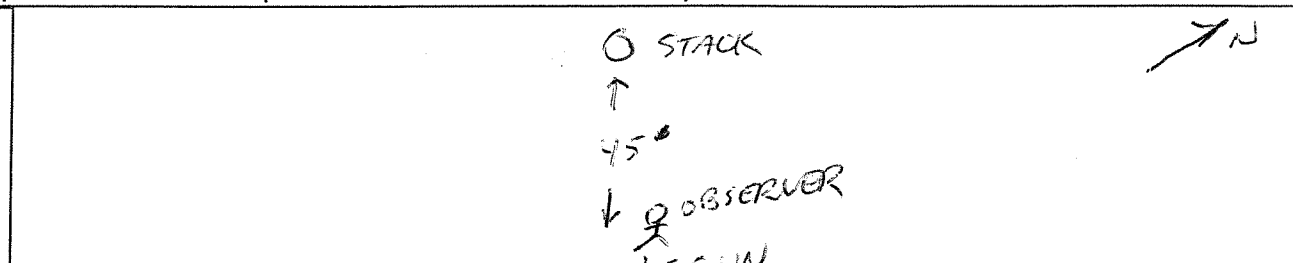
QA/QC Check
Completeness ☒ Legibility ☒ Accuracy ☒ Specifications ☒ Reasonableness ☒

Checked by: [Signature]

FUGITIVE OR SMOKE EMISSION INSPECTION OUTDOOR LOCATION	
COMPANY <u>COMM</u>	OBSERVER <u>A. Bismann / J. Schneider</u>
LOCATION _____	AFFILIATION <u>COMM</u>
COMPANY REPRESENTATIVE _____	DATE <u>9/23/14</u>
Sky Conditions <u>Clear</u>	Wind Direction <u>Calm</u>
Precipitation <u>0</u>	Wind Speed <u>0</u>
INDUSTRY _____	PROCESS UNIT <u>120213-RUNSA</u>

30-70-30°

Sketch process unit; indicate observer position relative to source and sun; indicate potential emission points and/or actual emission points.



OBSERVATIONS	CLOCK TIME	OBSERVATION PERIOD DURATION, MIN:SEC	ACCUMULATED EMISSION, TIME, MIN:SEC
Begin Observation	<u>Start 8:50</u>	<u>20:00</u>	<u>0:00</u>
	<u>AB 9:10</u>	<u>20:00</u>	<u>0:00</u>
	<u>JS 9:30</u>	<u>20:00</u>	<u>0:00</u>
	<u>AB 9:50</u>	<u>4:00</u>	<u>0:00</u>
	_____	_____	_____
	_____	_____	_____
	_____	_____	_____
	_____	_____	_____
	_____	_____	_____
End Observation	<u>9:54</u>	<u>64:00</u>	<u>0:00</u>

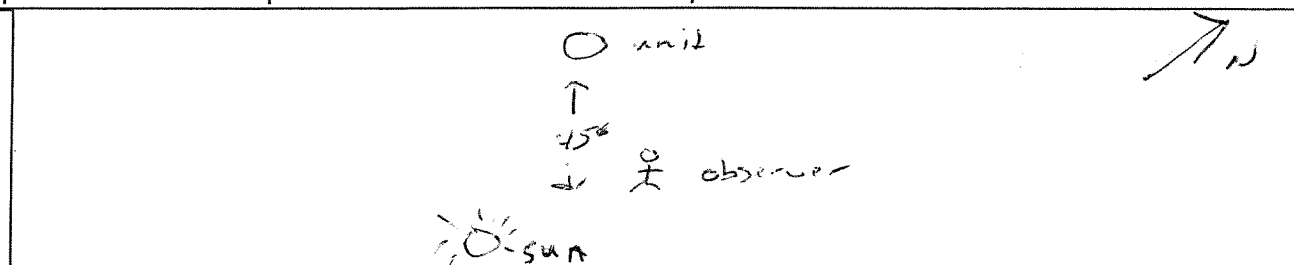
QA/QC Check
Completeness ✓ Legibility ✓ Accuracy ✓ Specifications ✓ Reasonableness ✓

Checked by: ✓

FUGITIVE OR SMOKE EMISSION INSPECTION OUTDOOR LOCATION	
COMPANY <u>Comm</u>	OBSERVER <u>A. Bienvenu / J. Scheider</u>
LOCATION _____	AFFILIATION <u>Comm</u>
COMPANY REPRESENTATIVE _____	DATE <u>9/23/14</u>
Sky Conditions <u>Clear</u>	Wind Direction <u>E</u>
Precipitation <u>0</u>	Wind Speed <u>1 mph</u>
INDUSTRY _____	PROCESS UNIT <u>Model 3 pump 3B</u>

30-70-30%

Sketch process unit; indicate observer position relative to source and sun; indicate potential emission points and/or actual emission points.



OBSERVATIONS	CLOCK TIME	OBSERVATION PERIOD DURATION, MIN:SEC	ACCUMULATED EMISSION, TIME, MIN:SEC
Begin Observation			
	<u>5ms 10:15</u>	<u>20:00</u>	<u>0:00</u>
	<u>AB 10:35</u>	<u>20:00</u>	<u>0:00</u>
	<u>5ms 10:55</u>	<u>20:00</u>	<u>0:00</u>
	<u>AB 11:15</u>	<u>4:00</u>	<u>0:00</u>
	_____	_____	_____
	_____	_____	_____
	_____	_____	_____
	_____	_____	_____
	_____	_____	_____
End Observation	<u>11:19</u>	<u>64:00</u>	<u>0:00</u>

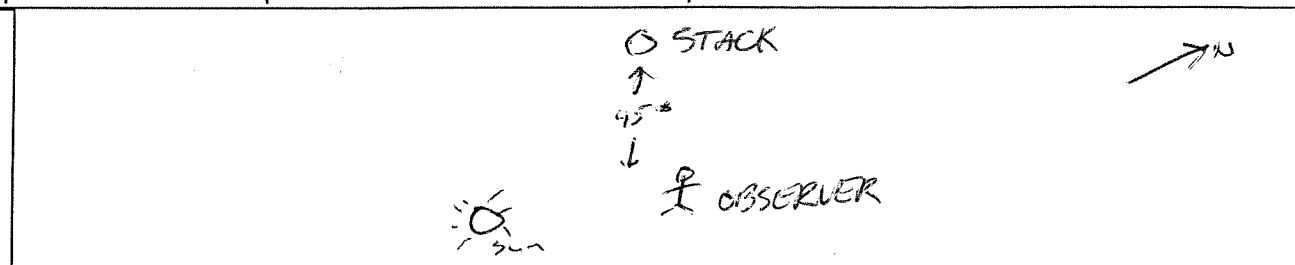
QA/QC Check
Completeness ✓ Legibility ✓ Accuracy ✓ Specifications ✓ Reasonableness ✓

Checked by: _____

FUGITIVE OR SMOKE EMISSION INSPECTION OUTDOOR LOCATION	
COMPANY <u>COMIN</u>	OBSERVER <u>A. Bienvenu J. Scheider</u>
LOCATION _____	AFFILIATION _____
COMPANY REPRESENTATIVE _____	DATE <u>9-23-14</u>
Sky Conditions <u>clear</u>	Wind Direction <u>E</u>
Precipitation <u>0</u>	Wind Speed <u>4 mph</u>
INDUSTRY _____	PROCESS UNIT <u>Model 3-Run 3C</u>

30-70-30%

Sketch process unit; indicate observer position relative to source and sun; indicate potential emission points and/or actual emission points.



OBSERVATIONS	CLOCK TIME	OBSERVATION PERIOD DURATION, MIN:SEC	ACCUMULATED EMISSION, TIME, MIN:SEC
Begin Observation	<u>5:45</u>	<u>20:00</u>	<u>0:00</u>
<u>AB</u>	<u>12:00</u>	<u>20:00</u>	<u>0:00</u>
<u>5:45</u>	<u>12:20</u>	<u>20:00</u>	<u>0:00</u>
<u>AB</u>	<u>12:40</u>	<u>4:00</u>	<u>0:00</u>
End Observation	<u>12:44 pm</u>	<u>64:00</u>	<u>0:00</u>

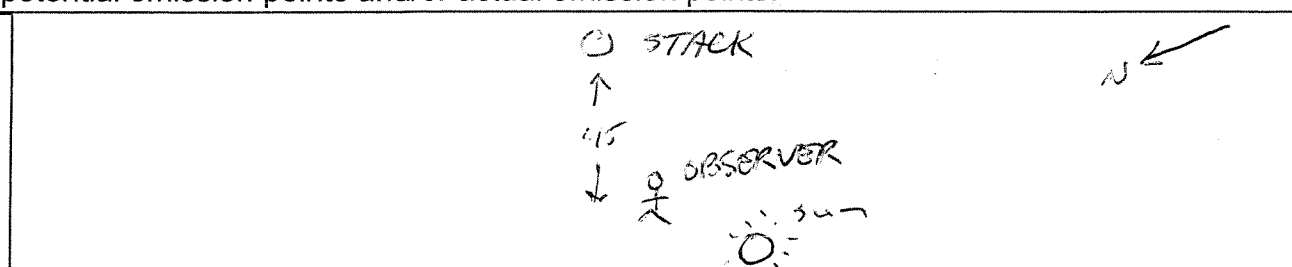
QA/QC Check
 Completeness ☒ Legibility ☒ Accuracy ☒ Specifications ☒ Reasonableness ☒

Checked by: [Signature]

FUGITIVE OR SMOKE EMISSION INSPECTION OUTDOOR LOCATION	
COMPANY <u>Comm</u>	OBSERVER <u>A. Bienvenido / J. Scheider</u>
LOCATION _____	AFFILIATION <u>Comm</u>
COMPANY REPRESENTATIVE _____	DATE <u>9-23-16</u>
Sky Conditions <u>clear</u>	Wind Direction <u>SSE</u>
Precipitation <u>0</u>	Wind Speed <u>7 mph</u>
INDUSTRY _____	PROCESS UNIT <u>Model 3 - run 4A</u>

0-30-01

Sketch process unit; indicate observer position relative to source and sun; indicate potential emission points and/or actual emission points.



OBSERVATIONS	CLOCK TIME	OBSERVATION PERIOD DURATION, MIN:SEC	ACCUMULATED EMISSION, TIME, MIN:SEC
Begin Observation	JS 2:40	20:00	0:00
	AB 3:00	20:00	0:00
	JS 3:20	20:00	0:00
	AB 3:40	4:00	0:00
	_____	_____	_____
	_____	_____	_____
	_____	_____	_____
	_____	_____	_____
End Observation	3:40 pm	64:00	0:00

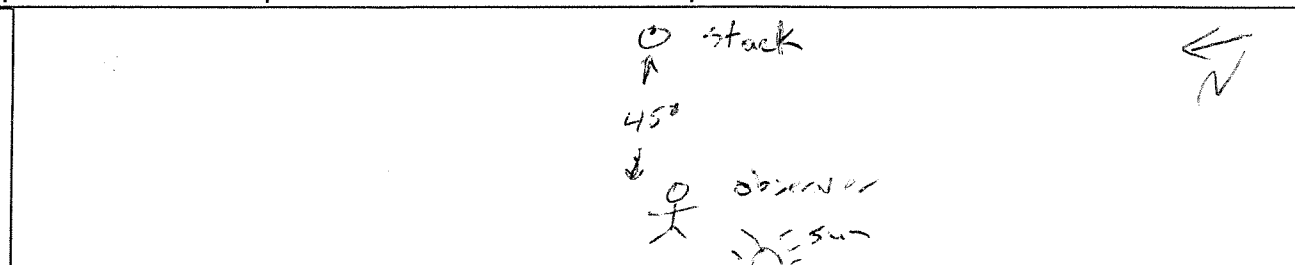
QA/QC Check ✓
 Completeness ✓ Legibility ✓ Accuracy ✓ Specifications ✓ Reasonableness ✓

Checked by: ✓

FUGITIVE OR SMOKE EMISSION INSPECTION OUTDOOR LOCATION	
COMPANY <u>Comm</u>	OBSERVER <u>A. Bionuevo / S. Schneider</u>
LOCATION _____	AFFILIATION <u>Comm</u>
COMPANY REPRESENTATIVE _____	DATE <u>9/23/10</u>
Sky Conditions <u>clear</u>	Wind Direction <u>SE</u>
Precipitation <u>0°</u>	Wind Speed <u>4 mph</u>
INDUSTRY _____	PROCESS UNIT <u>Model 3-run 4B</u>

0-30-6%

Sketch process unit; indicate observer position relative to source and sun; indicate potential emission points and/or actual emission points.



OBSERVATIONS	CLOCK TIME	OBSERVATION PERIOD DURATION, MIN:SEC	ACCUMULATED EMISSION, TIME, MIN:SEC
Begin Observation	<u>5ms 3:57</u>	<u>20:00</u>	<u>0:00</u>
	<u>AB 4:17</u>	<u>20:00</u>	<u>0:00</u>
	<u>Sam 4:37</u>	<u>20:00</u>	<u>0:00</u>
	<u>AB 4:57</u>	<u>4:00</u>	<u>0:00</u>
	_____	_____	_____
	_____	_____	_____
	_____	_____	_____
	_____	_____	_____
	_____	_____	_____
End Observation	<u>5:24 pm</u>	<u>64:00</u>	<u>0:00</u>

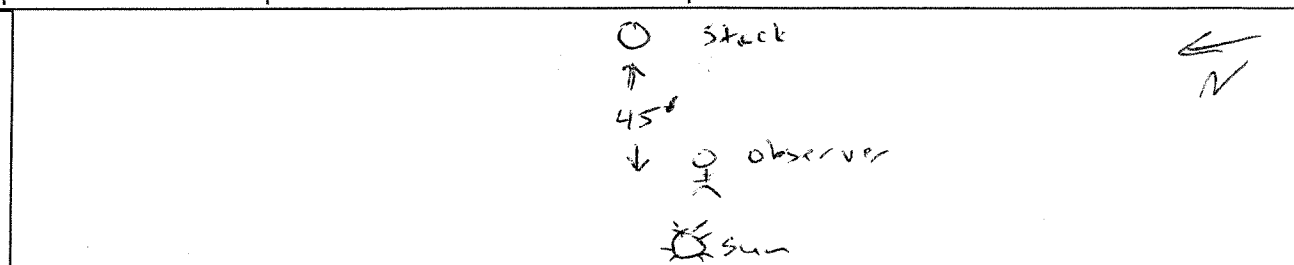
QA/QC Check
Completeness ✓ Legibility ✓ Accuracy ✓ Specifications ✓ Reasonableness ✓

Checked by: K

FUGITIVE OR SMOKE EMISSION INSPECTION OUTDOOR LOCATION	
COMPANY <u>Comm</u>	OBSERVER <u>A. Bismann / J. Schneider</u>
LOCATION _____	AFFILIATION <u>comm</u>
COMPANY REPRESENTATIVE _____	DATE <u>9/23/10</u>
Sky Conditions <u>clear</u>	Wind Direction <u>SE</u>
Precipitation <u>0°</u>	Wind Speed <u>2 mph</u>
INDUSTRY _____	PROCESS UNIT <u>Model 3-20-40</u>

0-30-01

Sketch process unit; indicate observer position relative to source and sun; indicate potential emission points and/or actual emission points.



OBSERVATIONS	CLOCK TIME	OBSERVATION PERIOD DURATION, MIN:SEC	ACCUMULATED EMISSION, TIME, MIN:SEC
Begin Observation	<u>5:15</u>	<u>20:00</u>	<u>0:00</u>
<u>AB 5:35</u>		<u>20:00</u>	<u>0:00</u>
<u>SM 5:55</u>		<u>20:00</u>	<u>0:00</u>
<u>AB 6:15</u>		<u>4:00</u>	<u>0:00</u>
End Observation	<u>6:19 p.m.</u>	<u>64:00</u>	<u>00:00</u>

QA/QC Check
 Completeness ☒ Legibility ☒ Accuracy ☒ Specifications ☒ Reasonableness ☒

Checked by: A

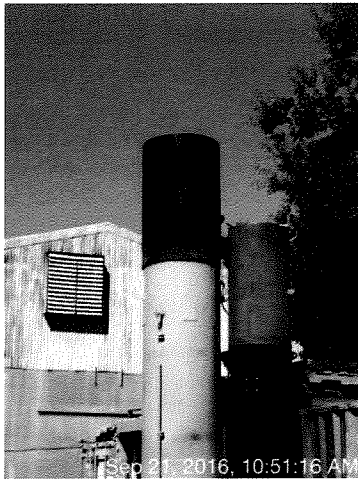
Model 3 Run 1A



Model 3 Run 2A



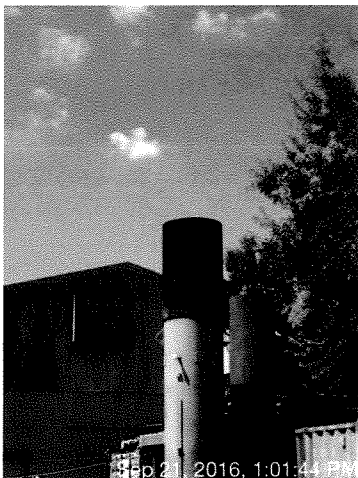
Model 3 Run1B



Model 3 Run 2B



Model 3 Run1C



Model 3 Run 2C



Model 3 Run 3A



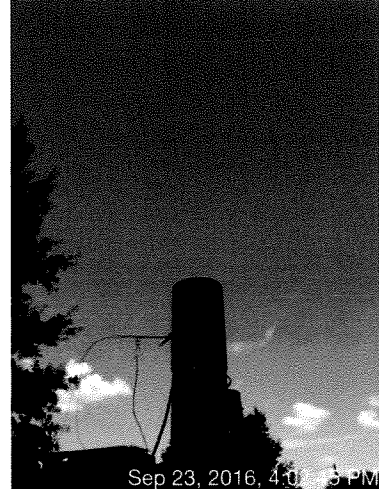
Model 3 Run 4A



Model 3 Run 3B



Model 3 Run 4B



Model 3 Run 3C



Model 3 Run 4C



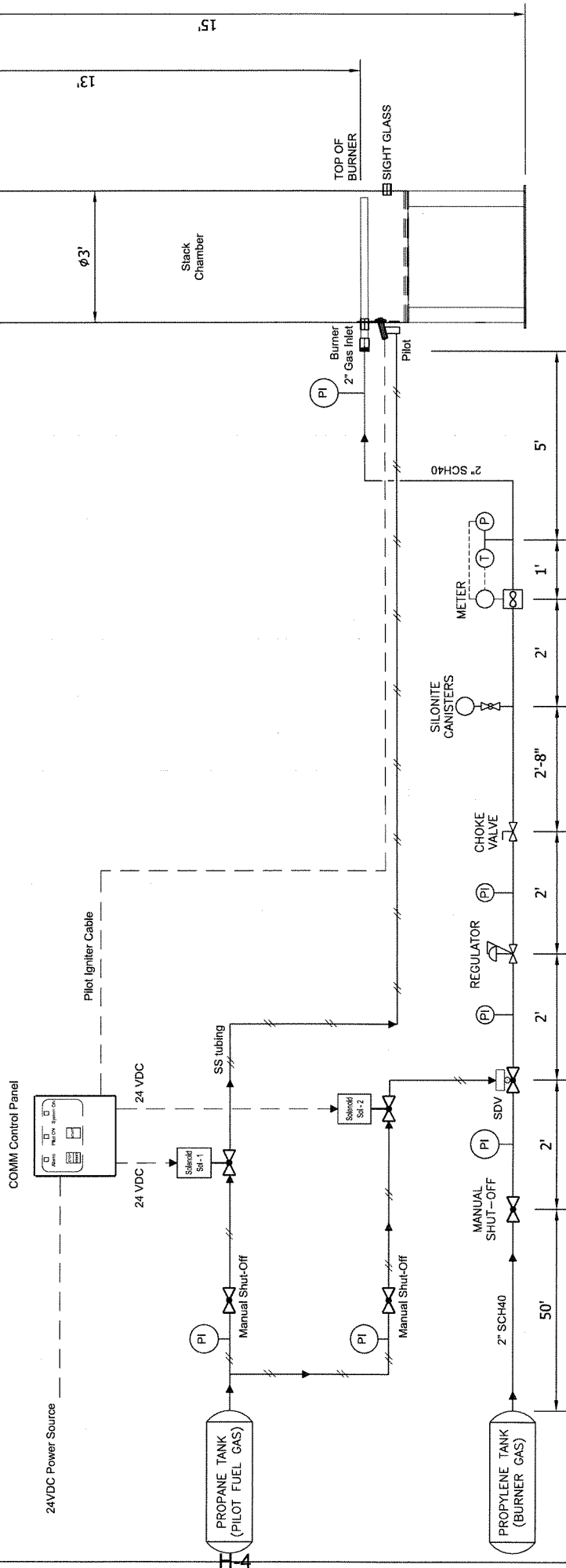
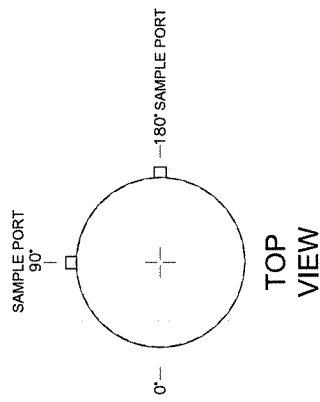
APPENDIX H

Plant Operational Data, Schematic, Fuel Analysis,
and Inlet Flow Meter Calibration Data

- (i) A full schematic of the control device and dimensions of the device is attached along with the layout of the testing equipment.
- (ii) The maximum net heating value of the device is 4.8 MMBTU/hr.
- (iii) The test fuel gas flow range: see attached flow tables and charts.
Maximum allowable inlet flow rate: 2050 scfh (227.3 lbs/hr)
Minimum allowable inlet flow rate: 0 scfh (0 lbs/hr)
- (iv) The air/stream injection/assist ranges, if used. Not used.
- (v) (A) Fuel gas delivery pressure and temperature: see attached flow tables for 5 minute interval readings.
(B) Fuel gas moisture range: see attached Propylene Certificate from supplier.
(C) Purge gas usage range: Not used.
(D) Condensate separation range: Not applicable.
(E) Combustion zone temperature range: Not applicable.
(F) Excess air range: see attached Exhaust Gas data.
(G) Flame arrestor(s): No flame arrestor was used on the fuel inlet line during tests.
(H) Burner manifold pressure: see attached flow tables for 5 minute interval readings.
(I) Pilot flame indicator: The controls for each unit include a control panel with an auto-reigniting pilot and indicating light. At startup, the control panel sends a signal to the pilot to spark and allows pilot fuel gas to flow to the pilot. While the pilot is attempting to light (sparking), the pilot indicating light on the front of the panel blinks. The control valve on the main fuel gas line remains closed to prevent unburnt fuel gas to flow into the combustor stack while the pilot attempts to light. Once a pilot flame is detected, the indicating light stays lit (no blinking) and the pilot stops sparking. If no pilot flame is detected, the panel will continue to spark the pilot in short intervals. After 3 failed attempts to establish a pilot flame, a pilot flame fail alarm light will blink red on the front of the control panel. The panel will continue to attempt pilot ignition until the panel is stopped locally or via remote signal. Once a pilot flame is established, after a few seconds, the panel will send a signal to open the control valve on the main fuel gas line to allow fuel through the burner and into the combustor stack for ignition.
(J) Pilot flame design fuel and usage: Pilot can operate on Natural Gas or Propane. Pilot fuel burn rate is 19 scfh at 15 psig supply pressure.
(K) Tip velocity range: Not applicable.
(L) Momentum flux ratio: Not applicable.
(M) Exit temperature range: see Exhaust Gas data.
(N) Exit flow rate: see Exhaust Gas data.
(O) Wind velocity and direction: see Method 22 forms.

Schematic

LEGEND	
PI - Pressure Gauge	
SDV - Shut Down Valve	



ELEVATION VIEW (FOR SINGLE UNIT)

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										16-3										COMM ENGINEERING 16-3 16-3										COMM										MODEL 3 COMBUSTOR TESTING SCHEMATIC										REV. 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																																																																																																																																																																																																																																																																																																																																																																																																						

Plant Operational Data

Method 2A Calculations - Fuel Inlet Flow Rates (SCFH)
 COMM Engineering
 Model 3 Tests

		Average Metered Ps PSIA	Average Metered T Deg F	Average Metered Flow Rate SCFH	Converted			Meter Default Pbar in Hg. (abs)	Actual Pbar in Hg. (abs)	Method 2A Calculated Flow Rate SCFH
September 21, 2016					Ps in. Hg (abs)	Ps in. Hg	T R			
Model 3 - Run 1A: 90-100%	Averages	15.84	81.82	2065.53	32.26	2.27	541.49	29.99	29.97	2064.25
Model 3 - Run 1B: 90-100%	Averages	15.84	88.97	2046.64	32.26	2.27	548.64	29.99	29.97	2045.37
Model 3 - Run 1C: 90-100%	Averages	15.84	92.35	2060.58	32.26	2.27	552.02	29.99	29.97	2059.30

September 22, 2016

Model 3 - Run 2A: 70-100-70%	Averages	15.57	84.11	1815.41	31.69	1.70	543.78	29.99	29.99	1815.41
Model 3 - Run 2B: 70-100-70%	Averages	15.56	88.54	1830.91	31.69	1.70	548.21	29.99	29.99	1830.91
Model 3 - Run 2C: 70-100-70%	Averages	15.56	84.13	1827.82	31.69	1.70	543.80	29.99	29.99	1827.82

September 23, 2016

Model 3 - Run 3A: 30-70-30%	Averages	15.47	81.63	1136.82	31.50	1.51	541.30	29.99	30.06	1139.35
Model 3 - Run 3B: 30-70-30%	Averages	15.47	86.37	1134.65	31.50	1.51	546.04	29.99	30.06	1137.17
Model 3 - Run 3C: 30-70-30%	Averages	15.47	90.39	1142.57	31.49	1.50	550.06	29.99	30.06	1145.11
Model 3 - Run 4A: 0-30-0%	Averages	14.92	89.82	414.37	30.38	0.39	549.49	29.99	30.06	415.32
Model 3 - Run 4B: 0-30-0%	Averages	14.92	88.22	412.72	30.39	0.40	547.89	29.99	30.06	413.67
Model 3 - Run 4C: 0-30-0%	Averages	14.93	87.20	416.48	30.39	0.40	546.87	29.99	30.06	417.44

Method 2A Formula: Calculated Flow Rate (SCFH) = Metered Flow Rate (SCFH) * [(Actual Pbar + Ps)/(Meter Pbar + Ps)]

COMM Model 3 - Flow Meter Readings

Meter ID: 92240

Collect Time: 9/23/2016 6:42:25 PM

Firmware Rev:

Firmware Part Number: 2104497-019

CUSTOMER: COMM Engineering

Report Page: 1

Print Date: 23 Sep 2016

Location: 2104492-002

Data Source: Archive

Effective Dates: 21 Sep 2016 to 23 Sep 2016

Meter Name

Station

Meter Name

Time	Ps	T	Flow Rate
21-Sep-16	PSIA	Deg F	SCFH
Model 3 - Run 1A: 90-100%			
9:22:00 AM	15.85	79.12	2074.04
9:27:00 AM	15.83	79.45	2071.07
9:32:00 AM	15.84	79.83	2101.06
9:37:00 AM	15.84	80.26	2090.21
9:42:00 AM	15.85	80.70	2025.96
9:47:00 AM	15.85	81.24	2067.81
9:52:00 AM	15.84	81.63	2111.40
9:57:00 AM	15.84	82.01	2009.41
10:02:00 AM	15.85	82.54	2062.36
10:07:00 AM	15.85	82.94	2109.61
10:12:00 AM	15.84	83.27	2020.59
10:17:00 AM	15.84	83.59	2103.56
10:22:00 AM	15.85	84.22	2052.63
10:27:00 AM	15.84	84.70	2017.75
Averages	15.84	81.82	2065.53

Model 3 - Run 1B: 90-100%			
10:45:00 AM	15.83	86.15	2069.31
10:50:00 AM	15.85	86.58	2012.30
10:55:00 AM	15.85	87.05	2003.32
11:00:00 AM	15.84	87.51	2078.54
11:05:00 AM	15.84	87.98	2006.44
11:10:00 AM	15.84	88.30	2056.10
11:15:00 AM	15.84	88.78	2023.93
11:20:00 AM	15.85	89.13	2100.20
11:25:00 AM	15.84	89.59	2004.61
11:30:00 AM	15.85	90.08	2075.41
11:35:00 AM	15.83	90.44	2040.79
11:40:00 AM	15.84	90.92	2067.90
11:45:00 AM	15.85	91.34	2079.18
11:50:00 AM	15.84	91.72	2034.88
Averages	15.84	88.97	2046.64

Model 3 - Run 1C: 90-100%			
12:10:00 PM	15.84	91.68	2049.24
12:15:00 PM	15.85	91.74	2088.81
12:20:00 PM	15.85	91.78	2070.66
12:25:00 PM	15.84	91.86	2054.95
12:30:00 PM	15.84	91.95	2068.78

12:35:00 PM	15.85	92.01	2075.83
12:40:00 PM	15.85	92.12	2096.46
12:45:00 PM	15.84	92.30	2106.27
12:50:00 PM	15.85	92.44	2036.18
12:55:00 PM	15.85	92.62	2031.19
1:00:00 PM	15.85	92.80	1992.06
1:05:00 PM	15.84	92.94	2022.28
1:10:00 PM	15.83	93.20	2101.80
1:15:00 PM	15.83	93.39	2053.57
Averages	15.84	92.35	2060.58

Time	Ps	T	Flow Rate
22-Sep-16	PSIA	Deg F	SCFH
Model 3 - Run 2A: 70-100-70%			
8:40:00 AM	15.05	82.11	1403.90
8:45:00 AM	15.85	82.40	2066.74
8:50:00 AM	15.86	82.72	1997.81
8:55:00 AM	15.04	83.06	1395.77
9:00:00 AM	15.86	83.35	1993.30
9:05:00 AM	15.84	83.69	2088.05
9:10:00 AM	15.05	83.91	1432.30
9:15:00 AM	15.86	84.25	2017.22
9:20:00 AM	15.85	84.54	2058.48
9:25:00 AM	15.05	84.86	1393.88
9:30:00 AM	15.85	85.22	2042.54
9:35:00 AM	15.86	85.53	1996.83
9:40:00 AM	15.05	85.82	1432.93
9:45:00 AM	15.84	86.05	2095.97
Averages	15.57	84.11	1815.41

Model 3 - Run 2B: 70-100-70%			
3:30:00 PM	15.05	89.99	1400.98
3:35:00 PM	15.86	89.84	2071.67
3:40:00 PM	15.84	89.52	2082.39
3:45:00 PM	15.05	89.35	1410.02
3:50:00 PM	15.86	89.11	2026.54
3:55:00 PM	15.86	88.94	2079.57
4:00:00 PM	15.04	88.71	1432.41
4:05:00 PM	15.84	88.41	2028.36
4:10:00 PM	15.84	88.21	2048.95
4:15:00 PM	15.03	87.95	1475.20
4:20:00 PM	15.86	87.70	2037.92
4:25:00 PM	15.86	87.51	2061.78
4:30:00 PM	15.05	87.27	1473.35
4:35:00 PM	15.85	87.07	2003.56
Averages	15.56	88.54	1830.91

Model 3 - Run 2C: 70-100-70%			
5:00:00 PM	15.05	86.14	1419.16
5:05:00 PM	15.86	85.80	2021.43
5:10:00 PM	15.85	85.54	2099.48
5:15:00 PM	15.04	85.18	1429.58
5:20:00 PM	15.85	84.88	2095.92
5:25:00 PM	15.86	84.63	2031.51
5:30:00 PM	15.05	84.24	1468.34

5:35:00 PM	15.84	83.96	2043.92
5:40:00 PM	15.86	83.66	2010.29
5:45:00 PM	15.05	83.37	1394.30
5:50:00 PM	15.84	83.02	2054.12
5:55:00 PM	15.84	82.81	2030.55
6:00:00 PM	15.05	82.48	1466.53
6:05:00 PM	15.85	82.19	2024.31
Averages	15.56	84.13	1827.82

Time	Ps	T	Flow Rate
23-Sep-16	PSIA	Deg F	SCFH
Model 3 - Run 3A: 30-70-30%			
8:50:00 AM	15.03	79.90	623.88
8:55:00 AM	15.72	80.21	1415.51
9:00:00 AM	15.72	80.35	1420.11
9:05:00 AM	15.02	80.64	627.67
9:10:00 AM	15.72	80.91	1425.94
9:15:00 AM	15.73	81.30	1449.85
9:20:00 AM	15.03	81.42	598.04
9:25:00 AM	15.73	81.76	1428.73
9:30:00 AM	15.73	82.02	1397.84
9:35:00 AM	15.02	82.36	611.06
9:40:00 AM	15.71	82.58	1443.26
9:45:00 AM	15.72	82.88	1450.24
9:50:00 AM	15.03	83.14	602.31
9:55:00 AM	15.72	83.42	1421.05
Averages	15.47	81.63	1136.82

Model 3 - Run 3B: 30-70-30%			
10:15:00 AM	15.02	84.52	604.85
10:20:00 AM	15.73	84.81	1425.03
10:25:00 AM	15.71	85.17	1455.77
10:30:00 AM	15.03	85.41	621.52
10:35:00 AM	15.72	85.66	1419.49
10:40:00 AM	15.73	85.92	1396.49
10:45:00 AM	15.02	86.29	621.72
10:50:00 AM	15.72	86.55	1405.68
10:55:00 AM	15.72	86.74	1447.85
11:00:00 AM	15.03	87.02	631.68
11:05:00 AM	15.72	87.35	1413.30
11:10:00 AM	15.73	87.69	1426.86
11:15:00 AM	15.02	87.96	606.45
11:20:00 AM	15.72	88.12	1408.44
Averages	15.47	86.37	1134.65

Model 3 - Run 3C: 30-70-30%			
11:40:00 AM	15.02	89.25	623.80
11:45:00 AM	15.71	89.43	1406.31
11:50:00 AM	15.71	89.70	1453.04
11:55:00 AM	15.03	90.04	627.77
12:00:00 PM	15.73	90.32	1464.13
12:05:00 PM	15.72	90.41	1429.76
12:10:00 PM	15.01	90.48	599.54
12:15:00 PM	15.72	90.59	1394.55
12:20:00 PM	15.72	90.62	1414.77

12:25:00 PM	15.01	90.71	625.02
12:30:00 PM	15.73	90.86	1468.33
12:35:00 PM	15.71	90.91	1440.27
12:40:00 PM	15.02	91.03	610.39
12:45:00 PM	15.72	91.14	1438.32
Averages	15.47	90.39	1142.57

Model 3 - Run 4A: 0-30-0%

2:40:00 PM	14.75	90.70	47.27
2:45:00 PM	15.03	90.55	600.08
2:50:00 PM	15.02	90.34	624.27
2:55:00 PM	14.75	90.18	7.59
3:00:00 PM	15.01	90.04	601.66
3:05:00 PM	15.01	89.92	602.61
3:10:00 PM	14.75	89.85	56.95
3:15:00 PM	15.02	89.74	602.24
3:20:00 PM	15.01	89.57	628.17
3:25:00 PM	14.74	89.54	97.67
3:30:00 PM	15.01	89.42	630.95
3:35:00 PM	15.01	89.29	628.29
3:40:00 PM	14.75	89.22	64.37
3:45:00 PM	15.01	89.10	609.05
Averages	14.92	89.82	414.37

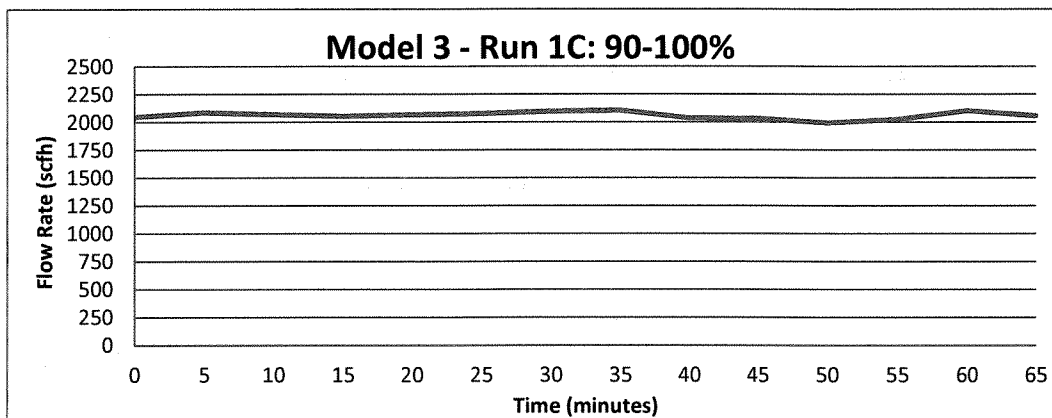
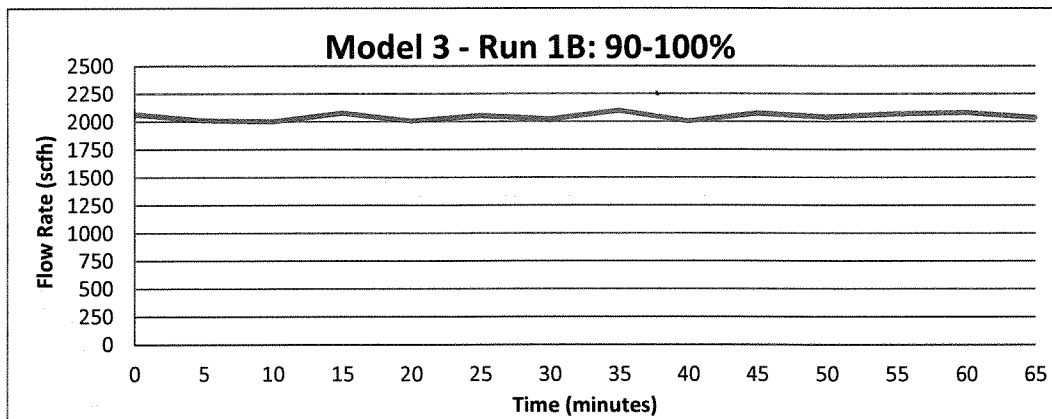
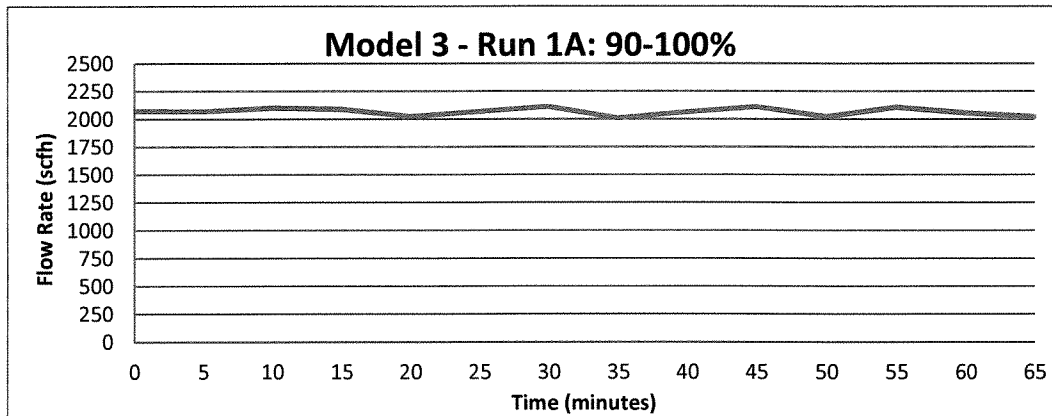
Model 3 - Run 4B: 0-30-0%

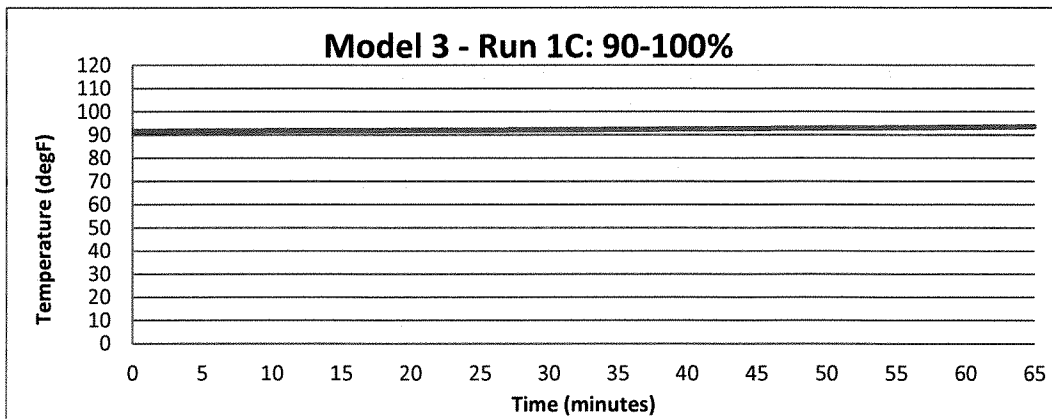
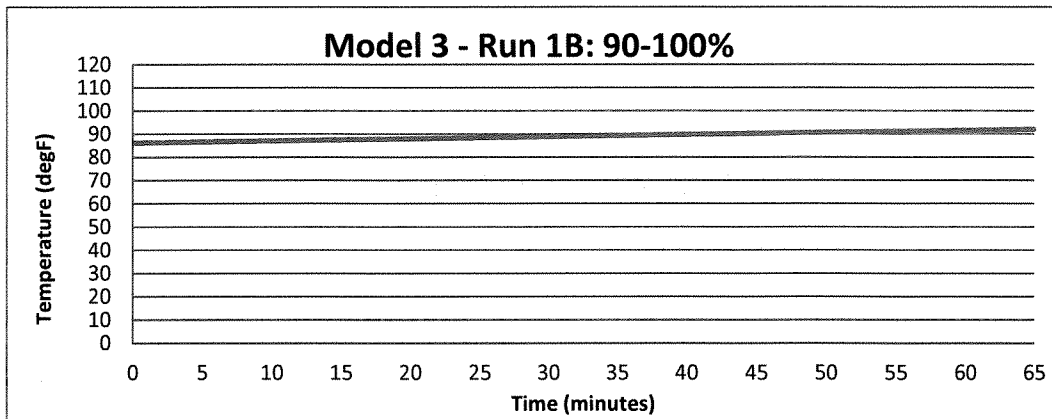
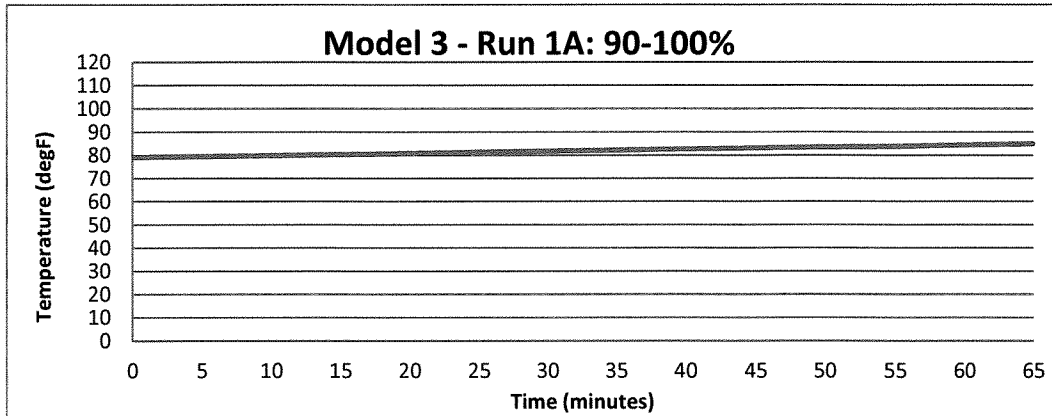
3:57:00 PM	14.76	88.89	20.40
4:02:00 PM	15.03	88.71	601.55
4:07:00 PM	15.03	88.65	628.37
4:12:00 PM	14.75	88.57	18.43
4:17:00 PM	15.01	88.44	599.08
4:22:00 PM	15.03	88.26	626.15
4:27:00 PM	14.75	88.24	64.43
4:32:00 PM	15.02	88.06	624.13
4:37:00 PM	15.02	88.01	602.09
4:42:00 PM	14.75	87.95	87.38
4:47:00 PM	15.01	87.92	599.04
4:52:00 PM	15.01	87.88	626.44
4:57:00 PM	14.75	87.85	60.23
5:02:00 PM	15.03	87.72	620.42
Averages	14.92	88.22	412.72

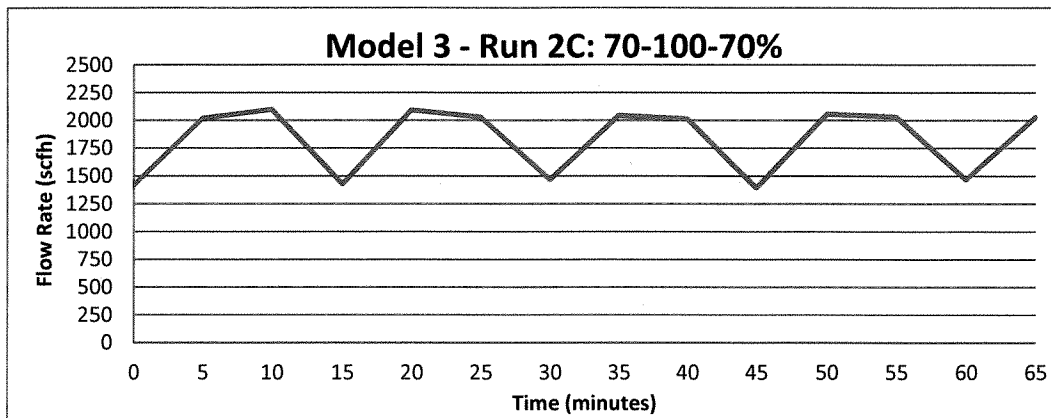
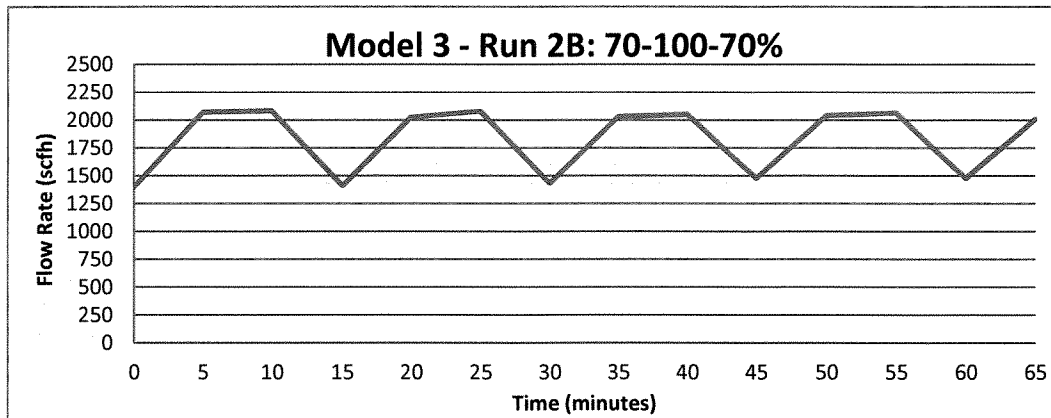
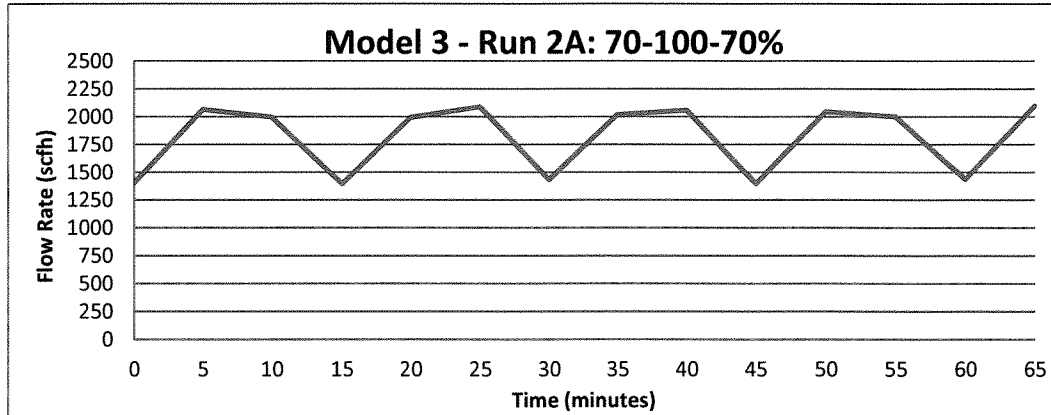
Model 3 - Run 4C: 0-30-0%

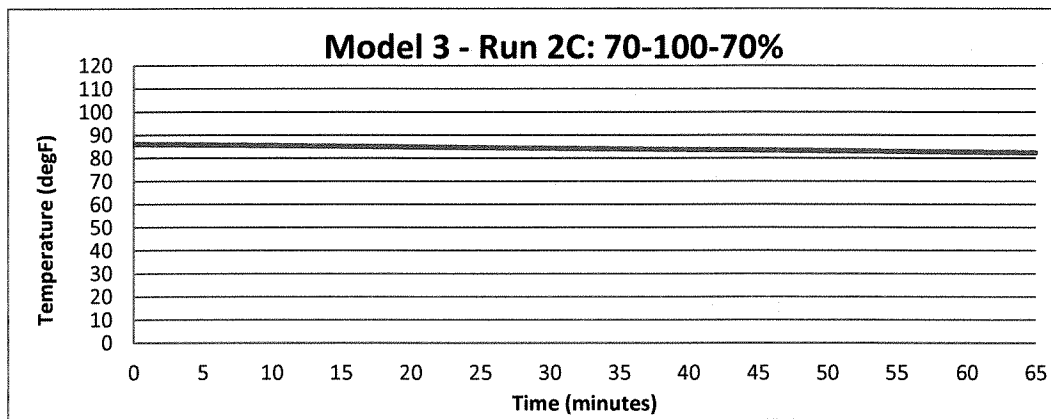
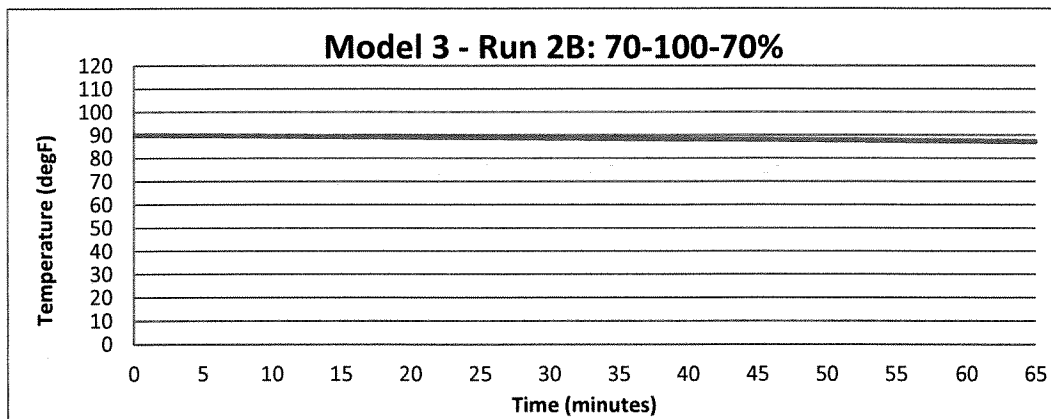
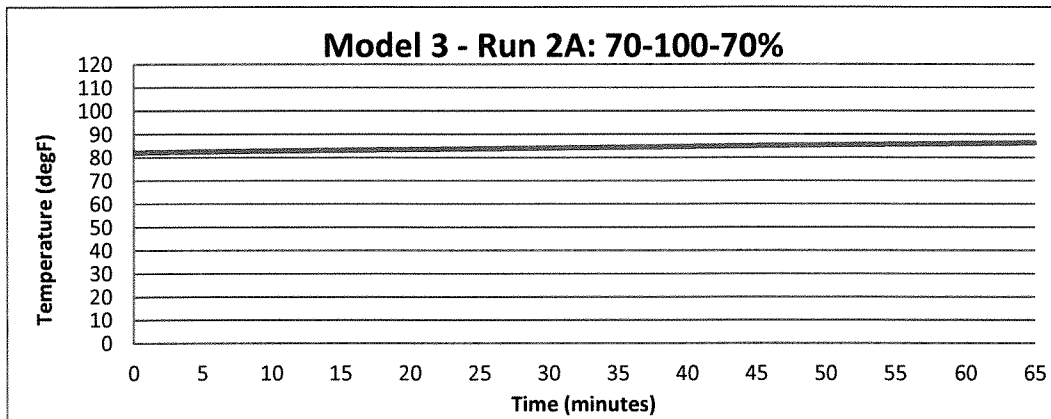
5:15:00 PM	14.76	87.62	40.28
5:20:00 PM	15.02	87.55	620.88
5:25:00 PM	15.01	87.51	610.96
5:30:00 PM	14.74	87.44	58.88
5:35:00 PM	15.02	87.39	627.45
5:40:00 PM	15.01	87.31	625.92
5:45:00 PM	14.76	87.26	66.32
5:50:00 PM	15.03	87.21	604.38
5:55:00 PM	15.03	87.10	597.88
6:00:00 PM	14.76	87.03	107.19
6:05:00 PM	15.03	86.96	601.53
6:10:00 PM	15.03	86.91	616.49
6:15:00 PM	14.75	86.83	47.02

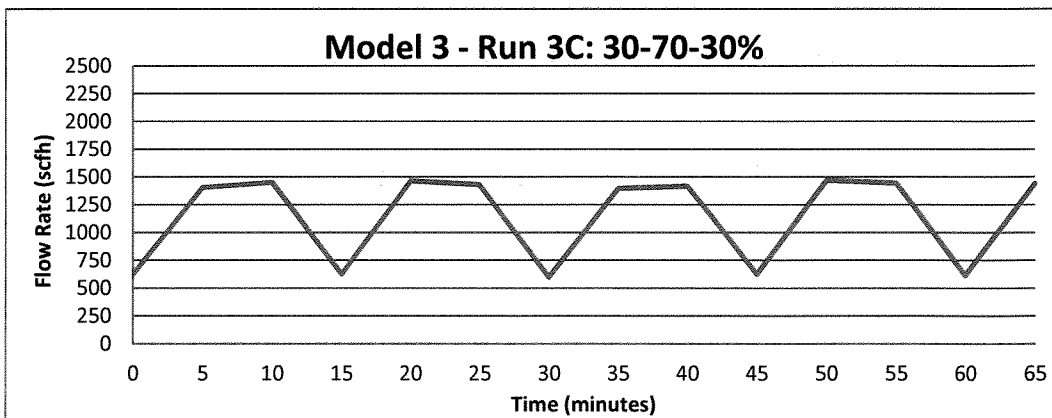
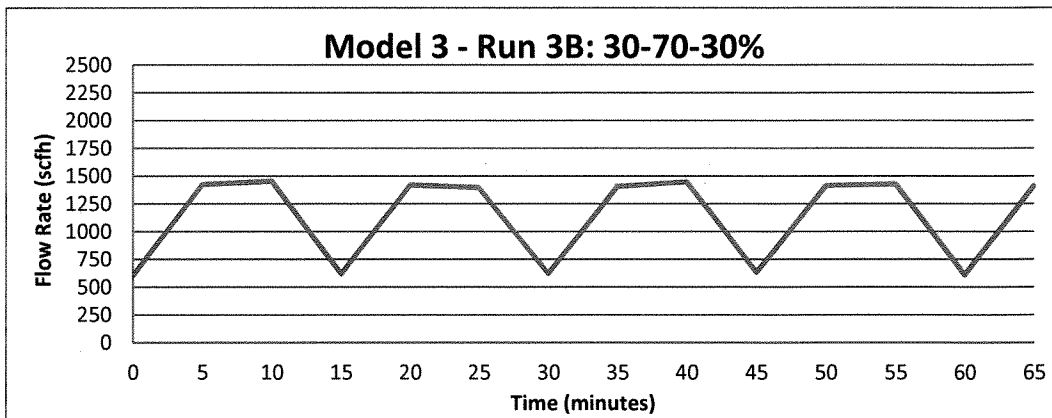
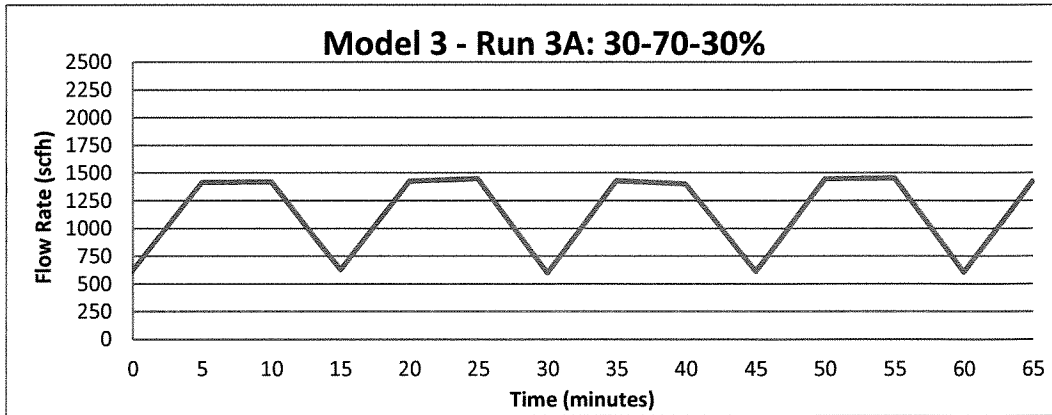
6:20:00 PM	15.03	86.71	605.58
Averages	14.93	87.20	416.48

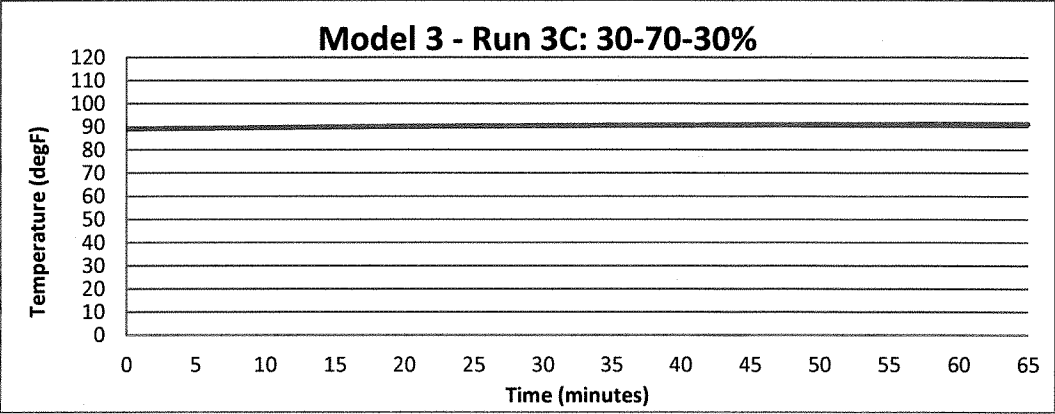
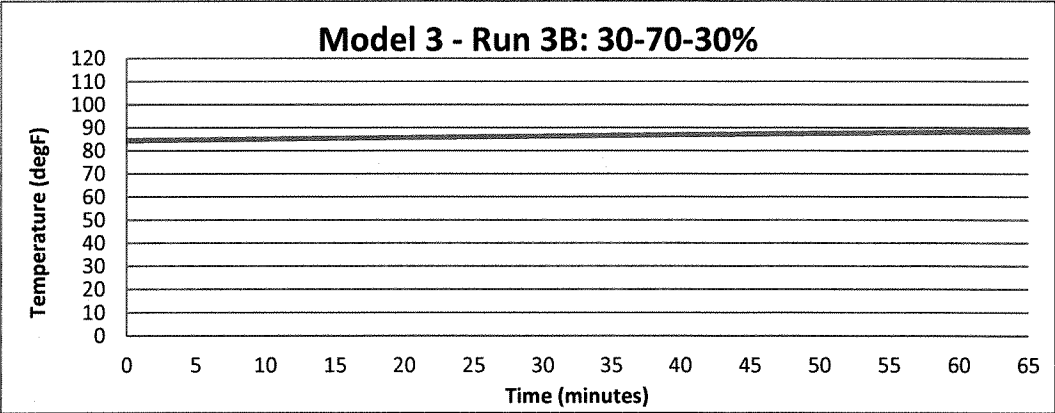
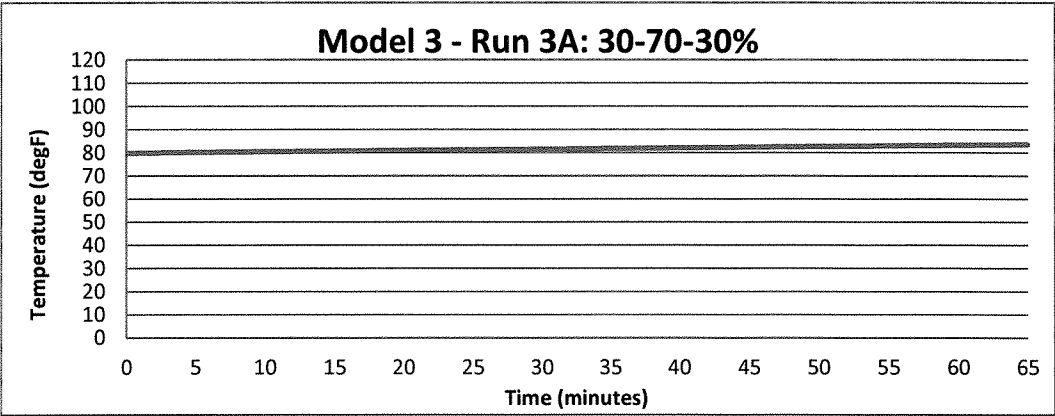


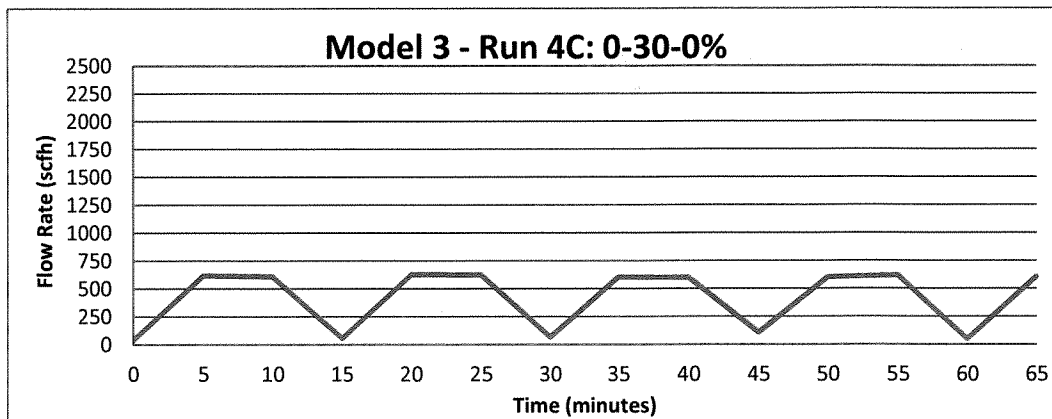
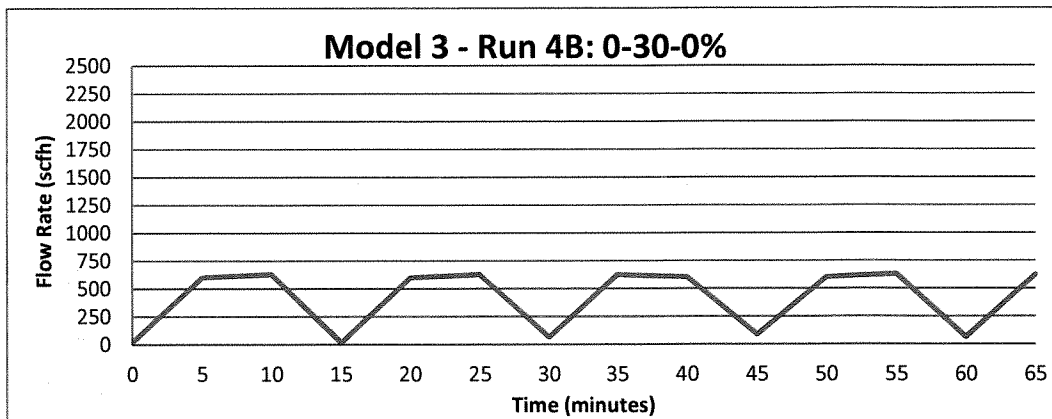
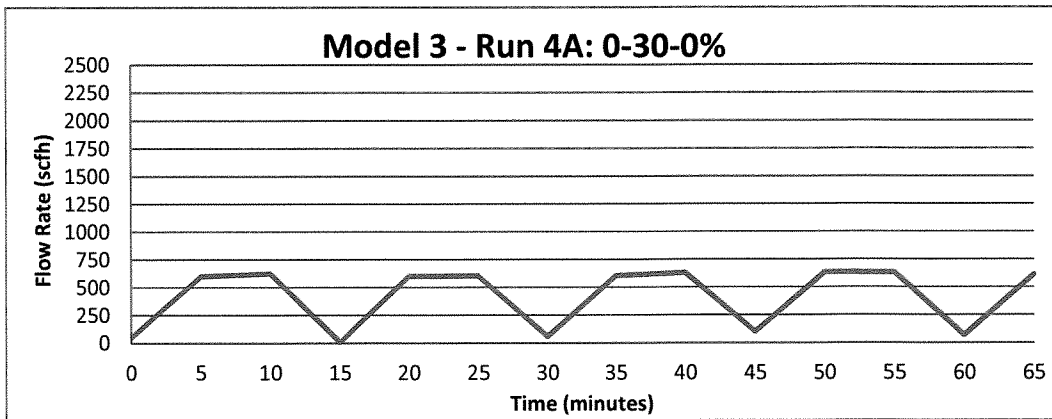


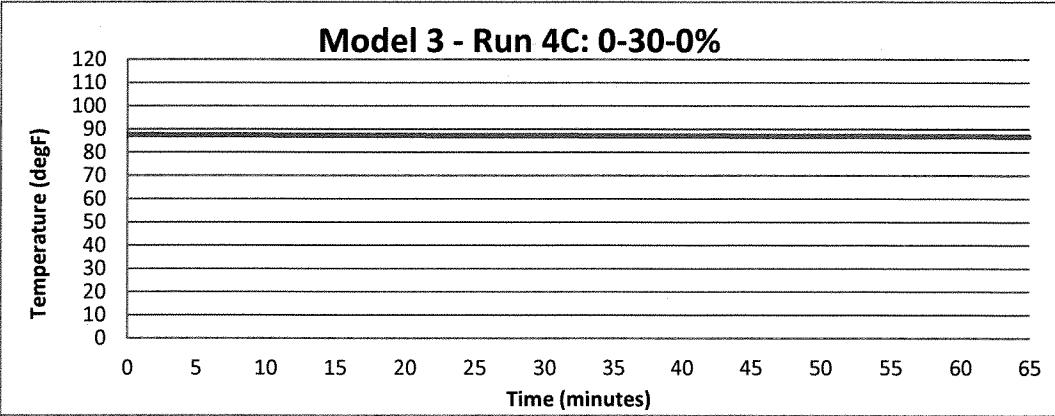
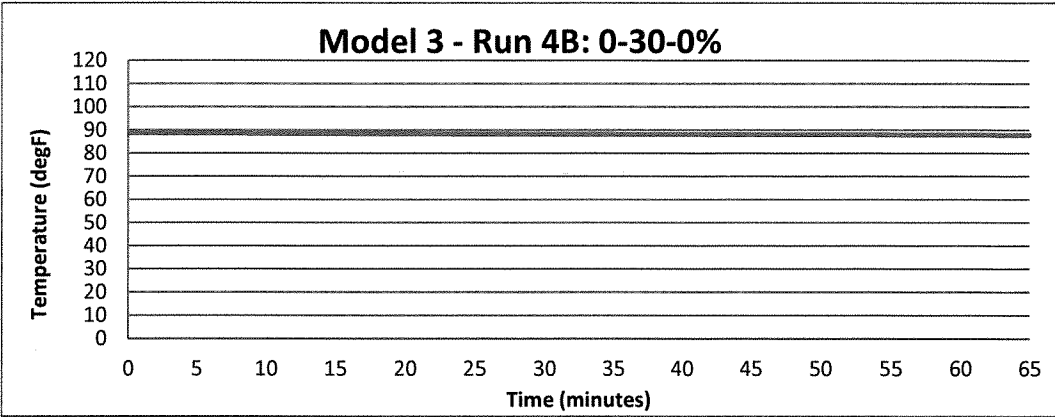
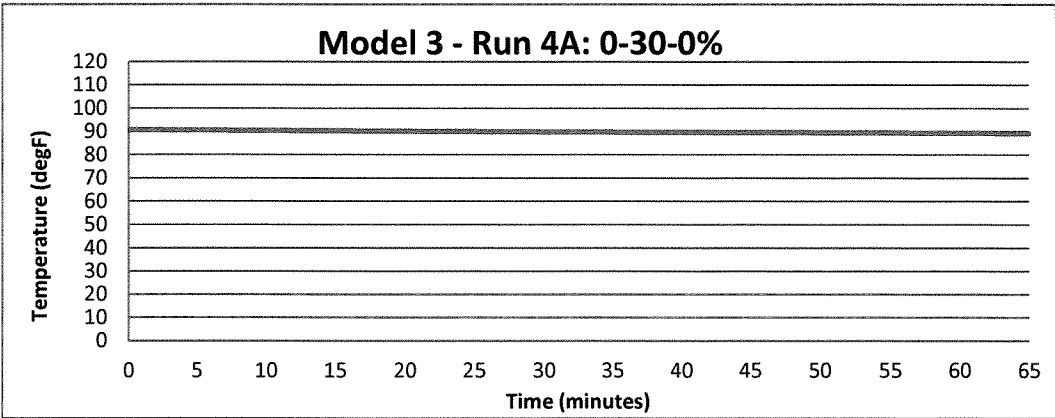












Flow Meter Calibration



DMD Model 5 Prover
Date: 9/19/2016

TEL: 337-234-7017

FAX: 337-233-0314

Name: ZEDI/RENTAL COM ENG
Location:
Operator's Name or ID: TOM EDWARDS
Master Meter Type: 10M(10000cfh/283.2m3)
Master Serial #: 1097053
Meter Output: Uncorrected
Field Meter Type: NUFLO
Field Meter Serial #: 2SBG16088
Alternate Serial Number:
Test Setup:
Comments:
ACCURACY - 99.85
K- FACTOR - 336.88
Test Completed: Span Test Result: PASS +/- 1.00

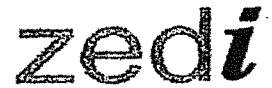
	21:08:32	21:11:11	21:13:15
Flow Rate: (acfh)	2097.439	1544.917	997.759
Test Volume: (cf)	21.000	15.500	10.000
Drive Rate or Pulses/Test:	7074.480	5221.640	3368.800
Ambient Pressure: (psia)	14.742	14.742	14.742
Master Temperature: (°F)	77.671	77.522	78.269
Master Pressure: (psig)	-0.134	-0.081	-0.040
Master Differential: (psig)	0.008	0.006	0.003
Master Volume: (cf)	21.377	15.716	10.184
Meter Temperature: (°F)	73.618	73.469	73.321
Meter Pressure: (psig)	-0.032	-0.017	-0.007
Meter Differential: (psig)	0.003	0.001	0.000
Test Duration:	00:00:36	00:00:36	00:00:36
Upper Pass/Fail Limit:	0.500	0.500	0.500
Lower Pass/Fail Limit:	0.500	0.500	0.500
% Pressure Correction:	-0.693	-0.433	-0.224
% Temp. Correction:	-0.754	-0.754	-0.920
% Uncorrected Proof:	101.513	101.129	101.620
% Corrected Proof:	100.049	99.931	100.460
% Accuracy:	99.951	100.069	99.542
% Error:	-0.049	0.069	-0.458
Single Test Result:	Pass	Pass	Pass

COMMENTS:

* WITNESS

Monday, September 19, 2016


1 of 1
ZEDI EMPLOYEE



DMD Model 5 Prover
Date: 9/30/2016

TEL: 337-234-7017

FAX: 337-233-0314

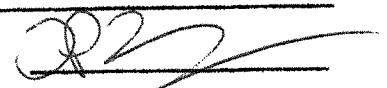
Name: RENTAL METER/ COMM NGINEERING
Location: LAFAYETTE LA
Operator's Name or ID: Tom Edwards
Master Meter Type: 10M(10000cfh/283.2m3)
Master Serial #: 1097053
Meter Output: Uncorrected
Field Meter Type: NUFLO
Field Meter Serial #: 11285888602
Alternate Serial Number:
Test Setup:
Comments:
ACCURACY - 100.17
K- FACTOR - 126.78
Test Completed: Span Test Result: PASS +/- 1.00

	14:43:57	14:46:37	14:48:41
Flow Rate: (acfh)	6705.369	4044.679	1995.518
Test Volume: (cf)	70.000	50.000	20.000
Drive Rate or Pulses/Test:	8874.250	6338.750	2535.500
Ambient Pressure: (psia)	14.760	14.760	14.760
Master Temperature: (°F)	71.248	71.845	72.592
Master Pressure: (psig)	-0.875	-0.367	-0.109
Master Differential: (psig)	0.875	0.367	0.109
Master Volume: (cf)	74.122	51.534	20.327
Meter Temperature: (°F)	67.962	68.111	67.813
Meter Pressure: (psig)	-0.155	-0.062	-0.017
Meter Differential: (psig)	0.104	0.040	0.010
Test Duration:	00:00:39	00:00:45	00:00:36
Upper Pass/Fail Limit:	0.500	0.500	0.500
Lower Pass/Fail Limit:	0.500	0.500	0.500
% Pressure Correction:	-4.928	-2.072	-0.627
% Temp. Correction:	-0.619	-0.703	-0.898
% Uncorrected Proof:	105.572	102.767	101.355
% Corrected Proof:	99.749	99.930	99.815
% Accuracy:	100.252	100.070	100.185
% Error:	0.252	0.070	0.185
Single Test Result:	Pass	Pass	Pass

COMMENTS:

* WITNESS

Friday, September 30, 2016


ZEDI EMPLOYEE

Fuel Analysis

GAS INNOVATIONS

CERTIFICATE OF CONFORMANCE

PROPYLENE

INSTRUMENT PURITY / POLYMER GRADE

<u>Guaranteed Specifications</u>		<u>Minimal Purity</u>
99.5 % +	Propylene	99.50 % +
Sum of all impurities to be < 0.50 %	Ethane	< 1 PPM
	Propane	2707 PPM
	Carbon Dioxide	< 1 PPM
Water < 5 PPM	Water	< 3 PPM
Liquid Phase Analysis	Nitrogen	< 10 PPM
	Total saturated C4's	208 PPM
	Oxygen	< 2 PPM
	Sulfur	Non Detected
	Methane	< 1 PPM

Certified by: Randy Chatham

Date: 9-14-16

SO# 00078911

Cylinder Serial Number(s)
Bulk

Batch Number
PRY-091416-I

CUSTOMER PO#: **1555-160649**

Lot Number: PRY-053116-I

18005 E. Highway 225, La Porte, TX 77571 Tel- 281-471-2200 Fax- 281-471-2201 www.gasinnovations.com

APPENDIX I

Resumes of Test Personnel

PATTERSON, Robert M; President

Education B. S. 1983, Central Michigan University; Mt. Pleasant, Michigan, in Geology and Earth Science-Meteorology.

Professional Training Courses Attended a two-day short course, "Performing and Observing Source Sampling" in Dallas, Texas.

Attended a one-day short course on basic supervision.

Attended a four-week management course presented by the American Management Association, 1991-1992.

Certification Certified Visible Emissions Evaluator
Certified Cabot Full-Face Respirator Fit Tester

Professional Memberships Source Evaluation Society
American Management Association

Technical Experience Participated in the sampling of over 1,000 sources, including several of which were sampled simultaneously using more than one sampling train. Thoroughly trained in all EPA testing procedures, 1986-present.

Over twenty-six years experience with EPA and Texas Air Control Board methods of sampling - both stationary sources and ambient air. CFR, Title 40, Chapter I, Part 60, EPA Methods 1 through 25, and 101 through 110. Performance Specifications 1 through 5. CFR, Title 40, Chapter I, Part 50, Appendix A through F. "Sampling Procedures Manual, Texas Air Control Board, January 1983." Parts 1-1 through 14-6, Appendix B through Appendix M.

Experienced with sampling Method 0010, Modified Method 5 Sampling Train; Method 0030, Volatile Organic Sampling Train; and various EPA and "Site Specific" multiple metal and acid gas sampling trains.

(continued)

PATTERSON, Robert M (cont'd)

Technical
Experience
(cont'd)

Over twenty-six years experience with EPA and Texas Air Control Board methods of analysis of both stationary and ambient air samples. Particulate matter, SO_3 , SO_2 , H_2SO_4 , NO_x , CO , CO_2 , O_2 , H_2S , F , TRS , HCl , Cl_2 , NH_3 , VOC , $\text{C}_1\text{-C}_7$, and other organics. Both laboratory and on-site analyses were performed.

Experienced in the sampling and analysis of commercial calibration gas cylinders for sulfur dioxide, oxides of nitrogen, carbon dioxide, oxygen, carbon monoxide, and $\text{C}_1\text{-C}_7$ hydrocarbons.

Thoroughly trained in the operation and routine maintenance of the following:

- MSA LIRA Model 202S Infrared Analyzer
- Analytical Instrument Development, Inc. Model 340A Calibration System
- Shimadzu GC-Mini 2 Gas Chromatograph
- Thermo Environmental Model 10AR Oxides of Nitrogen Analyzer
- Thermo Oxygen Analyzer
- Teledyne Model 326 Oxygen Analyzer
- Thermo Environmental Model 48 Carbon Monoxide Analyzer
- Thermo Environmental Model 40 Sulfur Dioxide Analyzer
- Ratfisch Model RS 100 Total Hydrocarbon Analyzer
- Western Research Model 721AT Sulfur Dioxide Analyzer
- Horiba Model PIR 2000 Carbon Dioxide Analyzer
- Ratfisch Model RS 55 Total Hydrocarbon Analyzer
- J.U.M. Model VE-7 Total Hydrocarbon Analyzer

MONFRIES, James R; Senior Quality Assurance Manager

Education B. S. 1975, University of Texas at Arlington; Arlington, Texas, in Biology with a minor in Chemistry.

Graduate work at the University of Texas at Dallas in the Environmental Science Department.

Professional Training Courses Attended a two-day short course, "Performing and Observing Source Sampling" in Dallas, Texas, July 1976.

Certification Qualified Individual (Groups I, II, III, and IV)
Certified Visible Emissions Evaluator

Professional Memberships Air and Waste Management Association
Source Evaluation Society - Past President

Technical Experience Participated in the sampling of over 700 sources, serving in the supervisory capacity on over 500 sources. Many of the sources were sampled simultaneously using more than one sampling train at several points in the flue gas stream, 1976-present.

Also supervised several ambient air monitoring studies, including a permanent five-station high volume air sampling network in South Texas, a permanent four-station high volume air sampling network in Pennsylvania, and a permanent seven-station sulfur dioxide sampling network in East Texas.

Was Quality Assurance Manager for several ambient air monitoring studies; including a four-station high volume air sampling network for TSP and PM10 in Midlothian, Texas; a single-station high volume air sampling network for PM10 in South Texas, a two-station high volume air sampling network for TSP in Wichita Falls, Texas, and a four-station continuous air sampling network for TSP and PM10 in Jewett, Texas using Thermo Andersen FH 62 C14 Beta Gauge Dust Monitors.

(continued)

MONFRIES, James R (cont'd)

Thirty years experience with EPA and Texas Commission on Environmental Quality methods of analysis of both source and ambient air samples for particulates, SO₂, SO₃, H₂SO₄, H₂S, HCl, Cl₂, NO_x, Hydrocarbons, and TRS.

Experienced in the analysis of commercial calibration gas cylinders for sulfur dioxide and oxides of nitrogen.

Experienced with VOST and Modified Method 5 Sampling Procedures.

Thoroughly trained in the operation and routine maintenance of the following:

- Lear Siegler, Inc. SM800 Stack Gas Monitor
- Du Pont Model 460/1 Photometric Analyzer System
- Lear Siegler, Inc. SM1000 Ambient SO₂ Monitor
- Calibrated Instruments Ultragas SO₂ Monitor
- Meloy 285E SO₂ Analyzer
- Meloy SA-700 Fluorescent SO₂ Analyzer
- MSA LIRA Model 202S Infrared Analyzer
- Analytical Instrument Development, Inc. Model 340A Calibration System
- Shimadzu GC-Mini 2 Gas Chromatograph
- Thermo Environmental Model 10S NO_x Analyzer
- Thermo Oxygen Analyzer
- Teledyne Model 326 Oxygen Analyzer
- Thermo Environmental Model 48 Carbon Monoxide Analyzer
- Thermo Environmental Model 40 Sulfur Dioxide Analyzer
- Ratfisch Model RS 103 Total Hydrocarbon Analyzer
- Western Research Model 721AT Sulfur Dioxide Analyzer
- Horiba Model PIR 2000 Carbon Dioxide Analyzer
- Ratfisch Model RS 55 Total Hydrocarbon Analyzer
- J.U.M. Model VE-7 Total Hydrocarbon Analyzer
- Thermo Andersen Model FH 62 C14 Dust Monitor

JOHNSON, Jeremiah; Project Supervisor III

Education B. S. Agriculture Development, August 2000; Texas A & M University; College Station, Texas.

Certifications Qualified Individual (Groups I, II, III and IV)
Certified Visible Emissions Evaluator
HAZMAT certified
Adult CPR certified
Standard First Aid certified

Technical Experience Participated in the sampling of over 500 sources, including several of which were sampled simultaneously using more than one sampling train. Thoroughly trained in all EPA testing procedures, 2001-present.

Experienced with Modified Method 5 Sampling Train (Method 0010).

Experienced with VOST sampling procedure (Method 0030).

Experienced with calibration techniques for all field-testing equipment.

Experienced with various multiple metal and acid gas sampling trains.

Has performed on-site SO₂ analysis and H₂S fuel gas analysis.

Thoroughly trained in the operation and routine maintenance of the following:

- Thermo Environmental Model 10S and 42C Oxides of Nitrogen Analyzers
- Teledyne Model 326 Oxygen Analyzer

(continued)

JOHNSON, Jeremiah (cont'd)

Technical
Experience
(cont'd)

Operation and maintenance (cont'd)

- Western Research Model 721 AT Sulfur Dioxide Analyzer.
- Horiba Model PIR 2000 Carbon Dioxide Analyzer
- J.U.M. Model VE-7 Total Hydrocarbon Analyzer
- Thermo Environmental Model 48 Carbon Monoxide Analyzer



ATTESTATION OF COMPLIANCE (QUALIFIED INDIVIDUAL)

I, Jeremial Johnson of TestAmerica Air Emission Corp. (DBA METCO Environmental
(Qualified Individual)

Understand and acknowledge that all test projects conducted under his/her supervision will conform to the
METCO Environmental's quality manual and to this practice [ASTM D 7036-04] in all respects.

I, Ned Shappley of TestAmerica Air Emission Corp. (DBA METCO Environmental
(Technical Director)

I certify the aforementioned qualified individual has participated in at least 10 tests employing the methods for
which they are qualified and passed the qualification exam(s).

Jeremial Johnson 2-26-13
(Qualified Individual Signature/Date)

Jeremial Johnson
(Printed Name)

Ned Shappley 8/25/13
(Technical Director Signature/Date)

Ned Shappley
(Printed Name)

The relevant external qualification exam(s) were administered by the Source Evaluation Society.

Group 1 Exam Date 1/31/13 # 09109

QSTI Number (if applicable) _____

Group 2 Exam Date 1/31/13 # 09112

QSTI Number (if applicable) _____

Group 3 Exam Date 1/31/13 # 09113

QSTI Number (if applicable) _____

Group 4 Exam Date 01/02/15 # 11444

QSTI Number (if applicable) _____

Group 5 Exam Date 7/6/12

QSTI Number (if applicable) _____

HO, Benson L; Environmental Scientist III

Education

B. S. May 2013, Major: Biochemistry, Minor: Chemistry; Louisiana State University Agricultural and Mechanical College, Baton Rouge, LA.

Technical
Experience

Participated in the sampling of over 75 sources, including several of which were sampled simultaneously using more than one sampling train.

Thoroughly trained in all EPA testing procedures, 2014-present.

RIOS, Brandon; Environmental Scientist

Education

B.S. University of Mississippi, Oxford, MS. Major: Geology.
Graduated May 2014

Technical
Experience

Participated in the sampling of over 25 sources, including
several of which were sampled simultaneously using more
than one sampling train.

Thoroughly trained in all EPA testing procedures, 2015-present.

MADDEN, Alex A ; Environmental Scientist

Education

B. S. in Environmental Management Systems, Dec 2014; Louisiana State University, Baton Rouge, LA

Technical
Experience

Participated in the sampling of over 25 sources, including several of which were sampled simultaneously using more than one sampling train.

Thoroughly trained in all EPA testing procedures, 2016-present.

From: [Andrew Bienvenu](#)
To: [Mia, Marcia](#)
Cc: [Garwood, Gerri](#); [Jason Huckaby](#); [Bill Schneider](#)
Subject: RE: COMM Engineering (Model 4 Combustor) - OOOOa Manufacturer's Performance Test Report (Part 2 of 2)
Date: Friday, February 24, 2017 1:39:51 PM
Attachments: [removed.txt](#)
[COMM OOOO Manufacturer's Test - EPA Review Responses 2-24-2017.pdf](#)

Marcia,

Please see attached pdf file for the information requested below.

Please review this information and let us know if there is anything else you need from us.

Thank you,

Andrew Bienvenu

COMM Engineering

PO Box 53463 | Lafayette, LA 70505

1319 W. Pinhook Road, Ste 401 | Lafayette, LA 70503

Office: 337.237.4373 ext 132

Fax: 337.234.1805



From: Mia, Marcia [mailto:Mia.Marcia@epa.gov]
Sent: Wednesday, February 01, 2017 1:35 PM
To: Andrew Bienvenu
Cc: Garwood, Gerri; Jason Huckaby
Subject: RE: COMM Engineering (Model 4 Combustor) - OOOOa Manufacturer's Performance Test Report (Part 2 of 2)

Andrew,

We have completed our initial review of the COMM Model 2, Model 3 and Model 4 Combustor which were submitted on 12/05/17.

We have the following follow-up items. You may reply via email and we can follow-up via conference call if there are any more questions. Thanks in advance.

Models 2/3/4

1. §60.5413(d)(10) requires 12 color photos (one from each test run) of the Method 22 VE test – The photos provided were black and white. Please provide color photos.
2. §60.5413(d)(12)(v)(I) requires a pilot flame indicator – Please provide the operator manual (hyperlink is sufficient) to the burner management system.
3. §60.5413(d)(3) and §60.5413(d)(12)(vi) require strip charts for the operation parameters – Pressure was not included. Please provide a graphical representation of the pressure data.

4. §60.5413(d)(5)(ii)(A) and (B) requires inlet testing using ASTM D1945-03 – Your test report indicates you used ASTM D1946-90. Please explain.

Model 2

1. §60.5413(d)(5)(ii)(A) requires labs for hydrocarbons for the inlet fuel – The nitrogen and oxygen levels for the condition one canister indicate leakage, and a propylene content <80%. Please explain.

Model 3

1. §60.5413(d)(7)(i) requires that Outlet Testing be conducted in accordance with Method 3C – You indicated in your report that Condition III-3 is not considered to be representative, with CO2 being non-detect. You therefore averaged the CO2 and O2 data from runs 1 and 2 and used that number for the run 3 data. Please explain why you were unable to get representative results, especially since you collected a duplicate bag. Please recalculate using only the data from runs 1 and 2 (instead of including an average for runs 1 and 2 in place of the data for run 3).

-

Marcia B Mia
Office of Compliance/Air Branch
2227A WJCS
U.S. Environmental Protection Agency
202-564-7042

From: Mia, Marcia **On Behalf Of** Oil_and_Gas_PT
Sent: Wednesday, January 25, 2017 10:18 AM
To: 'Andrew Bienvenu' <abienvenu@commengineering.com>
Cc: Garwood, Gerri <Garwood.Gerri@epa.gov>; Jason Huckaby <Jason.Huckaby@erg.com>
Subject: RE: COMM Engineering (Model 4 Combustor) - OOOOa Manufacturer's Performance Test Report (Part 2 of 2)

We have the initial review completed I need to generate the follow-up email which I will work on and try to get out COB today. Thanks.

Marcia B Mia
Office of Compliance/Air Branch
2227A WJCS
U.S. Environmental Protection Agency
202-564-7042

From: Andrew Bienvenu [<mailto:abienvenu@commengineering.com>]
Sent: Monday, January 16, 2017 5:39 PM
To: Oil_and_Gas_PT <Oil_and_Gas_PT@epa.gov>
Cc: Garwood, Gerri <Garwood.Gerri@epa.gov>; Jason Huckaby <Jason.Huckaby@erg.com>
Subject: RE: COMM Engineering (Model 4 Combustor) - OOOOa Manufacturer's Performance Test Report (Part 2 of 2)



February 24, 2017

Ms. Marcia Mia
EPA – Office of Compliance/Air Branch
1200 Pennsylvania Ave. N.W
2227A WJCS

RE: **EPA OOOO Manufacturer's Test Reports – Initial Review Follow-Up
COMM Model 2, 3, and 4 Combustors**

Dear Marcia:

Here are COMM's responses to the follow-up items from the EPA's initial reviews.

Models 2/3/4

1. §60.5413(d)(10) requires 12 color photos (one from each test run) of the Method 22 VE test – The photos provided were black and white. Please provide color photos.

COMM Response: See Appendix A for color photos.

2. §60.5413(d)(12)(v)(I) requires a pilot flame indicator – Please provide the operator manual (hyperlink is sufficient) to the burner management system.

COMM Response: ACL 3200 controller – controller is operated in “Flame Ionization” mode.

http://acl-manufacturing.com/pdf/2015_01_15_ACL3200_Rev_4A_Installation_Manual_v0_2g.pdf

3. §60.5413(d)(3) and §60.5413(d)(12)(vi) require strip charts for the operation parameters – Pressure was not included. Please provide a graphical representation of the pressure data.

COMM Response: See Appendix B for pressure strip charts.

4. §60.5413(d)(5)(ii)(A) and (B) requires inlet testing using ASTM D1945-03 – Your test report indicates you used ASTM D1946-90. Please explain.

COMM Response: See Appendix C for clarifications from Metco and Enthalpy.

Model 2

1. §60.5413(d)(5)(ii)(A) requires labs for hydrocarbons for the inlet fuel – The nitrogen and oxygen levels for the condition one canister indicate leakage, and a propylene content <80%. Please explain.

COMM Response: See Appendix C for clarifications from Metco and Enthalpy.

Model 3

1. §60.5413(d)(7)(i) requires that Outlet Testing be conducted in accordance with Method 3C – You indicated in your report that Condition III-3 is not considered to be representative, with CO₂ being non-detect. You therefore averaged the CO₂ and O₂ data from runs 1 and 2 and used that number for the run 3 data. Please explain why you were unable to get representative results, especially since you collected a duplicate bag. Please recalculate using only the data from runs 1 and 2 (instead of including an average for runs 1 and 2 in place of the data for run 3).

COMM Response: See Appendix C for clarifications from Metco and Enthalpy.

If you have questions, please give us a call.

Regards,



Andrew Bienvenu
VP - Engineering
COMM Engineering
Office: 337.237.4373 ext 132
Fax: 337.234.1805



Appendix A – Color Photos

Model 2 Run 1A



Model 2 Run 2A



Model 2 Run1B



Model 2 Run 2B



Model 2 Run1C



Model 2 Run 2C



Model 2 Run 3A



Model 2 Run 4A



Model 2 Run 3B



Model 2 Run 4B



Model 2 Run 3C



Model 2 Run 4C



Model 3 Run 1A



Model 3 Run 2A



Model 3 Run1B



Model 3 Run 2B



Model 3 Run1C



Model 3 Run 2C



Model 3 Run 3A



Model 3 Run 4A



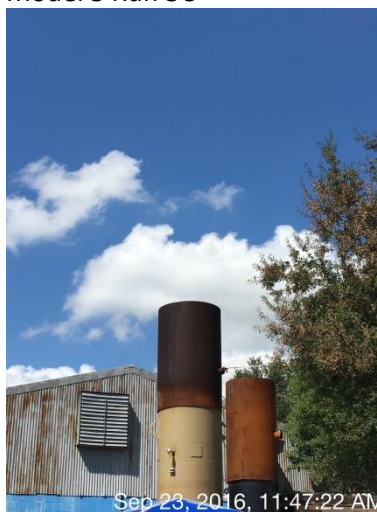
Model 3 Run 3B



Model 3 Run 4B



Model 3 Run 3C



Model 3 Run 4C



Model 4 Run 1A



Model 4 Run 2A



Model 4 Run1B



Model 4 Run 2B



Model 4 Run1C



Model 4 Run 2C



Model 4 Run 3A



Model 4 Run 4A



Model 4 Run 3B



Model 4 Run 4B



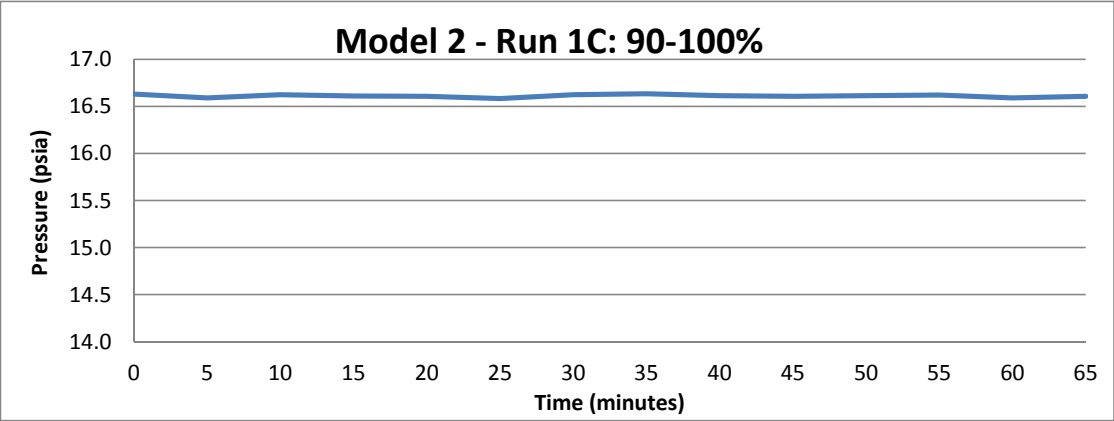
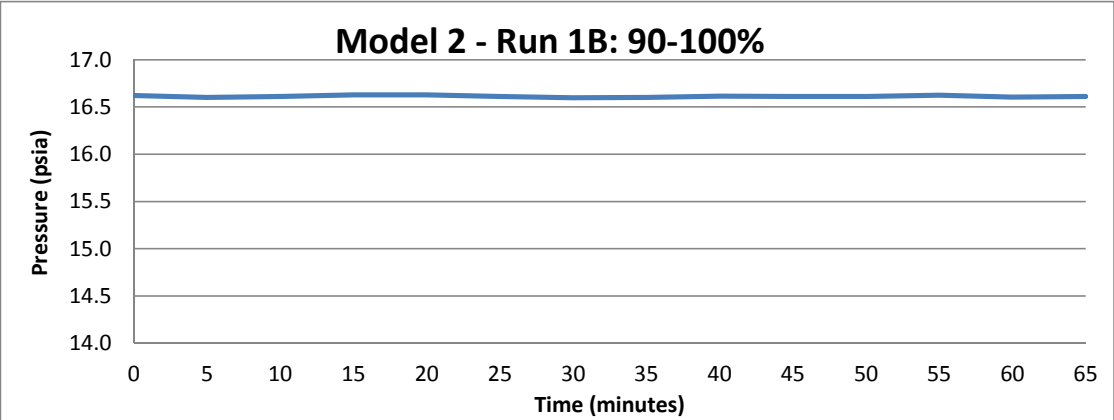
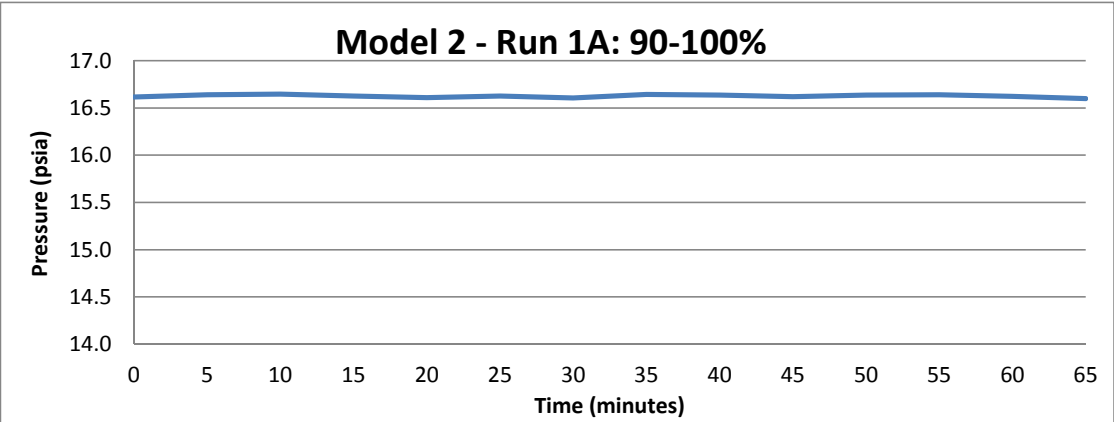
Model 4 Run 3C

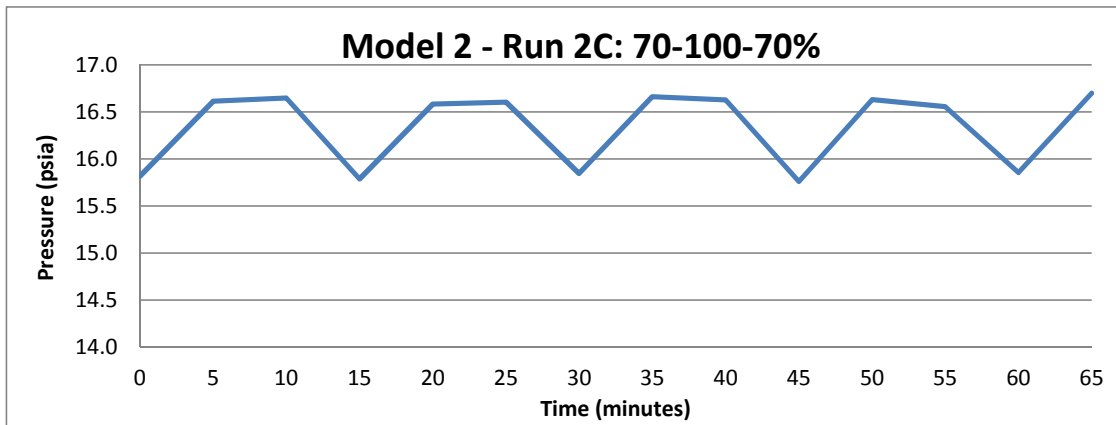
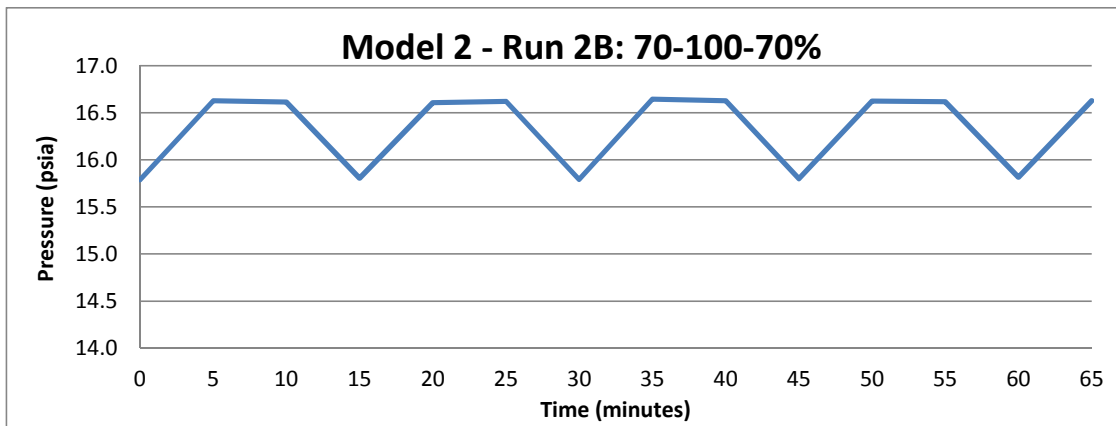
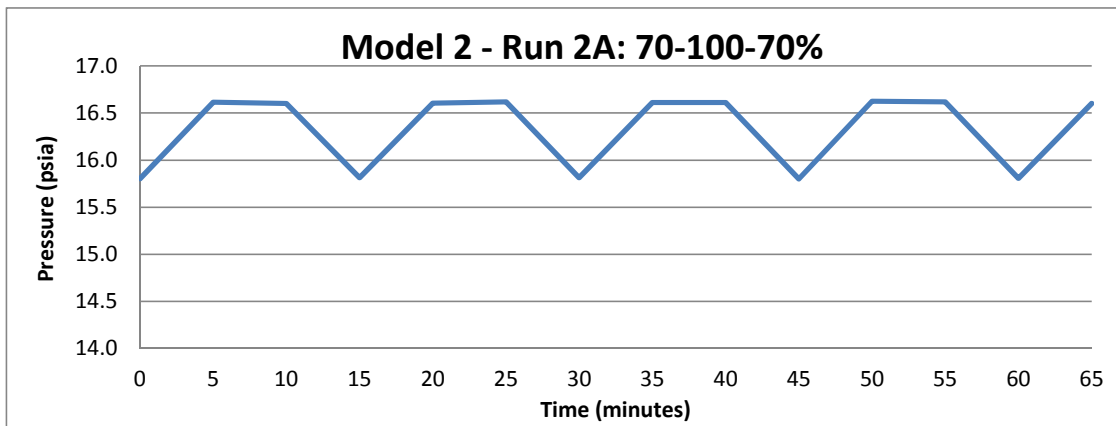


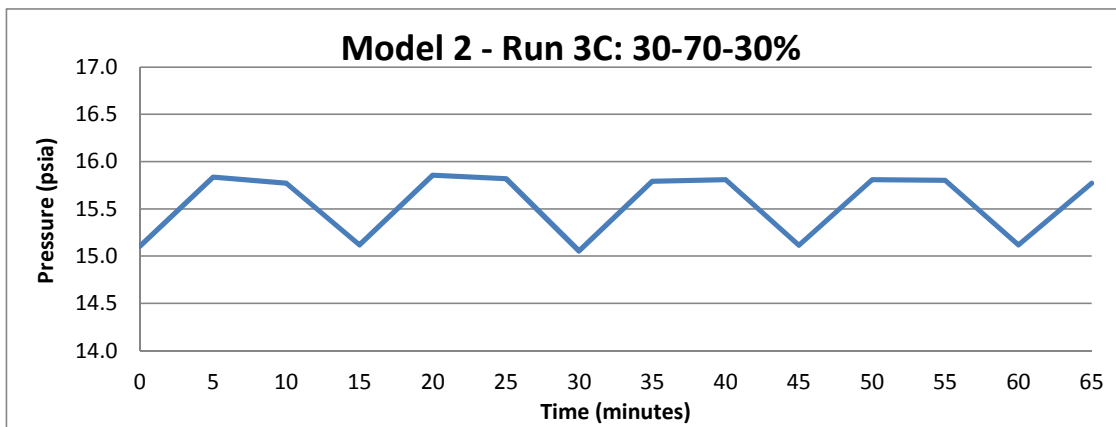
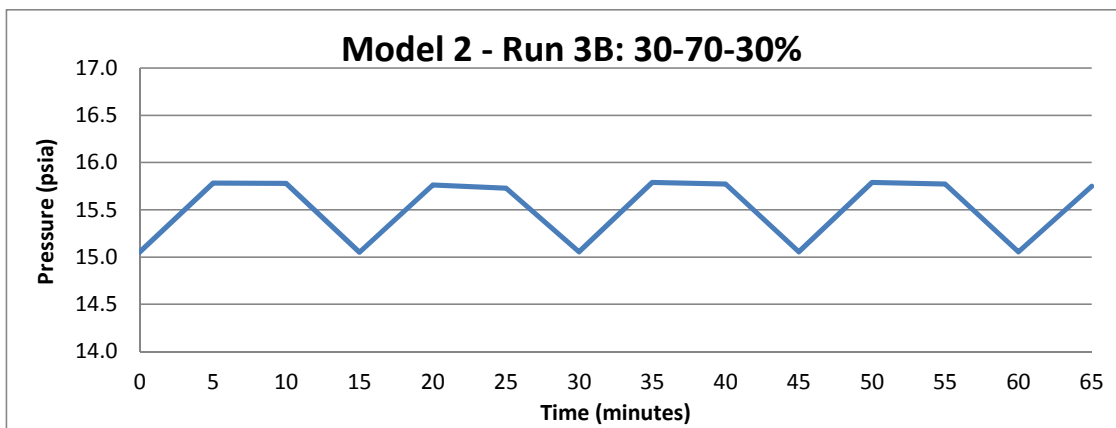
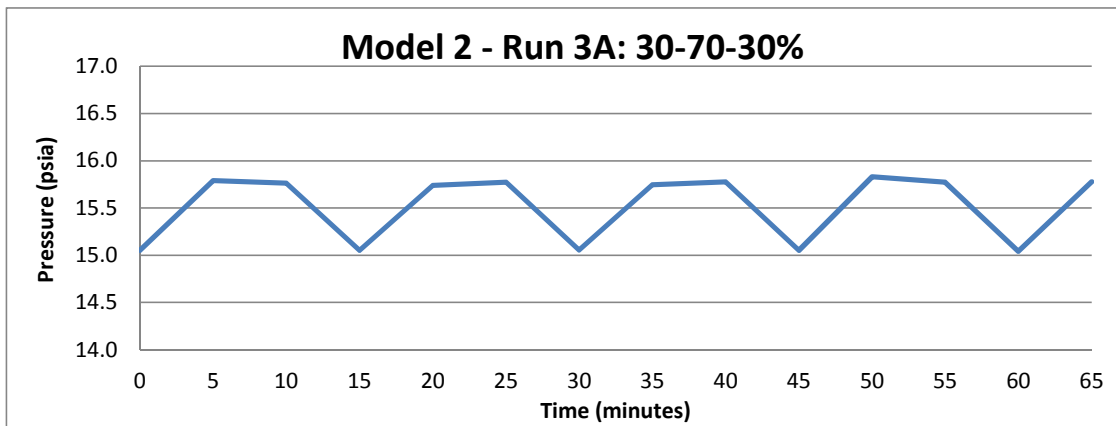
Model 4 Run 4C

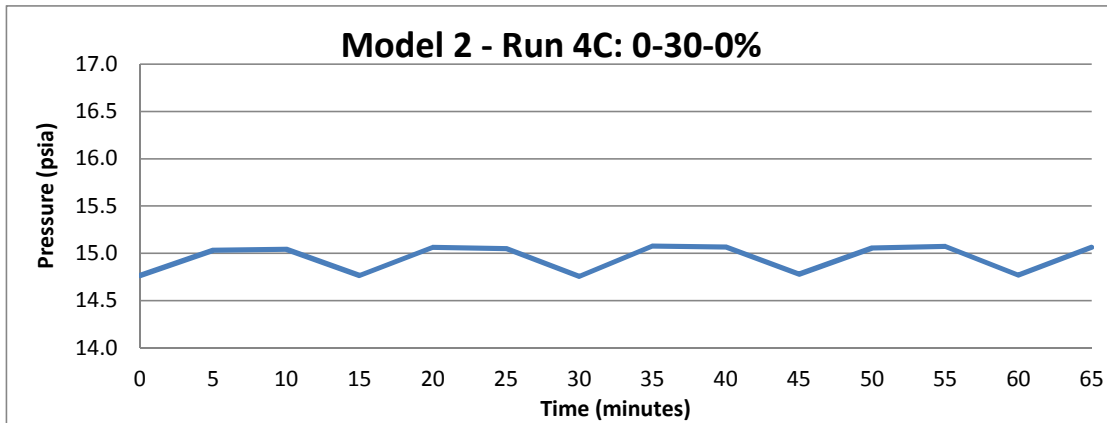
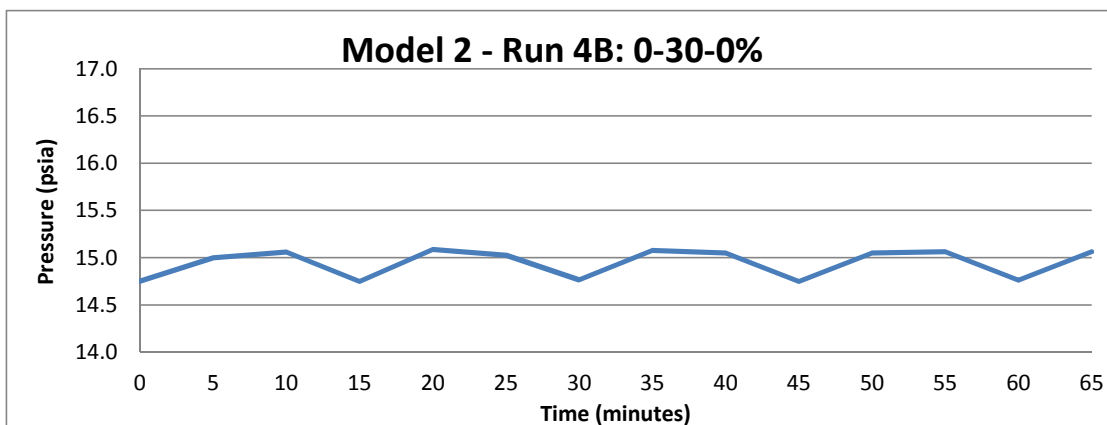
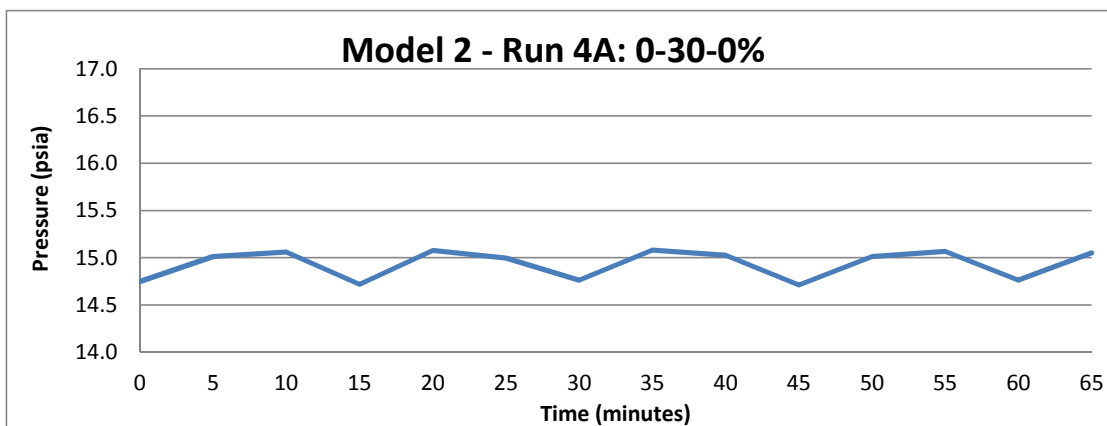


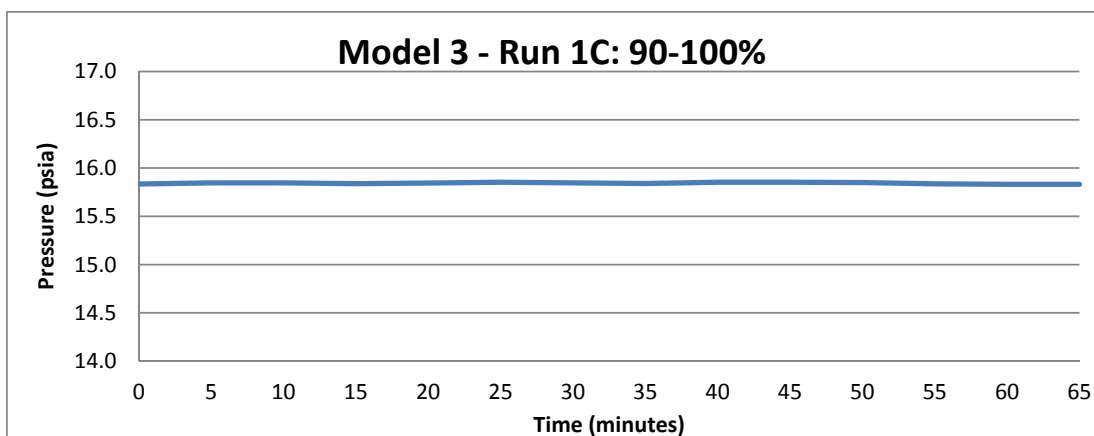
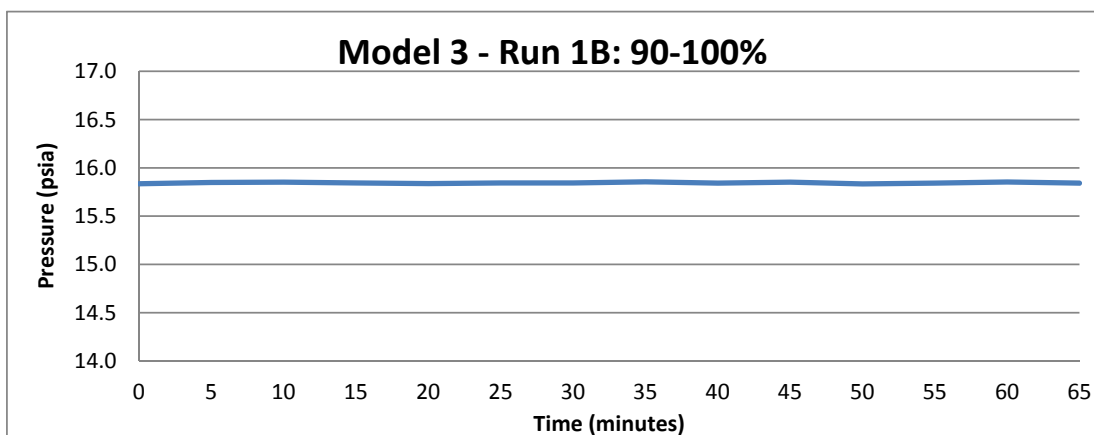
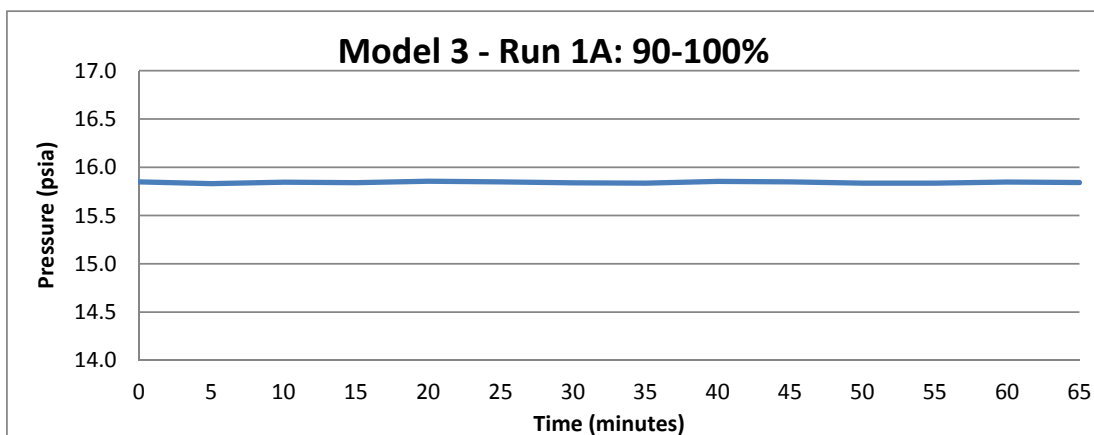
Appendix B – Strip Charts (Pressure)

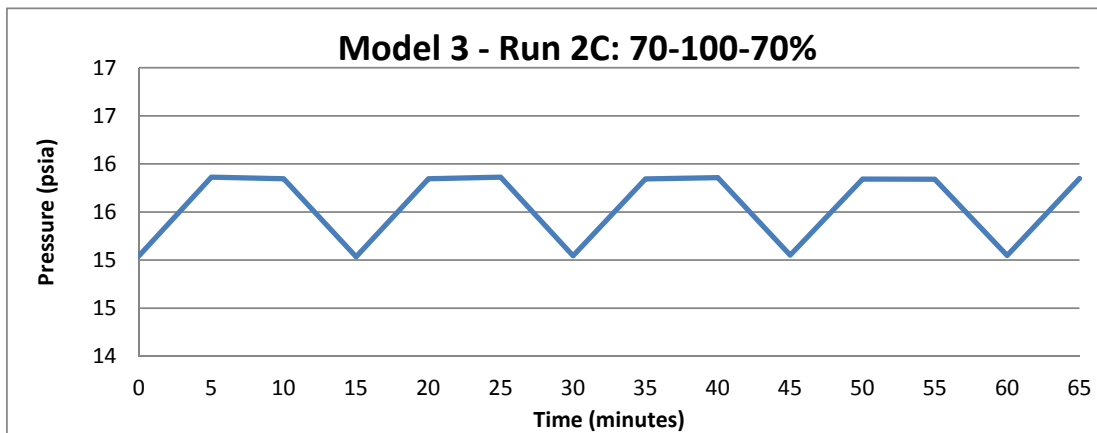
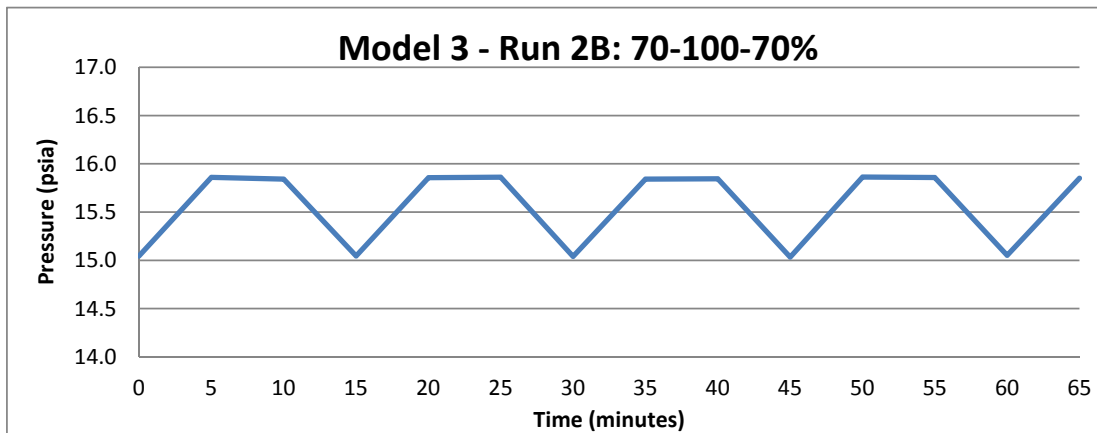
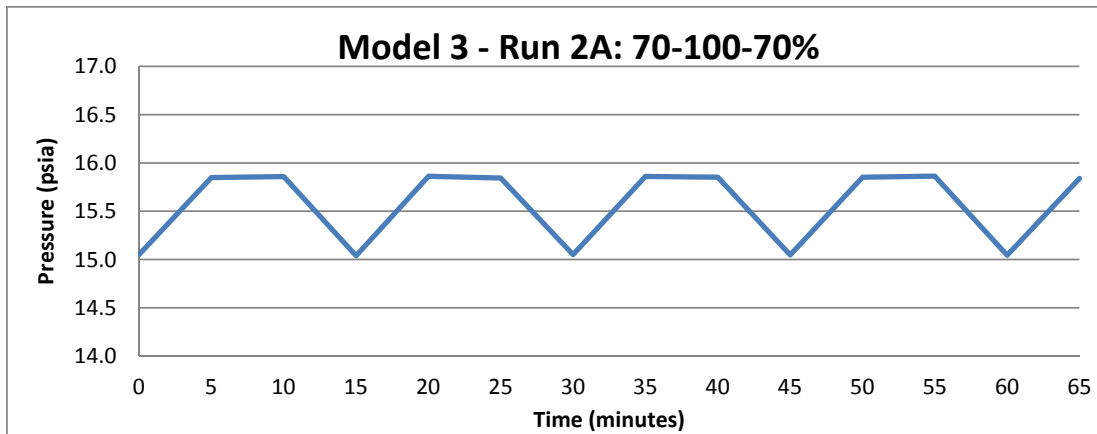


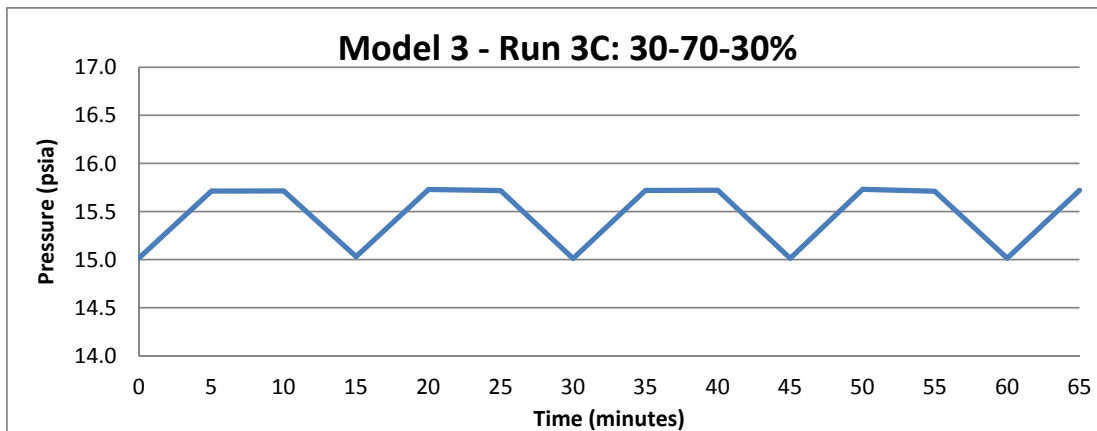
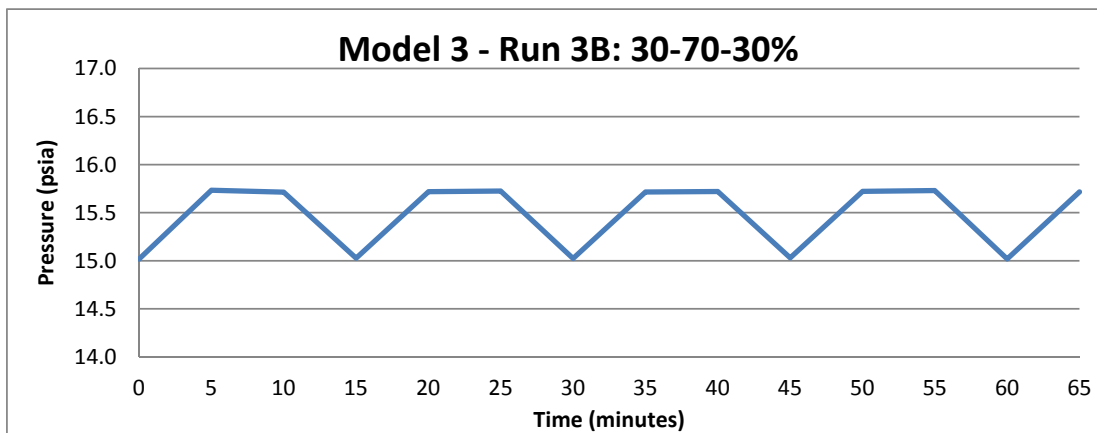
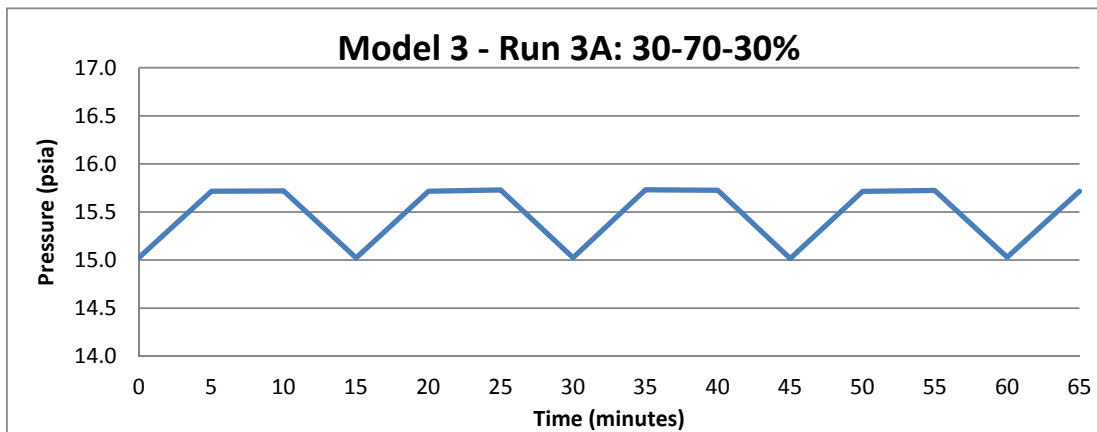


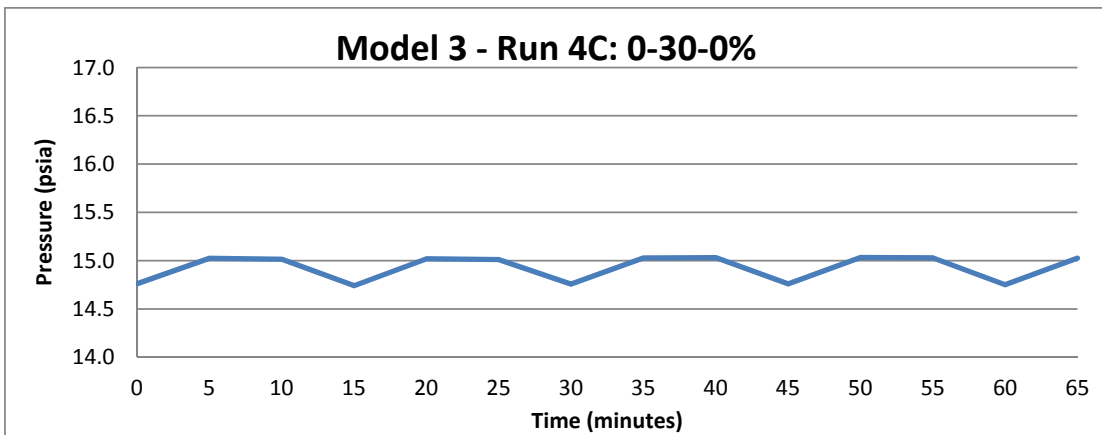
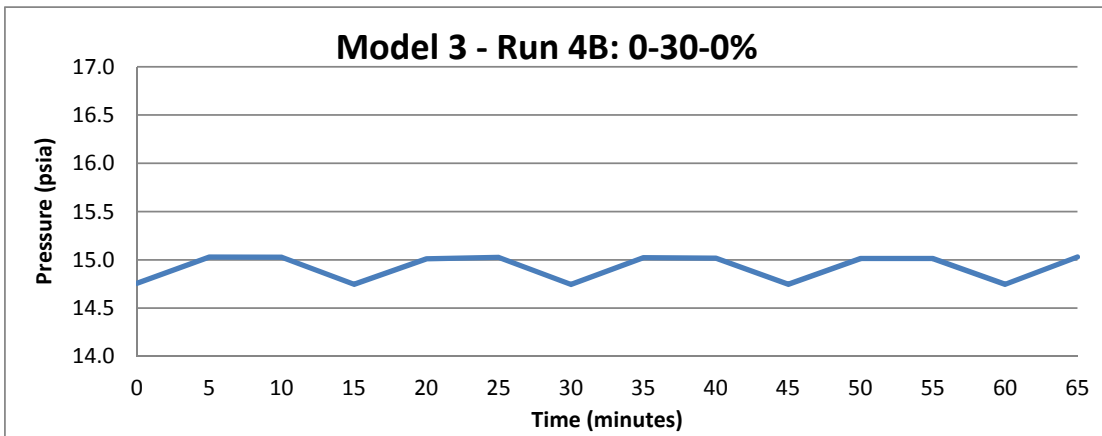
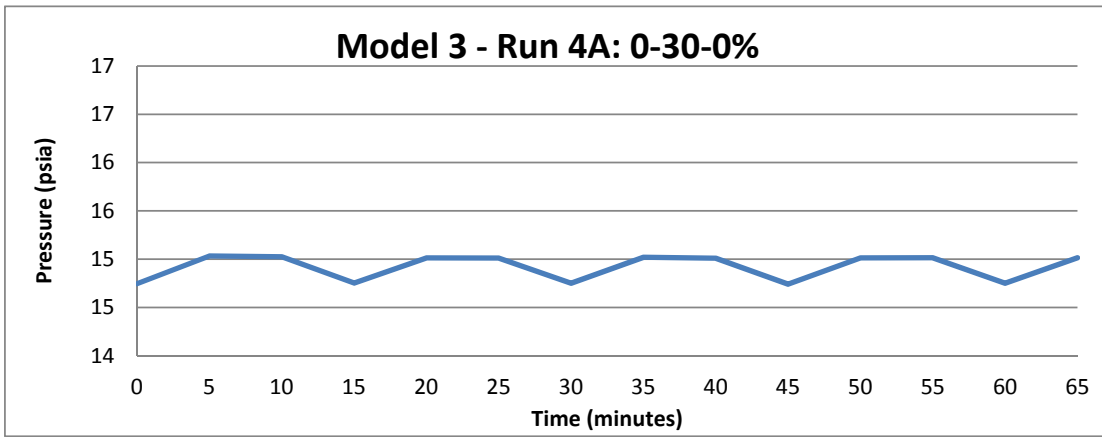


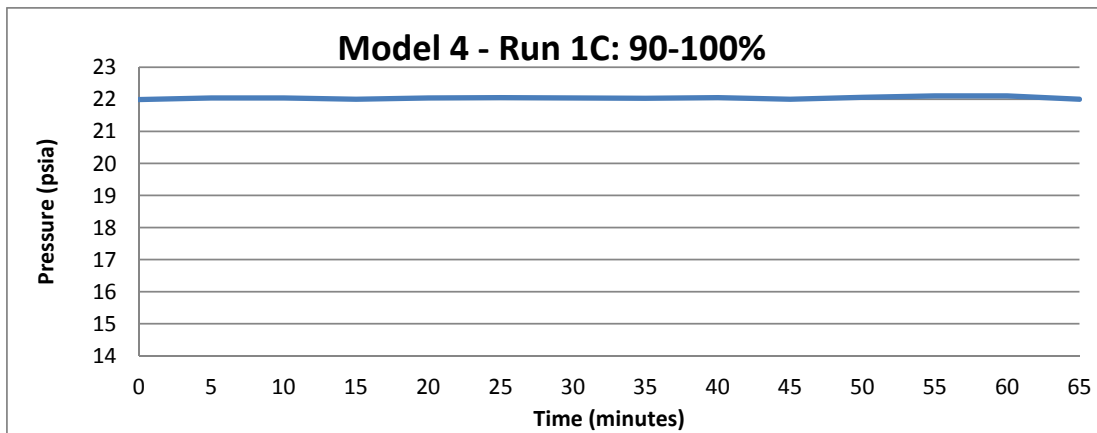
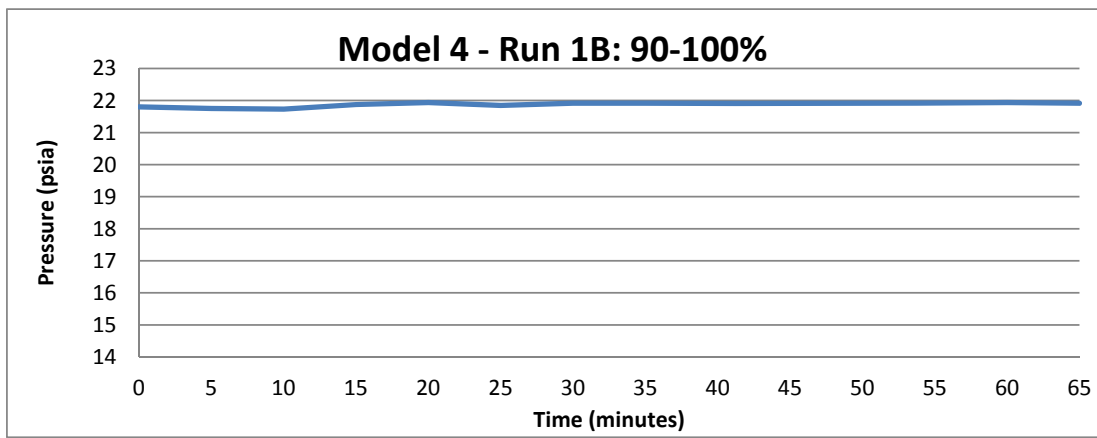
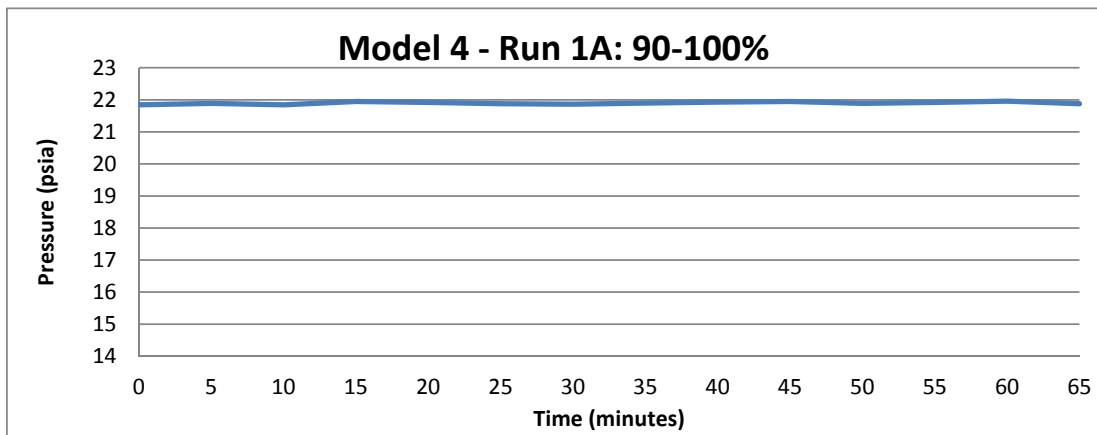


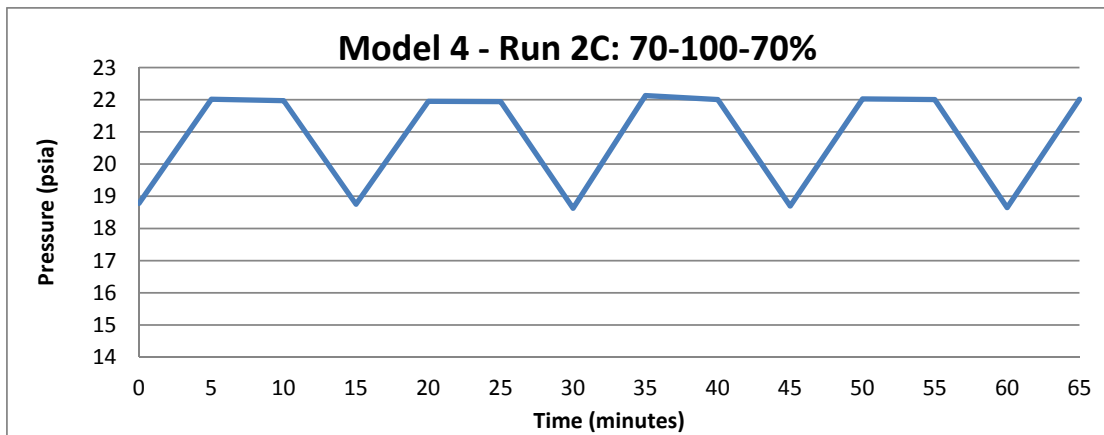
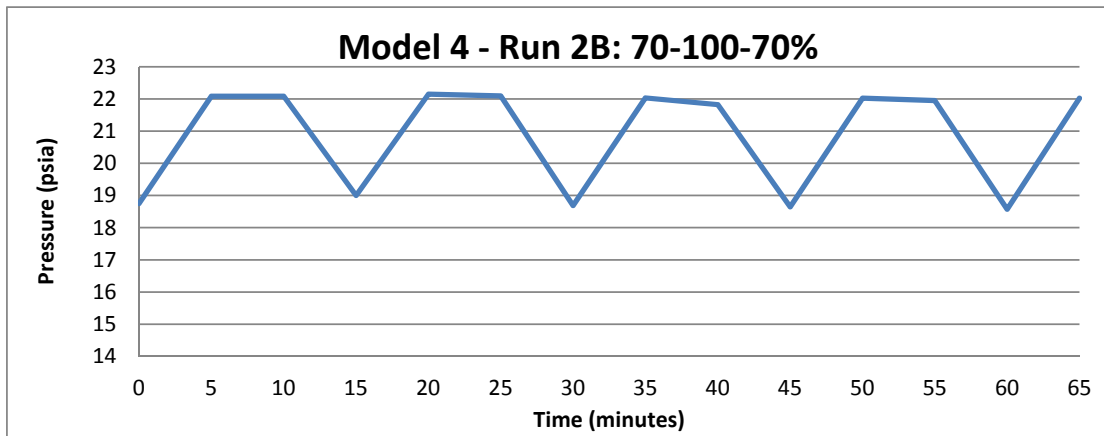
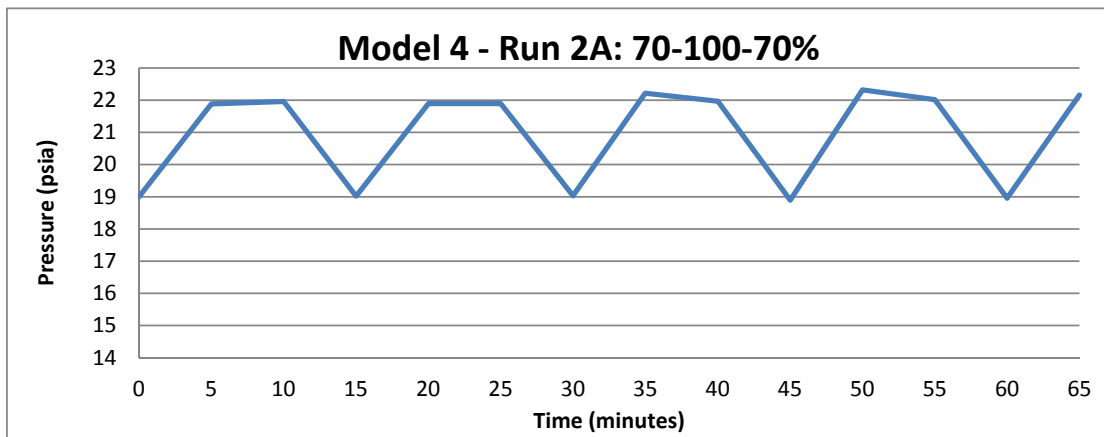


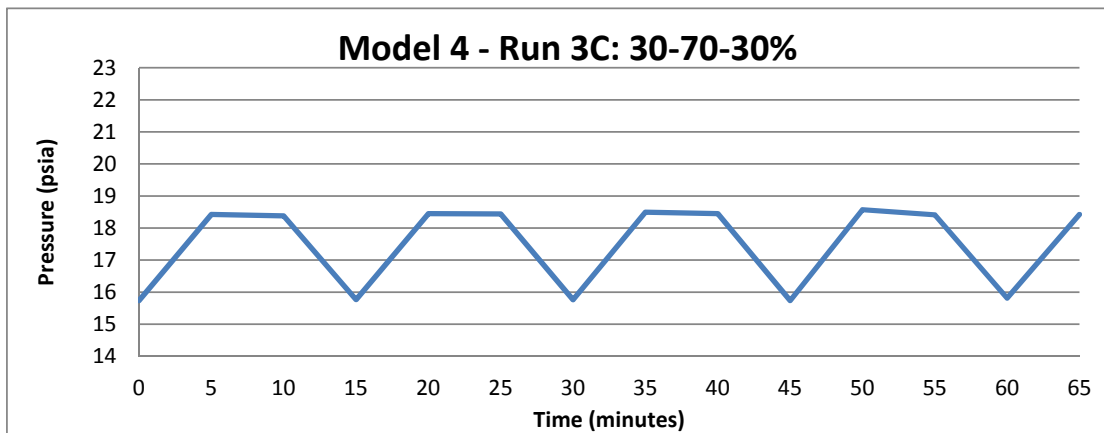
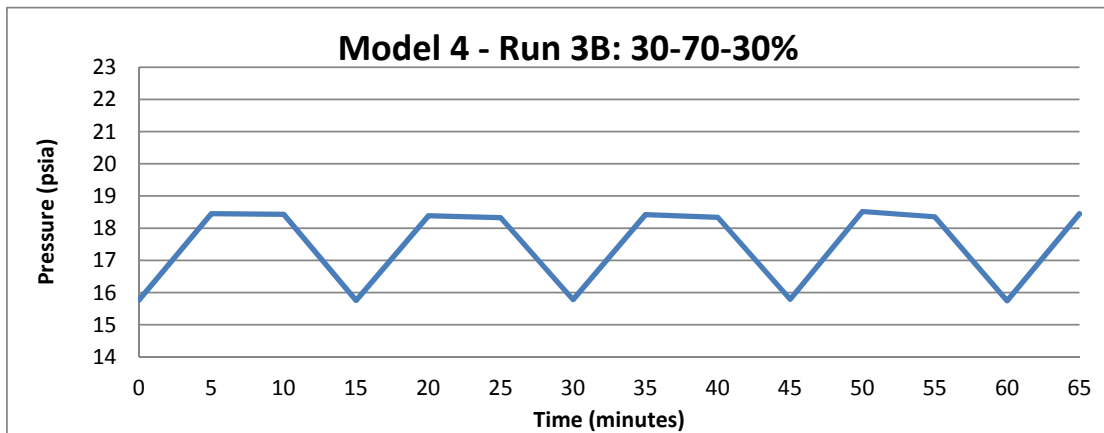
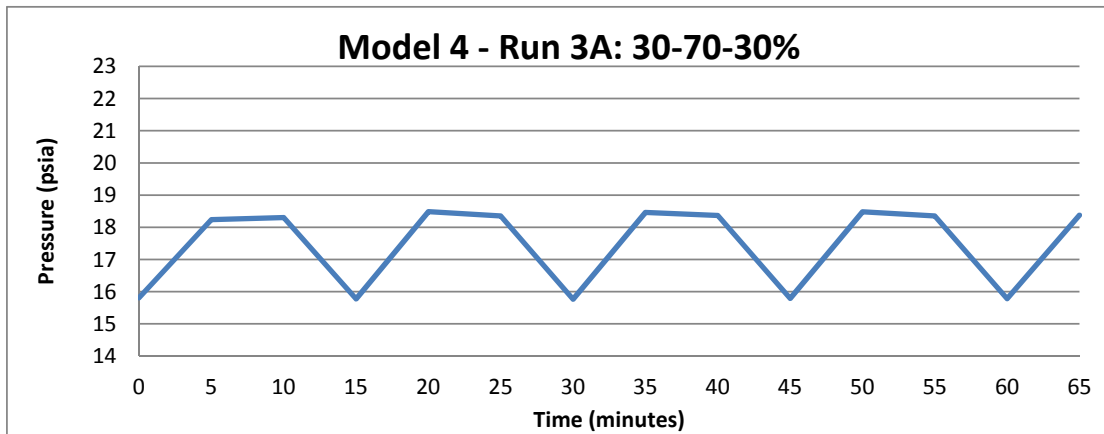


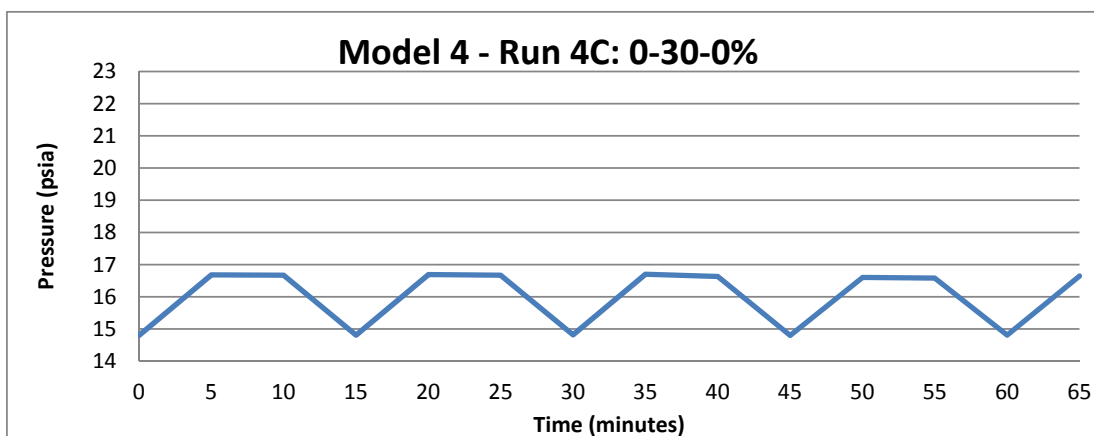
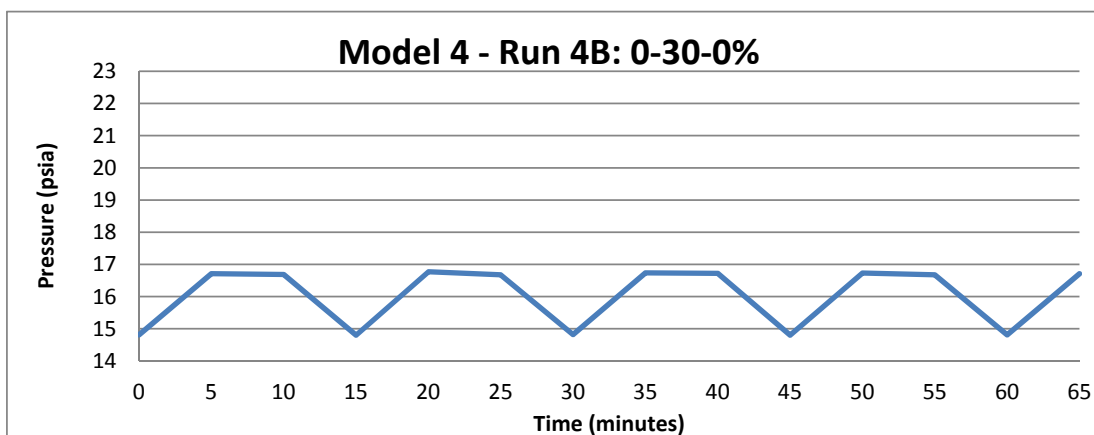
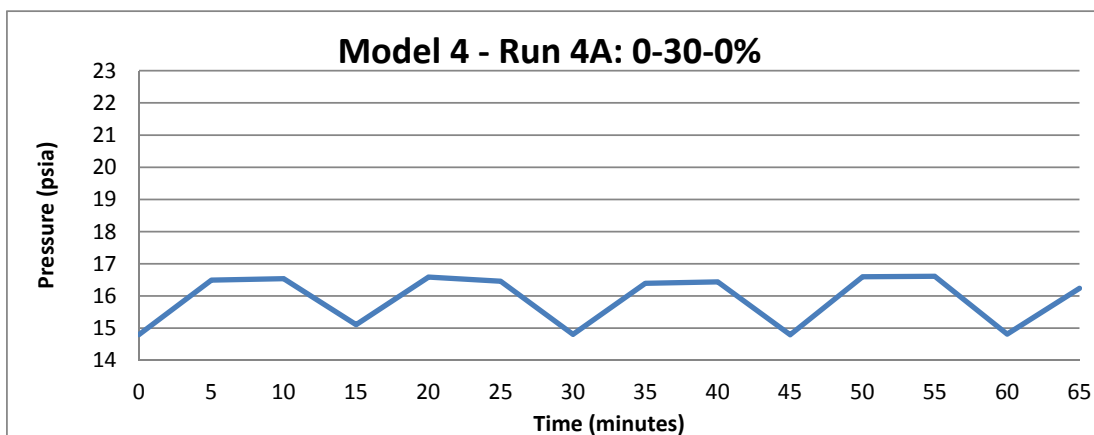












Appendix C – 3rd Party Tester and Lab Clarifications



Ph: 800-394-1194
Fx: 972-931-8398

February 24, 2017

Mr. Andrew Bienvenu
COMM Engineering
PO Box 53463
Lafayette, LA 70503

Dear Mr. Bienvenu:

Thank you very much for the opportunity to provide a response to the EPA questions regarding the Subpart OOOO testing that METCO performed on three COMM Engineering combustors.

1. Models 2/3/4 – 60.5413(d)(5)(ii)(A) and (B) requires inlet testing using ASTM D1945-03 – Your test report indicates you used ASTM D1946-90. Please explain.

Enthalpy has revised their analytical reports for all three models to reflect the correction to ASTM D1945-03. All requirements of that method were followed but the original lab reports mistakenly identified ASTM D1946-90 as it is used more frequently. Two pages from one of the reports is provided on the following pages to show the revised narrative summary identifying the use of ASTM D1945-03 and the header from one of the summary pages. There are too many pages to provide them in this format, but complete revised analytical reports could be provided if requested. Each lab report is almost 600 pages.

2. Model 2 - 60.5413(d)(5)(ii)(A) requires labs for hydrocarbons for the inlet fuel – The nitrogen and oxygen levels for the condition one canister indicate leakage, and a propylene content <80%. Please explain.

Three pages from Enthalpy's revised analytical report are provided on the following pages. In short, all of the canisters for each condition are analyzed **undiluted** as part of their SOP. This step identifies in many cases how much of a sample dilution must be made to the sample gas (if necessary) to place the analysis within the calibration range of the instrument. The undiluted analysis indicated a propylene content of 1,024,204 ppm. Enthalpy notes on the following pages; "There was an error in the second pressurization or the laboratory dilution performed after this pressurization which resulted in a low propylene value for sample **U2-C1-Primary Can1648**." Chromatograms for the undiluted analysis

(ASTM D7036 Accredited)

"Quality Source Sampling"
A TestAmerica Company

were added to the revised lab report and can be provided upon request. The original METCO report calculated the DRE results conservatively using the lower reported value of propylene (~80%) and showed a DRE of 99.99%. Obviously, the higher inlet concentration of propylene (~100%) would only increase the DRE to something better than 99.99%. METCO and Enthalpy both apologize that the analytical mistake made during the second pressurization of the canister and calibration dilution was not identified originally, however the data does support that the canister had collected ~100% propylene and is consistent with the other test conditions and combustor models.

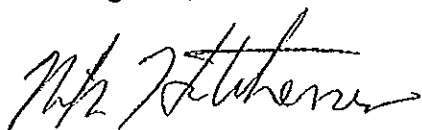
3. Model 3 - 60.5413(d)(7)(i) requires that Outlet Testing be conducted in accordance with Method 3C – You indicated in your report that Condition III-3 is not considered to be representative, with CO₂ being non-detect. You therefore averaged the CO₂ and O₂ data from runs 1 and 2 and used that number for the run 3 data. Please explain why you were unable to get representative results, especially since you collected a duplicate bag. Please recalculate using only the data from runs 1 and 2 (instead of including an average for runs 1 and 2 in place of the data for run 3).

METCO has re-calculated the results based on the two valid Method 3C samples as requested. The revised pages are provided on the following pages of this response. Any data that used Method 3C results for that run were "dashed out". This included any concentrations that were to be corrected to 3% CO₂ or any other calculation such as velocity, scfm, acfm, or lbs/hr. Unfortunately there is nothing we can do with regards to the sample itself. Contrary to what the EPA stated, "duplicate" bags were not collected. The bag samples were "split" so that we could retain them here should FedEx lose the samples during transport to Enthalpy. It appears the sample or bag itself were bad and the split sample indicate the same thing. It could have been as simple as a damaged bag from the manufacturer.

METCO acknowledges that the EPA did not allow the use of EPA Method 3A for O₂/CO₂ when writing the requirements for Subpart OOOO. However, METCO does use that method in the field as a sound sampling technique to be able to calculate preliminary emissions in the field and to identify in the field of any operational issues that may occur. If requested, METCO can provide the EPA Method 3A results which also support the fact that the Condition 3 Run 3 bag sample was obviously compromised but the unit was operating consistently with the other runs.

Thank you again for the opportunity to respond to the items in question.

Best Regards,



Mike Hutcherson
Director of Field Operations

QUESTION 1

Enthalpy Analytical Narrative Summary

Company	METCO Environmental
Analyst	NBT
Parameters	ASTM D1945-03

Client #	16-323
Job #	0816-140
# Samples	4 Canisters

Custody

Shannon Hammaker received the samples on 9/27/16 and 9/30/16 after being relinquished by METCO Environmental. The samples were received at ambient temperature and in good condition. Prior to, during, and after analysis, the samples were kept under lock with access only to authorized personnel by Enthalpy Analytical, Inc.

Analysis

The samples were analyzed for hydrogen, oxygen, nitrogen, carbon monoxide, methane, and carbon dioxide using the analytical procedures in Enthalpy SOP ENT165 for ASTM D1946 – 90 (Reapproved 2000), Standard Practice for Analysis of Reformed Gas by Gas Chromatography which is equivalent to ASTM D1945-03.

All samples and standards were introduced directly to the column using an automated multi-port Valco gas sampling valve equipped with a stainless steel loop. All target analytes were referenced to certified gas phase standards.

Upon receipt, the canister pressures were measured and recorded. The canisters were then pressurized and a dilution ratio was calculated for each canister (see the Canister Pressurization page in the Results section of this report).

The Agilent Technologies Model 6890N, Gas Chromatograph "Betty" (S/N US10430048) was equipped with a Thermal Conductivity Detector for these analyses.

Calibration

The calibration curves are included in the Raw Data section of this report. The data analysis method is referenced in the Analysis Method column on the Detailed Results page.

The first page of the curve contains all method specific parameters (i.e., curve type, origin, weight, etc.) used to quantify the samples. The calibration curve section also includes a table with the Retention Time (RetTime), Level (Lvl), Amount (corresponding units), Area, Response Factor (Amt/Area) and the analyte Name. The calibration table is used to identify (by retention time) and quantify each target compound.



Enthalpy Analytical

Company: METCO Environmental

Job No.: 0816-140 ASTM D1945-03 Canister Analysis

Client No.: 16-323

Summary Table

Sample Name Compound	U2-C1-Primary Can1648 Sample Conc (%)	U2-C2-Primary Can1649 Sample Conc (%)	U2-C3-Primary Can1341 Sample Conc (%)	U2-C4-Primary Can1111 Sample Conc (%)
Hydrogen	0.727 ND	0.629 ND	0.652 ND	0.622 ND
Oxygen	0.652 J	0.439 J	2.13 J	1.39 J
Nitrogen	2.18 J	1.54 J	4.80 J	5.87
Carbon monoxide	0.324 ND	0.280 ND	0.290 ND	0.277 ND
Carbon Dioxide	0.463 ND	0.401 ND	0.415 ND	0.396 ND

QUESTION 2

Enthalpy Analytical Narrative Summary

Company	METCO Environmental
Analyst	NBT
Parameters	EPA Method 18-Type

Client #	16-323
Job #	0816-140R
# Samples	4 Canisters

Custody

Shannon Hammaker received the samples on 9/27/16 and 9/30/16 after being relinquished by METCO Environmental. The samples were received at ambient temperature and in good condition. Prior to, during, and after analysis, the samples were kept under lock with access only to authorized personnel by Enthalpy Analytical, Inc.

Analysis

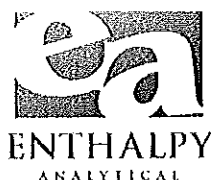
The samples were analyzed for methane, ethane, propane, butane, pentane, hexane, benzene, propylene, total volatile organic compounds as propylene and others as C_x compounds using the general analytical procedures in EPA Method 18, Measurement of Gaseous Organic Compound Emissions by Gas Chromatography (40 CFR Part 60, Appendix A).

All samples and standards were introduced directly to the column using an automated multi-port Valco gas sampling valve equipped with a stainless steel loop. The C₁-C₆ n-alkanes, benzene, and propylene were referenced to certified gas phase standards.

The n-alkane retention times are used to generate retention time windows for other hydrocarbons, which are reported 'as' the nearest n-alkane. For example, the areas for all peaks between 3.714 and 5.209 minutes (except the n-pentane peak) are referenced to the calibrated n-pentane response. The sum of the results is labeled 'C5 as pentane'.

Total VOC as propylene results were determined by summing the peak areas for all peaks in each injection and calculating the average area, then multiplying that average area by the calibrated propylene response factor from the initial calibration. For sample *U2-C1-Primary Can1648* the propylene value from the undiluted analysis was combined with the 'as propylene' value from the second canister pressurization to get the TVOC as propylene value.

Upon receipt, the canister pressures were measured and recorded. The canisters were then pressurized and a dilution ratio was calculated for each canister (see the Canister Pressurization page in the Results section of this report).



Enthalpy Analytical Narrative Summary

(continued)

Analysis (continued)

The canister *U2-C1-Primary Can1648* was pressurized a second time, and then reanalyzed for propylene. There was an error in the second pressurization or the laboratory dilution performed after this pressurization which resulted in a low propylene value for sample *U2-C1-Primary Can1648*. This second revised report shows the e-flagged propylene result from the undiluted analysis performed prior to the second pressurization which is more in line with the other samples.

The Agilent Technologies Model 7890A, Gas Chromatograph "Edith" (S/N CN10722006) was equipped with a Flame Ionization Detector for these analyses.

Chromatographic Conditions

The acquisition methods, AQ_EDITHP274_HRVOC_SHORT.M, AQ_EDITHP274_HRVOC.M, AQ_EDITHP503_HRVOC.M and AQ_EDITHP274_HRVOC_XLONG.M are included in the Raw Data section of this report.

Calibration

The calibration curves are included in the Raw Data section of this report. The data analysis method is referenced in the Analysis Method column on the Detailed Results page.

The first page of the curve contains all method specific parameters (i.e., curve type, origin, weight, etc.) used to quantify the samples. The calibration curve section also includes a table with the Retention Time (RetTime), Level (Lvl), Amount (corresponding units), Area, Response Factor (Amt/Area) and the analyte Name. The calibration table is used to identify (by retention time) and quantify each target compound.

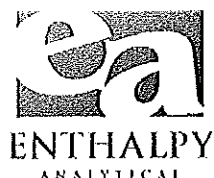
QC Notes

The analysis of the laboratory zero air blank contained no target compounds at concentrations greater than the detection limit.

Reporting Notes

These analytical results are reported on a wet basis. The user of this report should determine the percent moisture in the sample and correct the reported value to ppmvd as appropriate.

The results presented in this report are representative of the samples as provided to the laboratory.



Enthalpy Analytical

Company: METCO Environmental

Job No.: 0816-140 EPA Method 18-Type Canister Analysis

Client No.: 16-323

Summary Table

Sample Name Compound	U2-C1-Primary Can1648 Sample Conc (ppm)	U2-C2-Primary Can1649 Sample Conc (ppm)	U2-C3-Primary Can1341 Sample Conc (ppm)	U2-C4-Primary Can1111 Sample Conc (ppm)
Methane	4.26 ND	3.69 ND	3.82 ND	3.64 ND
Ethane	32.1 J	32.1 J	29.0 J	28.1 J
C2 as Ethane	4.26 ND	3.69 ND	3.82 ND	3.64 ND
Propane	4.26 ND	3.69 ND	3.82 ND	3.64 ND
C3 as Propane	4.26 ND	3.69 ND	3.82 ND	3.64 ND
Butane	1,283	1,366	1,229	1,172
C4 as Butane	68.0	103	99.6	82.0
Pentane	4.39 ND	3.80 ND	3.94 ND	3.75 ND
C5 as Pentane	4.39 ND	3.80 ND	3.94 ND	3.75 ND
Hexane	4.31 ND	3.73 ND	3.86 ND	3.68 ND
C6 as Hexane	4.31 ND	3.73 ND	3.86 ND	3.68 ND
Benzene	1.69 ND	1.46 ND	1.51 ND	1.44 ND
Propylene	1,024,204 E	982,847	966,078	925,240
TVOC as Propylene	1,029,366	986,695	969,689	928,799

QUESTION 3

SUMMARY OF RESULTS

Model 3 Thermal Combustor Outlet Stack

Design Rate: 90-100%	Condition-Run Number I-1	Condition-Run Number I-2	Condition-Run Number I-3	Average	Allowable
Emission Parameter					
Carbon Monoxide Emissions – ppmvd ¹	0.19	0.12	0.23	0.18	≤ 10
Total Hydrocarbons Emissions as Propane – ppmvw ¹	0.05	0.05	0.07	0.06	≤ 10
Excess Air @ Sampling Point - %	382.9	396.8	636.3	472.0	≥ 150
Total Hydrocarbons Destruction Efficiency - %	>99.99	>99.99	>99.99	>99.99	≥ 95

Design Rate: 70-100-70%	Condition-Run Number II-2	Condition-Run Number II-4	Condition-Run Number II-5	Average	Allowable
Emission Parameter					
Carbon Monoxide Emissions – ppmvd ¹	0.54	2.76	1.45	1.58	≤ 10
Total Hydrocarbons Emissions as Propane – ppmvw ¹	0.06	0.07	0.06	0.06	≤ 10
Excess Air @ Sampling Point - %	812.8	1,260.7	540.6	871.4	≥ 150
Total Hydrocarbons Destruction Efficiency - %	>99.99	>99.99	>99.99	>99.99	≥ 95

Design Rate: 30-70-30%	Condition-Run Number III-1	Condition-Run Number III-2	Condition-Run Number III-3	Average	Allowable
Emission Parameter					
Carbon Monoxide Emissions – ppmvd ¹	0.07	1.49	---	0.78	≤ 10
Total Hydrocarbons Emissions as Propane – ppmvw ¹	0.04	0.12	---	0.08	≤ 10
Excess Air @ Sampling Point - %	361.6	703.8	---	532.7	≥ 150
Total Hydrocarbons Destruction Efficiency - %	>99.99	>99.99	---	>99.99	≥ 95

Design Rate: 0-30-0%	Condition-Run Number IV-1	Condition-Run Number IV-2	Condition-Run Number IV-3	Average	Allowable
Emission Parameter					
Carbon Monoxide Emissions – ppmvd ¹	0.53	0.74	0.63	0.63	≤ 10
Total Hydrocarbons Emissions as Propane – ppmvw ¹	< 0.01	0.08	0.11	< 0.07	≤ 10
Excess Air @ Sampling Point - %	185.8	239.5	211.8	212.4	≥ 150
Total Hydrocarbons Destruction Efficiency - %	>99.99	>99.99	>99.99	>99.99	≥ 95

¹ Corrected to 3% carbon dioxide.

Note: Run Numbers 1 and 3 at Condition II were aborted due to plant operational problems.

The EPA Method 3C bag sample results for Run 3 at Condition III were not considered a representative sample. Therefore the carbon monoxide and total hydrocarbon concentrations could not be corrected to 3% CO₂, and the total hydrocarbon lbs/hr destruction efficiency could not be calculated for Run 3.

SUMMARY OF RESULTS

Model 3 Thermal Combustor

Condition- Run Number	<u>Inlet Duct</u> Average Total Hydrocarbons Concentration as Propylene (lbs/hr)	<u>Outlet Stack</u> Average Total Hydrocarbons Emissions as Propylene (lbs/hr)	Destruction Efficiency (%)
I-1 (90-100%)	217.55	< 0.001	> 99.99
I-2 (90-100%)	217.55	< 0.001	> 99.99
I-3 (90-100%)	<u>217.55</u>	< <u>0.001</u>	> <u>99.99</u>
Average	217.55	< 0.001	> 99.99
II-2 (70-100-70%)	190.40	< 0.001	> 99.99
II-4 (70-100-70%)	190.40	< 0.001	> 99.99
II-5 (70-100-70%)	<u>190.40</u>	< <u>0.001</u>	> <u>99.99</u>
Average	190.40	< 0.001	> 99.99
III-1 (30-70-30%)	115.89	< 0.001	> 99.99
III-2 (30-70-30%)	115.89	< 0.001	> 99.99
III-3 (30-70-30%)	<u>115.89</u>	-----	> <u>99.99</u>
Average	115.89	< 0.001	> 99.99
IV-1 (0-30-0%)	40.71	< 0.001	> 99.99
IV-2 (0-30-0%)	40.71	< 0.001	> 99.99
IV-3 (0-30-0%)	<u>40.71</u>	< <u>0.001</u>	> <u>99.99</u>
Average	40.71	< 0.001	> 99.99

Notes: Only one canister sample was collected over the duration of the testing condition.

Run Numbers 1 and 3 at Condition II were aborted due to plant operational problems.

The EPA Method 3C bag sample results for Run 3 at Condition III were not considered a representative sample. Therefore the total hydrocarbon lb/hr destruction efficiency could not be calculated for Run 3.

SUMMARY OF RESULTS

Model 3 Thermal Combustor Outlet Stack

Design Rate: 30-70-30%

Condition-Run Number	III-1	III-2	III-3	Average
Date	09/23/16	09/23/16	09/23/16	----
Time	0850-0956	1015-1121	1140-1246	----
Stack Flow Rate – ACFM	2,582	2,546	---	2,564
Stack Flow Rate – DSCFM ¹	557	549	---	553
% Water Vapor - % Volume	8.85	8.81	8.23	8.63
% Carbon Dioxide - % Vol. ²	4.6	2.3	---	3.5
% Oxygen - % Vol. ²	16.4	18.4	---	17.4
% Nitrogen - % Vol. ²	79.0	79.3	---	79.2
% Methane - % Vol.	< 0.0310	< 0.0310	---	< 0.0310
Molecular Weight – lb/lb-mole	28.38	29.10	---	28.74
% Excess Air @ Sampling Point	361.6	703.8	---	532.7
Stack Temperature -°F	1,788	1,790	1,817	1,798
Stack Pressure - "Hg	30.02	30.02	30.00	30.01

¹ 29.92 "Hg, 68°F (760 mm Hg, 20°C)

² Method 3C analytical results are normalized to 100%

Note: The EPA Method 3C bag sample results for Run 3 at Condition III were not considered a representative sample. Therefore the stack flow rates and the excess air could not be calculated for Run 3.

SUMMARY OF RESULTS

Model 3 Thermal Combustor Outlet Stack

Design Rate: 30-70-30%

Condition-Run Number	III-1	III-2	III-3	Average
Date	09/23/16	09/23/16	09/23/16	----
Time	0850-0956	1015-1121	1140-1246	----
Stack Flow Rate – DSCFM ¹	557	549	---	553
% Carbon Dioxide - % Vol.	4.6	2.3	---	3.5
% Water Vapor - % Volume	8.85	8.81	8.23	8.63
Carbon Monoxide Emissions - ppmvd	0.10	1.14	1.12	0.79
Carbon Monoxide Emissions - ppmvd ²	0.07	1.49	---	0.78
Carbon Monoxide Emissions - lbs/hr	< 0.001	0.003	---	< 0.002
Total Hydrocarbons Emissions as Propane - ppmvw	0.06	0.09	0.11	0.09
Total Hydrocarbons Emissions as Propane - ppmvw ²	0.04	0.12	---	0.08
Total Hydrocarbons Emissions as Propane - ppmvd	0.07	0.10	0.12	0.10
Total Hydrocarbons Emissions as Propylene - lbs/hr	< 0.001	< 0.001	---	< 0.001

¹ 29.92 "Hg, 68°F (760 mm Hg, 20°C)

² Corrected to 3% carbon dioxide

Note: The EPA Method 3C bag sample results for Run 3 at Condition III were not considered a representative sample. Therefore the carbon monoxide and total hydrocarbon concentrations could not be corrected to 3% CO₂, and the carbon monoxide and total hydrocarbon lbs/hr could not be calculated for Run 3.

The three completed tests for carbon monoxide, total hydrocarbons, and fixed gases appeared to be valid representations of the actual emissions during the tests. All leak checks performed on the sampling train, the pitot tubes, the integrated bag sampling system, and the reference method monitors sampling systems showed no leaks before or after each test. The zero and calibration drift tests of the reference method monitors were stable with no variations greater than 3.0 percent. The calibration error check and the sampling system bias check performed on the reference method monitors prior to testing were valid. The indicative parameters calculated from the field data were in close agreement. The moisture percentages for the three completed tests were within 6.2 percent of the mean value. The measured flow rates (Q_s) for the tests were within 7.3 percent of the mean value.

The calculated emissions (pounds per hour) of carbon monoxide for the three completed tests showed a range of -75.0 percent to +50.0 percent variation from the mean value.

The calculated emissions (pounds per hour) of total hydrocarbons for the three tests showed no variation from the mean value.

Condition III - 30-70-30%

The bag sample results for Run Number 3 were not considered a representative sample. Therefore the carbon monoxide and total hydrocarbon concentrations could not be corrected to 3% CO₂, and the carbon monoxide and total hydrocarbon lbs/hr could not be calculated for Run 3 and was excluded from all averages.

*

The three tests for carbon monoxide, total hydrocarbons, and Run Numbers 1 and 2 for fixed gases appeared to be valid representations of the actual emissions during the tests. All leak checks performed on the sampling train, the pitot tubes, the integrated bag sampling system, and the reference method monitors sampling systems showed no leaks before or after each test. The zero and calibration drift tests of the reference method monitors were stable with no variations greater than 3.0 percent. The calibration

SOURCE EMISSION CALCULATIONS

JOB NUMBER: 16-323
 JOB NAME: COMM ENGINEERING
 LOCATION: LAFAYETTE, LOUISIANA
 UNIT TESTED: MODEL 3 - CONDITION III

SYMBOL	DESCRIPTION	UNITS	RUN NUMBER		
			1	2	3
CO2		%	4.6	2.3	----
O2		%	16.4	18.4	----
CO		%	0.0	0.0	----
N2		%	79.0	79.3	----
%EA	EXCESS AIR @ SAMPLING POINT	%	361.6	703.8	----
MWd	MOLECULAR WEIGHT OF DRY STACK GAS	LB/LB-MOLE (g/g-MOLE)	29.39 (29.39)	29.10 (29.10)	----
MW	MOLECULAR WEIGHT OF STACK GAS	LB/LB-MOLE (g/g-MOLE)	28.38 (28.38)	28.13 (28.13)	----
Cp	PITOT TUBE CALIBRATION		0.807	0.807	0.807
DELTA P	VELOCITY HEAD OF STACK GAS	"H2O (mm H2O)	0.003 (0.100)	0.003 (0.100)	0.003 (0.100)
DELTA P ^{^(1/2)}		"H2O	0.054	0.053	0.051
Ts	STACK TEMPERATURE	DEG. F (DEG. C)	1,788 (976)	1,790 (977)	1,817 (992)
Ps	STACK PRESSURE	"Hg Abs. (mm Hg) "H2O	30.02 (763.00) 0.20	30.02 (763.00) 0.20	30.00 (762.00) 0.20
Vs	STACK VELOCITY @ STACK CONDITIONS	FPM (m/SEC.)	363 (2)	358 (2)	----
As	STACK AREA	(SQ.INCHES) (SQ.METERS)	1,025 (1)	1,025 (1)	1,025 (1)
Qs	DRY STACK GAS VOLUME @ STANDARD CONDITIONS* WET STACK GAS VOLUME @ STANDARD CONDITIONS*	DSCFM (DSCM/HR) WSCFH	557 (946) 36,665	549 (933) 36,122	---- ---- ----
Qa	ACTUAL STACK GAS VOLUME @ STACK CONDITIONS	ACFM (m^3/HR)	2,582 (4,387)	2,546 (4,326)	---- ----

* 68 Deg.F, 29.92 "Hg (20 Deg.C, 760 mm Hg)

Note: The bag sample results for Run 3 were not considered a representative sample.

From: [Andrew Bienvenu](#)
To: [Garwood, Gerri](#); [Mia, Marcia](#)
Cc: [Jason Huckaby](#); [Bill Schneider](#)
Subject: RE: COMM Engineering (Model 4 Combustor) - OOOOa Manufacturer's Performance Test Report (Part 2 of 2)
Date: Thursday, March 16, 2017 5:58:47 PM
Attachments: [removed.txt](#)
[METCO_03.13.17_OOOO ASTM D1945-96 Discussion.pdf](#)

Gerri,

As per our conversation with the lab on Tuesday, 3/14, please see attached for their formal response in regards to the EPA's questions in regards to ASTM 1945 and 1946.

Let us know if you need anything else.

Regards,

Andrew Bienvenu

COMM Engineering

PO Box 53463 | Lafayette, LA 70505

1319 W. Pinhook Road, Ste 401 | Lafayette, LA 70503

Office: 337.237.4373 ext 132

Fax: 337.234.1805



From: Andrew Bienvenu
Sent: Monday, March 13, 2017 5:28 PM
To: 'Garwood, Gerri'; Mia, Marcia
Cc: Jason Huckaby; Bill Schneider
Subject: RE: COMM Engineering (Model 4 Combustor) - OOOOa Manufacturer's Performance Test Report (Part 2 of 2)

Gerri,

Are you available between 10am-11am CST (11am-12pm EST) on Tuesday, 3/14, for a conference call with COMM and the lab?

Please advise.

Thanks,

Andrew Bienvenu

COMM Engineering

PO Box 53463 | Lafayette, LA 70505

1319 W. Pinhook Road, Ste 401 | Lafayette, LA 70503

Office: 337.237.4373 ext 132

Fax: 337.234.1805



From: Garwood, Gerri [<mailto:Garwood.Gerri@epa.gov>]
Sent: Thursday, March 09, 2017 4:35 PM
To: Andrew Bienvenu; Mia, Marcia
Cc: Jason Huckaby; Bill Schneider
Subject: RE: COMM Engineering (Model 4 Combustor) - OOOOa Manufacturer's Performance Test Report (Part 2 of 2)

Hi Andrew,

I just looked at schedules, and it looks like Marcia is out all of next week. We can either do something the week after next, or I could do a call with the lab next week and relay the information to Marcia once she is back.

If you want to do next week, I am available on Tuesday from 10-1 or Wednesday 9-10 or 1:30-3. Thursday and Friday are pretty much open all day.

Sincerely,

Gerrí G. Garwood, P.E.

U.S. Environmental Protection Agency
OAR/OAQPS/SPPD
Measurement Policy Group
Ph: 919-541-2406 Fax: 919-541-3207

From: Andrew Bienvenu [<mailto:abienvenu@commengineering.com>]
Sent: Thursday, March 09, 2017 4:05 PM
To: Mia, Marcia <Mia.Marcia@epa.gov>
Cc: Garwood, Gerri <Garwood.Gerri@epa.gov>; Jason Huckaby <Jason.Huckaby@erg.com>; Bill Schneider <bill@commengineering.com>
Subject: RE: COMM Engineering (Model 4 Combustor) - OOOOa Manufacturer's Performance Test Report (Part 2 of 2)

Thank you Marcia.

What day and times are better for you for a call with the lab?

Regards,
Andrew Bienvenu
COMM Engineering

Office: 337.237.4373 ext 132

From: Mia, Marcia [<mailto:Mia.Marcia@epa.gov>]
Sent: Tuesday, March 07, 2017 2:18 PM
To: Andrew Bienvenu
Cc: Garwood, Gerri; Jason Huckaby; Bill Schneider
Subject: RE: COMM Engineering (Model 4 Combustor) - OOOOa Manufacturer's Performance Test Report (Part 2 of 2)

Andrew,

We are still struggling to understand the ASTM "1945" vs "1946" method.

In Appendix C of your follow-up, the lab explains that they used ASTM 1945-03, but in the revised narrative (see page 27) they explain that ASTM 1946-90 was used and that it is "equivalent" to ASTM 1945-03.

The list of gases that ASTM 1946 targets is different from those of 1945. Specifically, Method 1946-03 doesn't target gases in the C3-C6 range (of which propylene would fall). 1945-03 also has more specifications that the GC column has to meet.

The lab indicates that their SOP for 1946 is equivalent to 1945.

We need to understand exactly what method the lab used, and if they used Method 1946-90, how they ensured it was equivalent to Method 1945-03.

We are happy to set up a call with between us, and include the testing lab, if that might move it along. Please let me know how you would like to proceed.

Marcia B Mia
Office of Compliance/Air Branch
2227A WJCS
U.S. Environmental Protection Agency
202-564-7042

From: Andrew Bienvenu [<mailto:abienvenu@commengineering.com>]
Sent: Thursday, March 02, 2017 3:50 PM
To: Mia, Marcia <Mia.Marcia@epa.gov>
Cc: Garwood, Gerri <Garwood.Gerri@epa.gov>; Jason Huckaby <Jason.Huckaby@erg.com>; Bill Schneider <bill@commengineering.com>
Subject: RE: COMM Engineering (Model 4 Combustor) - OOOOa Manufacturer's Performance Test Report (Part 2 of 2)

Marcia,

Please confirm receipt of our responses submitted on Friday, 2/24/2017.

Based on your current schedule, when can we expect further feedback/confirmation from the EPA on the test from these 3 models?

Regards,

Andrew Bienvenu

COMM Engineering

PO Box 53463 | Lafayette, LA 70505

1319 W. Pinhook Road, Ste 401 | Lafayette, LA 70503

Office: 337.237.4373 ext 132

Fax: 337.234.1805



From: Andrew Bienvenu

Sent: Friday, February 24, 2017 12:39 PM

To: 'Mia, Marcia'

Cc: Garwood, Gerri; Jason Huckaby; Bill Schneider

Subject: RE: COMM Engineering (Model 4 Combustor) - OOOOa Manufacturer's Performance Test Report (Part 2 of 2)

Marcia,

Please see attached pdf file for the information requested below.

Please review this information and let us know if there is anything else you need from us.

Thank you,

Andrew Bienvenu

COMM Engineering

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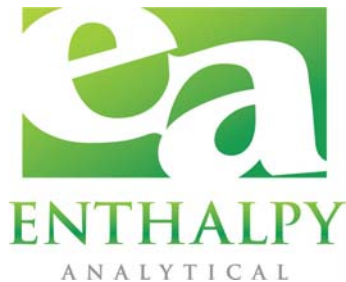
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From: Mia, Marcia [<mailto:Mia.Marcia@epa.gov>]

Sent: Wednesday, February 01, 2017 1:35 PM



March 16, 2017

Mr. Mike Hutcherson
METCO Environmental
3226 Commander Dr.
Carrollton, TX 75006

Subject: OOOO Guidance and ASTM D1945-96 Discussion

Dear Mike,

Per our ongoing discussions and conference call with the EPA on March 15, 2017 I am submitting this letter to summarize analytical questions for a OOOO Test completed by METCO (16-323) and Enthalpy (0816-140). The question to be addressed concerns the methods used to analyze the Propylene canisters collected.

6L sampling canisters were used in the field to collect Propylene gas. Samples we collected by METCO and analyzed by Enthalpy Analytical for: inert gases (Carbon dioxide, Carbon monoxide, Hydrogen, Methane, Oxygen, Nitrogen) and Hydrocarbons (Methane, Ethane, Propane, Butane, Pentane, Hexane, Benzene, Propylene). Inert gases were run by ASTM D1946-90, Hydrocarbons by modified EPA Method 18.

During regulatory review of the Enthalpy data it was found that the inert gases and Hydrocarbons should have been run by ASTM D1945-03. Enthalpy thoroughly reviewed ASTM D1945-03 and found that the method was almost identical to the Enthalpy approaches except for two items:

- ASTM D1945-03 requires data to be adjusted to 100%. *We do not adjust data without empirical evidence to support the adjusting (i.e. blank adjustments, spike & recovery adjustment). Adjust the data to 100% would allow the lab to normalize an "80% total gas" result to 100% and without a complete data package this adjustment would never be known. We feel it best to report data as acquired by the instrument.*
- ASTM D1945-03 requires +/-1% reproducibility between duplicate injections – Enthalpy follows the traditional +/-5% reproducibility requirement. *Successive injection reproducibility of 1% is tremendously difficult to achieve with any analytical measurement.*

Please do not hesitate to contact me if you have any questions. Thank you for this opportunity to address specific questions pertaining to this OOOO test.

Sincerely,

Bryan D. Tyler
Director Business Development Marketing

S. Thorne Gregory
Technical Director